Blackboard

transaction *System*

Vending Reader VR4100

Installation Guide

Commerce Suite

Bb

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This Class B digital apparatus complies with
Canadian ICES-003

Cet appareill numérique de la classes B est conform
à la norme NMB-003 du Canada

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Part 15.21: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

This equipment complies with the FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

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VENDING READER VR4100 INSTALLATION GUIDE

Overview

The Blackboard VR4100 Vending Reader supports both swipe and contactless card technology. The Vending Reader allows MDB vending machines to be used with the Blackboard Transaction System (BbTS), and uses an Ethernet connection (wired or wireless) to communicate to the BbTS server. Communication of host downloads and reader transactions use a maintained Transport Layer Security (TLS) Secure Communication Channel to meet PCI Compliance.

The VR4100 vending Reader can be used in any vending machine that complies with the NAMA MDB (National Automated Merchandising Association Multi-Drop Bus) interface specification. Many vending machines manufactured today support this interface.

Figure 1-1 What's included

READER FEATURES

- Reader works with Windows based BbTS

- Configuration accessible via front panel (Touch Screen), CONFIG port or Web Service

- Stores up to 2500 off-line transactions

- Allows mixed card and cash vends (if supported by machine controller software)

- Interfaces to all NAMA MDB compliant vending machines

- Mounts easily in bill acceptor or comparable sized opening

- Reduces interference problems with limited size inside machine

- Two simple connections: machine controller/coin mechanism and the network

- Volume can be set to off, quiet or loud

- Front panel (Touch Screen) and Web Service access can be disabled for added security

- All IP communications encrypted and authenticated for data security

- Tracks cash sales (if supported by machine controller software)

- Displays balance, account warnings, and other messages following vend

For specifications, see: **Reader Specifications** *(Page 14).*

OBJECTIVES

After reading this guide you can:

- Install the Vending Reader
- Test the Vending Reader

- Configure the Vending Reader

1. Configure the reader in BbTS

See: The Transaction System Release 3.5 Administration Guide

2. Reader Installation (page 1-4)
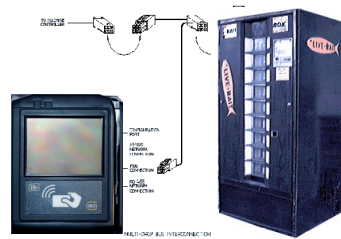
3. Reader Configuration (page 1-7)
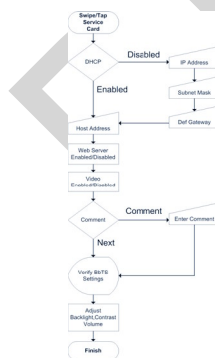
4. Reader Test (page 1-11)

Figure 1-2 Setup Overview

READER INSTALLATION

Mount the reader

All wiring should be completed by a trained electronic technician.
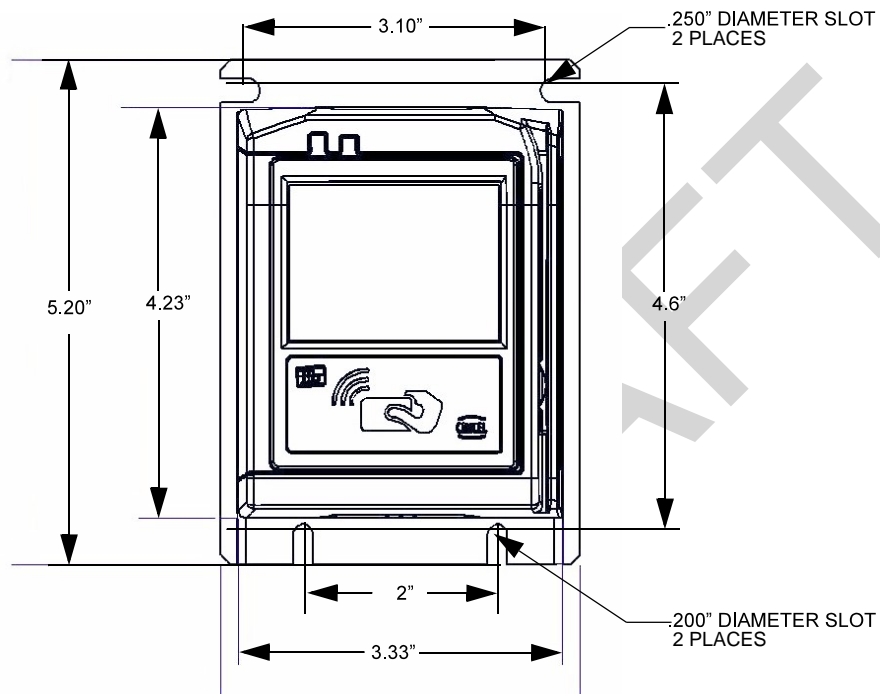
3.10"

.250" DIAMETER SLOT
2 PLACES

5.20"   4.23"

4.6"

2"

.200" DIAMETER SLOT
2 PLACES

3.33"

Figure 1-3 Vending Reader Face and Mounting Dimensions

To mount the reader

1   Power down the vending machine.

Refer to the vending machine operation manual.

2   Prepare a 3.3" x 4.2" cut-out (slightly larger allows reader to fit easily), and then drill four 3/16" holes for mounting studs in the center locations of the slots.

See: The Vending Reader Face and Mounting Dimensions (page 1-4).

If replacing an existing bill acceptor, remove the bill acceptor.
If installing in a pre-cut opening, remove the filler plate.

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3   Slide the face of the reader through the opening from the inside of the machine.

If using a mounting plate, slide it over the face of the reader from the outside of the machine.

4   Install four flat washers and four nuts or threaded standoffs onto the threaded studs to secure the reader.

If installing in a non-conductive panel in the vending machine (such as a plastic front panel), a customer supplied ground wire should be connected from one of the mounting studs to a grounded metal part inside the machine.

Data cables are susceptible to electrical noise that can corrupt data. Avoid routing cables near electrical equipment, including fluorescent lights, compressors, and motors.
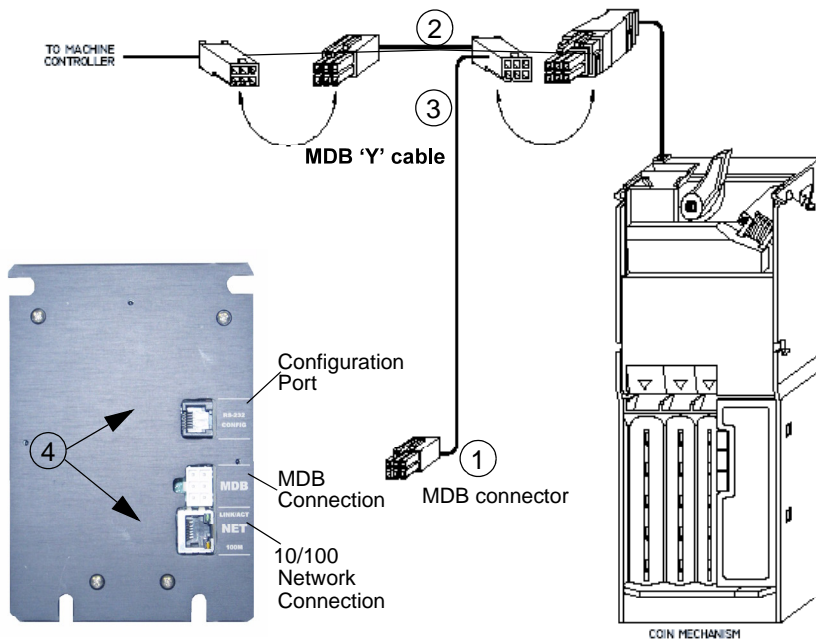
Connect the reader cables

Figure 1-4 MDB (Multi-Drop Bus) Connections

To connect the reader cables

1 Connect the single connector end of the supplied MDB 'Y' cable (p/n 055-800-132) to the MDB connector on the back of the VR4100 Reader.

2 Disconnect the coin mechanism MDB connector from the machine controller; remember where it was connected.

3 Connect the double connector end of the supplied MDB 'Y' cable to a.) the coin mechanism MDB connector, and b.) the machine controller MDB connector.

*A 16' MDB extension cable
(VE/MDBDPCE16) is available from Blackboard if the supplied 30" cable is not long enough.*

4 Connect one end of the supplied CAT5 network cable into the reader:

• **Ethernet connection (10/100Base-T):** 'NET' port

The network cable is a CAT5 patch cable with RJ45 connectors on each end.

5 Route the network cable from the VR4100 out the back of the vending machine.

Typically this should be routed across the door hinge along a cable bundle that already crosses the door hinge. Use wire ties to hold all wires away from any mechanically moving parts such as hinges, the coin return lever linkage, door latch, etc.

***STOP!** DO NOT connect the other end of the network cable to the wall plate until reader Configuration is complete.*

6 Power up the vending machine.

This powers up the reader.

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READER CONFIGURATION

The VR4100 requires an IP address and Host IP address to communicate with BbTS. If using DHCP, the reader does not need to be configured. Configure the VR4100 Reader, use one of three communication modes:

- **Front panel (Touch Screen)** swipe or tap a service card

  See: Front panel (Touch Screen & Service Card) configuration (page 1-7).

- **RS-232** use an RS-232 terminal (i.e. computer and HyperTerminal software) & Configuration Cable

  See: RS-232 or web service configuration (page 1-8)

- **Web Service** via IP through an Ethernet connection

  See: RS-232 or web service configuration (page 1-8)

Front panel (Touch Screen & Service Card) configuration

To configure the reader using Front Panel Configuration

1 Swipe or tap the specially encoded service card.

MAC Address: BSQR0EFF01
Comm Method: Bb IP/Ether
DHCP: *Disabled*
IP Address: *XX.XX.XX*
Subnet Mask: *XX.XX.XX*
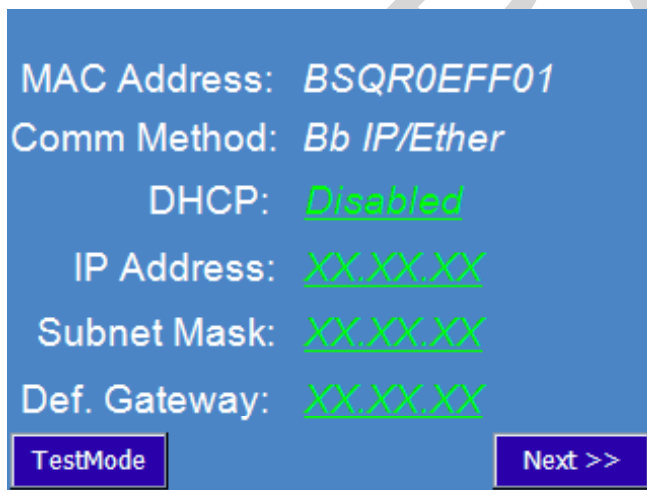Def. Gateway: *XX.XX.XX*
TestMode   Next >>

Figure 1-5 Configuration Screen

2 Set the configuration parameters using the front panel display.

  See: VR4100 Configuration Flowchart (page 1-9).

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RS-232 or web service configuration

To configure the reader using RS-232 or web service

1   Open a **terminal program** (RS-232 or Web Service)
     If using RS-232, establish connection settings:
     • 9600 baud
     • 1 stop
     • no parity
     • no flow control

For RS-232 Config Port Pinouts, see: **RS-232 Config Port Pinout** *(page 1-8).*

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2   Login using the default password: **IPrdr4U**.
     The password is case sensitive.

3   Type **config**, and then press **Enter** at the reader menu.

4   Set the configuration parameters.
     See: **VR4100 Configuration Flowchart** *(page 1-9).*

Table 1-1: RS-232 Config Port Pinout

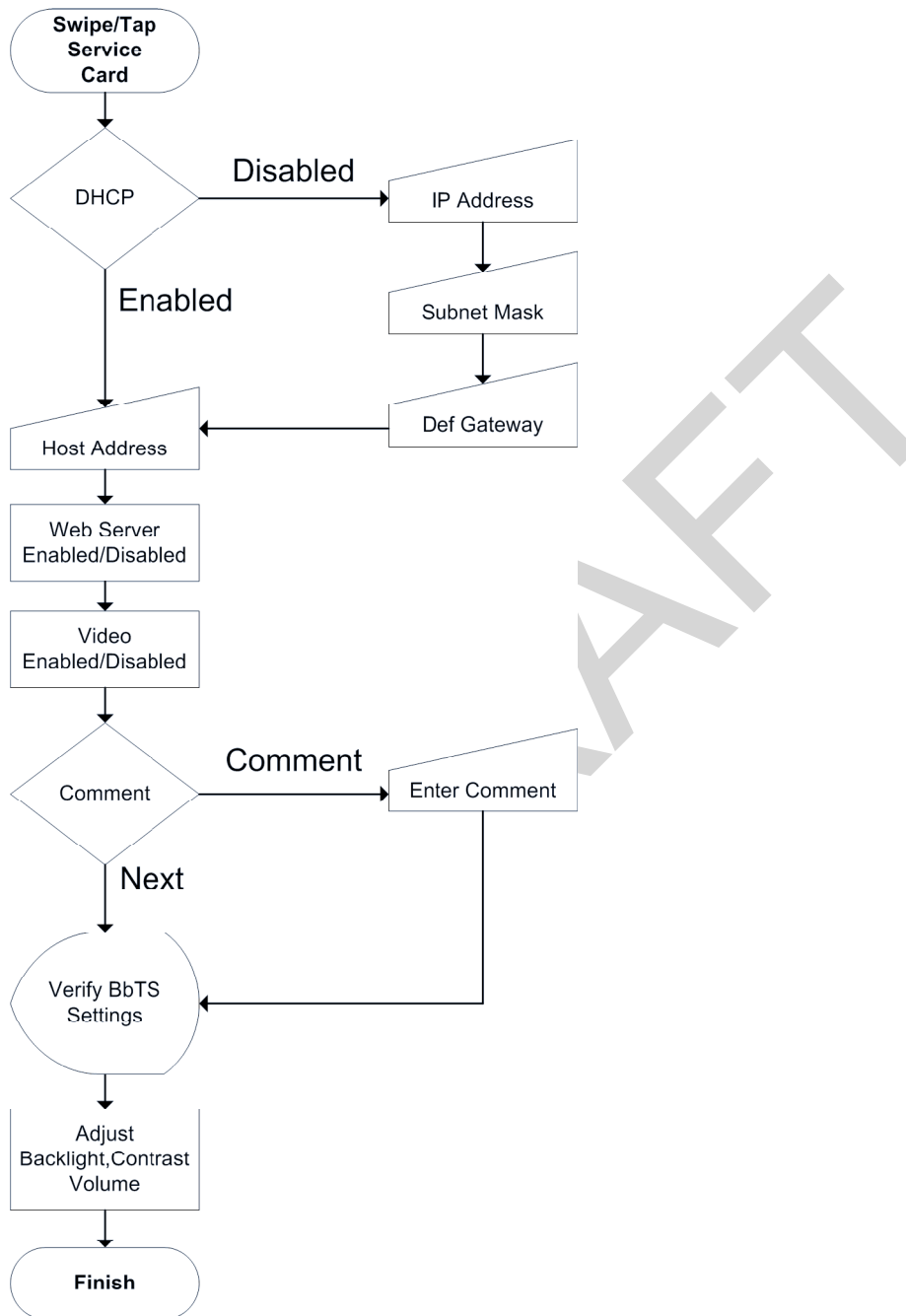| VR4100 (RJ12)	PC Serial Port DB9 Connector	Signal
Pin 1	Pin 5	Ground
Pin 3	Pin 3	Receive (RX)
Pin 4	Pin 2	Transmit (TX)

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Figure 1-6 VR4100 Configuration Flowchart

RESTORE FACTORY DEFAULT SETTINGS

Reset the reader default settings to restore the original password.

To Restore Factory Default Settings

1 Connect a computer to the reader's CONFIG port, and then unplug the MDB cable from the reader.

Disconnecting the MDB cable powers down the reader.

2 Reconnect the MDB cable, and immediately type three ASCII x characters.
Typing "xxx" within 3 seconds of the reader boot process will reset to the default settings.

READER TEST

To test the reader

1   After configuring the reader, connect the other end of the CAT5 network cable into a 10/100 Base-T network jack.

'Out of Service 100': Check with the vending machine manufacturer to see how to configure the machine to support MDB card readers, or possibly, to configure the machine to send cash audit messages to the card reader.

1   Swipe or tap a card, and then press **CANCEL**.

Verify the reader returns to the idle display (Please Swipe or tap xxxxxxxxx Card).

2   Insert coins, and then press the coin return lever on the vending machine.

Verify the reader returns to the idle display.

3   Insert money (coins or bills), and then select a product that costs less than the amount inserted.

Verify the reader displays the proper amount and returns to the idle display.

4   Insert money (coins or bills), and then select a product that costs the exact amount inserted.

Verify the reader displays the proper amount and returns to the idle display.

5   Swipe or tap a card, and then select a product that costs less than the maximum credit amount set in the BbTS host.

Verify the reader displays the proper amount and returns to the idle display.

6   Swipe or tap a card, and then select a product that costs exactly the maximum credit amount set in the BbTS host.

Verify the reader displays the proper amount and returns to the idle display.

7   In the BbTS host, verify the test transactions posted properly for each test case.

READER AUDIT

Reader Audits are implemented at cash collections for reporting collections to the BbTS. The Audit is initiated with a Manager Card swipe or tap. The reader displays Audit messages at a slow rate for manually recording, about 10 seconds per message. Once the entire message cycle is complete, the reader reports the date, manager, and amount of cash transactions to BbTS and resets interval totals to zero. The BbTS Net Sales By Location Report reports the amounts.

A Manager Card must be swiped to initialize audit counts.

Press Cancel to advance messages at a faster pace.
Pressing Cancel at the Cancel Message, aborts the audit -- interval totals are not reset.
Pressing Cancel while swiping or tapping the card allows a normal transaction.

Table 1-2: VR4100 Reader Audit Messages

Rdr Loc xxxxxx	Abbreviated reader name configured in BbTS
mm/dd/yy hh:mm:ss	The current date and time.
CardInt$ $ xxxx.xx	Dollar value of card transactions in current interval, since last audit.
CardInt# xxxxxx	Number of card transactions in current interval, since last audit.
CashInt$ $xxxx.xx	Dollar value of cash transactions in current interval, since last audit.
CashInt# xxxxxx	Number of cash transactions in current interval, since last audit.
CardTot$ $xxxx.xx	Dollar value of card transactions since reader was initialized.
CardTot# xxxxxx	Number of card transactions since reader was initialized.
CashTot$ $ xxxx.xx	Dollar value of cash transactions since reader was initialized.
CashTot# xxxxxx	Number of cash transactions since reader was initialized.
CANCEL? hit cncl	Pressing CANCEL aborts interval resets.

Table 1-3: VR4100 Reader Status Messages

Out of Srvc 900	FLASH memory program error. Return reader to Blackboard for service.
Out of Srvc 901	CRC error on a stored transaction. Return reader to Blackboard for service.
Out of Srvc 001	Complete configuration not received by BbTS. Check reader setup and resend download.
Out of Srvc 002	Off-line transaction storage is full. Bring the reader on-line.
Out of Srvc 100	Complete configuration not received from vending machine Controller. Power cycle vending machine. Verify Controller supports MDB reader.
Reader Disabled	Controller disabled or the machine is out of product.
Card Use Disabled	Reader is off-line and off-line transactions are disabled.
Please Swipe or tap xxxxxxxx card	Reader is ready for use. (xxxxxxxx is the configured BbTS card name.) On-line: "Swipe" is left-justified; Offline: "Swipe" is right-justified.

READER SPECIFICATIONS

Physical Size: **Dimensions: 3.7" W x 5.2" H x 2.1" D**

   Weight: 0.72 lbs

Input Power: **24-34VDC 500mA max**

Operating: **Temperature: 0 - 60+ degrees Celsius**

   Relative Humidity: 0 - 95%, non-condensing

   Altitude: 0 - 10,000 feet

Non-Operating: **Temperature: -20 to 70+ degrees Celsius**

   Relative Humidity: 0 - 95%, non-condensing

   Altitude: 0 - 35,000 feet

This device contains two integrated lithium batteries (BR2032). There is a risk of fire if the battery is replaced with an incorrect type. Proper disposal of a used battery is essential.