

# NCR Voyix POS Terminal VX80 (7787)

User Guide



BCC5-0000-5748 Issue A

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### **Preface**

### **Audience**

This publication is written for store personnel, system integrators, and field engineers.



#### ■ Note

This document is NCR Voyix proprietary information and is not to be disclosed or reproduced without consent.

# **Safety Requirements**

The NCR Voyix POS Terminal VX80 (7787) conforms to all applicable legal requirements. To view the compliance statements see the RealPOS Terminals Safety and Regulatory Information (B005-0000-1589).

#### **A** Caution

The on/off switch is a logic switch only. The AC line voltage primaries are live at all times when the AC power cord is connected to the AC outlet. Therefore, disconnect the AC power cord from the AC outlet and wait 30 seconds before opening the unit to install features or service this terminal.

### **Lithium Battery Warning**

#### **Marning**

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

#### Warning

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rébut les batteries usagées conformément aux instructions du fabricant.

### **Battery Disposal (Switzerland)**

Refer to Annex 4.10 of SR814.013 for battery disposal.

### **IT Power System**

This product is suitable for connection to an IT power system with a phase-to-phase voltage not exceeding 240 V.

### Peripheral Usage

This terminal should only be used with peripheral devices that are certified by the appropriate safety agency for the country of installation (UL, CSA, TUV, VDE) or those which are recommended by NCR Voyix Corporation.

#### Warning

DO NOT connect or disconnect the transaction printer while the terminal is connected to AC power. This can result in system or printer damage.

#### Warning

DO NOT connect or disconnect any serial peripherals while the terminal is connected to AC power. This can result in system or printer damage.

### **Grounding Instructions**

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not modify the plug provided—if it will not fit the outlet, have the proper outlet installed by a qualified electrician. Improper connection of the equipment-grounding conductor can result in a risk of electric shock.

The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor.

If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if you are in doubt as to whether the product is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the product's plug. **Repair or replace damaged or worn cords immediately.** 

# Out of Box Failure (OBF)

If you experience an out of box failure (OBF) during installation or staging that is related to a missing, wrong or defective unit or item, or damage to the frame/cabinet of the unit, contact NCR Voyix and provide a detailed description of the issue.

#### ■ Note

Used equipment that experiences a failure does not qualify as an OBF and should go through the NCR Voyix warranty process.

To contact NCR Voyix, do any of the following:

- A. Send an email message to CustomerSat.Retail@ncrvoyix.com with the following details:
  - NCR Voyix Sales Order # (Sales Order # are located on the box)
  - Date of Product Installation
  - Product Model #
  - Unit Serial #
  - NCR Voyix part # of defective/missing/wrong component
  - Description of Failure (please be specific. For example: "display will not power on")
  - Customer/Requestor's contact name, phone number and/or e-mail address
  - Address to ship replacement part(s)

#### ■ Note

Components of the NCR Voyix POS Terminal VX80 (7787) can be replaced by an NCR Voyix Services technician.

- B. Call or leave a voice message at:
  - 1-800-528-8658 (USA)
  - +1-770-623-7400 (International)

#### **₽** Note

When leaving a message, please provide a phone number and/or an email address so NCR Voyix can contact you if additional details are needed.

### Warranty

Warranty terms vary by region and country.

All parts of this product that are subject to normal wear and tear are not included in the warranty. In general, damages due to the following are not covered by the warranty.

- Improper or insufficient maintenance
- Improper use or unauthorized modifications of the product.
- Inadequate location or surroundings. Site installation must conform to guidelines listed in the Site Preparation Guide and the <u>NCR Workstation and Peripheral AC Wiring</u> <u>Guide</u> (BST0-2115-53).

For detailed warranty arrangements please consult your contract documents.

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# **Revision Record**

Publication issue	Date	Description of change
A	Mar 2025	First issue

### **Product Overview**

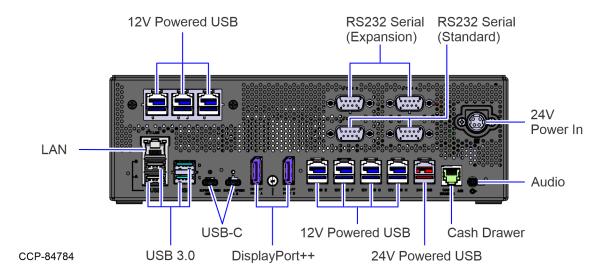
The NCR Voyix POS Terminal VX80 (7787) is a Point-of-Sale terminal designed with a low-profile chassis, latest generation memory and storage, and maximized connectivity. It is powered by Intel Gen 14 Raptor Lake Refresh chipset.



### **Base Models**

Product ID	Description	Configuration Notes
7787-1300-8801	VX80 POS, Intel Core i3, Power Supply	Must select storage, memory, power cord, and OS
7787-1500-8801 VX80 POS, Intel Core i5, Power Supply		Must select storage, memory, power cord, and OS

# **Connectivity**



Port	Number of Ports
LAN 10/100/1000	1
USB 3.0 (5V)	4
USB-C	2
DisplayPort++	2
12V powered USB	4
24V powered USB 2.0 Printer	1
Cash Drawer dual port	1
Amplified Audio	1
24V Power In	1
RS232 (DB9) Serial	2
RS232 (DB9) Serial (Expansion Option)	2
12V Powered USB	3

### **Features**

Feature	Feature Number	Description
Motherboard	F212	Motherboard, Raptor Lake-S Refresh
Memory	F132	Memory Module 8GB, DDR5, 2400MT/s, 1200MHz
	F134	Memory Module 16GB, DDR5, 2400MT/s, 1200MHz
Processor	F203	Processor, Intel Raptor Lake Refresh, i3-14100T
	F205	Processor, Intel Raptor Lake Refresh, i5-14500T
Storage Media	F241	SSD 120 GB, M.2 SATA
	F255	SSD 480 GB, M.2 NVMe (PCIe)
		Note  When using NMVe PCIe SSD drive types in combination with older Linux distributions not advocated by NCR Voyix, the drives might not be recognized by the operating system. For the drives to be recognized, turn off the VMD in the BIOS setting. Linux distributions that are certified by NCR Voyix for use with VX80 do not require this adjustment.
I/O Expansion	F020	I/O Expansion - 3 12V Powered USB
Power Supply	F120	Power Supply, 24VDC, 150W
Power Cord	F100	USA Power Cord
	F101	International Power Cord
	F119	No Power Cord
Enclosure	F030	Enclosure, BLK, VX80, Modular
Serial Cable	F495	Dual Serial Cables (COM1/COM2)

### **Operating Systems**

The OS image and base platform drivers will be pre-loaded on the solid state drive prior to shipment. The POS must be configured with a solid state drive.

Feature	Description	Configuration Notes
7787-F700	No Operating System for Windows users	Approval required
7787-F720	) Windows 11 IoT Enterprise 2024 LTSC Entry OS Factory pr	
7787-F710	Windows 11 Pro	Factory pre-installed
7787-F756	NCRLinuxU 2.0 (Ubuntu 22.04) OS	Factory pre-installed
7787-F791	SUSE Linux Enterprise Server (SLES) 15 64-bit Operating System	Factory pre-installed

Base client and third-party software are also available on the public NCR Platform Software Website:

http://www5.ncr.com/support/support\_drivers\_patches.asp?Class=External/display

### **Specifications**

Feature	7787-1300-8801	7787-1500-8801
Chipset	Intel Raptor Lake Refresh	
Processor	Intel Core i3-14100T	Intel Core i5-14500T
Base Clock speed	2.7 GHz	1.7 GHz
Max Turbo Frequency	Up to 4.4 GHz	Up to 4.8 GHz
Total Cores	4	14
Level 2 Cache	5MB	11.5MB
Thermal Design Power	35 Watts	35 Watts
AMT (vPro component)	No	Yes

Feature	7787-1300-8801	7787-1500-8801
Intel vPro	No	Yes
Image Recovery Button	Yes	Yes
RAID support	Yes	Yes
TPM 2.0	Yes	Yes
Memory		
Memory Type	DDR5 4800MT/s	
Form Factor	SODIMM	
Memory Slots	Up to 2	
Standard Memory	8GB or 16GB, Up to 32GB	
M.2 Storage		
Solid State Drive	120GB SATA, 480GB NVMe	
Drives	Up to 2	
Dimensions/Weight		
Dimensions	10.02" x 8.44" x 3.22"	
(width x depth x height)	(254.4 mm x 214.1 mm x 81.7 mm)	
Weight	7.00 lbs (3.18 kg)	

# **Trusted Platform Module (TPM)**

The VX80 supports fTPM (software) version 2.0.

### Verifying TPM is enabled

To confirm that TPM is enabled, follow these steps:

- 1. Go to Windows Device Manager.
- 2. Click the drop-down for **Security devices**. Trusted Platform Module 2.0 should display as shown below.
  - ✓ Security devices
     Trusted Platform Module 2.0

### **Operator Controls**

### **Power Button**

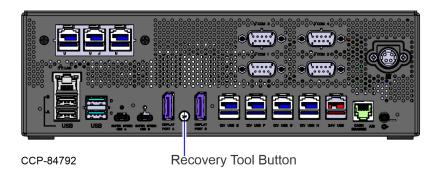
The Power Button is located on the front of the terminal. This button is a momentary contact, push-on-push-off switch.



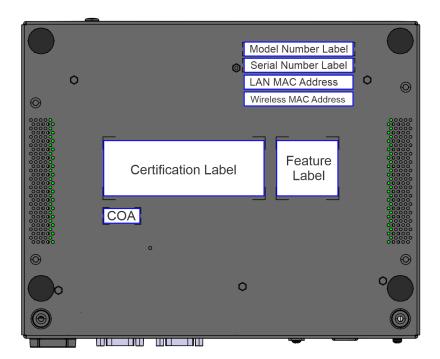
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# **Recovery Tool Button**

The Recovery Tool Button, located on the I/O panel, is for the OS Recovery Tool option. The recessed button is a momentary contact, push-on-push-off switch.



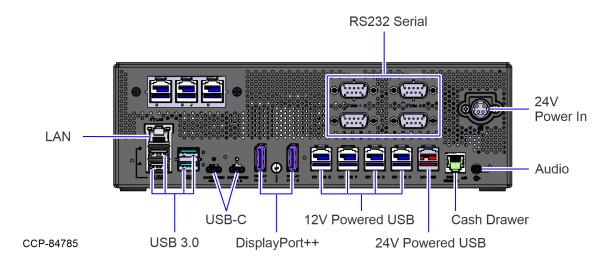
### **Label Locations**



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# I/O Connectors

### Motherboard



Port	Number of Ports
LAN 10/100/1000	1
USB 3.0 (5V)	4
USB-C	2
DisplayPort++	2
12V powered USB	4
24V powered USB 2.0 Printer	1
Cash Drawer dual port	1
Amplified Audio	1
24V Power In	1
RS232 (DB9) Serial	4

### **Motherboard Connector Pinouts**



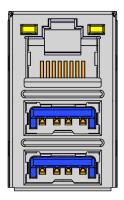
#### ■ Note

For all powered ports, use the NCR Voyix POS Terminal VX80 (7787) Power Matrix as a guide to calculate the available power.

#### LAN and USB 3.2

The Motherboard provides 10/100/Gb LAN support using Intel 219LM with Wake on LAN support.

A Foxconn JFM38U1M-B3VP-4F combo LAN plus dual USB 3.2 through-hole connector supports both Ethernet and USB 3.2 connectivity.



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The connector features an integrated magnetic module and two LEDs. The LED on the right is yellow and indicates Link/Activity when lit/flashing. The LED on the left is bi-color and indicates the following when the yellow LED on the right side is lit.

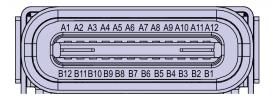
Network Link Status	Bi-Color LED
Link 1000	Green
Link 100	Orange
Link 10	Unlit

### **USB** Display

The USB Display connector serves as the connection between the Motherboard and a secondary display or external device. It uses the Alt Mode for Display Port, including reversibility. This connector supports Gen 2.

The Power Delivery (PD) Controller supports 5V and user defined 12V.

Overcurrent/short VBUS protection is provided.

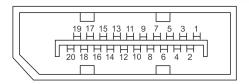


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Signal	Pin	Pin	Signal
GND	A1	B12	GND
USB 3.0 TX1+	A2	B11	USB 3.0 RX1+
USB 3.0 TX1—	A3	B10	USB 3.0 RX1—
+V (12V)	A4	В9	+V (12V)
CC1	A5	B8	SBU2
USB 2.0 D+	A6	В7	USB 2.0 D-
USB 2.0 D-	A7	В6	USB 2.0 D+
SBU1	A8	B5	CC2
+V (12V)	A9	B4	+V (12V)
USB 3.0 RX2-	A10	В3	USB 3.0 TX2-
USB 3.0 RX2+	A11	B2	USB 3.0 TX2+
GND	A12	B1	GND

### **DisplayPort**

The Motherboard provides two full-size vertical DisplayPort connectors.



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Pin	Signal Name
1	ML_LaneO (p)
2	GND
3	ML_LaneO (n)
4	ML_Lane1 (p)
5	GND
6	ML_Lane1 (n)
7	ML_Lane2 (p)
8	GND
9	ML_Lane2 (n)
10	ML_Lane3 (p)
11	GND
12	ML_Lane3 (n)
13	CONFIG1
14	CONFIG2
15	AUX CH (p)
16	GND
17	AUX CH (n)
18	Hot Plug Detect

Pin	Signal Name
19	Return
20	DP_PWR

#### 12V USB + Power

The Motherboard provides four latching 12V Powered USB ports. The connector color is teal.

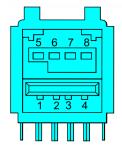
The 12V Powered USB port can supply 12V at 2.0A, with a combined total for all 12V peripherals connected to the motherboard of 6A (electrical limitation). This power budget includes the four 12V USB ports and the four 12V serial ports on the motherboard. Overcurrent signals are used to detect when the fuses are open. These signals are connected to a GPIO on the Super I/O.



#### ■ Note

The expansion card generates its own 12V from 24V and is not subject to the 12V current budget of the motherboard. These 12V USB power ports are individually fused and support 2A each.

Self-healing poly fuses, which support 500mA each, protect the +5V of the ports. An overcurrent signal is used to detect when this fuse is open. The signals are connected to overcurrent inputs/GPIO on the PCH.



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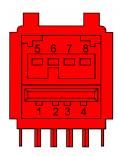
Signal Name	Pin	Pin	Signal Name
USB PWR	1	5	GND
USB D-	2	6	+12V
USB D+	3	7	+12V
GND	4	8	GND
FRAME GND	9	10	FRAME GND
FRAME GND	11	12	FRAME GND

#### 24V USB + Power

The Motherboard provides one latching 24V Powered USB port. The 24V Powered USB port is capable of supplying 24V at 2.3A continuous and 3.0A peak. The connector color is red.

The 24V is fused with a resettable fuse. An overcurrent signal is used to detect when this fuse is open. This signal is connected to a GPIO on the Super I/O.

A self-healing poly fuse, which supports 500mA, protects the +5V of the port. An overcurrent signal is used to detect when this fuse is open. The signals are connected to overcurrent inputs/GPIO on the PCH.



CCP-78292

Signal Name	Pin	Pin	Signal Name
USB PWR	1	5	24V_RET
USB D-	2	6	+24V
USB D+	3	7	+24V
GND	4	8	24V_RET
FRAME GND	9	10	FRAME GND
FRAME GND	11	12	FRAME GND

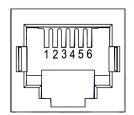
### **Cash Drawer**

The Motherboard supports dual 24V Cash Drawers on one connector. Two cash drawers share a common switch status signal. The port auto-detects drawer voltage and configures the driving circuit for the drawers.

Control signals are connected to GPIOs of the PCH. The 24V uses the same fuse type as the +24V USB plus power port.

The CDKO circuit design is a new type that supports both NCR Voyix and Radiant cash drawer families. The cash drawer interface circuit supports both 12V and 24V output voltages, selectable in software. A presence detect function signals whether Drawer A, Drawer B, or both are present. Dual drawer splitter devices for Silver are supported, allowing differentiation of whether Drawer A or Drawer B is open.

A 6-position RJ12 connector is used.

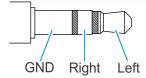


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Pin	Signal Name
1	Cash Drawer GND
2	Cash Drawer CTL1
3	Cash Drawer Open Con
4	Cash Drawer Power
5	Cash Drawer CTL2
6	+24V RET

### **Audio**

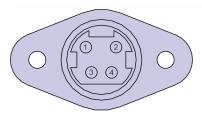
The Motherboard provides amplified stereo speaker output through the 3.5mm headphone jack. Audio Jack detection is not supported.



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#### **Power In**

The Motherboard accepts 24V DC ±10% input power via an onboard 4-pin DC-IN connector.



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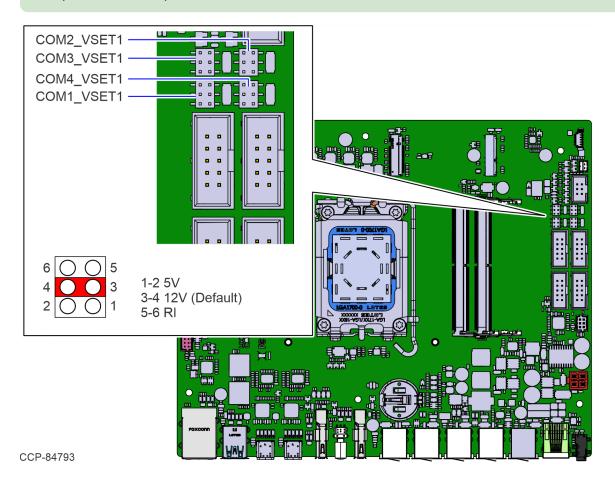
Pin	Signal Name
1	GND
2	24V
3	GND
4	24V

#### Serial RS-232

The Motherboard provides up to four (4) full RS-232 Standard 9-pin D-shell connectors via harnesses. All of the RS-232 ports have a shunt to select between +12V, +5V, or normal RI functionality.

#### ■ Note

Two Serial RS-232 ports (COM1 and COM2) are standard, and the others (COM3 and COM4) are available as a kit. For more information, refer to 7787-K496 Serial Cables (COM3/COM4).

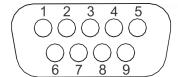


Maximum power capability is 1.5A from any one port. The power outputs from the powered ports are protected by a self-healing fuse. These ports are marked on the rear I/O with the "lightning bolt" symbol to signify its powered capability.

#### ■ Note

In some cases, hot plugging RS-232 devices may cause the terminal to shut down unexpectedly by "crow barring" the power supply. However, this will not cause damage to the hardware. It is also important to note that RS-232 devices will not autodetect like USB devices.

These ports are provided in four single DB9 panel mount cable assembly mounted on the rear I/O chassis.



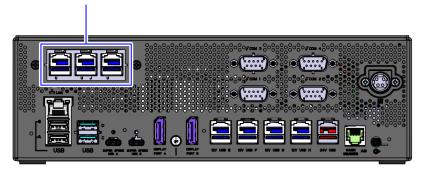
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Pin	Signal Name
1	DCD
2	Serial In (SIN)
3	Serial Out (SOUT)
4	DTR-
5	GND
6	DSR-
7	RTS-
8	CTS-
9	RI OR +12V OR +5V

### 3-Port 12V USB+Power Expansion Board

The Expansion Board provides three additional 12V USB+Power ports. The board features its own USB 2.0 hub and a 24V to 12V generation. The 12V Powered USB port can supply 12V at 2.0A and is fused with a self-healing poly-fuse on each port.

#### 3-Port 12V USB+Power



CCP-84786

### Hardware Installation

The VX80 comes fully assembled and ready to use. This section explains how to perform an "out-of-box" installation of a VX80 hardware and how to connect optional peripheral devices.

### **Installation Restrictions**

- The NCR Voyix POS Terminal VX80 (7787) conforms to all applicable legal requirements. To view the compliance statements see the NCR RealPOS Terminals Safety and Regulatory Statements (B005-0000-1589).
- Install the VX80 near an electrical outlet that is easily accessible. Use the power cord as a power disconnect device.
- Do not permit any object to rest on the power cord. Do not install the VX80 where the power cord can be walked on.
- Use a grounding strap or touch a grounded metal object to discharge any static electricity from your body before servicing the VX80 terminal.

#### Warning

This unit contains hazardous voltages and should only be serviced by qualified service personnel.

#### Caution

Do not connect or disconnect the transaction printer while the terminal is on. This can result in system or printer damage.

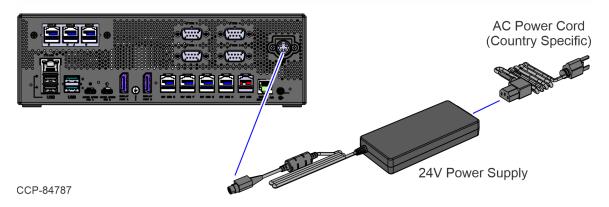
### **Connecting AC Power**

The NCR Voyix POS Terminal VX80 (7787) receives power from an external 24V power brick. To connect the VX80 to the AC Power, follow these steps:

#### **A** Caution

The VX80 requires the NCR Voyix 24V Power Supply that is shipped with the terminal. Use of other power bricks may cause damage to the unit.

- 1. Connect the Power Supply Cable to the Power In connector on the terminal.
- 2. Connect the AC Power Cord to the Power Supply and to an AC outlet.





#### **A** Caution

Do not connect or disconnect the Power Cable from the terminal with the AC Power Cord connected to an AC outlet.

### Connecting to a Network

Most business configurations require the terminal to connect to a network. Connecting to a network enables communicating with other systems and devices also on the network. Depending on business configurations, connecting to a network may allow connection to the Internet.

To connect the VX80 terminal to a network, connect the 10/100/1000 Ethernet Cable to the port labeled LAN on the I/O. The other end of the 10/100/1000 Ethernet Cable should be connected into the network hub.

#### ■ Note

Consult with your business Information Technology (IT) representative to determine the available connection, and to locate the network hub.

# **Installing the Display**

The NCR Voyix POS Terminal VX80 (7787) supports the following displays:

Display	Product Class	Interface
NCR X-Series Displays	5985	DisplayPort
	5968	DisplayPort
NCR XL Series Displays	5916	DisplayPort
	5915	DisplayPort
	5910	DisplayPort
		USB-C
	5907	DisplayPort
		USB-C

For information on installing the display, refer to their respective User Guides:

- NCR X-Series Displays (5968/5985) User Guide (B005-0000-2337)
- NCR XL Series Displays:
  - NCR XL15W Display (5916) User Guide (BCC5-0000-5310)
  - NCR XL15 Display (5915) User Guide (BCC5-0000-5162)
  - NCR XL10W Display (5910) User Guide (BCC5-0000-5197)
  - NCR XL7W Display (5907) User Guide (BCC5-0000-5202)

The User Guides can be downloaded from the NCR Voyix Information Products site:

https://onlinehelp.ncrvoyix.com/

# **Installing the Transaction Printer**

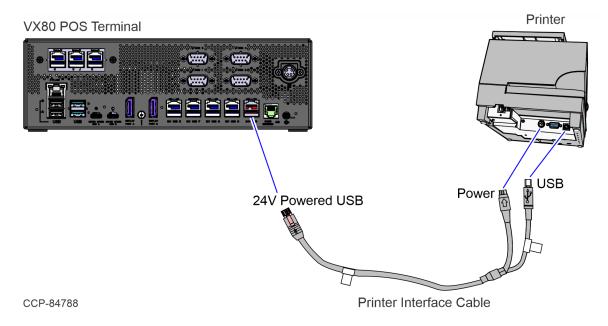


### **Marning**

Do not hot plug the printer when connecting the POS terminal. Always power down the POS prior to connecting the printer to prevent damage to the POS and/or printer.

To install the Transaction Printer, connect the Printer Interface Cable to the following ports:

Connector	Port
Power	Printer (Power)
USB	Printer (USB)
24V Powered USB	VX80 POS Terminal (24V Powered USB)



There are two Powered USB Printer Interface Cables available:

- 1432-C086-0010
- 1432-C402-0040

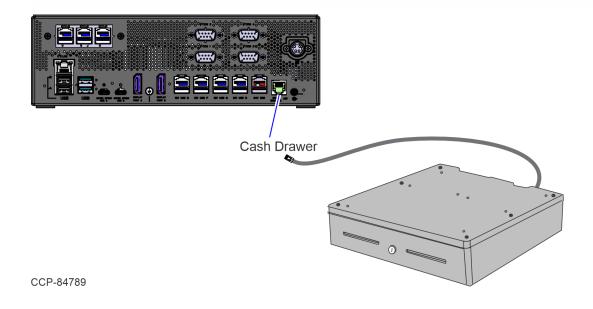
# **Installing the Cash Drawer**

The 24V Cash Drawer can be connected to the Cash Drawer connector on the VX80 terminal or to the Cash Drawer connector on the transaction printer.



### **A** Warning

Non-NCR Cash Drawers must contain a protective diode.



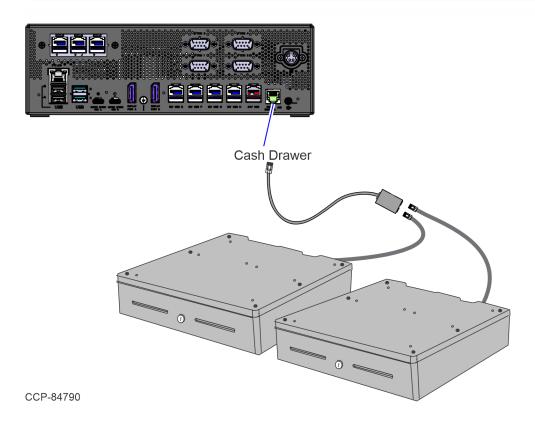
# **Installing the Second Cash Drawer**

The VX80 terminal supports a 2-drawer configuration with a 24V Dual Cash Drawer Cable (1432-C516-0009). Connect this cable to the terminal or transaction printer cash drawer connector.



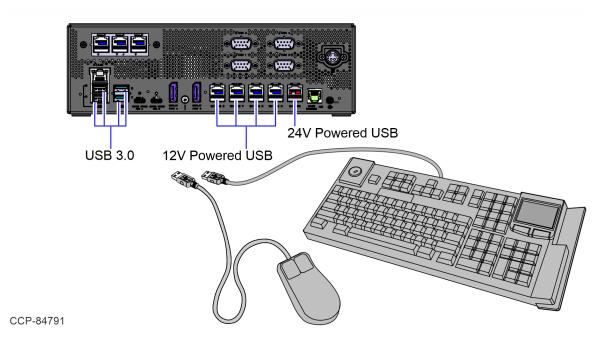
### **Marning**

Non-NCR Cash Drawers must contain a protective diode.



# Installing the Keyboard and Mouse

The VX80 terminal supports USB type keyboards and USB type mice. The keyboard and mouse may be connected to the USB 3.0 ports on the terminal. The lower half of unused 12V Powered USB and 24V Powered USB ports may also be used.

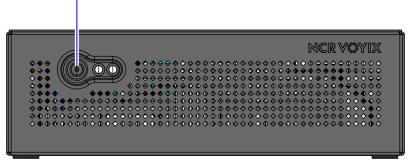


# **Powering Up the Terminal**

To turn on the Terminal, follow these steps:

- Install the Terminal. For more information, refer to "<u>Hardware Installation</u>" on page 34
- 2. Press the Power Button to turn on the system, as shown in the image below.

  Power Button



CCP-84744



The system installs the system devices, configures system settings, and then reboots to continue setup.

- 3. Complete the System Setup. This varies depending on the operating system, but the following is typical:
  - Starting Windows
  - Preparing the computer for the first time
  - Checking video performance
- 4. Accept the License Terms Agreement.

### ■ Note

Depending on the installed operating system and the selected settings, the amount of time it takes to boot up may vary.

## **LED**

## **Power LED**

The Power LED is located on the front of the terminal, next to the Power Button.



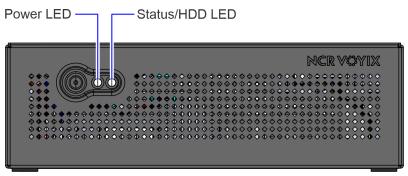
CCP-84756

The Power LED has functions as defined below.

Color	Description	
Solid Green (steady on)	Terminal ON; Motherboard and Power Supply voltages OK	
Blinking Green	Terminal in Suspend (S3/S4) Mode	
Solid Red	Processor Over Temperature	

# **Diagnostics LEDs**

The Power LED and Status/HDD LED also function as diagnostic indicators, defined below.



CCP-84757



The cell colors indicate the color of the LED at that particular time.

Timeframe	Suspect Component / Failure	Terminal State	Power LED	Status / HDD LED	Debug Path
Normal Operation	N/A	System ON	ON	OFF	Normal operation, no action required
Normal Operation	N/A	System ON with HDD activity	ON	Flashing (HDD Access)	Normal operation, no action required
Normal Operation	N/A	Unit in Suspend (S3/S4)	Blinking (1x/sec)	ON	Normal operation, no action required
Normal Operation	N/A	OFF, not in standby,	OFF	ON	Normal operation, no action required

Timeframe	Suspect Component / Failure	Terminal State	Power LED	Status / HDD LED	Debug Path
OFF with AC present	Power system	OFF, not in standby	OFF	OFF	<ol> <li>Check AC power to power supply.</li> <li>Check power supply.</li> <li>Check power connection from power supply to motherboard, and motherboard to power button harness.</li> <li>Replace power supply.</li> <li>Replace motherboard.</li> <li>Replace power button harness.</li> </ol>
Runtime	Cooling solution/CPU	Over Temperature	Flashes red/green, then solid red as temperature increases	N/A	<ol> <li>Check for blocked cooling vents.</li> <li>Check for excessive ambient temperature.</li> <li>Check cooling solution.</li> </ol>
POST	CPU	CPU not operating	ON	ON	Replace motherboard.

Timeframe	Suspect Component / Failure	Terminal State	Power LED	Status / HDD LED	Debug Path
POST	BIOS Chip	BIOS Checksum Failure	ON	Flashing (4x/sec)	<ol> <li>Perform BIOS         crisis recovery.</li> <li>Replace BIOS         chip.</li> <li>Replace         motherboard.</li> </ol>
POST	Memory	Memory Issue	ON	Flashing (1x/sec)	<ol> <li>Check for properly installed memory.</li> <li>Replace memory.</li> <li>Replace motherboard.</li> </ol>
POST	Motherboard	No Display	ON	Flashing (1x/4 sec)	Replace motherboard.
POST	Display, Motherboard, Peripheral	Stopped Prior to Boot	ON	Flashing (1x/8 sec)	No Display:  1. Check for power to display.  2. Check cable connection between unit/motherboard and display.  3. Check for properly working display.  4. Replace motherboard.  Display Working:Use display to determine failure point via onscreen message and BIOS setup.

Timeframe	Suspect Component / Failure	Terminal State	Power LED	Status / HDD LED	Debug Path
Boot time	Boot Media (Storage, LAN)	Display is working, but unit will not boot or it booted from wrong device.	ON	OFF	1. Check storage status in BIOS setup. 2. Check connections between storage and motherboard. 3. Replace or reimage storage. 4. Replace motherboard.
					1. Check for LAN link and activity LEDs on connector panel. 2. Check LAN cable. 3. Replace motherboard.

## Power Management

The BIOS supports the Advanced Configuration and Power Management Interface (ACPI) 3.0 specification. A key feature of ACPI is that the operating system, not the BIOS, configures and implements power management. The VX80 terminal supports the Global system power states defined by ACPI.

### **Computer States**

### G3 Mechanical Off

A computer state that is entered and left by a mechanical means.



#### Example

Turning off the system's power through the movement of a large red switch.

Various government agencies and countries require this operating mode. It is implied by the entry of this off state through a mechanical means that no electrical current is running through the circuitry and that it can be worked on without damaging the hardware or endangering service personnel. The OS must be restarted to return to the Working state. No hardware context is retained. Except for the real-time clock, power consumption is zero.

### G2/S5 Soft Off

A computer state where the computer consumes a minimal amount of power. No user mode or system mode code is run. This state requires a large latency in order to return to the Working state. The system's context will not be preserved by the hardware. The system must be restarted to return to the Working state. It is not safe to disassemble the machine in this state.

### **G1 Sleeping**

A computer state where the computer consumes a small amount of power, user mode threads are not being executed, and the system appears to be off (from an end user's perspective, the display is off, and so on). Latency for returning to the Working state varies on the wake environment selected prior to entry of this state (for example, whether the system should answer phone calls). Work can be resumed without rebooting the OS because large elements of system context are saved by the hardware and the rest by system software. It is not safe to disassemble the machine in this state.

### **G0** Working

A computer state where the system dispatches user mode (application) threads and they execute. In this state, peripheral devices (peripherals) are having their power state changed dynamically. The user can select, through some UI, various performance/power characteristics of the system to have the software optimize for performance or battery life. The system responds to external events in real time. It is not safe to disassemble the machine in this state.

## **ACPI Sleep States (SO - S5)**

Under the G1 sleeping state ACPI defines levels of system sleep state support. The VX80 supports the following sleeping states:

- **\$0**—Normal Powered-On state
- \$1 (Standby)—The \$1 sleeping state is a low wake latency sleeping state. In this state,
  no system context is lost (CPU or chip set) and hardware maintains all system contexts.
  - **₽** Note

The VX80 does not support S1 state. Turning off the backlight and hard drives provides the equivalent power savings (due to Intel's processor C-states feature) at nearly zero latency.

• \$2-Not supported

• S3 (Suspend to Ram)—The S3 sleeping state is a low wake latency sleeping state. This state is similar to the S1 sleeping state except that the CPU and system cache context is lost (the OS is responsible for maintaining the caches and CPU context). Control starts from the processor's reset vector after the wake event. In NCR Voyix systems, during S3, power is only provided to the USB 3.0 ports.

#### ■ Note

When the terminal resumes from an S3 state, all the USB devices re-enumerate. This causes speaker tones as if they were disconnected and then reconnected. This does not present a problem and the USB devices will continue to operate correctly.

- Requirements for S3 support:
  - O/S must be built on a system with S3 enabled in the BIOS
  - Some peripherals may not be \$3 capable, which can prevent the system from entering S3 state.
- **S4** (Suspend to Disk)—The S4 state is the lowest power, longest wake latency sleeping state supported by ACPI. In order to reduce power to a minimum, it is assumed that the hardware platform has powered off all devices. Platform context is maintained.
  - Requirements for S4 support:
    - O/S must be built on a system with S3 enabled in the BIOS
    - Some peripherals may not be \$4 capable, which can prevent the system from entering S4 state.

Reference the ACPI Specification for details.

**Peripherals:** ACPI defines power states for peripherals which are separate from the system power state. The device power states range from DO (fully-on) to D3 (off). It is the responsibility of the driver developer for each peripheral to define and support the available power states.

Power State	S0 Working	SO Idle, Backlight Off, SSD Off	S3 Suspend to RAM	S4 Hibernate	S5 Soft Off
Supported: Y/N	Υ	Y	Υ	Υ	Υ
Description	Fully Functional**	Video Backlight Off, SSD Off	Video Backlight Off, SSD Off, Cache Flush, Memory in Slow Refresh, CPU Halted	Video Backlight Off, SSD Off, Cache Flush, Memory data to SSD, CPU Halted	OFF  Some devices remain powered by standby voltage (LAN, ME-AMT, USB) to allow wake-up
Power Supply Status	On	On	Powered Down*	Powered Down*	Powered Down*
Power Consumpt	tion				
i3-14100T	70.0W	32.0W	6.0W	5.0W	5.0W
i5-14500T	70.0W	46.0W	6.0W	5.0W	5.0W
Wake Options					
Power Button	N/A	Υ	Υ	Υ	Υ
Touch	N/A	Υ	N	N	N
USB Keyboard	N/A	Υ	Υ	N	N
USB Mouse	N/A	Υ	Υ	N	N
LAN (magic packet)	N/A	Y	Υ	N	Υ
RTC Alarm	N/A	N	N	N	N
Serial Port (RI)	N/A	Y	N	N	N

#### Note

Power consumption based on the following configuration: 16GB RAM, 240GB SSD

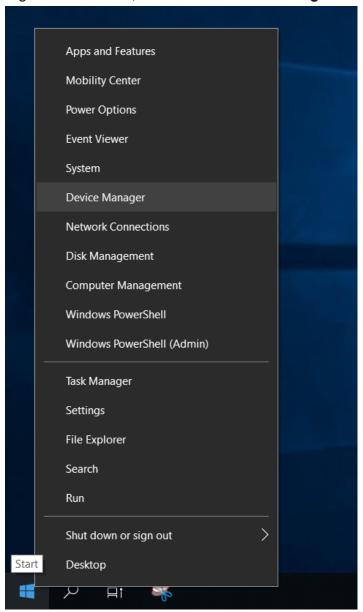
<sup>\*</sup>Maintains small voltage to support wake circuits.

<sup>\*\*</sup>Passmark Performance test. This represents a maximum use case. Actual customer usage will differ.

## **Enabling Wake on LAN**

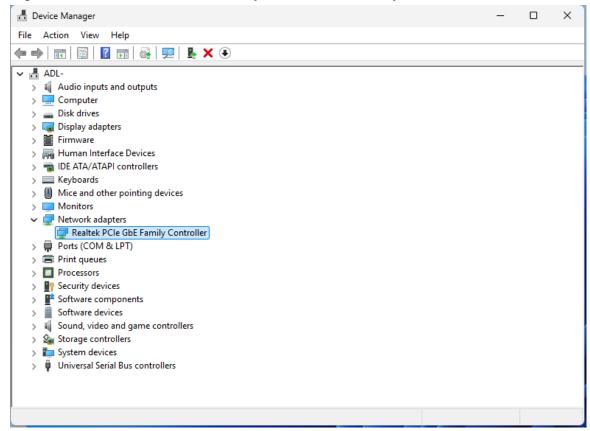
In order for Wake on LAN to function, the Network driver must be enabled (factory default).

1. Right-click on **Start**, then select **Device Manager**.

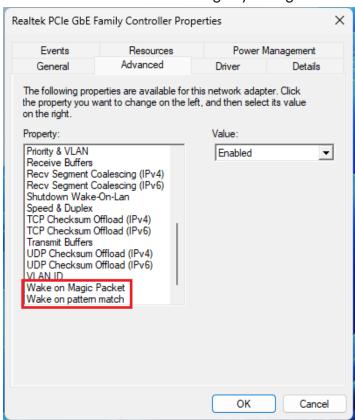


2. Select Network adapters.

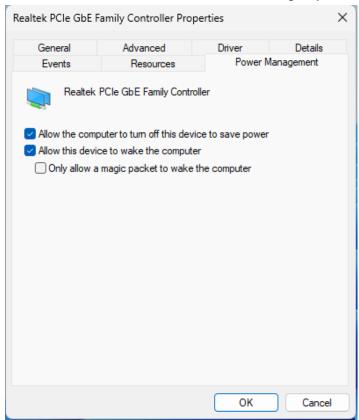
3. Right-click Realtek PCIe GbE Family Controller >> Properties.



4. Under the Advanced tab, Wake on Magic Packet and Wake on Pattern Match should be enabled. Select **OK** after making any changes.



5. Under the *Power Management* tab, *Allow this device to wake the computer* option box should be checked. Select **OK** after making any changes.



### **ACPI Processor C-States**

ACPI defines the power state of system processors while in the GO working state as being either active (executing) or sleeping (not executing). Processor power states are designated C0, C1, C2, C3, ...Cn.

The CO power state is an active power state where the CPU executes instructions. The C1 through Cn power states are processor sleeping states where the processor consumes less power and dissipates less heat than leaving the processor in the CO state.

While in a sleeping state, the processor does not execute any instructions. Each processor sleeping state has a latency associated with entering and exiting that corresponds to the power savings. In general, the longer the entry/exit latency, the greater the power savings when in the state

To conserve power, OSPM places the processor into one of its supported sleeping states when idle. While in the CO state, ACPI allows the performance of the processor to be altered through a defined "throttling" process and through transitions into multiple performance states (P-states).

#### ■ Note

The VX80 processors support CO and C1 states. Support of deeper sleep states is not required due to its inherently low power consumption.

### **BIOS Setup**

## **Entering Setup**

- 1. Connect an alphanumeric USB keyboard to the terminal.
- 2. Apply power to the terminal.
- 3. When you see the NCR Voyix logo displayed, press [Del] or [F2].

# **Selecting Menu Options**

The following keyboard controls are used to select the various menu options and to make changes to their values:

- Use the arrow keys to select (highlight) options and menu screens.
- Use the [Enter] key to select a submenu.
- Use the [F5] and [F6] keys to change values.
- To view help information on the possible selections for the highlighted item, press [F1].
- To save the changes, move the cursor to the *Exit Menu*, select **Exit Saving Changes**, and press **[Enter]**.

### **Restoring Factory Settings**

To reset all values to their default settings, press [F9] and then [Enter] when the confirmation message is displayed. The terminal automatically loads the BIOS default values. To save the factory default values, go to the *Exit Menu*, select **Exit Saving Changes**, and press [Enter].

# **BIOS Updating Procedure**

The BIOS is located in the Serial Peripheral Interface (SPI) chip on the processor board. This chapter discusses procedures on how to update the terminal SPI and/or BIOS. The update software is distributed via the NCR Website:

https://www5.ncr.com/support/support\_drivers\_patches.asp

The BIOS update can be performed using the following methods:

- Bootable USB Memory Device
- Windows Flash Executable

# **Prerequisites**

The following are required to perform a SPI/BIOS update:

- USB Alphanumeric Keyboard
- BIOS Software. Download from the NCR
   Website:https://www5.ncr.com/support/support\_drivers\_patches.asp

## **USB Flash Key update prerequisites**

- USB Flash Key with sufficient space for the update files.
- Access to a USB port on the terminal to be updated that is enabled in the BIOS (via BIOS setup).

### Windows Flash Executable update prerequisites

- There should be no other programs running while the BIOS/SPI is updating.
- The Windows Flash Executable is designed to run from an Administrator account.

# **SPI/BIOS Updating Procedures**

# Using the Windows Flash Executable

#### ■ Note

Close all running programs prior to updating the BIOS.

To run the executable, right-click on the file and select Run as administrator. The terminal will reboot after the flash process has completed.



#### **A** Caution

The reboot is important to ensure the BIOS initializes properly. Do not interrupt the reboot process.

# **Initial Terminal Imaging**

Factory default SSD images for the VX80 are distributed on bootable auto-imaging USB Flash Drive media. The following procedures describe how to apply/restore an image on the terminal.

#### Warning

Using this procedure will replace any previously stored OS images created using the Disk Image Backup and NCR Recovery Tool.

#### ■ Note

A USB Keyboard is required to perform this operation.

# **Imaging Procedure**

- 1. Connect the USB flash drive to the target terminal that you wish to image.
- 2. Connect a USB keyboard to the terminal.
- 3. Power on the terminal and boot from the USB Flash Drive. This can be done by pressing [F8] during the boot and choosing the USB option (NCR), or by entering BIOS Setup and changing the boot order. The system boots in the Windows PE OS environment.
- 4. Press [Y] on the keyboard at the confirmation prompt to re-image the terminal.
- 5. When the imaging process is complete, press [Exit] on the keyboard to reboot the system.
- 6. After the reboot, remove the USB Flash Drive and disconnect the keyboard.

### **Maintenance**

# Cleaning the VX80 Cabinet

- 1. Disconnect the unit from the power outlet before cleaning.
- 2. Wipe the cabinet using a non-abrasive cloth (microfiber cleaning cloth or cloth towel) dampened with soap and water solution.



#### Warning

Do not use alcohol (methyl, ethyl, or isopropyl) or any strong dissolvent. Do not use thinner or benzene, abrasive cleaners (powders), abrasive cleaning materials (scrub brush, scouring pad), or compressed air. Do not use any other types of cleaners such as vinegar, solvents, degreasers, or ammonia-based cleaners. These can damage the unit.

### **Marning**

Avoid getting liquids inside the unit. If liquid does get inside, have a qualified service technician check it before you power it on again.

3. Wipe the cabinet using a clean and dry lint-free cloth.

# **Cleaning the Cooling Vents**

The air vents on the terminal should be cleaned periodically to maintain optimum cooling for the CPU.

Use the hose attachment on a standard household vacuum cleaner to remove the dust from the vents.