

# MX 900 Series

## Installation Guide

Date: October 31, 2022



**Verifone**<sup>®</sup>

# MX 900 Series Installation Guide

October 31, 2022

Verifone Inc.

1-800-Verifone

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## Product Warranty

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**Comments?** Please e-mail all comments on this document to your local Verifone Support Team.

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# 1 INTRODUCTION

This installation guide is your primary source of information for setting up and installing the MX 900 Series terminals, the MX 915™ and MX 925™.

## Intended Audience

This guide is useful for anyone installing and configuring the MX 900 Series terminals. A basic description of terminal's features is also provided.

## Document Organization

The following chapters are included:

Chapter 1, Introduction, explains the Intended Audience, and Document Organization.

Chapter 2, Installation, explains how to install the MX 900 Series terminals.

Chapter 3, Specifications, provides information on the power, environment, and dimensions of the hardware.

Chapter 4, Maintenance, explains how to maintain your MX 900 Series terminals.

## Modifications to this document

This document may be changed or extended to include new product requirements.



# 2 HARDWARE INSTALLATION

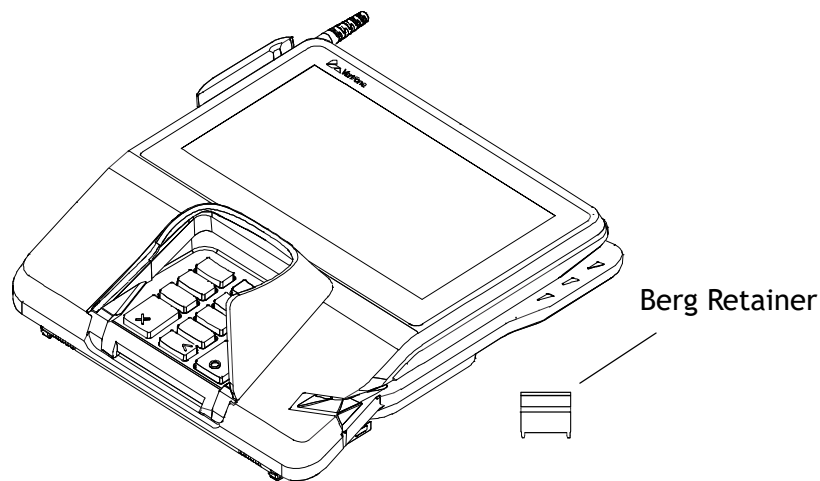
This chapter describes the MX 900 Series installation procedures and includes connection examples.

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## Unpacking

Open the shipping carton and carefully inspect the contents for possible tampering or shipping damage.

**Warning:** Do not use a damaged terminal.



## To unpack the shipping carton

1. With the shipping carton rightside up, open the top and remove all items from the carton:
  - Terminal unit
  - Berg etainer
2. Remove the protective plastic wrap from the display.
3. Place the components on a table or countertop.
4. Save the shipping cartons and packing material for repacking or moving in the future.

---

## Selecting a Location

**Warning:** The MX 900 Series terminal is designed for indoor use only.

Use the following guidelines to select a location for the MX 900 Series terminal.

1. Select a location for the terminal that offers adequate ventilation and protection and is convenient for the user and merchant.
2. Place the MX 900 Series terminal on a flat surface, such as a table or countertop, or mount it on a mounting stand supplied by Verifone. Avoid areas with:
  - Excessive heat or dust
  - Oil or moisture
  - Devices that cause excessive voltage fluctuations or electrical noise, such as air conditioners, fans, electric motors, neon signs, or high-frequency security devices must be no closer than 24 inches
  - Direct sunlight or objects that radiate heat

**Note:** Interference Sources:

Special care is required when mounting the MX 900 Series terminal in sites that utilize anti-theft devices positioned at doorways or surface mounted deactivator pads. Devices of this type, such as Sensormatic brand devices, generate strong electromagnetic fields which may interfere with MX 900 Series terminals. Always select mounting locations at least 6 feet from doorway units and at least 18 inches from surface mounted deactivator pads.

**Note:** Mounting Considerations:

Verifone recommends the use of an approved stand for all mounting situations. Position the terminal conveniently in relation to power, ECR and LAN connections. Ensure the MX 900 Series terminal is located in a manner that allows customers to swipe their magnetic cards or insert their Smart Cards in a smooth and comfortable motion without encountering obstructions. If the unit will be swiveled during normal operation, Verifone requires the use of an approved swivel stand. The stand must limit the swivel to 180 degrees to prevent twisting and damage to the MX 900 Series cable. After mounting, verify all cables move freely and do not twist when the unit is rotated throughout its range of motion.



**Warning:** Do not use the MX 900 Series terminal near water, including a bathtub, washbowl, kitchen sink, or laundry tub. Do not use it in a wet basement or near a swimming pool.

3. Before connecting the terminal to the power pack, complete the installation by connecting all the cables (see Connecting the Device and Power Up with the Multiport Cable).

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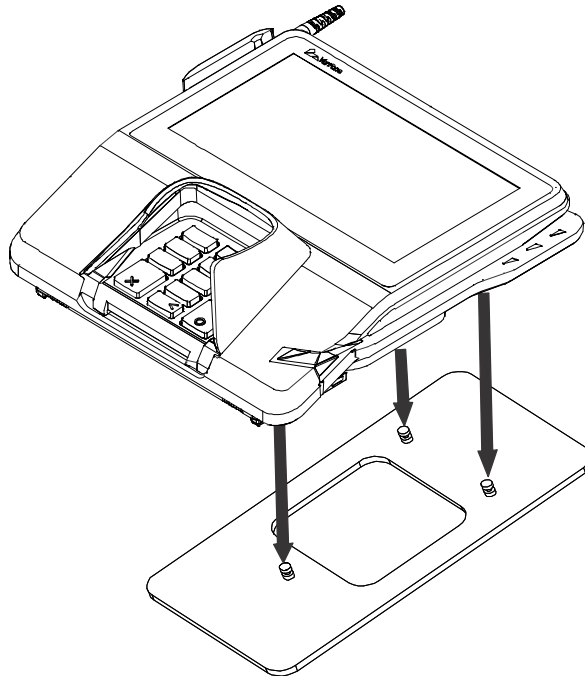
## Stand Mount

In most retail spaces, the terminal is positioned on a stand mount.

### Stand Mount Installation

To install the terminal on the stand mount:

1. Install the stand mount on the countertop in the desired lane over an appropriate hole through which the wiring connections can be threaded.
2. Thread all wiring connections through the center of the stand mount.
3. Make all wiring connections.
4. Align and seat the three pins on the top plate of the stand mount platform with the three key-hole slots on the bottom of the terminal.
5. Slide the terminal down until the unit seats securely.

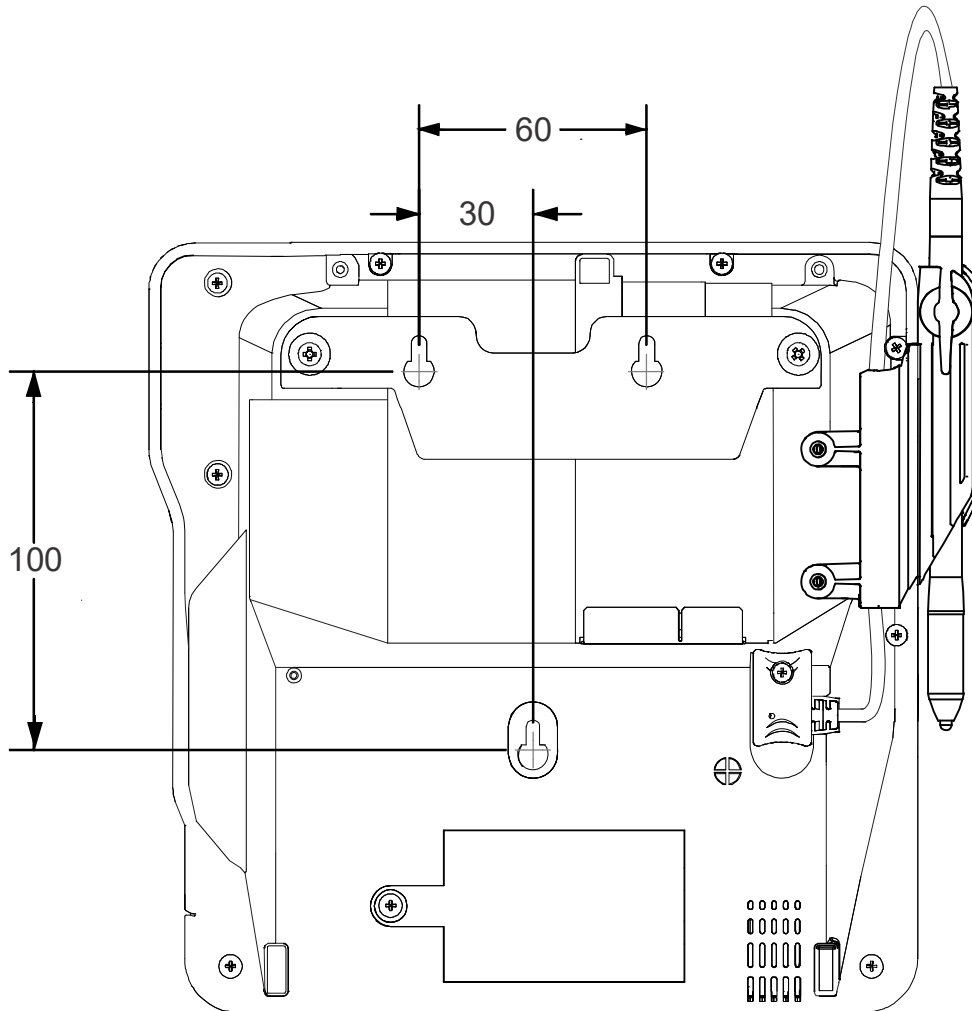


6. Position the stand so that it is protected from being bumped or damaged by shopping carts or other items.

## Wall Mount

The MX 900 Series terminal can be mounted on a wall. To wall mount the MX 900 Series terminal:

1. Create a template of the three keyhole slots at the bottom of the MX 900 Series terminal.



2. Locate a wall stud to the base center placement of the MX 900 Series terminal unit.
3. Mark the hole placement on the desired wall location.

4. Prepare holes for screw placement. For mounting into drywall use 1/8" Hollow Wall Anchors. Other stud mountings use #6 trim screws. After installation apply 30 pounds force downward to ensure proper mounting.
  - a. Create a small hole in which to screw in self-tapping wood screws, or
  - b. Insert molly screws into prepared holes in sheet rock wall.
5. Insert screws into prepared holes, leaving approximately 6.35mm (1/4") of the screw above the level of the wall.

**Note:** Adjust the screw depth till the unit is firmly mounted.

6. Align and seat screws in the key hole slots.
7. Slide the MX 900 Series terminal down until the unit seats securely.

---

## PIN Protection Measures

Several techniques can be employed to provide for effective screening of the PIN entry keypad during the PIN entry process. These methods would typically be used in combination, though in some cases a method might be used singly.

- Position the terminal on the check-stand in such a way as to make visual observation of the PIN entry process infeasible. Examples here include:
  - Visual shields designed into the check-stand. These shields may be solely for shielding purposes, or may be part of the general check-stand design.
  - Position the PED so that it is angled in such a way that PIN spying is difficult.
- Installing the PED on an adjustable stand that allows consumers to swivel the terminal sideways and/or tilt it forwards/backwards to a position that makes visual observation of the PIN entry process difficult.
- Positioning of in-store security cameras so that the PIN entry keypad is not visible.

The following table shows the combinations of methods that must be used when installing the MX 900 Series terminal to protect the cardholder's PIN during PIN entry.

Method	Observation Corridors			
	Cashier	Customer Queue	Customers elsewhere	On-Site Cameras
Countertop with Swivel Stand	No Action Needed.	Customer positions PED.	No Action Needed.	Do not install within view of cameras.
Countertop without stand	Position unit to face away from the cashier. Use signage to block cashiers view.	Position unit between customer and the next in cue. Install the optional privacy shield.	Privacy Shield Installed.	Do not install within view of cameras.

**Note:** The stand swivels to allow the cardholder to position the PED to optimize their viewing angle. If the stand will be used, you must include prompts in your application directing the cardholder to position the PED strategically to restrict the view of others.

Additionally, you may wish to implement the following to further increase security during PIN entry.

- Offer PIN security literature at the point of sale
- Use signage to limit the view of the PED to just that of the cardholder

## Privacy Shield

In order to comply with PCI, perform visual inspection of the terminal every 24 hours to ensure that the privacy shield is installed.

---

## Removing and Installing Optional Components

This section discusses the installation procedures for the optional components available for the MX 900 Series terminal. Your terminal may already have some of these options, as modules can be installed at the factory or in the field.

### Installing Countertop Wedge

The countertop wedge raises the rear section of the MX 900 Series terminal by an angle of 10 degrees to facilitate use of the screen. See the Stand Mount section for aligning the pins.

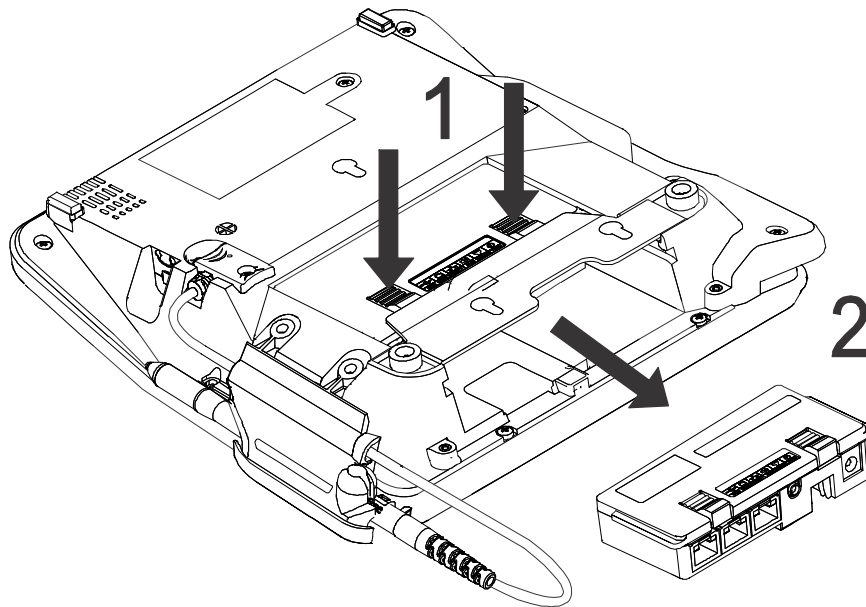
#### To install the countertop wedge

1. Align the pins in the countertop wedge with the two key holes on the bottom of the MX 900 Series terminal.
2. Slide the countertop wedge firmly into position.

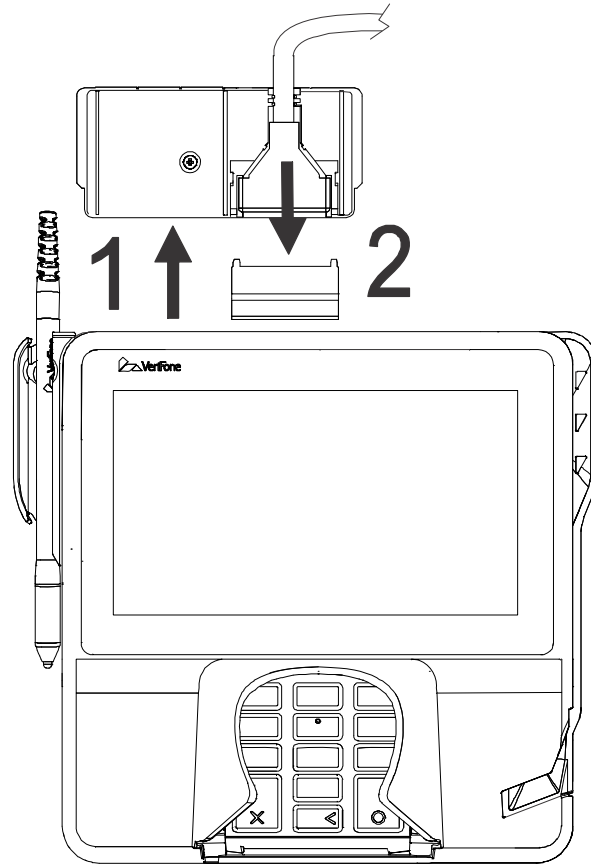
### Removing or Installing the I/O Module

Use the following steps to remove and install I/O modules.

1. Push down the two tabs and slide the I/O module out of the terminal.

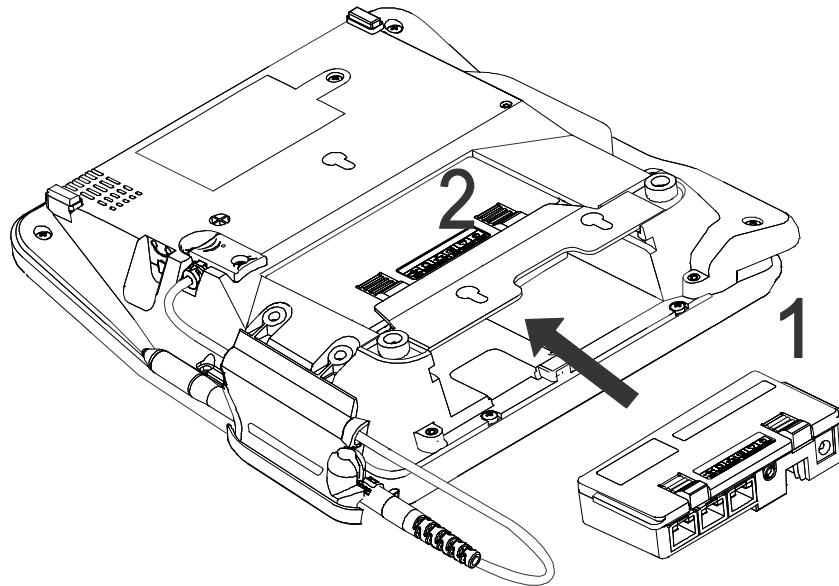


2. If the I/O module has a Berg connection, remove the Berg Retainer after sliding out the I/O module.



3. To install, slide in the I/O module until it locks into place.

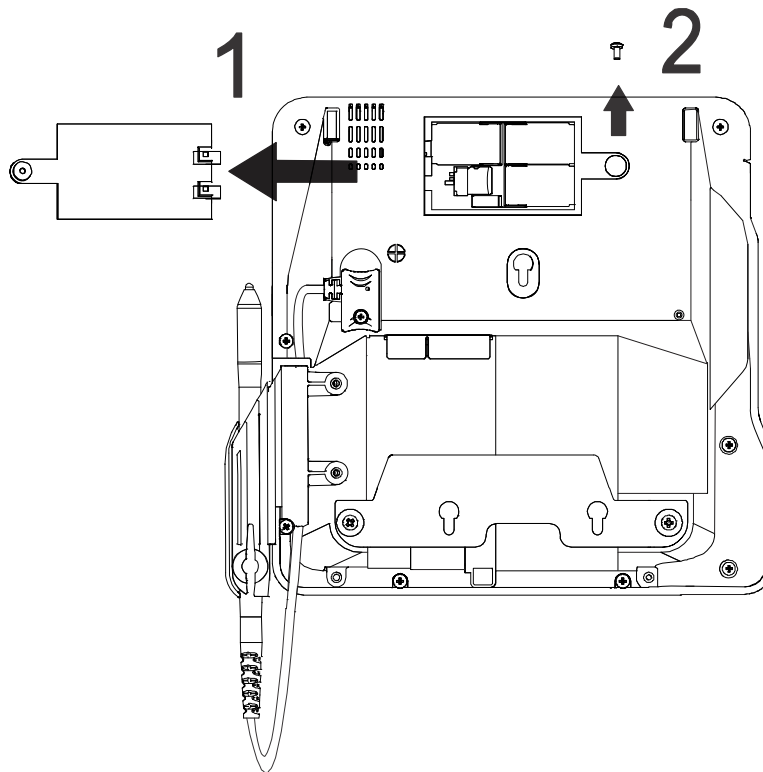
**Note:** Make sure that the Berg Retainer is secure before inserting the I/O module. If any excessive force is needed, the retainer may not be properly aligned.



## Installing MSAM or SD Cards

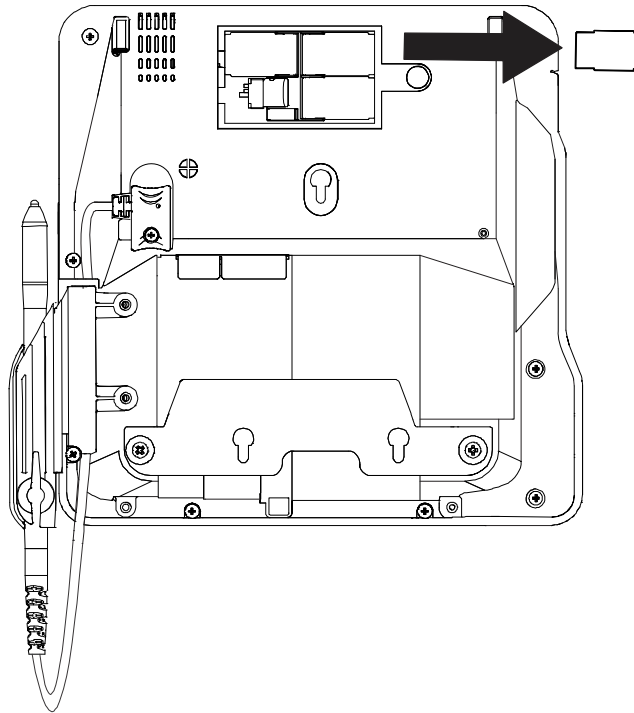
Often merchants are issued MSAM or SD cards to run small applications, such as loyalty programs. The MX 900 Series terminals support microSD cards up to 32GB and up to three MSAM cards. MSAM and SD cards are used only with MX 900 Series terminal smart card configurations. Follow the steps below to install smart cards (MSAM or SD cards).

1. Unplug the power pack from the multiport cable or unplug from the I/O module if no multiport cable is present.
2. Place the terminal upside down on a soft, clean surface to protect the glass cover from scratches.
3. Remove the card compartment door screw and rotate the door up and back to access the SD and MSAM cardholders.



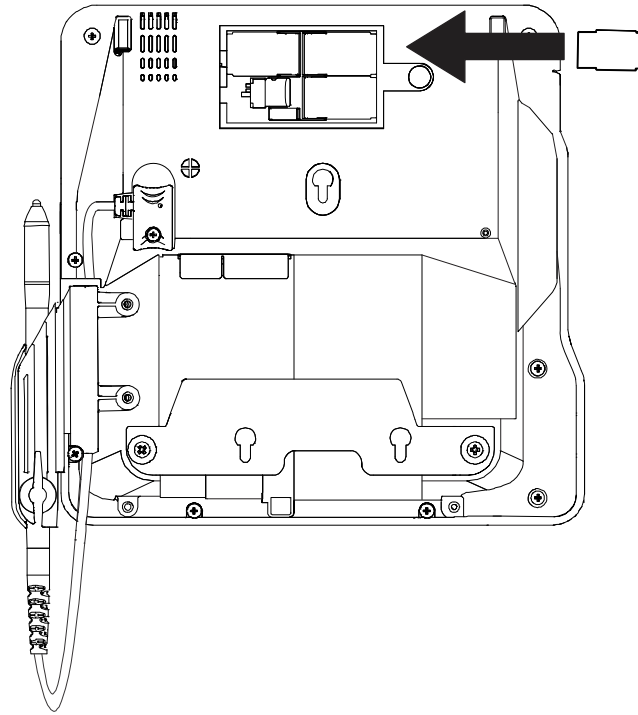


4. Remove any previously installed MSAM or SD card by sliding the card from the cardholder.

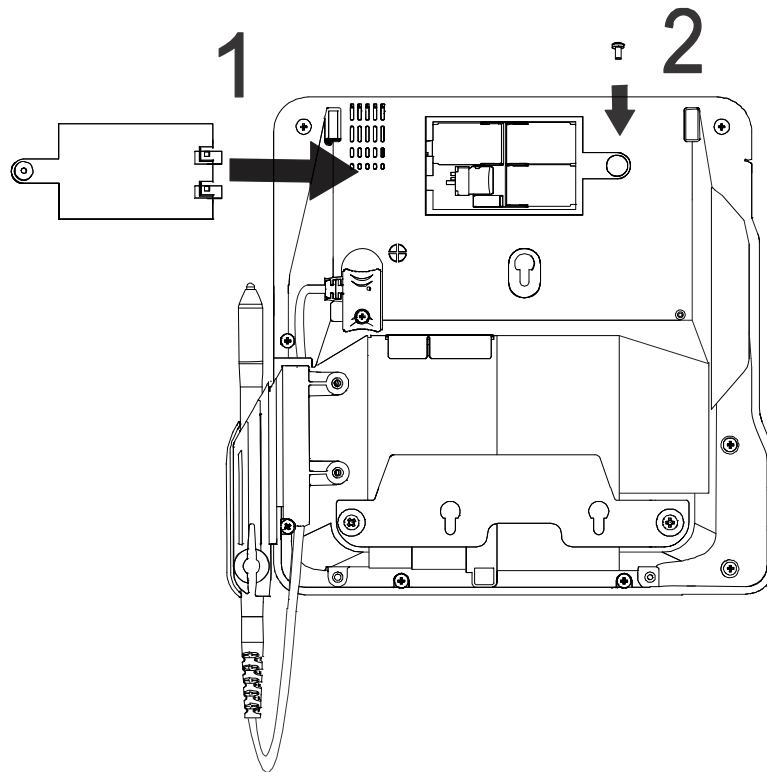


**Note:** Before inserting the SD or MSAM card, position it with the card's gold contacts facing the smart card reader end of the terminal. The cardholder connector base has a set of contacts and a notch on one corner to ensure the card is positioned correctly. The card has a notch on one corner to ensure that it fits into the connector base in only one way. The card compartment door will not close properly if the cards are installed incorrectly.

5. Install an MSAM or SD card by aligning the card and carefully sliding it within the guides on the cover until it is fully inserted.



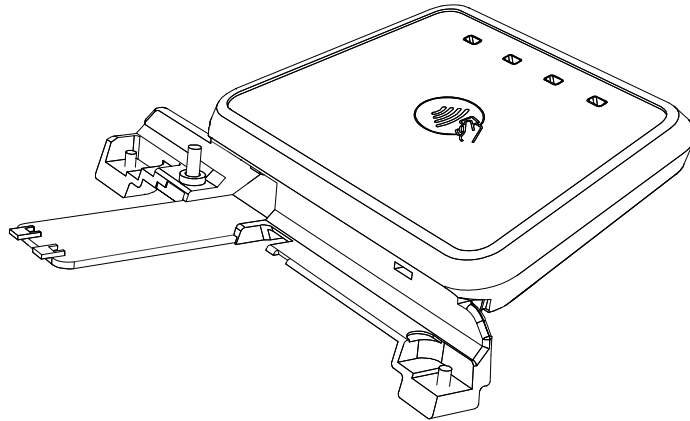
6. Reinstall the compartment cover and door screw.



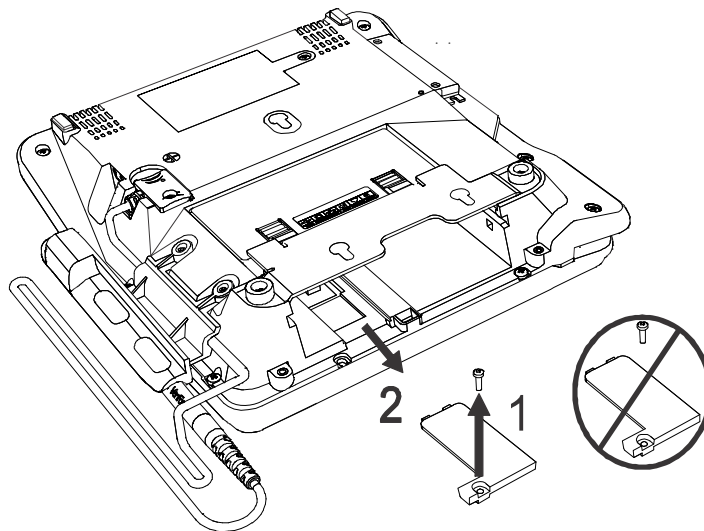
## Installing the Optional Contactless Module on the MX 925

Use the following steps to install the Optional Contactless Module on the MX 925.

### MX 925 Contactless Module, P/N P132-913-00-R

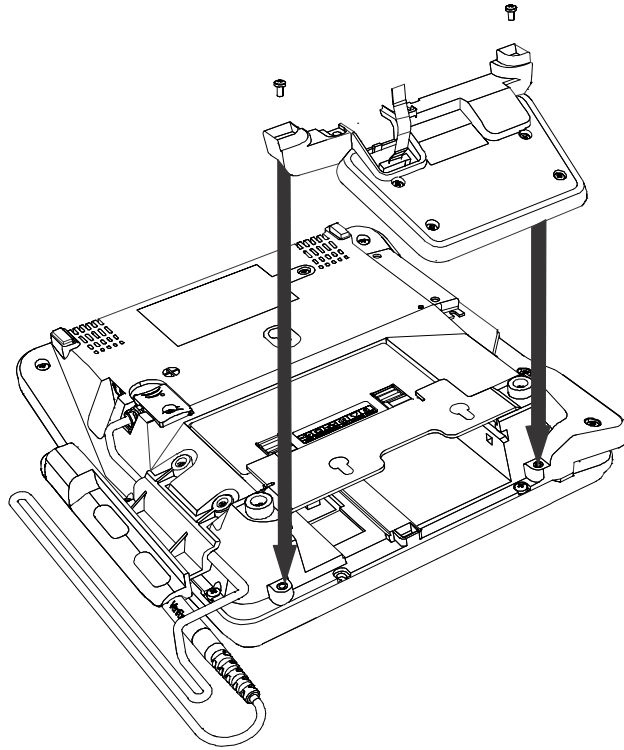


1. Remove the screw.
2. Lift the cover and slide out.



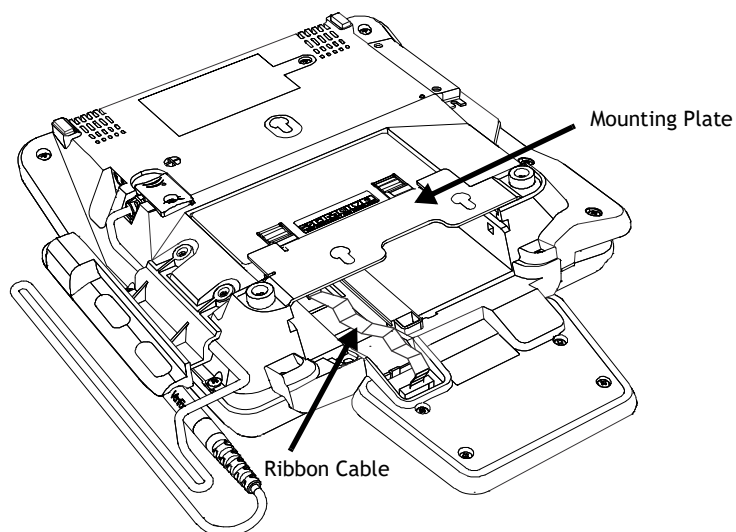
3. Discard the cover and screw.

4. Attach the Contactless Module using the two screws.

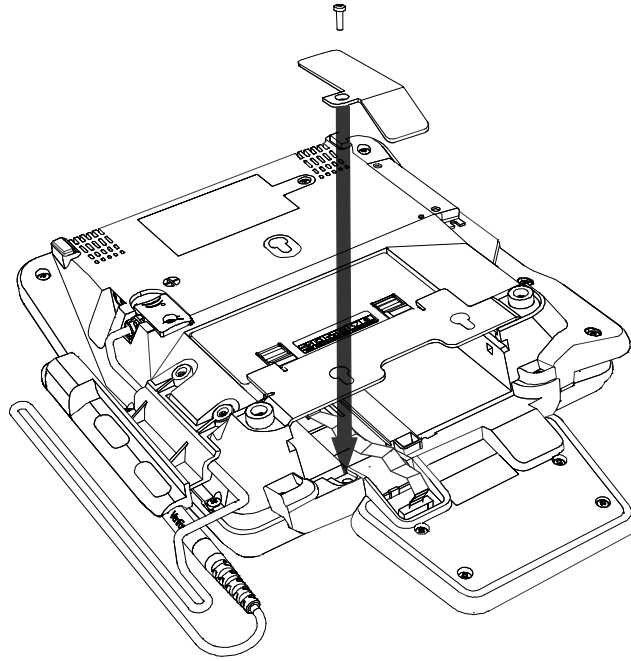


5. Attach the ribbon cable from the Contactless Module to the MX 925 terminal.

**Note:** If more room is needed to attach the ribbon cable, temporarily remove the top mounting plate.



6. Attach the ribbon cable cover using the screw.



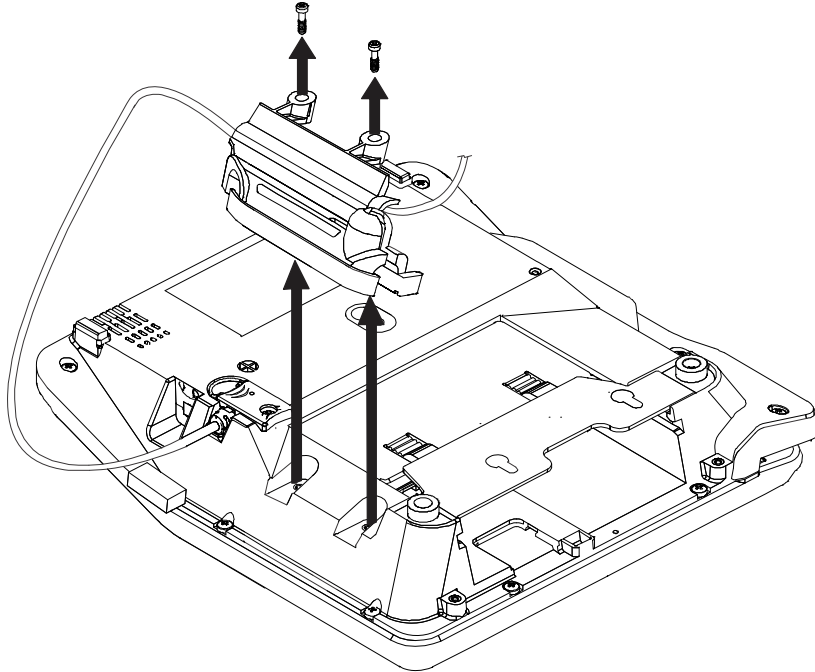
## Replacing the Stylus and Holster

Use the following steps to replace the stylus and its holster.

1. Turn the MX 900 Series terminal over and loosen the two screws that secure the holster.

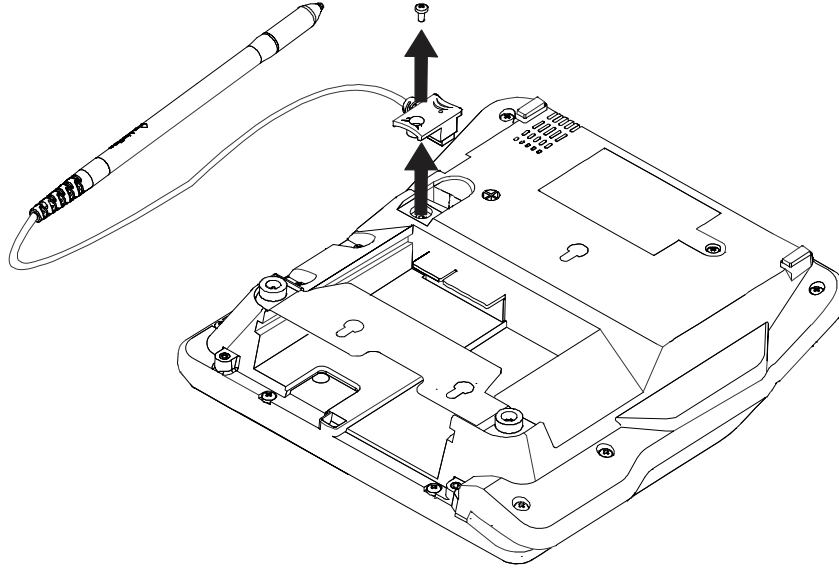
**Note:** The screws are held within the plastic and cannot be separated.

2. Remove the holster.

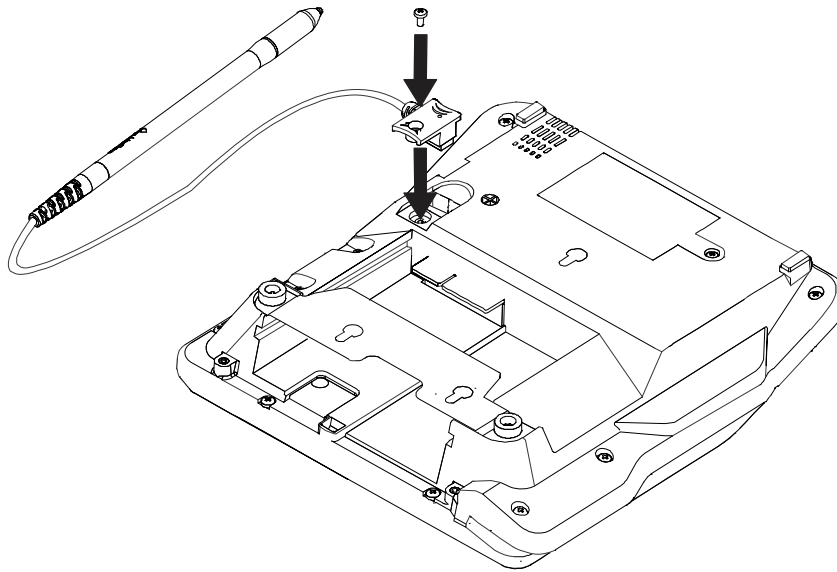


3. Loosen the screw that secures the stylus plug. Unplug the stylus cable from the bottom of the terminal.

**Note:** The screw is held within the plastic and cannot be separated.

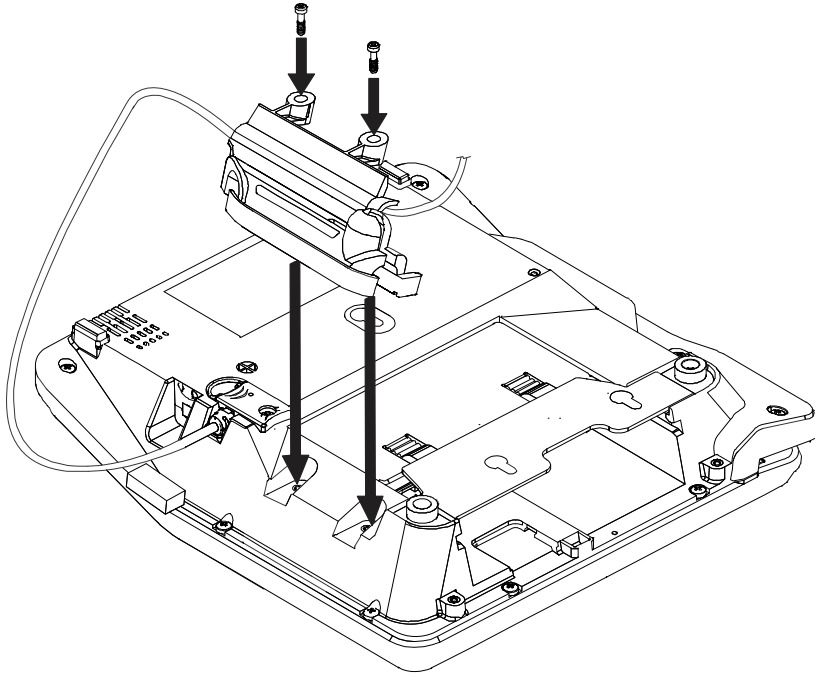


4. Plug in the stylus and secure it with the screw.



5. Locate the two screw holes for attaching the holster. Route the stylus cable through a channel in the holster. The white stripe on the stylus cable must be aligned with front edge of the holster. The cable should be in the channel between the holster and the terminal. Attach the holster using the two screws.

**Note:** Make sure that the tabs or pegs on the holster body align properly in the holes on the terminal housing before tightening the screws.



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## Connecting the Device

This section provides brief descriptions of possible MX 900 Series terminal device connections and the power pack connection. For complete information about installing and using an optional device, see the user documentation supplied with that device.

**Note:** Ensure that the multiport cable or I/O module is not connected to a power pack before attaching to the MX 900 Series terminal.



### I/O Modules

The MX 900 Series terminals use one of six I/O Modules to make the following connections. See the following section for I/O Module Illustrations.

**Note:** Use the Ethernet port on the I/O module only if the multiport cable is not attached. Otherwise, use the Ethernet port on the multiport cable.

I/O Modules			
Terminal	#	Description	I/O Module P/N
MX 915 P/N M132-409-01-R	1	AUD, BERG ONLY, NO TAILGATE	132-601-00-R
	2	PWR, AUD, BERG W/ TAILGATE, ETH, USB OTG, COM 2	132-602-00-R
	3	PWR, AUD, POE, USB OTG, USB HOST, COM 1, COM 2	132-603-00-R
	4	PWR, UD, ETH, SBIOTG, OM , 1 WIFI/BT	132-604-00-R
	5	AUD, BERG W/ TAILGATE	132-605-00-R
	6	PWR, ETH, USB HOST, USB DEVICE, COM 2	132-606-00-R
MX 925 P/N M132-509-11-R P/N M132-509-01-R P/N M132-509-21-R	1	AUD, BERG ONLY, NO TAILGATE	132-601-00-R
	2	PWR, AUD, BERG W/ TAILGATE, ETH, USB OTG, COM 2	132-602-00-R
	3	PWR, AUD, POE, USB OTG, USB HOST, COM 1, COM 2	132-603-00-R
	4	PWR, UD, ETH, SBIOTG, OM , 1 WIFI/BT	132-604-00-R
	5	AUD, BERG W/ TAILGATE	132-605-00-R
	6	PWR, ETH, USB HOST, USB DEVICE, COM 2	132-606-00-R

Connection	Module 1	Module 2	Module 3	Module 4	Module 5	Module 6
Power ack J		X	X	X		X
Audio ack J	X	X	X	X	X	
Berg with Tailgate		X			X	
Berg without Tailgate	X					
Ethernet		X		X		X
Power Over Ethernet			X			
USB 2.0 OTG		X	X	X		
USB 1.1 Host			X			X
USB 2.0 Device						X
COM1			X	X		
COM2		X	X			X
Wi-Fi/Bluetooth				X		

### Additional I/O Module Functionality

- All but the first and fifth I/O modules have the same DC power jack currently used on the MX products.
- I/O modules each have a unique ID in EEPROM (programmed in the factory) that allows the software to detect the available ports.

### USB Ports

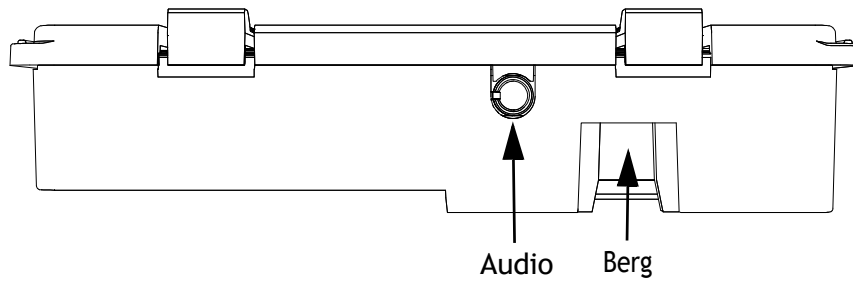
- High Speed USB On-The-Go (OTG) connector
  - 10P10C style connector (also known unofficially as a RJ50).
  - Accepts both RJ50 plugs and RJ45 plugs.
  - Pins 1 and 10 inaccessible to the RJ45.
  - Configurable as USB host or device by connecting the correct cable.
  - In host mode, may be used to perform a low level system software recovery.
- Full Speed USB connector
  - Standard USB Type A receptacle on module 3.
  - Full speed ports also available on Berg cables connected to modules 1, 2, or 5.

### Serial and Ethernet Ports

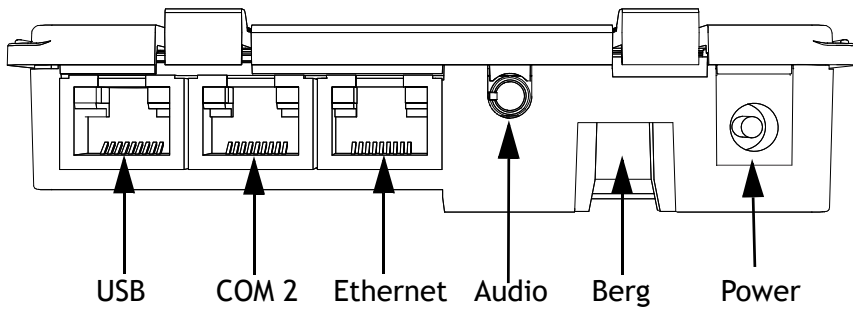
- Up to three serial ports
  - COM 1 and 2 are connected in parallel with the same serial port on the berg connector.
  - COM 3 is available only when I/O modules 2 or 5 are used with a Berg cable that supports this feature.
  - Do not connect to the COM ports on the I/O module and Multiport cable simultaneously (only affects I/O module 2).
- Ethernet
  - 10/100 Mbit
  - In parallel to the Berg connector
  - Do not connect to the Ethernet ports on the I/O module and Multiport cable simultaneously (only affects I/O module 2)

### I/O Modules with Port Names

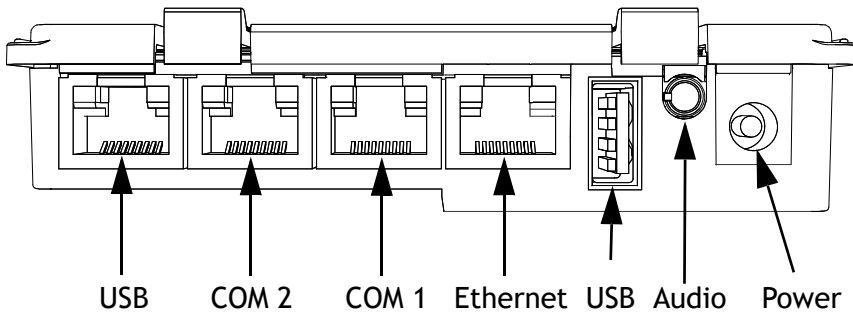
Module 1 with Black Label, P/N P132-601-00-R



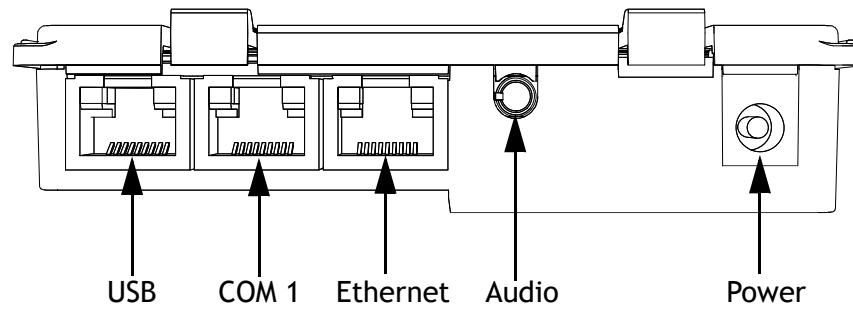
Module 2 with Red Label, P/N P132-602-00-R



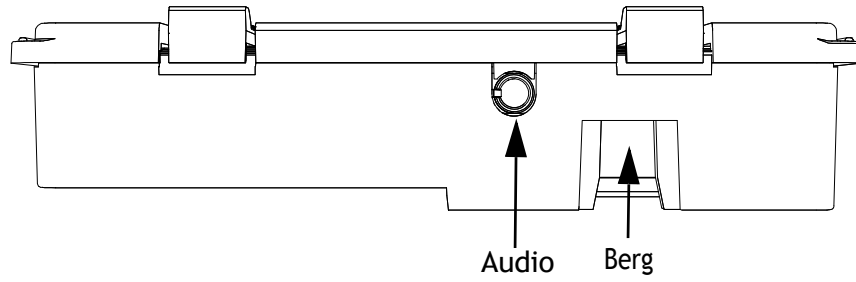
Module 3 with Grey Label, P/N P132-603-00-R



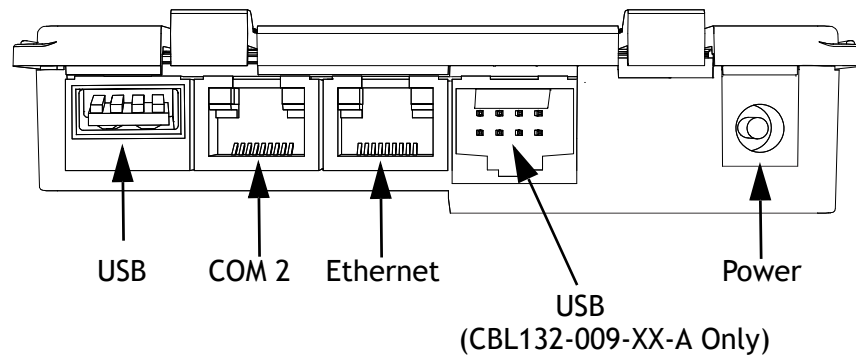
Module 4 with Purple Label, P/N P132-604-00-R



Module 5 with Orange Label, P/N P132-605-00-R



Module 6 with Green Label, P/N P132-606-00-R

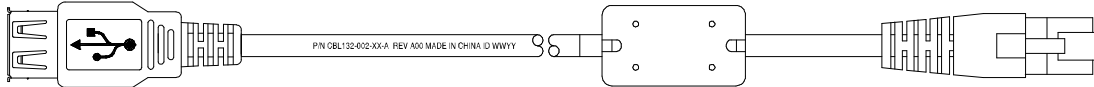


### Optional I/O Module Cables

USB OTG Device Cable, P/N CBL132-002-XX-A



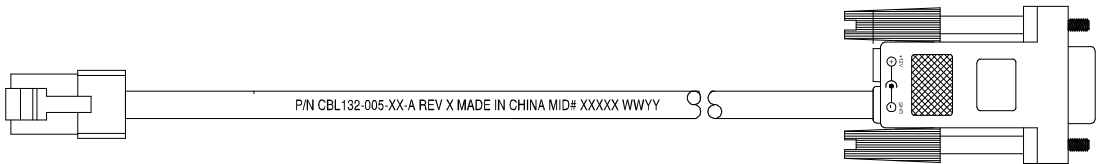
USB OTG Host Cable, P/N CBL132-003-XX-A



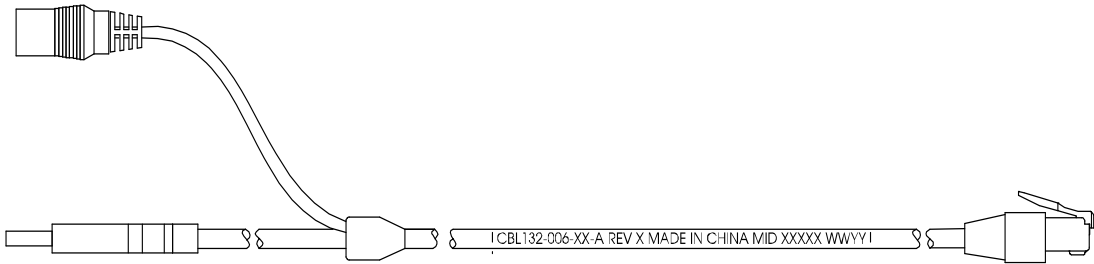
Power Over USB, P/N CBL132-004-XX-A



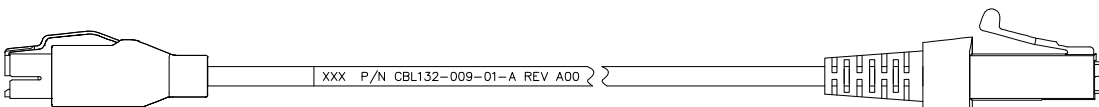
Powered Serial, P/N CBL132-005-XX-A



USB/Power Splitter, CBL132-006-XX-A



USB PLUS POWER 12V , CBL132-009-XX-A  
(I/O Module 6 Only)



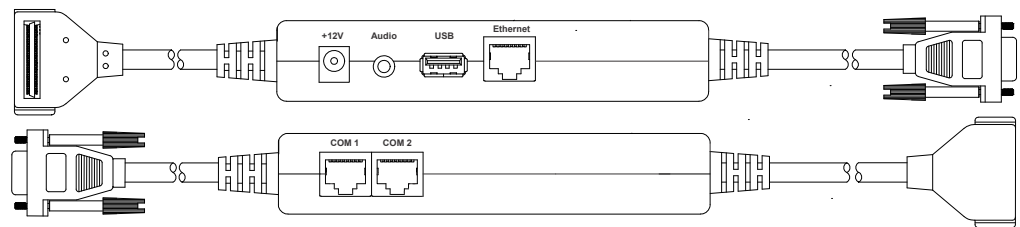
## Multiport Cable

The MX 900 Series terminals can use a multiport cable to make the following connections:

- ECR Tailgate
- Ethernet LAN
- Serial cable
- USB Host
- USB device
- Power input
- Audio output

**Note:** Some multiport cables require additional cabling to work; for example a pigtail for certain ports or Ethernet cable.

### Multiport Cable, P/N 23740-02 Rev. A



**Caution:** Improper installation or removal of the terminal connector may permanently damage the MX 900 Series terminal.

The following precautions must be taken with multiport cables:

- Use the Ethernet port on the I/O module only if the multiport cable is not attached. Otherwise, use the Ethernet port on the multiport cable.
- Do not force the terminal connector into place.
- Always make sure that all of the pins are lined up in correct parallel fashion before applying light pressure to snap the terminal connector into place.
- Disconnecting the power source during transaction processing may cause loss of transaction data.

## Connecting ECR in Tailgate Mode

To connect an ECR to the MX 900 Series terminal, insert the multiport cable plug into the bottom socket on the terminal and install the retainer. Then connect the SDL tailgate connector to the desired 12-volt port on the back of the IBM register, such as 9A or 9B.

**Caution:** Use caution because the various ports on the back of the register have different voltages. Plugging into the wrong port may damage the register or the MX 900 Series terminal.

## Connecting to a Serial Port

To connect the MX 900 Series terminal to the serial port of an ECR or PC, use a serial cable such as the 26264-XX-R. Connect the DB9 plug to the device and the RJ-45 plug to the assigned COM port on the I/O Module or the Multiport Cable.

## Connecting to the Ethernet LAN

To connect the MX 900 Series terminal to an Ethernet LAN through the Ethernet port using a standard Ethernet cable, insert the LAN cable from the LAN router or hub into the Ethernet port on the multiport cable or the Ethernet port on the I/O Module if no multiport cable is used.

## Connecting to USB Host or Hub

The CBL132-002-XX-A cable connects a USB host to the USB On-The-Go (OTG) port on the I/O Module. The 23741-02-R Multiport cable connects directly to a USB host.

---

## Powering up

This section describes how to connect the MX 900 Series terminal to a power source using the multiport cable or I/O Module.

**Note:** If connected to an ECR using a tailgate cable, the MX 900 Series terminal can receive power from the ECR.

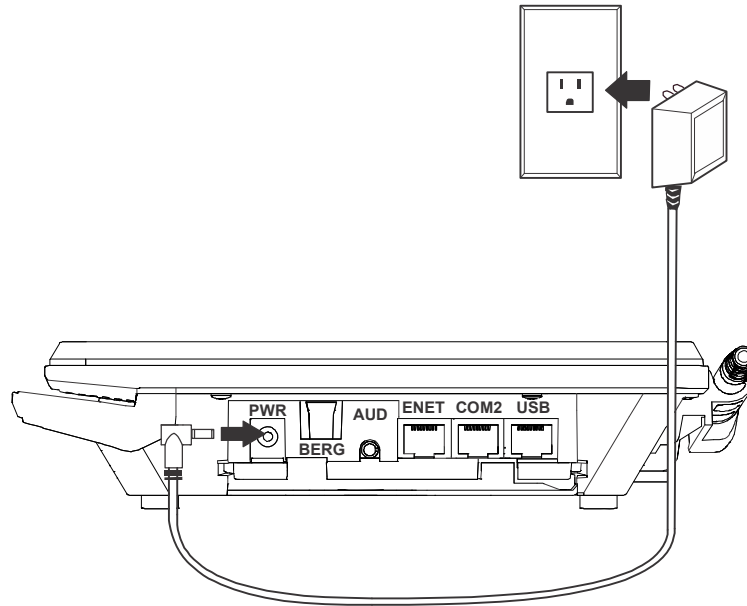
**Warning:** Do not plug the power pack into an outdoor outlet or operate the terminal outdoors.

**Note:** The power outlet should be on a dedicated circuit or on an uninterruptible power supply (UPS). If other devices are plugged into the same circuit, the MX 900 Series device can potentially experience power fluctuations that might cause it to malfunction.



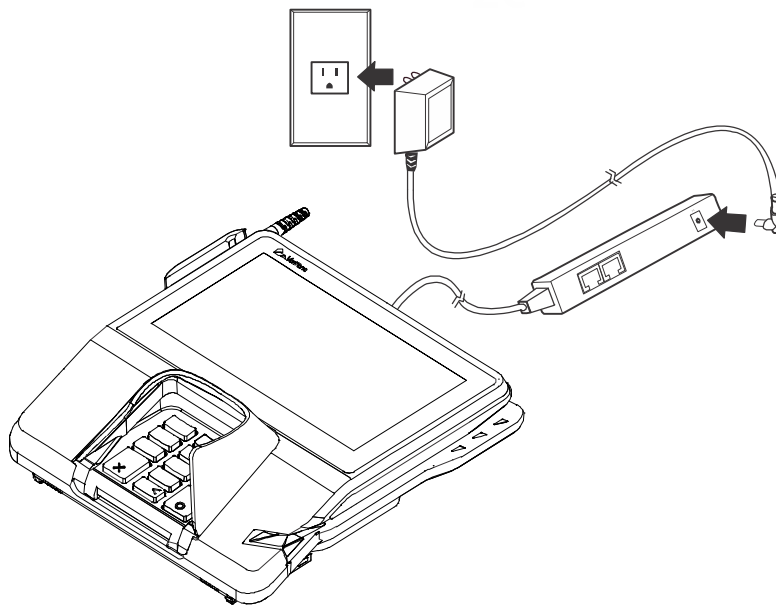
## Using the I/O Module

1. Make all other connections before connecting the power pack.
2. Insert the plug from the power pack into the +12V receptacle on the I/O module.
3. Plug the power pack into an indoor electrical power outlet.



## Using the Multiport Cable

1. Make all other connections before connecting the power pack.
2. Insert the multiport cable connector into the port on the back of the terminal and secure with the Berg retainer.
3. Insert the plug from the power pack into the +12V receptacle on the multiport cable.
4. Plug the power pack into an indoor electrical power outlet.



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## Calibrate Touch Screen

The MX 900 Series terminal requires a touch screen calibration at the time of installation. The terminal should be powered on and allowed to stabilize at normal operating temperature; usually this takes no longer than 30 minutes, even if the terminal was previously in a cooler or warmer location. The touch screen calibration procedure (below) should then be performed. Also, while in System Mode, verify the time on the unit is correct.

To perform a touch screen (panel) calibration, follow these procedures:

### Primary Method:

This method does not require knowledge of system password.

1. Press 'Red X' (clear) key prior to entering any digits on password screen. The menu screen displays the following options.
  - 1 - Run Application
  - 2 - Perform Calibration
  - X - Return to Login Screen
2. Press '2' key to perform screen calibration.
3. After calibration is complete, press '1' to run customer application or 'X' to return to password menu screen. If no keys are pressed within a few seconds, the terminal will automatically return to the password menu screen.

### Alternate Method:

1. Press the 1, 5, and 9 keys at the same time to enter System Mode.
2. Enter the System Mode password.
3. In System Mode, perform a manual touch screen compensation. Tap Administration > Touch Panel > Go. Follow the directions on the display.

**Note:** if the touch panel is completely unresponsive after logging in, press '1' and 'enter' to perform the calibration.



# 3 TERMINAL SPECIFICATIONS

## Terminal Specifications

This chapter discusses power requirements, dimensions, and other specifications of the MX 900 Series terminals.

Power	<ul style="list-style-type: none"><li>• Power pack output requirements: 12W, 12-24V DC.</li><li>• Power pack input requirements: 100-240V AC, 50/60 Hz.</li></ul>
Environmental	<ul style="list-style-type: none"><li>• Operating temperature: 0° to 40°C (32° to 104°F)</li><li>• Storage temperature: – 18° to + 66°C (0° to 150°F)</li><li>• Humidity: 15% to 95% relative humidity; non-condensation</li></ul>
Dimensions	<b>MX 915</b> <ul style="list-style-type: none"><li>• Height: 56 mm (2.2 inches)</li><li>• Width: 182 mm (7.2 inches)</li><li>• Depth: 225 mm (8.9 inches)</li></ul> <b>MX 925</b> <ul style="list-style-type: none"><li>• Height: 56 mm (2.2 inches)</li><li>• Width: 218 mm (8.6 inches)</li><li>• Depth: 230 mm (9.1 inches)</li></ul>
Weight	<b>MX 915:</b> 1.3 lbs. (0.6 kg) <b>MX 925:</b> 2.0 lbs. (0.9 kg)



# 4 MAINTENANCE

The MX 900 Series terminal has no user-maintainable parts. The smart card implementation is a proprietary hardware solution that has no serviceable parts.

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## Cleaning the Terminal

To clean the terminal, use a clean cloth slightly dampened with water and a drop or two of mild soap. For stubborn stains, use alcohol or an alcohol-based cleaner.

**Note:** Never use thinner, trichloroethylene, or ketone-based solvents as they may deteriorate plastic or rubber parts. Do not spray cleaners or other solutions directly onto the display.

---

## Cleaning the Display Screen

The following is the display screen cleaning method:

**Note:** Do NOT spray cleaners or other solutions directly onto the display.

1. Use neutral non-scrubbing detergent or isopropyl alcohol on a clean soft cloth to clean the screen surface.
2. Prevent using any kind of chemical solvent, acidic or alkali solution.
3. Apply the Touch Panel cleaning solution to the cloth first then wipe the surface of the touch panel.

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## Magnetic Stripe Cleaner

The following is the MSR cleaning method:

Dirt can lead to magnetic stripe card reading problems. The magnetic stripe reader (MSR) should be cleaned on a regular basis (daily to once a week depending on usage) using commercially available card reader cleaning cards or Verifone part number 02746-02.

**Note:** If using a commercially available cleaning card use ONLY an approved MSR cleaning card made specifically for POS MSR Card reader terminals or Petroleum MSR card readers.

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## Smart Card Reader

Do not attempt to clean the smart card reader. Doing so may void the warranty. For smart card reader service, contact your Verifone distributor or service provider.



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