Verifone®

e280

Installation Guide

Verifone Part Number DOC087-603-EN-C, Revision C01

e280 Installation Guide

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PREFACE

This guide is your primary source of information for setting up the e280.

Audience

This guide is useful for anyone installing an e280 device. Basic descriptions of the device features are also provided.

Organization

This guide is organized as follows:

Chapter 1, Device Overview. Provides an overview of the e280.

Chapter 2, Device Setup. Explains how to set up the e280 device. It tells you how to select a location and establish power connection.

Chapter 3, Specifications. Discusses power requirements and dimensions of the e280.

Chapter 4, Maintenance. Explains how to maintain your e280.

Chapter 5, Verifone Service and Support. Provides information on how to contact your local Verifone representative or service provider, and information on how to order accessories or documentation from Verifone.

Chapter 6, Troubleshooting Guidelines. Provides troubleshooting guidelines, should you encounter a problem in device installation.

Related Documentation

To learn more about the e280, refer to the following set of documents:

e280 Certifications and Regulations Sheet	VPN -DOC087-601-EN-A
e280 Quick Installation Guide	VPN -DOC087-602-EN-A

Conventions and Acronyms

This section describes the conventions and acronyms used in this guide.

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 Conventions and Acronyms.
Italics	Italic typeface indicates book titles or emphasis.	You *must* install a roll of thermal-sensitive paper in the printer.
`Courier`	The courier type face is used while specifying onscreen text, such as text that you would enter at a command prompt, or to provide an URL.	`http://www.verifone.com`
	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.

Various acronyms are used in place of the full definition. Table 2 presents acronyms and their definitions.

Table 2 Acronym Definitions

Acronym	Definitions
AC	Alternating Current
ARM	Acorn RISC Machine
EMV	Europay MasterCard and VISA
LCD	Liquid Crystal Display
NFC	Near Field Communication
MRA	Merchandise Return Authorization
PCI	Payment Card Industry
PED	PIN Entry Device
PIN	Personal Identification Number
USB	Universal Serial Bus
VPN	Verifone Part Number

Device Overview

This chapter provides a brief description of the e280 device.

The e280 is a secure wireless handheld mobile payment device that allows merchants to process credit card transactions anywhere. The e280 supports a variety of use cases and integrates with Verifone's estate management solution enabling clients to remotely monitor, manage, and update their device. The e280 also supports Bluetooth BLE and WiFi, and meets PCI 5.X SRED requirements for maximum security.

The e280's small, sleek, design makes it easily pocketable while supporting all payment methods - Magnetic stripe, EMV, and NFC/CTLS, including Apple Pay, Google Pay, and Samsung Pay mobile wallets. The easy to read color touch screen supports all payment related user interactions, including barcode scanner and secure PIN entry.

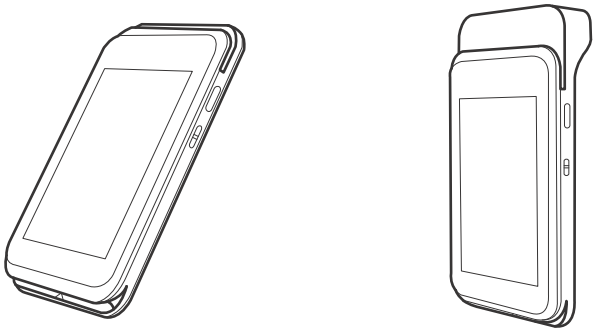


Figure 1 Supplied in the box

Key Features and Benefits

- Fast 300 MHz processor to support all your encryption needs.
- BT 4.2 with BLE, Wi-Fi, and USB-C connectivity options.
- Embedded 1660 m Ah battery provides 300 CTLS transactions over 10.5 hrs.
- PCI 5.X Certified.
- 3.5" HVGA Color Touchscreen for easy interaction, including PIN entry.
- Small, lightweight dimensions support multiple mobile use cases for maximum flexibility.
- Sleek, modern, design, drop rated to 1.2m.
- MFi Certified

Features and Benefits

The e280 provides the right combination of features and functions including a triple-track magnetic-stripe card reader, smart card reader, digital PINpad and contactless/NFC support.

BT and WiFi Performance

The dynamic combination of Bluetooth and Wi-Fi, wireless payment convenience, fewer dropped transactions and flexible point-of-sale options.

Modern Application Environment

- Reliable operating system and powerful tools create a richer customer experience.
- Common Engage software architecture enables faster and more cost-effective application development.

Accepts All Forms of Payment On-the-Go

- Accommodates all payment types - Magnetic stripe, EMV, Contactless/NFC, and mobile wallets along with a 3.5-inch color touch screen with digital PIN pad, barcode scanner and signature capture.

Exceptional Ease of Use

- The lightweight, compact, stylish, and ergonomic balance provide a convenient payment experience for the user.
- Horizontal, bi-directional, magnetic stripe card reader at the top of e280 features an enlarged card entrance and delivers optimal card swiping and reading.
- Easy to hold, easy to carry. e280's compact size allows it to easily fit in your pocket and provides lanyard holes, on both sides of the device, to attach wrist/neckbands.

Performance and Durability

- Secure and powerful 300 MHz processing encrypts and completes transactions quickly.
- High-capacity, embedded, lithium-ion battery pack (3.8 V / 1660 mAh) that easily supports a full 10-hour business day on a single charge.
- The USB-C port allows for convenient product charging as well as connection to accessories.
- Drop-tested up to 1.2m onto concrete surfaces.

- 512MBMB Flash, 512MBMB SDRAM of memory

Security

- PCI PED 5.0 approved for PIN-based transactions
- SSL protocols
- Direct key injection using industry standard HSMs
- VeriShield Retain
- VeriShield Remote Key
- Verifone Secure Data
- VeriShield Total Protect
- MasterCard TQM
- IPP8 functionality plus multiple DUKPT engines
- EMV L1 and L2
- ISO7816-3, ISO7816-10, and EMV 4.3 standards

Connectivity

USB host/ device port

- Support UART0 software debug (TXD0, RXD0).
- USB2.0 high speed
- Support 5V/200mA for external USB peripherals
- USB host or device is configured by SW
- e280 USB-C port is on left hand side

Bluetooth (wireless communication)

- Bluetooth 4.2 BLE
- Support Eddystone + iBeacon
- RF transmitter output power Class 1
- RF receiver GFSK typical -90dBm, n/4 PSK typical -90dBm, 8DPSK typical -83dBm
- UART3 interface for SOC communicates to BT

WiFi (wireless communication)(e280 Touch Only)

- WiFi 2.4 GHz and 5 GHz; a, b, g, n and ac
- Supports 2.4 GHz and 5 GHz
- SDIO for host interface

Charger IC

- Single cell switching mode Li-Ion battery charger
- Power path management integrated
- Programmable charging parameters

- Support dual inputs from either charging pins or USB connector

Main Battery

- Non-removable battery pack
- Use ID pin of battery to identify different battery source by AIN5_BATT_ID
- Nominal capacity/voltage: 1660mAh/3.8V

Fuel Gauge

- Host-side fuel gauge with Coulomb counter function

CHAPTER 2

Device Setup

This chapter describes the device setup procedure. You will learn about:

- Usage Guidelines
- Unpacking the Shipping Carton
- Examining e280 Device Features
- Examining Connection Port
- Using the Battery
- Battery Behavior (No Power Pack)
- Connecting the Terminal Power Pack
- Charging the Battery
- Using the Smart Card Reader
- Using the Magnetic Card Reader
- Using the CTLS Reader

Usage Guidelines

Use the following guidelines when using your e280.

Environmental Factors

- Select a flat support surface, such as a countertop or table, to keep the device. Please store your e280 device in a dry area:
  - Operation temperature is 0~45 degree.
  - Storage temperature is -20 to 60 degree.
- Do not use the device where there is high heat, dust, humidity, moisture, or caustic chemicals or oils.
- Keep the device away from direct sunlight and anything that radiates heat, such as a stove or motor.

CAUTION

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

Personal Security Considerations

The e280 can be used as handover device. Always exercise extreme caution when conducting transactions especially during PIN entry.

- Hand the e280 directly to the cardholder for PIN entry.

- Encourage the cardholder to hold the e280 close to avoid others from seeing the information entered.

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 device near water or in moist conditions.

Unpacking the Shipping Carton

Open the shipping carton and carefully inspect its contents for possible tampering or shipping damage. The e280 is a secure product and any tampering may cause the device to cease to function properly.

To unpack the shipping carton

1. Remove and inspect the following items:
   - e280 unit
   - USB-C to USB cable
2. Remove all plastic wrapping from the unit and other components.
3. Remove the clear protective from the display.

CAUTION

Do not use a unit that has been tampered with or otherwise damaged. This unit comes equipped with tamper-evident labels. If a label or component appears damaged, immediately notify the shipping company and your Verifone representative or service provider.

4. Save the shipping carton and packing material for future repacking or storing the device.

NOTE

- Charge the e280 device for eight hours before initial use.
- The e280 device comes with an extra battery, that will power the security circuit of the device, in case the device is tampered, and the main battery fails to charge. This extra battery has a life of 2 yrs.
- Ensure not to store the device for more than 1 week without charging, else the secondary battery gets discharged in turn reducing the life of the battery.

Examining e280 Device Features

Before you continue the installation process, familiarize yourself with the features of the e280. (See Figure 2)

Front Panel

The front panel includes the following features:

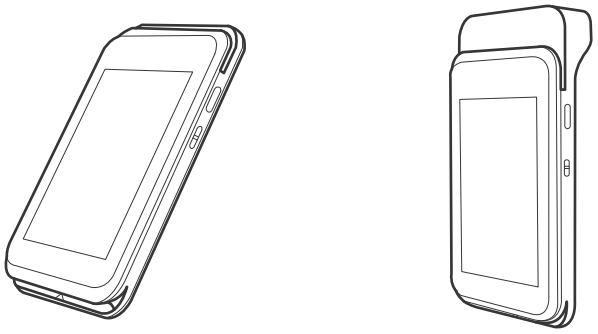


Figure 2 e280 Device Features (Front Panel)

- A colored capacitive-touch **LCD Display**
- A **smart card reader** built into the bottom of the device to process smartcard based debit or credit transactions. For directions on how to use a smart card, see Using the Smart Card Reader.
- A **magnetic card reader**, built into the top part of the device for performing debit or credit card transactions. The card can be swiped from either direction, but we recommend from left to right, magnetic stripe facing the back using the proper direction, with the magnetic stripe facing up. For directions on how to use a magnetic card, see Using the Magnetic Card Reader.
- A power/charging indicator.
- ALL LED's to indicate CTLS, EMV, MSR, BT, and Wi-Fi are shown ON the display.
- **CTLS** around the display for contactless payments. For directions on how to conduct contactless transactions, see Using the CTLS Reader.

Examining Connection Port

The e280 device has one primary USB-C port used for power and download.

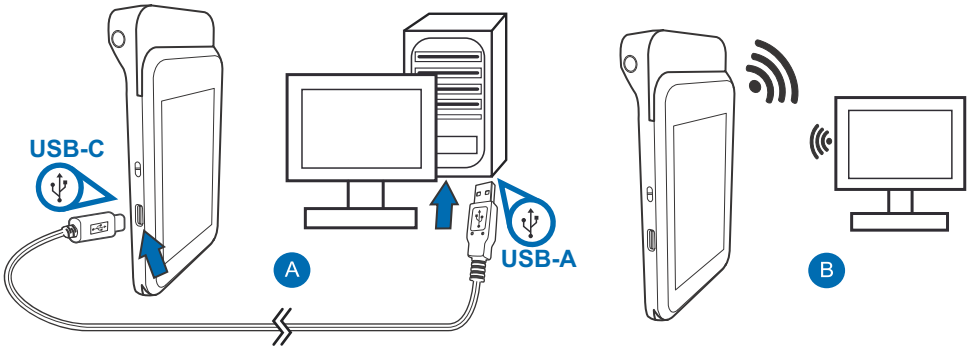


Figure 3 The e280 Primary USB-C Port

Using the Battery

The e280 device uses a single cell Li-ion battery. The internal logic of the battery prevents both overcharging and undercharging (a fault condition in which the battery level goes well below the minimum acceptable charge and the battery becomes unusable).

Battery Features

The following are features of the battery:

- Single Li-ion cell.
- A safety circuit that:
  - Prevents cell damage from overcharge, over-discharge, or overheating.
  - Activates when the battery is left in an unused device for extended periods.

NOTE

- Charge the e280 device for eight hours before initial use.
- The e280 device comes with an extra battery that will power the security circuit of the device in case, the device is tampered and the main battery fails to charge. This extra battery has a life of 2 yrs.
- Ensure not to store the device for more than 1 week without charging, else the secondary battery gets discharged in turn reducing the life of the battery.
- Disconnecting and unplugging the device power pack, reduce the life of the coin cell battery, which does not recharge and must be replaced if drained.
- Conserve battery power by turning the e280 device off when not in use. Do not let the battery charge fall below 10% for extended periods of time as this may permanently diminish the battery capacity. Recharge the battery by attaching the USB-C end of the power pack to the device and plugging the other end of the power pack into a wall outlet.

Battery Behavior (No Power Pack)

The device shifts to power pack mode and starts up automatically when the e280 is connected to a non-battery power source, regardless of the battery charge state.

Manual Startup

Hold the start button for about 10 seconds until the device displays the startup screen.

NOTE

Once the device is powered up, Verifone ADK MAC screen is displayed.

Manual Shutdown

Hold the start button for about 10 seconds until the device is switched OFF.

NOTE

The screen is blank when the device has no power.

Connecting the Terminal Power Pack

Connect the e280 device to the provided USB cable and insert the other end into any USB charger head for initial charging.

CAUTION Using an incorrectly rated power supply may damage the device or cause it not to work as specified. Before troubleshooting, ensure that the power supply being used to power the device matches the requirements specified on the bottom of the device. (See Specifications for detailed power supply specifications.) You can use any standard USB charger.

WARNING Do not plug the power pack into an outdoor outlet or operate the device outdoors.

During a transaction, disconnecting the power by unplugging the device from a wall power while at very low battery charge may cause transaction data files not yet stored in the device memory to be lost.

Each e280 device comes with a power supply cable, USB to USB-C cable is used to connect the device directly to an USB outlet to charge the battery. The e280 unit is equipped with an USB capable universal input.

To Connect the Terminal Power Supply

1 Insert the USB-C plug into the USB-C port of the e280, as shown in the figure below.

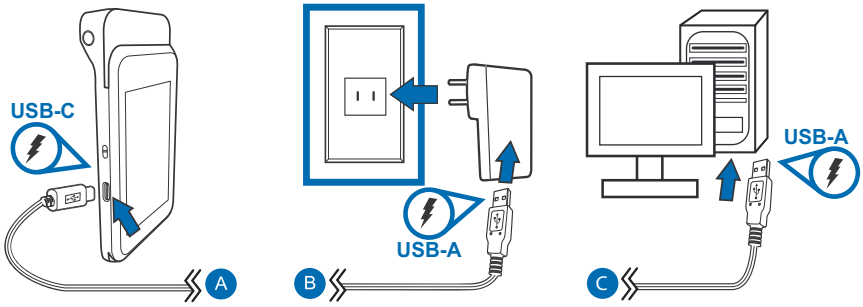


Figure 4 e280 Power Supply Connection

2 Plug the USB cable into a USB wall outlet or the output of a standard USB power supply.

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

Charging the Battery

After unpacking your e280 device, connect the power pack to the unit for eight hours or until fully charged.

- Charge the e280 device for eight hours before initial use.
- The e280 device comes with an extra battery that will power the security circuit of the device in case, the device is tampered and the main battery fails to charge. This extra battery has a life of 2 yrs.

- Ensure not to store the device for more than 1 week without charging, else the secondary battery gets discharged in turn reducing the life of the battery.
- Disconnecting and unplugging the device power pack, reduce the life of the coin cell battery, which does not recharge and must be replaced if drained.
- Conserve battery power by turning the e280 device off when not in use. Do not let the battery charge fall below 10% for extended periods of time as this may permanently diminish the battery capacity. Recharge the battery by attaching the USB-C end of the power pack to the device and plugging the other end of the power pack into a wall outlet.
- The e280 device automatically shuts off when the battery reaches the *critically low* charge state. If this occurs, the battery must be recharged for a minimum of 1/2 hour before it can power the device. *It may take several recharge attempts to reset the safety circuit* when charging a battery that has been discharged below this critical state.

Battery Life

Charging and discharging the battery will cause normal wear on the battery.

WARNING

Do not dispose batteries in a fire. Li-ion batteries must be recycled or disposed of properly. Do not dispose Li-ion batteries in municipal waste sites.

Using the Smart Card Reader

The insert the smart card to proceed with the EMV transaction. EMV supports credit card and debit card transactions.

To Conduct a Smart Card Transaction

1. Position the smart card with the contacts facing upward (see illustration below).
2. Insert the card into the reader slot in a smooth, continuous motion until it seats firmly.
3. Wait for the application to indicate a completed transaction before removing the card. Premature card removal invalidates the transaction.

Figure 5 Inserting a Smart Card

Using the Magnetic Card Reader

Use the magnetic stripe reader to perform credit and debit card transactions.

To Conduct a Debit or Credit card Transaction

1. Position the card with the magnetic stripe facing backwards.
2. To ensure a proper read of the magnetic swipe card, insert the magnetic card from the top of the device and swipe the card from left to right, as shown in the illustration below.

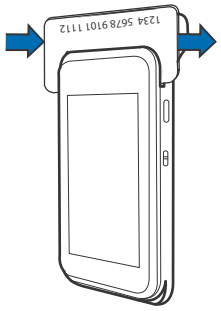


Figure 6 Using Magnetic Stripe Card

3. Swipe the card through the magnetic card reader.

Using the CTLS Reader

The e280 device supports contactless credit or debit card transactions. To perform a contactless transaction, gently tap the card or hold the card against the surface of the display.

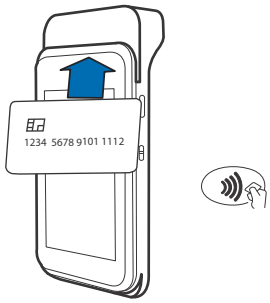
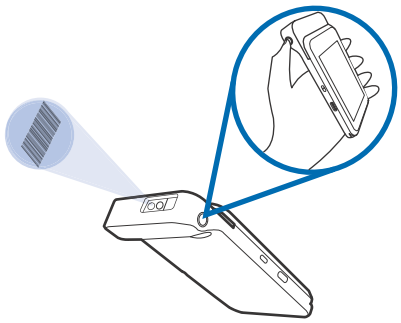


Figure 7 Using the CTLS Reader

Using the Barcode

The e280 device supports barcode scanner. To scan the barcode, press the first button located on the left side of the device.



CHAPTER 3

Specifications

This chapter discusses the power requirements and dimensions of the e280 device.

Unit Power Requirement

- Input power rating: 5 V DC, 1 A
- Charging via USB-C to computer system or you can use any smartphone or tablet USB power adapter.

Temperature

- Operating Environment:
  - Temperature: 0°C to +45 °C (23 °F to 113 °F)
  - Relative humidity: 5% to 90% RH non-condensing
- Non-Operating Environment:
  - Temperature: -20 °C to +60°C (-4 °F to 140 °F)
  - Relative humidity: 5% to 93% RH non-condensing

External Dimensions

- **Length:** 121 mm
- **Width:** 67 mm
- **Height:** 13.85 mm for Touchscreen

Weight

- 160 g for Touchscreen and 180g for scanner SKU

Memory

- 512MB Flash, 512MB DDR

Magnetic Stripe Card

- Triple-track
- Supports bi-directional card read, swipe speed at 10 IPS to 40 IPS

Communication

- BT 4.2 BLE (Bluetooth Low Energy), WiFi 2.4 GHz and 5 GHz(A+B+G+N+AC), MFI Certified

Display

- 3.5" HVGA Color Touch

CHAPTER 4

Maintenance

Maintenance and Cleaning

The e280 device has no user-maintainable parts. It can, however, be cleaned.

Surface Cleaning

To clean the device, use a clean cloth slightly dampened with water and a drop or two of mild soap. For stubborn stains, use cleaner.

CAUTION

Never use thinner, trichloroethylene, or ketone-based solvents – they may cause deterioration of plastic or rubber parts.

Do not spray cleaners or other solutions directly on the device display.

Magnetic Card Reader

Dirt accumulation can lead to MSR reading problems unless you clean the magnetic stripe reader (MSR) on a regular basis (daily to once a week, depending on usage).

Clean the MSR using commercially available card reader cleaning cards, or using Verifone's recommended MSR-cleaning card (PN 02746-02).

NOTE

If using a commercially available cleaning card, use ONLY an approved MSR cleaning card made specifically for POS MSR terminals or Petroleum MSR card readers.

Smart Card Reader

Do not attempt to clean the Smart Card Reader (SCR). Doing so may void any warranty. For smart card reader service, contact your Verifone distributor or service provider.

CAUTION

If you find foreign objects in the SCR, send your terminal to a Verifone authorized repair center.

Do not use Verifone's recommended MSR-cleaning card (PN 02746-02) or commercially available card reader cleaning cards with the SCR.

Additional Safety Information

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

WARNING

Potentially Explosive Environments

When using the device in areas with potential risk of explosion, such as gas stations, follow the advice of all signs and instructions. If there has been a leak, do not use this device.

CHAPTER 5

Verifone Service and Support

For e280 problems, contact your local Verifone representative or service provider.

For e280 product service and repair information:

- USA – Verifone Service and Support Group, 1-800-Verifone (837-4366), Monday - Friday, 8 A.M. - 8 P.M., Eastern time
- International – Contact your Verifone representative

Returning a Device for Service

Before returning an e280, you must obtain an MRA number. The following procedure describes how to return one or more devices for repair or replacement (U.S. customers only).

NOTE

Customers outside the United States are advised to contact their local Verifone representative for assistance regarding service, return, or replacement of devices and accessories.

To return a device for service

1. Get the following information from the on the box or underneath the plastic rear shell. You must remove the white plastic shell from the rear of the device to expose the printed labels or get the information from the labels on the box. at the back of *each* e280 to be returned:
   - Product ID, including the model and part number. For example, “e280” and “M087-XXX-XXX-XXX.”
   - Serial number (S/N nnn-nnn-nnn)
2. Obtain the MRA number(s) by completing one of the following:
   a. Call Verifone toll-free within the United States at 1-800-Verifone and follow the automated menu options.
      - Select the MRA option from the automated message. The MRA department is open Monday to Friday, 8 A.M.–8 P.M., Eastern Time.
      - Give the MRA representative the information you 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 727-953-4172 (U.S.).
   b. Address a fax to “Verifone MRA Dept.” with the model and part number(s)
      - Include a telephone number where you can be reached and your fax number.

c Complete the Inquiry Contact Form at https://www.verifone.com/en/us/contact-us.

- Address the Subject box with to “Verifone MRA Dept.”
- Reference the model and part number in the Note box.

NOTE

One MRA number must be issued for each e280 you return to Verifone, even if you are returning several of the same model.

3 Describe the problem(s).

4 Provide the shipping address where the repaired or replacement unit must be returned.

5 Keep a record of the following items:

- Assigned MRA number(s).
- Verifone serial number assigned to the e280 you are returning for service or repair (device serial numbers are located at the back of the unit.
- Shipping documentation, such as air bill numbers used to trace the shipment.
- Model(s) returned (model numbers are located on the Verifone label at the bottom of the white plastic shell or box labels.

Accessories and Documentation

Verifone produces the following accessories and documentation for the e280. When ordering, please take note of the part number.

- Verifone online store at `www.estore.verifone.com`
- USA – Verifone Customer Development Center, 800-Verifone (837-4366), Monday - Friday, 7 A.M. - 8 P.M., Eastern time
- International – Contact your Verifone representative

Accessories

Verifone Certified Power Adapter	PWR087-300-01-A
Verifone Cleaning Kit	02746-01

Documentation

e280 Certifications and Regulations Sheet	VPN -DOC087-601-EN-A
e280 Quick Installation Guide	VPN -DOC087-602-EN-A

CHAPTER 6

Troubleshooting Guidelines

The troubleshooting guidelines provided in the following section are included to help you install and configure your e280 successfully. Typical examples of malfunction you may encounter while operating your e280 and steps you can take to resolve them are listed in this chapter.

If the problem persists even after performing the outlined guidelines or if the problem is not described below, contact your local Verifone representative for assistance.

NOTE

The e280 comes equipped with tamper-evident labels. The e280 unit contains no user serviceable parts. Do not, under any circumstance, attempt to disassemble the device. 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

Before troubleshooting, ensure that the power supply being used to power the device matches the requirements specified at the bottom of the device. (See Specifications, for detailed power supply specifications.) Obtain the appropriately rated power supply before continuing with troubleshooting.

Device Does Not Start

- Ensure that the battery charge state is not below the critically low level.

Device Display Does Not Show Correct/ Readable Info

- Recharge the battery.
- Connect the e280 into a known-good power supply (if available) to see if this clears the problem.
- If the problem persists, contact your local Verifone representative for assistance.

Battery Does Not Charge

The e280 battery must initially receive a full charge to ensure proper operation.

NOTE

- Allow the e280 device to remain connected to the power pack for eight hours to ensure the battery receives a full charge.
- Li-ion batteries are not affected by shallow charging. Furthermore, when the device has no external power source or battery the coin cell battery provides power to the security circuit.
- Disconnecting and unplugging the device power pack reduce the life of the coin cell battery, which does not recharge and must be replaced if drained.
- Conserve battery power by turning the e280 device off when not in use. Do not let the battery charge fall below 10% for extended periods of time as this may permanently diminish the battery capacity. Recharge the battery by attaching USB end of the power pack to the device and plugging the other end of the power pack into a wall outlet.
- The e280 device automatically shuts off when the battery reaches the *critically low* charge state.
- Please charge the device once a week even when the device is not in use.

Blank Display

When the e280 device display screen does not show correct or clearly readable information:

- Battery connection is not available to the user.
- If the display doesn't turn on, press and hold the power key for 8-10 seconds.
- Plug the charger.
- If the problem persists, contact your local Verifone service provider.

Transactions Fail to Process

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

Check the 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. With the e280 card reader, the black magnetic stripe on the card should face down and outward (see Figure 6).
- Process a transaction manually. If the manual transaction works, the problem may be a defective card reader.
- Contact your Verifone distributor or service provider.

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e280

Installation Guide

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