

Blackboard

transaction *System*

AC3100

Installation Guide



Blackboard

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Blackboard Inc.	AC3100
	Tested To Comply With FCC Standards
FOR HOME OR OFFICE USE	

This Class A digital apparatus complies with
Canadian ICES-003

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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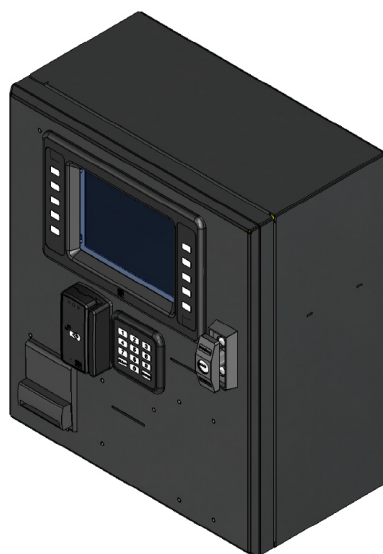
AC3100 INSTALLATION GUIDE

The Blackboard AC3100 enables cardholders to deposit to accounts, check balances, and purchase visitor cards. The user interface utilizes an LCD display, keypad, and a combination mag-stripe and contactless reader. Both the UNIX Edition and Universal Edition versions of the reader support user configurable background color, text color, and banner images. Communication of host downloads, and reader transactions use a maintained Transport Layer Security (TLS) Secure Communication Channel to meet PCI Compliance.

WHAT YOU GET

The following items are included with each AC3100:

- (2) bill boxes (one installed)
- (2) paper rolls
- (4) door lock keys
- (4) bill box key sets
- (1) hardware kit



AC3100 Reader



Spare Bill Box



Paper rolls



Door lock keys



Bill Box keys



Hardware kit

Figure 1-1 What You Get

The AC3100 connects to the Universal Edition Host via 10/100 Base-T or RS-485 through an IP Converter (IPC). In UNIX Edition, the AC3100 optionally connects via RS-485. This unit replaces the Value Transfer Station (VTS) on the UNIX Edition Host, and the Card Management Center (CMC) on the Universal Edition Host.

The AC3100 accepts unattended deposits into existing cardholder accounts, and must be online to be operational.

The following topics are covered in this document:

- [AC3100 Installation](#) (page 1-4)
- [AC3100 Communication Configuration](#) (page 1-8)
- [AC3100 Transaction Process](#) (page 1-13)
- [AC3100 Maintenance](#) (page 1-15)
- [Component Replacement](#) (page 1-20)
- [AC3100 Features & Specifications](#) (page 1-23)

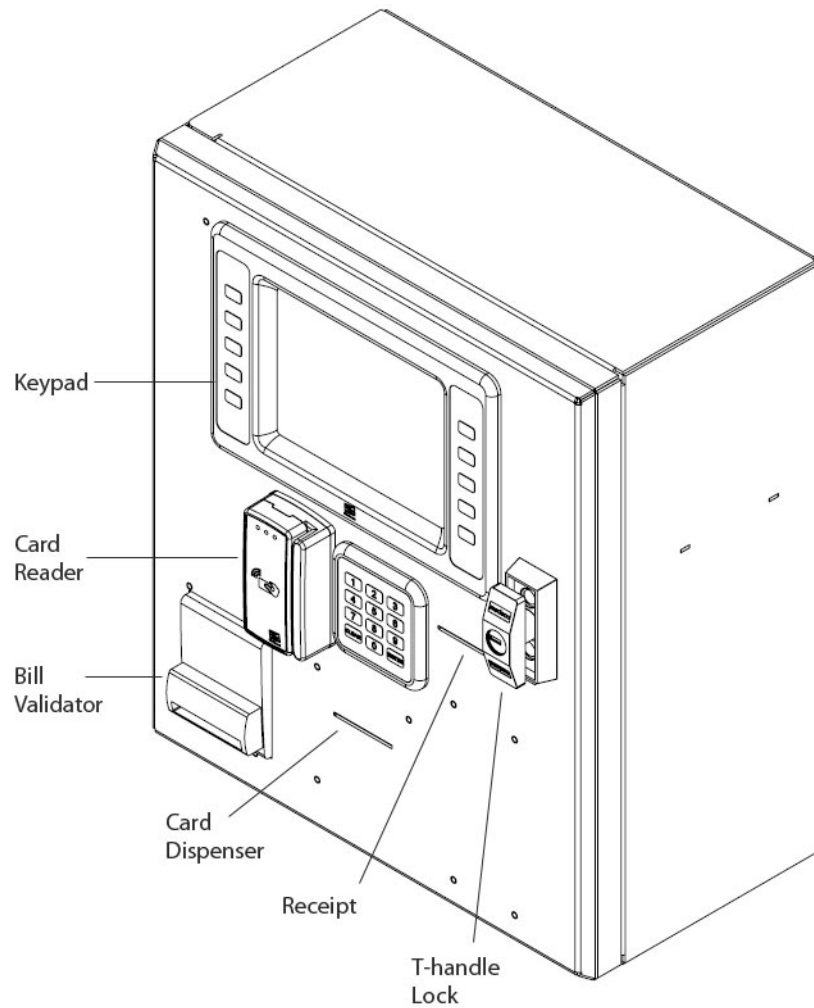


Figure 1-2 AC3100 Reader Details

AC3100 INSTALLATION

Mount the AC3100

The AC3100 can be surface mounted on a wall, recessed into a wall, or mounted on a pedestal. At least four 3/8" diameter metal fasteners should be used to mount the enclosure. The installer is responsible for ensuring the unit is securely installed to prevent theft.

WARNING: Use caution when opening the door without the enclosure secured to a wall or pedestal. The weight of the door when open can cause the unit to tip over and cause injury. Ensure the unit is securely mounted prior to operation.

To mount the AC3100

- 1 Decide where to mount the unit, and how to route power.
Conduit knockouts are located in the junction box located in the lower left of the enclosure. Power wiring must enter the unit within the junction box.
- 2 Decide how to route the network wiring entering the unit.

NOTE: To eliminate risk of electrical shock or injury, do not route the network cable through the junction box.

- 3 Punch or drill mounting holes in either the back or the bottom of the unit, based on the application.
- 4 Punch or drill a hole in the back or bottom of the cabinet to route the network cable.
This hole must be large enough to accommodate the RJ45 connector.
- 5 Securely mount the unit, see: [Figure 1-3 Mounting Illustration](#) (page 5).

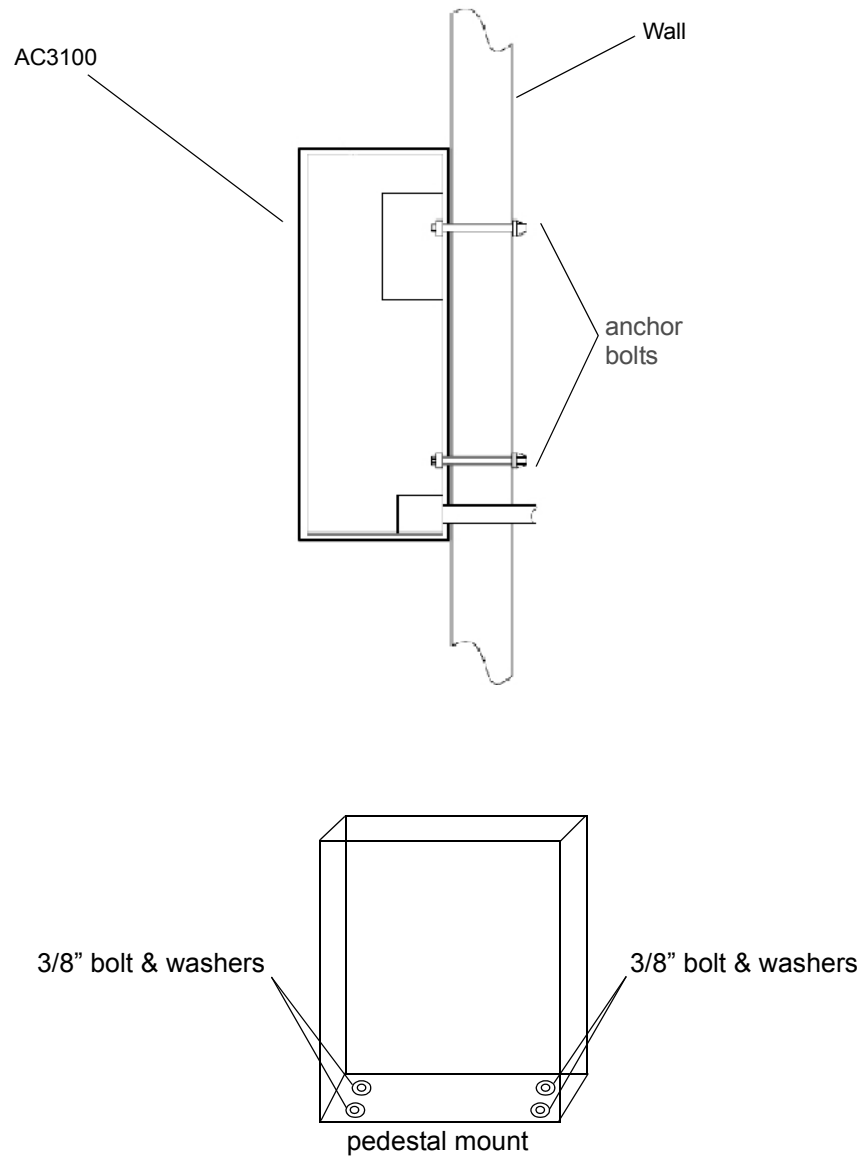


Figure 1-3 Mounting Illustration

Connect the AC3100 to the power source

Connect the unit to 120 VAC @ 60 Hz. Connect only to a 15A maximum branch circuit protection or equivalent. Use a circuit breaker or switch to disconnect power when installing or removing the AC3100.

The AC3100 enclosure is provided with standard 1/2" conduit knockouts in the power junction box. The power requirements are 120VAC @ 60Hz, 1.5 A max (line, neutral, and earth ground). The incoming wiring must meet all applicable electrical codes.

NOTE: Before connecting wiring to the AC3100, ensure that all power has been disconnected or that the circuit breaker is off.

To connect the AC3100 to the power source

- 1 Turn **OFF** the Power Supply.
- 2 Remove the junction box cover in the lower left corner of the enclosure by removing the 2 screws.
- 3 Connect the 120VAC external wiring to the existing wiring in the junction box using the supplied wire nuts.

Wires in the junction box are color coded and labeled as shown below.

Table 1-1: Junction box wiring

Wire Color	Label	Description
Green		Earth Ground
White	N	Neutral
Black	L	Line (hot)

- 4 Re-install the cover, and secure with two screws.
- 5 Turn **ON** the 120VAC power supply or circuit breaker to the reader, and then turn **ON** the AC3100.
The AC3100 powers-up and displays the power-up configuration.

Connect the AC3100 to the network

The AC3100 connects to the Universal Edition Host via 10/100 Base-T or RS-485 through an IP Converter (IPC). In UNIX Edition, the AC3100 optionally connects via the RS-485.

NOTE: When connecting to a Universal Edition Host using RS-485, see: *The AC3100 UE Migration Quick Start Guide* for recommended steps.

The network ports are identified on the LCD/PWA cover located on the door. Based on the application, plug the network cable into the appropriate RJ45 port connection.

NOTE: The RS-485 cable must be terminated with the wiring configuration as shown below.

RS-485 HOST Port and RJ-45 wall plate wiring

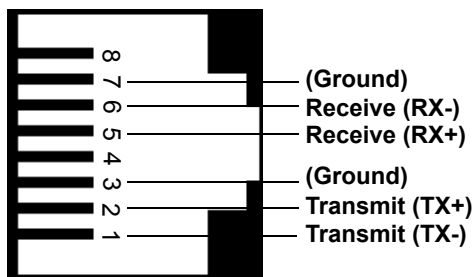


Figure 1-4 RS-485 Reader Pinout

AC3100 COMMUNICATION CONFIGURATION

NOTE: The AC3100 must be configured at the host before continuing. For more information, see: *The Transaction System Administration Guide*, and the *BbTS UNIX Edition Reference Manual*.

The AC3100 must be configured with communication parameters using one of three configuration methods:

- **Front Panel** (initiated by a service card)
See: [Configure Communication using Front Panel & Service Card](#) (page 1-10)
- **RS-232** using a terminal (i.e. computer, HyperTerminal software, and configuration cable)
See: [Configure Communication using RS-232 or Telnet](#) (page 1-11)
- **Telnet** via IP using an ethernet connection.
See: [Configure Communication using RS-232 or Telnet](#) (page 1-11)

NOTE: If this device accepts credit cards, Telnet must be disabled to meet PCI compliance.

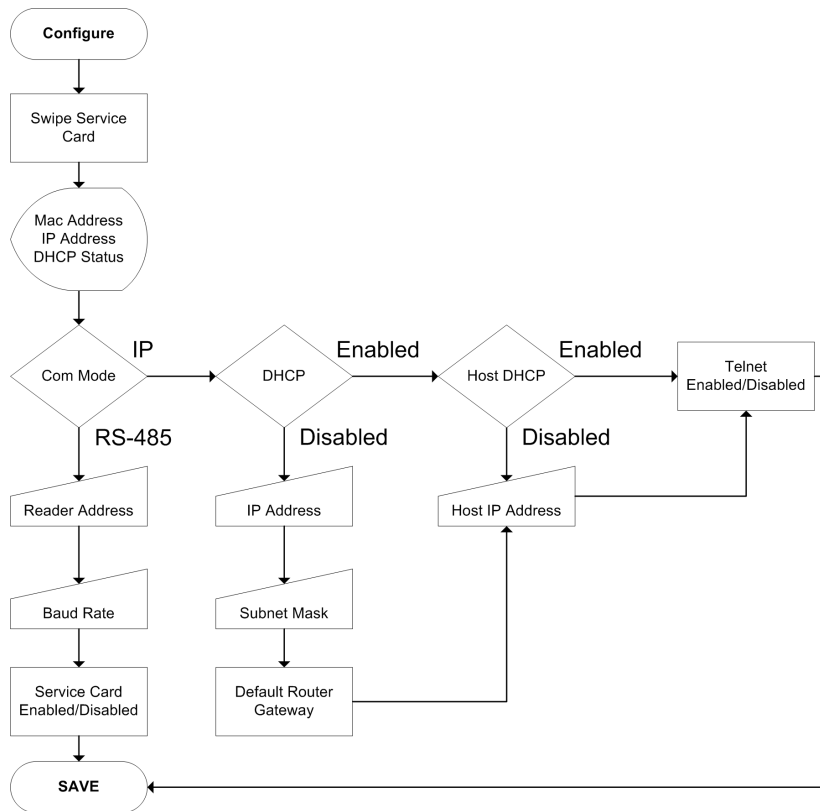


Figure 1-5 Configuration Flowchart

Configure Communication using Front Panel & Service Card

To configure communication using front panel & service card

- 1 Swipe the specially encoded service card, and then press **NEXT**.
- 2 Configure each of the setup parameters, as appropriate, using the keys and display prompts.
ACCEPT - Accept displayed value and advance to next setting.
CHANGE - Change displayed value.
ABORT - Abort configuration process.
*To update the IP address and related information, press **CHANGE** when the parameter displays, and then type in the number using zeroes (0) as placeholders.*
- 3 Press **SAVE** when prompted to save the new settings, and then reboot the AC3100.

NOTE: *Temporarily Out of Service displays until communication is established with the host.*

The 'Temporarily Out of Service' screen displays the out-of-service codes in the lower-left portion of the screen.

```

* 000000
| | | | | |
| | | | | +----- '1' = Incomplete configuration from host
| | | | | +----- '1' = Transaction storage full
| | | | | +----- '1' = Flash erase/programming error
| | | | | +----- '1' = Stored transaction CRC error
| | | | | +----- '1' = Invalid NVRAM transaction storage pointers
| | | | | +----- '1' = Invalid NVRAM accumulators
| | | | | +----- '*' = offline, ' ' (blank) = online
+-----

```

Figure 1-6 Out-Of-Service Codes

Configure Communication using RS-232 or Telnet

To configure communication using RS-232 or Telnet

- 1 If using RS-232, connect a configuration cable between the config port on the AC3100 and the COM port. For cable pinout, see: [Configuration Cable Pinout](#) (page 1-11).

Table 1-2: Configuration Cable Pinout

CONFIG Port (RJ-12)	PC Serial Port DB9 Connector	Signal
Pin 1	Pin 5	Ground
Pin 3	Pin 3	Receive (RX)
Pin 4	Pin 2	Transmit (TX)

- 2 Open a Terminal Program (RS-232 or Telnet).
- 3 Set the following connection settings for **RS-232**.
9600 baud
1 stop
no parity
no flow control
- 4 Login using the default password: **IPdr4U**.
The password is case sensitive.
- 5 Type **config**, and then press **Enter** at the prompt.
Set the configuration settings using the commands listed below.

Command Reference

config	- Configure network parameters
showconfig	- Display current configuration
status	- Display reader status
ping <ip_addr>	- Ping another IP device
netstats	- Display network statistics
netclear	- Clear network statistics counters
password	- Change config utility password
ipreboot	- Reboot reader
exit	- Log out of session

Type command, followed by 'Enter' key >

Figure 1-7 Configuration Command Reference

AC3100 TRANSACTION PROCESS

NOTE: Load paper and cards prior to performing transactions, see: [AC3100 Maintenance](#) (page 15).

Perform test transactions to verify proper operation of deposits, visitor card purchases, and account balance checks.

Deposit Funds to an Existing Account

To deposit funds to an existing account

- 1 Select **Deposit Funds** from the on-screen menu.

NOTE: The actual verbiage of this prompt is determined by the host configuration.

- 2 Follow the on-screen prompts to complete the transaction.

Purchase a Visitor Card

To purchase a visitor card

- 1 Select **Purchase Visitor Card** from the on-screen menu.

NOTE: The actual verbiage of this prompt is determined by the host configuration.

- 2 Follow the on-screen prompts to complete the transaction.

Check Account Balance

To check account balance

- 1 Select **Check Account Balance** from the on-screen menu.
- 2 Follow the on-screen prompts to complete the transaction.

AC3100 MANAGER CARD FUNCTIONS

Certain Cards can be configured as Manager Cards in BbTS. Inserting/removing a valid Manager Card when the AC3100 is in the idle mode (not in a transaction sequence), displays the manager card menu.

Manager functions:

Display/print transaction totals

This option displays and prints transaction totals. It is intended to be used to create a local Audit report on the transactions each time the bill box is emptied or swapped out with an empty one.

When totals display on the LCD, the manager has the option of clearing the interval totals. If the bills are being removed, it is recommended to clear the totals and attach a copy of the Audit printout with the bills for later audit.

These totals can be displayed/printed and not cleared if desired. If multiple copies of the audit printout are desired, the totals can be displayed/printed several times and only clearing them the last time.

Terminal setup

This option is used to adjust the display brightness and the volume of the tones.

Display device status information

This option displays the AC3100 status information. The display includes information on the communication status with the host (on-line or off-line, etc.), any out-of-service conditions and status of the printer, bill validator, and card dispenser.

Perform diagnostic functions

This option is used to perform diagnostic functions on the LCD, card dispenser, printer, local alarm and door switch, and the keypads.

AC3100 MAINTENANCE

AC3100 maintenance tasks include:

- [Fill the Card Dispenser](#) (page 1-15)
- [Empty the Bill Box](#) (page 1-15)
- [Install the Paper Roll](#) (page 1-17)
- [Replace the Power Supply Fuses](#) (page 1-20)

NOTE: The AC3100 contains a configurable local alarm. The alarm sounds when the door is opened without an authorized manager card swipe, see: [AC3100 Components](#) (page 1-21).

Fill the Card Dispenser

To fill the card dispenser

- 1 Remove the metal H shaped weight from the card dispenser chute.
For location, see: [AC3100 Components](#) (page 1-21).
- 2 Load the cards into the card dispenser chute, and then replace the metal weight on top of the stack of cards.

NOTE: Use only .030" PVC cards. The dispenser can hold approximately 190 cards.

Empty the Bill Box

Bills can only be removed from the Bill Validator by removing the Bill Box.

For location, see: [AC3100 Components](#) (page 1-21).

NOTE: Although the Bill Validator can hold up to 1000 bills, a maximum currency value can also be set. Once either limit is reached, cash deposits are no longer allowed.

There are two keys used with the Bill Box:

- **A042 Key** - Opens the Bill Box. (All Keyed alike)
- **A043 Key** - Releases the Bill Box from the Bill Validator. (All keyed alike)

To empty the Bill Box

- 1 With the enclosure open, insert the **A043** key, and then turn key counter-clockwise to unlock the Bill Box from the Bill Validator.
- 2 Press the two wire releases to disengage the latch, and then pivot the Bill Box away from the Bill Validator, by gently pulling at the top.

*The bill box can now be lifted straight up to disengage the hinge pins from the Bill Validator bracket.
The wire releases free the Bill Box from the cassette.*

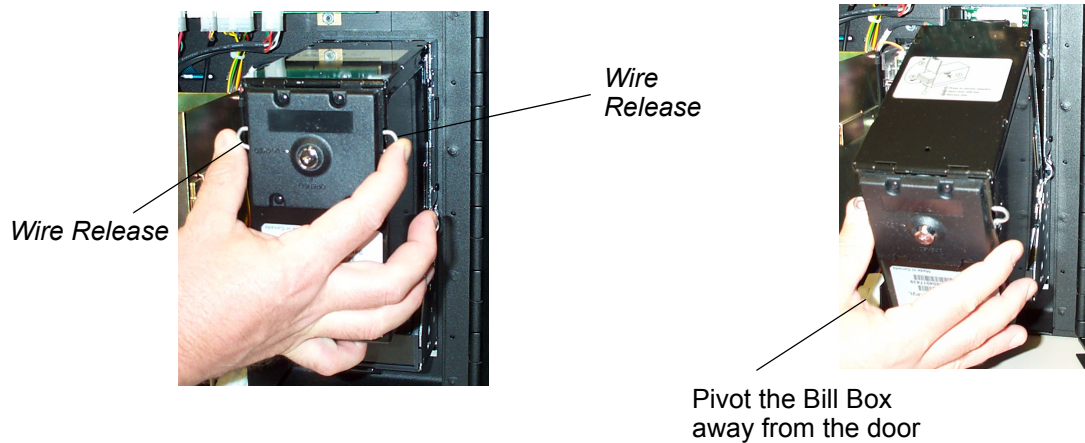


Figure 1-8 Bill Box Removal

- 3 Insert the **A042** key into the lock located in the rear of the Bill Box, and then turn counter-clockwise.
- 4 Open the Bill Box door.
Remove the currency.
- 5 To reinstall, engage pivot pins, and then push forward until the Bill Box latches.

Install the Paper Roll

NOTE: When installing a paper roll for the first time, the tape securing the print head to the printer body must be removed and discarded. The tape protects the print head from damage during shipping.

A Low Paper sensor located on the printer assembly alerts the administrator when this condition occurs. This information can be sent to a log file. The paper can be changed without access to the cash.

The AC3100 printer uses thermal paper with the following specifications:

- 80mm-wide
- 20# or 21# paper weight
- Maximum 6" OD
- 1" ID core
- Thermally coated side OUT

Table 1-3: Paper Roll Sources

Supplier	Part Number	Phone Number(s)
Communication Paper Ltd. Inc.	CP-80715 (Superior Grade 20#)	phone (888) 327-2737 fax (908) 713-6313
Current Components	TP80-6-354	(800) 342-9798
Max International	T2318645-8	(800) 233-0222 ext. 105
Printing Technologies	TTP7080	(800) 428-3786
Swecoin	SWE80-150	(401) 734-6709

To install the paper roll

- 1 Turn the new paper roll as shown.

Insert the paper roll into the printer with the temperature-sensitive side up.

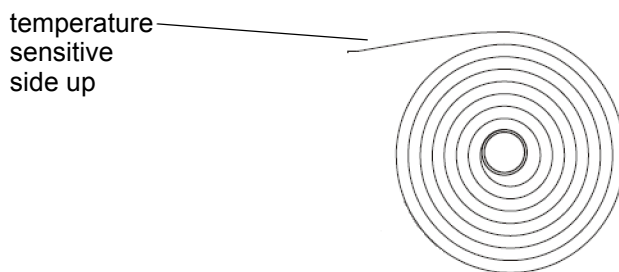


Figure 1-9 AC3100 Paper roll

- 2 Remove a full turn of the paper from the new paper roll.

NOTE: This is important since the outer end of the paper is usually fixed to the roll with glue or self-adhesive substance that can cause a paper jam or print head damage.

- 3 Cut the paper off at a 70 to 90 degree angle as shown.

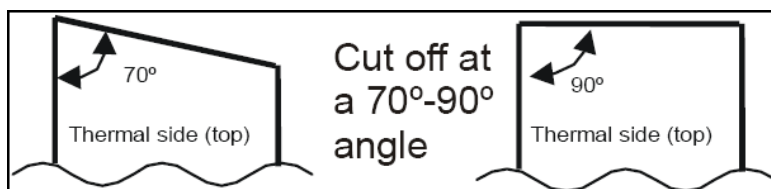


Figure 1-10 Paper Roll Cut-off

NOTE: If the paper is cut in the opposite direction to what is shown in Figure 1-10, the printer may not detect the paper.

- 4 Insert the paper through the paper entry opening at the back of the printer.
The printer feeds, cuts and ejects a printout, and then goes on-line.

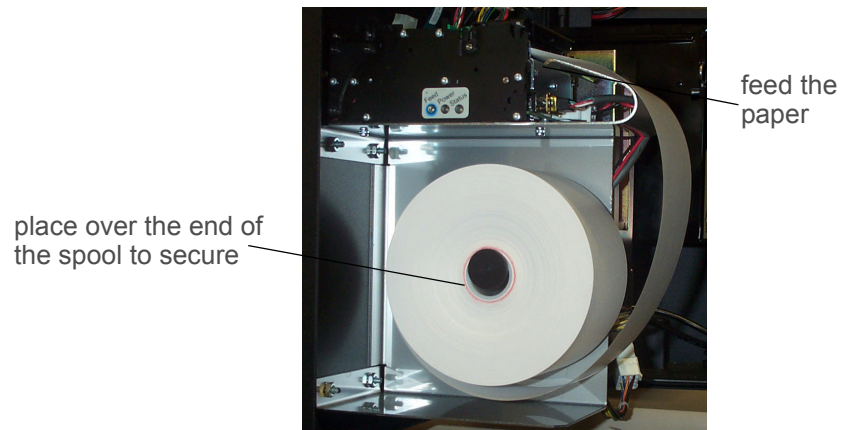


Figure 1-11 Paper Entry Opening

COMPONENT REPLACEMENT

Replace the Power Supply Fuses

WARNING: To eliminate risk of electrical shock or injury, it is recommended that the main 115VAC supply or breaker be turned off and the power switch on the AC3100 power supply is turned off!

The AC3100 uses a single 1A 250v fuse for input power and three 3A 250v fuses for output power. The power input fuse is located directly below the on/off power switch. The output fuses are located across the bottom of the power supply module. The fuse on the left is for +12v output which supplies power to the electronics board, LCD, and mag-stripe reader. The center fuse is +24v power for the printer. The right fuse is +24v power for the bill validator and card dispenser. If a peripheral is not functioning, check the fuse and replace if necessary.

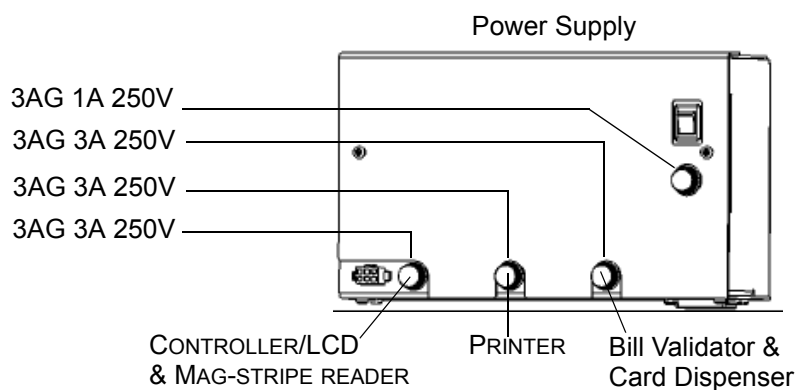


Figure 1-12 AC3100 Fuse Locations

FIELD REPLACEMENT COMPONENTS

When ordering replaceable parts for the AC3100, refer to the table below and contact Blackboard.

Table 1-4: AC3100 Replacement Parts

MSC Part Number	Description
MSC/BVACUS	Replacement Bill Validator for United States currency
MSC/BVACCA	Replacement Bill Validator for Canadian currency
MSC/RPAC	Replacement Printer
MSC/CDAC	Replacement Card Dispenser
MSC/RDRAC2	Replacement Contactless/Mag-stripe reader

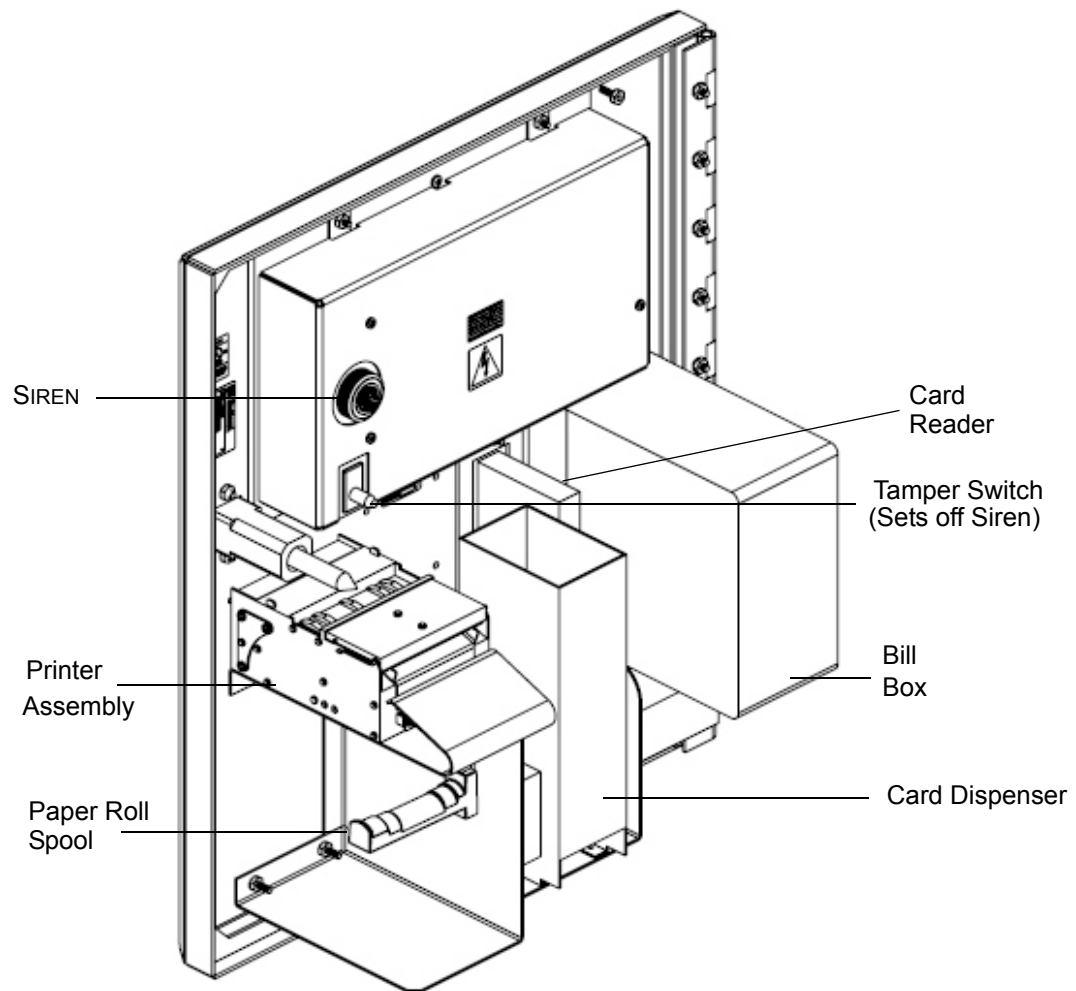


Figure 1-13 AC3100 Components

LOCK LUBRICATION

- The AC3100 requires lubrication of the lock mechanism
 - Apply lubricant anytime an increase in torque is required to turn the lock
 - Lubricate the threaded rod on the lock mechanism with a silicone-based grease (comparable to SIL-GLYDE)
 - Apply the grease to the first 3 threads at the end of the rod
- Lubricate the lock cylinder with a spray type lubricant (Teflon based such as Tri-Flow)
 - Close the door of the AC3100 to avoid any overspray coming into contact with electrical components
 - Position the spray nozzle close to the lock cylinder, and then apply a small amount
 - Install the key in the lock cylinder, and then turn several times to disperse the lubricant
 - Wipe off any excess from the lock handle and surrounding area
- Lubricate the hinge with a spray type lubricant (Teflon based such as Tri-Flow)
 - Position the spray nozzle close to the hinge and apply a small amount, avoid any overspray coming into contact with electrical components

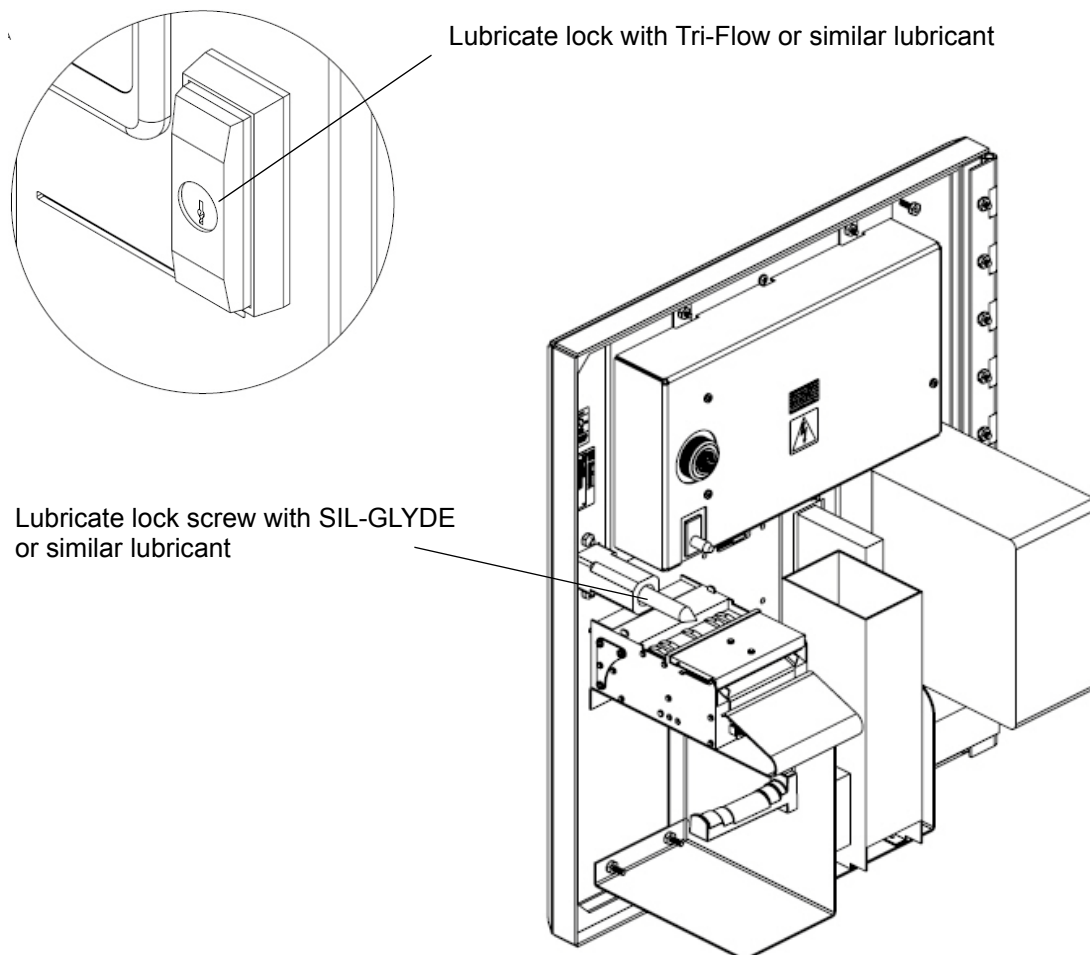


Figure 1-14 Lock Lubrication

AC3100 FEATURES & SPECIFICATIONS

AC3100 Features:

- Accepts unattended deposits
- Purchase and dispense visitor cards
- Check account balances
- Print receipts
- 8.4" color LCD display
- Configurable text colors, background colors, and color banners
- Optionally charge a fee for card purchases
- Configurable to accept \$1, \$5, \$10, \$20, \$50, \$100 bill denominations
- Accepts Credit cards (Universal Edition only)
- Local audit report capability
- Remote software downloads
- Lockable bill boxes (load printer paper or cards without access to cash)
- Advanced Encryption Standard (AES) for IP
- Local tamper siren
- Contact your Account Manager for a template to design a front cover decal used for marketing

AC3100 Specifications:

<i>Physical Size:</i>	18"W x 21"H x 9.775"D (10.145"D including bezel) 80 pounds
<i>Input Power:</i>	120 VAC Max @ 60Hz, 1.5 amp max
<i>Operating:</i>	Temperature: 0 to +50 degrees Celsius Relative Humidity: 0 to 96 percent, non-condensing Altitude: 0 - 10,000 feet
<i>Non-Operating:</i>	Temperature: -20 to +70 degrees Celsius Relative Humidity: 0 to 95 percent, non-condensing Altitude: 0 - 35,000 feet

NOTE: This device contains an integrated lithium battery. There is a risk of fire if the battery is replaced with an incorrect type. Proper disposal of a used battery is essential. Please follow the manufacturer's instructions.

BBTS UNIVERSAL EDITION CHANGES

When converting an AC3100 from Unix Edition to Universal Edition, the following items are affected:

- **Privileges** - Do not function the same as they do in Unix Edition, every cardholder that uses a reader in a particular Profit Center is required to use the same fund Autostored Value Order
- **Plan Level Discounts** - Do not currently work in UE
- **Shadow Accounts** - Do not currently work in UE