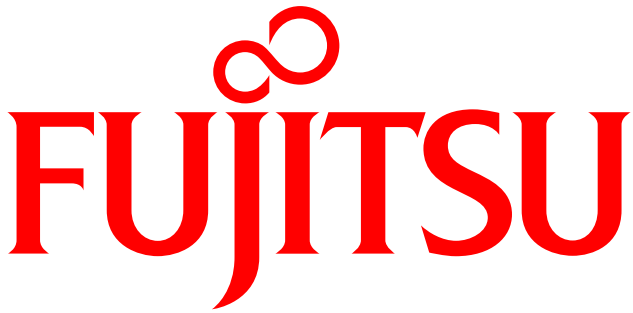


CASHCODE Bill Acceptor Service Guide for U-Scan

ST, SM, and MSM Models

Version: North American Version
Document Update number: V5
Date: January 19, 2006

U-SCAN®

Document Updates

Version 5:

- Made larger chip replacement procedure for the ST model more generic.

Version 4:

- Added OSA driver information to the “Introduction” section.

Version 3:

- Added CASHCODE SM remote download process to the “Additional Information” section (page 22).
- Added DLL and firmware version information for CASHCODE SM with ST emulation to the Introduction (page 2).

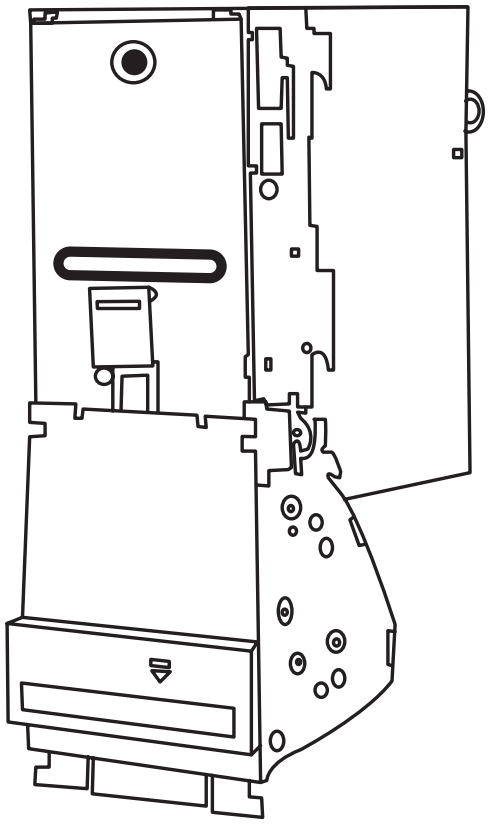
Version 2:

- Added CASHCODE SM information.
- Added note on remote download information.

Version 1:

- Document creation.

CASHCODE Bill Acceptor



Features:

- Optical sensors
- Four-way bill acceptance (face-up, face-down, etc.)
- 96% validation rate
- Removable vault (capacity of 400 bills)

Models:

Check the label on the CASHCODE to identify the model in your store. All models use the same vault and cables.

- **CASHCODE ST**
  - Older model
  - EPROM chip for firmware upgrade
- **CASHCODE SM** or **MSM**
  - Memory stick for firmware upgrade
  - Remote firmware upgrade is possible in OSA stores and in stores with Automated Software Maintenance (ASM) or that allow dial-in access.

Technical Specifications

Environment

- Temperature: 32°F to 122°F (0°C to 50°C)

Power Supply Requirements

- Input: 85 to 265 V ac; 0.3 A; 50 to 60 Hz
- Output: 12 V dc; 0.9 A **OR** 2.5 A

Communication

- 18-pin to 25-pin cable to DIGI Box or Edgeport

U-Scan Specific Information

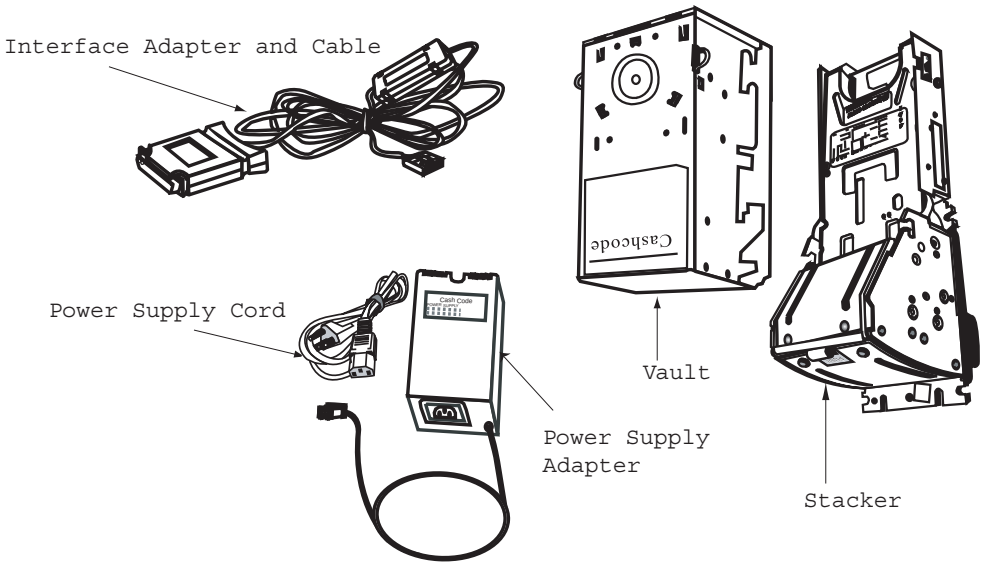
- DLLs - non-OSA systems:
  - — ST and SM (firmware US 3611 or CA 3614-20 for ST emulation): **CASHCODE.DLL**
  - — SM (all other firmware versions) and MSM: **CCMFL.DLL**OSA systems: **Cashcode**
- Drivers - OSA systems
  - — ST and SM (firmware US 3611 for ST emulation): **BillAcceptor.CashCode**
  - — SM (all other firmware versions): **BillAcceptor.CashCodeSM**

NOTE: *As of OSA build 221, the ST emulation stick should no longer be used in the CASHCODE SM. The driver must be set to* ***BillAcceptor.CashCodeSM*** *in OSACheck. Refer to the* ***Meijer System Description*** *for information on using OSACheck.*

Components of the CASHCODE

The CASHCODE is made up of the following components:

- Vault
- Stacker (ST, SM, or MSM)
- Power supply adapter (0.9 A or 2.5 A)
- Power cable
- Communication cable



Troubleshooting the CASHCODE

1. Follow the Testing Procedure

See “Testing the Bill Acceptor.”

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2. Inspect the Power

1. Ensure that the power supply cable is connected to the power supply adapter. The green LED power indicator must be on when using a 0.9 A power supply.

   NOTE: *There is no green LED on the 2.5 A power supply.*

2. Ensure that the power cable is connected to the device.
3. Ensure that the red LED at the front of the device is on.
4. Ensure that the power supply cable is connected to the power bar.
5. Cycle the power by unplugging the power supply and then plugging it back in.

---

3. Inspect the Data Cable

NOTE: *The data cable for the Bill Acceptor has a larger connector than the other cables.*

1. Ensure that the data cable is connected to the device.
2. Ensure that the data cable is connected to Port 8 on the Edgeport.

---

4. Inspect for Bill Jams

1. Unplug the power supply to disconnect the power to the device.
2. Remove the vault by pressing on the clips on each side of the vault and pulling the vault forward.
3. Turn the black knob to open the vault.
4. Inspect the inside of the vault for bill jams.

5 Pull on the metal pusher plate to ensure that it is free from pieces of torn bills.

6 Open the sensor housing doors by pressing the black button on the housing.

7 Inspect for bill jams inside the stacker.

5. Clean the Sensors and Rollers

NOTE: *Do not use alcohol to clean the sensors or rollers.*

1 Disconnect the power at the power supply.

2 Open the sensor housing doors (clamshells) by pressing the black button on the housing.

3 Clean the sensors inside the housing with a damp lint-free cloth.

4 Clean the rollers (small wheels) thoroughly with a damp lint-free cloth.

Troubleshooting the CASHCODE *(Cont'd)*

6. Inspect the Metal Tab on the Circuit Board Cover

1 Disconnect the power at the power supply.

2 Remove the vault.

3 Pull the right side of the circuit board cover to remove it from the stacker.

4 Ensure that the metal tab on the back plate is properly secured.

5 Ensure that the metal tab is at a 90° angle with the plate.

---

7. Inspect the Ribbon Cables

1 Disconnect the power at the power supply.

2 Remove the vault.

3 Remove the circuit board cover.

4 Check all the ribbon cables on the circuit board for any signs of damage.

Troubleshooting the CASHCODE *(Cont'd)*

8. Check the EPROM Version (ST Model Only)

NOTES: *The EPROM is the small chip on the circuit board.*

The SM model uses a memory stick instead of an EPROM chip.

1 Disconnect the power at the power supply.

2 Remove the vault.

3 Remove the circuit board cover.

4 Check the EPROM version number. For the latest EPROM version, contact the U-Scan Support Center.

5 If necessary, see "Additional Information" to change the EPROM.

---

9. Check the DIP Switches

NOTE: *DIP Switches:*
ON = Right
OFF = Left

1 Disconnect the power to the device.

2 Remove the vault.

3 Remove the circuit board cover.

4 Ensure that the DIP switch settings for the **CASHCODE ST** are:
Bank 1:
DIP switches 1,2,3, and 4, **ENABLED**.
DIP switches 5,6,7, and 8, **DISABLED**.
Bank 2:
3,4 are **ENABLED**.
DIP switches 1,2 are **DISABLED**.

OR

Ensure that all DIP switches for the **CASHCODE SM OR MSM** are **ENABLED** (ON).

Additional Information for the CASHCODE Bill Acceptor

This section contains the following information:

CASHCODE LED Status

1 If the Bill Acceptor is enabled in the **Device Tester** and the red LED on the front of the device is on, insert a bill.

2 Remove the bill when the red LED turns off.

NOTE: *If you insert the bill and the LED does not turn off, there is a communication problem.*

3 Count the number of times the LED flashes.

NOTE: *When the diagnostic process is complete, the LED becomes steady. Do **NOT** count this as a flash.*

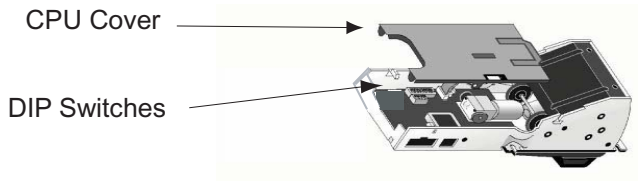
4 Locate the problem in the table below.

CASHCODE ST or SM

Number of Flashes	Problem
1	Cassette is not present.
2	Stacking motor is not rotating.
3	Cassette is full.
4	Mechanical jam in cassette.
5	Stacking motor electrical overload.
6	Optical sensor failure.
7	Magnetic sensor failure.
8	Transport motor is not moving.
9	Speed of transport motor is too high.
10	Transport motor electrical overload.
11	Bill pathway security latch is open.
12	Bill is in the entry slot of the cassette and the credit is not issued.

CASHCODE DIP Switch Settings

The DIP switches on the CASHCODE Bill Acceptor are covered by the vault or stacker. There are two banks of DIP switches to set.



CASHCODE ST

The standard DIP switch settings are:

Bank 1:
DIP switches 1,2,3, and 4, **ENABLED**.
DIP switches 5,6,7, and 8, **DISABLED**.
Bank 2:
DIP switches 1,2 are **DISABLED**.
3,4 are **ENABLED**.

NOTE: *If a store accepts **$50 bills**, DIP switch 1 on Bank 2 is ENABLED. See "Setting $50 Bill Acceptance" on page 16 for more information.*

Refer to the table below for a list of factory default DIP switch settings and functions for the **CASHCODE ST**.

BANK 1

DIP	State
1	4 Pulse $1 Enabled
2	OFF
3	$1 Enabled
4	$5 Enabled
5	4-Way
6	Down Stacker
7	Fast Pulse
8	All Interfaces

BANK 2

DIP	State
1	$50 Disabled
2	$100 Disabled
3	High Security
4	BDP OFF

CASHCODE SM and MSM

For the CASHCODE SM and MSM, all DIP switches must be set to **ENABLED**. Refer to the table below for a list of DIP switch functions.

BANK 1

DIP	Function
1	$1 Enabled
2	$2 Enabled
3	$5 Enabled
4	$10 Enabled
5	$20 Enabled
6	$50 Enabled
7	$100 Enabled
8	Reserved

BANK 2

DIP	Function
1	Four-Way Enabled
2	Stacker Up Enabled
3	9600 bps Enabled
4	CCNET ON Enabled

Upgrading the CASHCODE ST Memory (Chip US6R_S50 or Later)

Perform the following steps to upgrade the CASHCODE ST so that it will accept the new US currency.

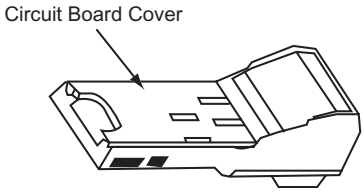
Requirements:

- CPU chip US6R_S50 or later
- ESD wrist strap
- PLCC chip extraction tool

1 Disconnect the power and communication cables from the Bill Acceptor.

2 Remove the cassette from the stacker.

3 Lift the metal circuit board cover to remove it.



Bill Acceptor Stacker

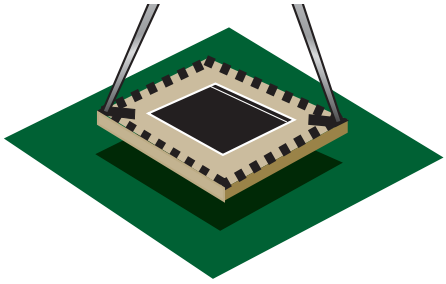
4 Put on the ESD strap and attach the other end to an **electrically grounded** metal object.
EXAMPLE: Metal water pipe.

NOTE: *Do **NOT** attach the ESD strap to any part of the U-Scan casing.*

5 Locate the larger chip.

6 Note the location of the beveled (slanted) edge on the chip.

7 Locate the corner slots in the socket and insert the hooks of the extraction tool.



8 Gently squeeze the chip extractor and lift the chip from the socket.

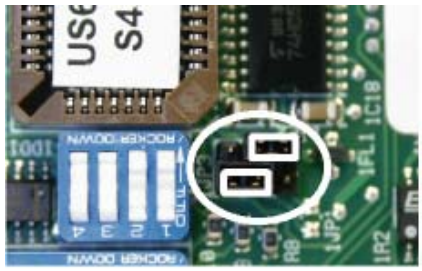
NOTE: *Only use the extraction tool to remove chip. Other tools can damage the socket.*

9 Align the beveled edge on the new chip with the notch in the socket.

10 Place the new chip in the socket and press it into place.

NOTE: *DO NOT APPLY EXCESSIVE FORCE. DO NOT ALIGN THE CHIP BASED ON THE DIRECTION OF THE LABEL.*

11 Set the jumpers on the circuit board as shown below.



12 Ensure that the DIP switches are set up properly:

BANK 1 (8 Switches)

DIP	State
1 - 4	Enabled
5 - 8	Disabled

BANK 2 (4 Switches)

DIP	State
1	Enabled
2	Disabled *Enabled if the store accepts $100 bills
3	Enabled
4	Enabled

13 Replace the circuit board cover.

14 Replace the cassette.

15 Connect the power and communication cables.

16 Access the **Device Tester**.

17 Select the **Bill Acceptor** tab.

18 Test that the Bill Acceptor accepts several denominations.

Setting $50 Bill Acceptance

DIP switch 1 on Bank 2 should be set to 1 (**ON**). This allows the device to accept $50 bills. The registry setting must also be changed.

To Change the Registry Setting

1. Go to **Start > Run**.
2. Enter **regedit**.
3. Click **OK**.
   The **Registry Editor** appears.
4. Go to **HKEY_ CURRENT _USER \Software\OptimalRobotics\Devices\BillAcceptor**.
5. Click **AllowedDenominations**.
6. Modify the **Value data** text box to reflect the denominations accepted in the store.
   EXAMPLE: 1, 5, 10, 20, 50. (By default, the first four numbers are displayed. Add **50** to the default values.)

Changing the EPROM Chip (CASHCODE ST Only)

Perform this procedure to change the EPROM chip and update the CASHCODE firmware.

***CAUTION**:* To prevent damage to components, disconnect the DC power supply or the AC power cord.

Required Tools

- Surface-mount chip extractor (Diebold part number 19-038127-000A)

NOTE: *DO NOT use any other tool to remove the EPROM.*

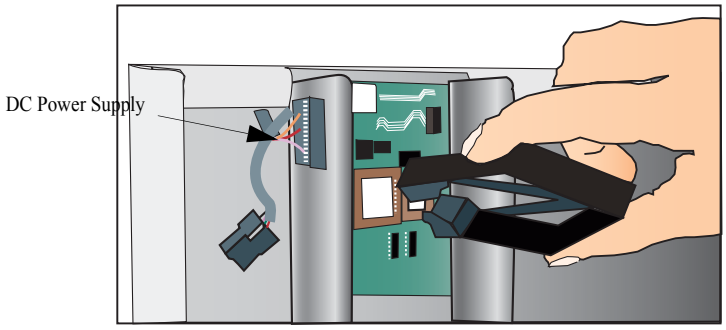
To Change the EPROM Chip:

1 Disconnect the DC power supply from the side of the Bill Acceptor.

2 Remove the CASHCODE vault.

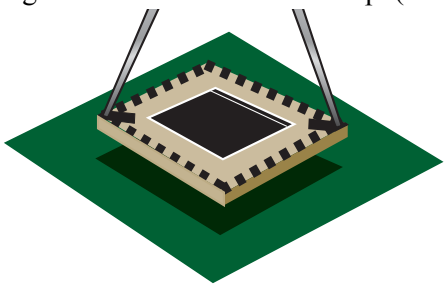
3 Remove the back plate to uncover the circuit board.

4 Remove the *smaller* chip. (See the diagram below.)



a Insert the chip extractor into the notches on the upper left and lower

right corners of the smaller chip. (See the diagram below.)



b Carefully remove the chip.

5 Insert the new EPROM chip, with the beveled side of the EPROM chip to your right. The chip should click into place.

6 Insert the back plate.

7 Insert the CASHCODE vault.

8 Connect the AC power supply to the CASHCODE.

9 Access the **Device Tester**.

10 Test the device with different denominations.

Changing the Memory Stick (CASHCODE SM and MSM)

The CASHCODE SM Bill firmware can be upgraded through a U-Scan software update. However, technicians may have to change the memory stick to upgrade the firmware for the CASHCODE SM Bill Acceptor if the remote software upgrade is unsuccessful.

Single-Download or Multi-Download Memory Stick

Technicians will be provided with either a single-download or multi-download memory stick. **Read the instructions below carefully to ensure that you perform the correct steps based on your memory stick.**

Single-Download Memory Stick

- Use a different memory stick for each CASHCODE you upgrade.
- Leave the memory stick in the CASHCODE.

Multi-Download Memory Stick

- Use the same memory stick to upgrade all the CASHCODES in a cluster.
- Ensure that the CASHCODE works after you remove the memory stick.

1 Stop the U-Scan software.

a At the Customer Station, locate the Computer keyboard.

b Press **ALT+TAB** and select the **Robot Control** window.

c Touch **Stop Robot**.
The **Launchpad** appears.

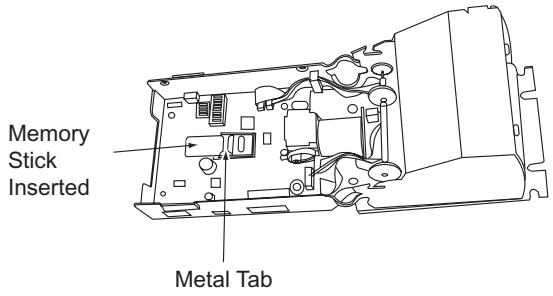
2 Disconnect the power and communication cables from the side of the CASHCODE.

3 Remove the vault.

4 Remove the circuit board cover.

5 Locate the memory stick.

6 Slide the metal tab up toward the OPEN position to unlock the memory stick slot.



7 If there is a memory stick present in the slot, lift and remove the memory stick.

8 Insert the new memory stick.

9 Slide the new memory stick into the slot and set the memory stick down against the circuit board.

10 Slide the metal tab down toward the CLOSED position to lock the memory stick in place.

11 Replace the circuit board cover.

12 Replace the vault.

13 Connect the power cable. When the download process starts, the LED flashes red and green.

14 Wait approximately 1 minute for the LED to come on solid green. This indicates that the download was successfully completed.

NOTE: *If the CASHCODE LED emits a series of green flashes followed by long red flash, refer to "LED Indications After Software Upgrade (CASHCODE SM)" on page 21 to identify and troubleshoot the problem.*

15 If you are using a multi-download stick for the cluster, follow the steps below:

a Disconnect the power cable from the side of the CASHCODE.

b Remove the vault.

c Remove the circuit board cover.

d Slide the metal tab down to the OPEN position.

e Lift and remove the memory stick.

f Press the metal tab and slide it up into the CLOSED position.

g Replace the circuit board cover.

h Replace the vault.

i Connect the power cable.

16 On the **Launchpad**, touch **Device Tester**.

17 Enter the password (**1379**) and touch **OK**.

18 Select the **Bill Acceptor** tab.

19 Test the CASHCODE.

20 If you are using a multi-download stick for the cluster, repeat these steps at the remaining Customer Stations.

LED Indications After Software Upgrade (CASHCODE SM)

Number of Flashes and LED Color	Problem	Possible Solution
1 green on red	COM port CRC error Software may not be suitable for CCNET download	• Repeat the download procedure. • Contact the U-Scan Support Center. The software may not be suitable for memory stick download.
2 green on red	Memory stick CRC error.	• Disconnect the power cable from the side of the CASHCODE. • Remove and then re-insert the memory stick. • Connect the power cable. • If the issue persists, use a different memory stick.
3 green on red	Incorrect data in memory stick	• Make sure that you are using the correct type of memory stick. • Make sure that you are using the correct software type for the CASHCODE.
4 green on red	Memory stick is not present	• Ensure that the memory stick is inserted properly.
5 green on red	Wrong type of memory stick	• Make sure that you have the correct type of memory stick.
6 green on red	Download error	• Disconnect the power cable from the side of the CASHCODE. • Remove and then re-insert the memory stick. • Connect the power cable. • Repeat the download procedure.
7 green on red	Operation error of memory stick interface	• Disconnect the power cable from the side of the CASHCODE. • Remove and then re-insert the memory stick. • Connect the power cable. • If the issue persists, use a different memory stick.

CASHCODE SM Remote Download Process

The CASHCODE SM firmware version can be upgraded remotely in the following instances:

- Stores with ASM: Firmware can upgraded through a software update package
- Stores that allow dial-in: Fujitsu can dial in to a store and prepare the store for the download.
- OSA stores: Firmware can be upgraded through a software update package.

The process performed by ASM in stores with ASM to download the firmware is outlined below. **No action is required by field engineers.**

1 ASM copies the Intel HEX file containing the upgrade to **C:\Robot\Data**.

2 ASM sets the registry setting **HKEY_CURRENT_USER \ Software \ OptimalRobotics \ Devices \ BillAcceptor \ DownloadName** to the full path of the upgrade file. EXAMPLE: **C:\Robot\Data\SM-USXXXX.hex**, where "XXXX" represents the firmware version.

3 Every time the Bill Acceptor starts, it checks the **DownloadName** registry setting. If this setting is set to anything other than **NONE**, it checks the path specified for the update file.

4 When the Bill Acceptor locates an update, the update is converted into binary format and downloaded to the device.

5 Once the download is **successfully completed**,

a The Bill Acceptor driver sets the **DownloadName** setting to **NONE**.

b A file named **BADNLD_XXXXXXXX.ok** (where "XXXXXXXX" represents the Machine Name) is created in **C:\Robot\Data**.

6 If the download **fails**,

a The **DownloadName** setting does not change to **NONE**. The device will attempt to download the firmware again the next time it starts.

b A file named **BADNLD_XXXXXXXX.nok** (where "XXXXXXXX" represents the Machine Name) is created in the folder on the Customer Station where the download file was stored. This file contains one or two lines explaining why the download failed.

Manually Applying the CASHCODE SM Firmware Upgrade HEX File

Follow the steps below to upgrade the CASHCODE SM firmware without changing the memory stick in stores that do not have ASM or if the ASM upgrade process fails.

1 Stop the U-Scan software.

a Locate the Computer Keyboard.

b Press **ALT+TAB** and select **Robot Control**.
The **Robot Control** window appears.

c Touch **Stop Robot**.
The **Launchpad** displays.

NOTE: *If the **Eventlog View** screen appears with a warning or error message, ignore it and click **No**.*

2 Insert the CD-ROM containing the firmware upgrade HEX file into the CD-ROM drive.

3 Go to **C:\Robot\Data**.

4 Copy the HEX file into the **Data** folder.

a In Windows Explorer, go to the CD-ROM drive and double-click it to the display the contents.

b Right-click the HEX file and select **Copy**.

c Right-click inside the **Data** folder and select **Paste**.

5 Set the **DownloadName** registry setting.

a Go to **Start > Run**.

b Enter **regedit** and press **ENTER**.
The Registry Editor displays.

c Go to **HKEY_CURRENT_USER \ Software \ OptimalRobotics \ Devices \ BillAcceptor**.

d Double-click **DownloadName**.

e Change the value from **NONE** to **C:\Robot\Data\XXXXXXXXX.hex**, where "XXXXXXXXX" represents the EXACT HEX file name.

NOTE: *Include any hyphens (-) or underscores (_) included in the file name.*

f Click **OK**.

6 Start the Bill Acceptor in the **Device Tester**.

a On the **Launchpad**, click **Device Tester**.

b Enter the password (**1379**) and click **OK**.

c Select the **Bill Acceptor** tab.

d Click **Start**.
The firmware download starts. The red and green LEDs flash.

7 Wait for the LEDs to stop flashing.

8 Confirm the firmware upgrade.

a Go to **C:\Robot\Data**.

b Look for a **BADNLD.ok** file to indicate that the download succeeded.

NOTE: *If there is **BADNLD.nok** file present, the download failed. Open the file for the explanation. Attempt the download again.*

9 Reset the **DownloadName** registry setting.

a Go to **HKEY_CURRENT_USER \ Software \ OptimalRobotics \ Devices \ BillAcceptor**.

b Double-click **DownloadName**.

c Change the value from **C:\Robot\Data\XXXXXXXXX.hex** to **NONE**.

d Click **OK**.