

JCM[®] TRAINING OVERVIEW

UBA[®]-10/11/14/24/25

Revision 5

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UBA®-10/11/14/24/25

Revision 5

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OVERVIEW

UBA Component Locations

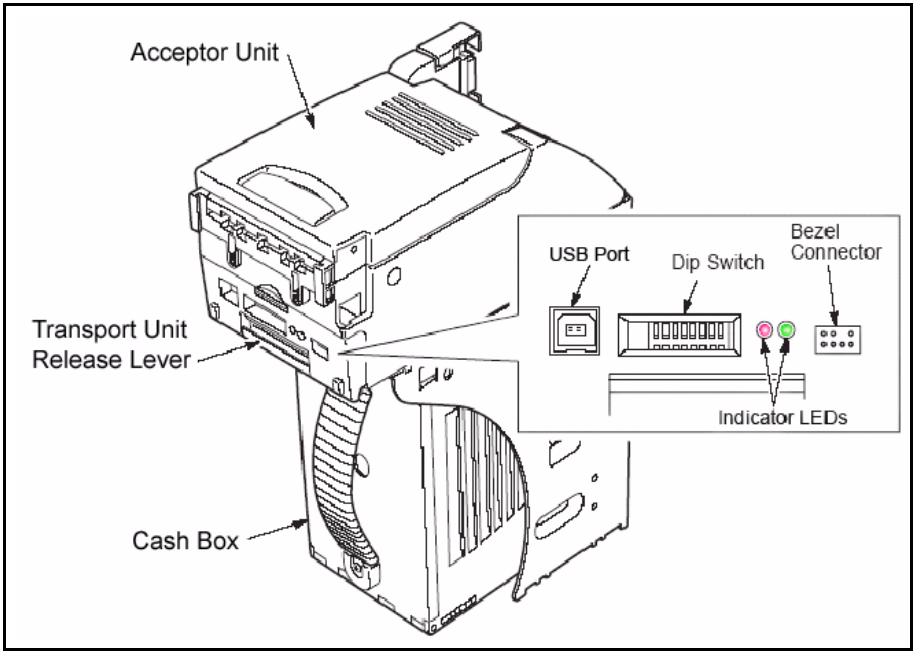


Figure 1 UBA Front & Right Side Primary Components

Lecture Notes

TRAINING COURSE TARGETS

This training course addresses the following JCM UBA® device versions:

Table 1 UBA-1X/2X Versions

Device	Capacity
UBA-10	8 Meg Flash Memory
UBA-11	8 Meg EPROM
UBA-14	16 Meg Flash, USB compatible, SS Configuration
UBA-24	16 Meg Flash, USB compatible, SU Configuration
UBA-25	16 Meg EPROM, USB compatible, SU Configuration



NOTE: For UBA-24 SU Configuration, connect Pins 13 to 20 on the Rear Connector.

Lecture Notes

JUMPER CONFIGURATIONS

UBA-10/11 5.0V DC JUMPER CONFIGURATIONS

The required signal level can be selected by Jumpers located on the UBA-10/11 CPU Board.



NOTE: The CPU Board needs to be removed from the Acceptor unit in order to change the Jumper settings!

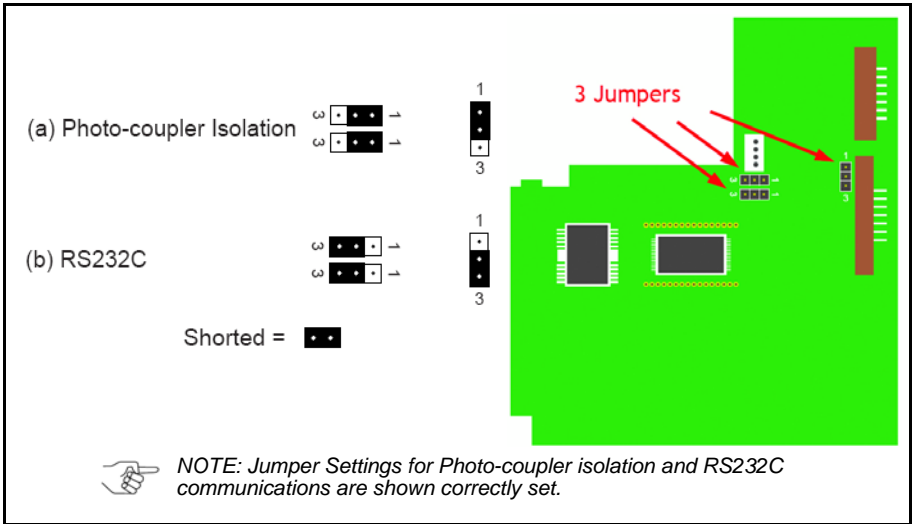


Figure 3 UBA-10/11 5.0V DC Jumper Configurations



NOTE: The UBA-14/24/25 does not contain Jumper provisions for selecting RS-232C Interface settings. An optional PCB must be installed to accommodate a RS232C Communications signal.

Lecture Notes

UBA-10/11 3.3V DC JUMPER CONFIGURATIONS

The required signal level can be selected by Jumpers located on the UBA-10/11 CPU Board.

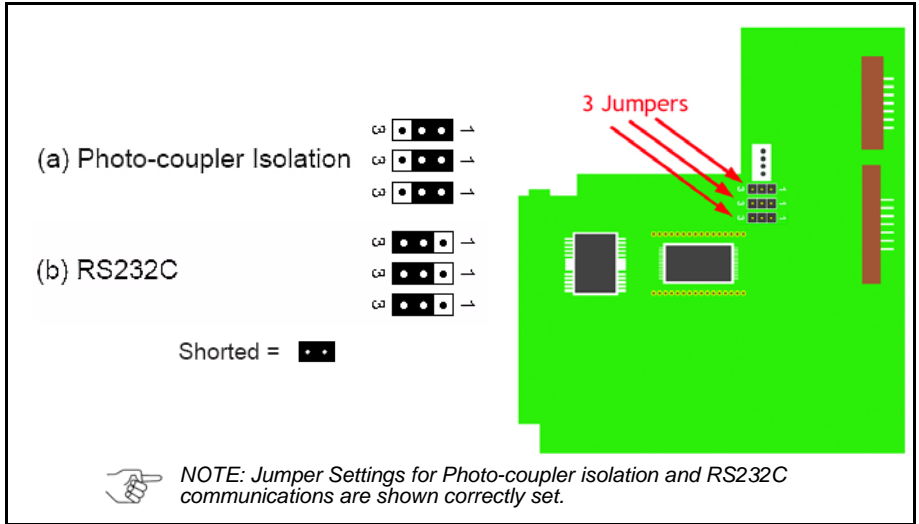


Figure 4 UBA-10/11 3.3V DC Jumper Configurations

Lecture Notes

BILL ACCEPTANCE TEST

BILL ACCEPTANCE TEST MODES AVAILABLE

- Two Modes exist to run a UBA Bill acceptance test:
 - Testing the Transport and Frame.
 - Transport must be installed in the Frame (no Cash Box installed).
 - Testing the Transport and Frame with a Cash Box in place.
 - All Sensors and functions are tested including Cash Box functions.

ENTERING BILL ACCEPTANCE MODE

- Perform the following steps to enter Bill Acceptance Test Mode:
 1. Turn the UBA Power OFF.
 2. Turn DIP Switch #8 ON, and apply power to the UBA Unit (Test Mode).
 3. Turn on DIP Switches according to the desired test listed in the Table 2 Chart.
 4. Turn DIP Switch #8 OFF to start the selected Bill Acceptance Test. The unit will cycle and be ready to accept and identify Bills.

Table 2 provides DIP Switch settings for performing various Bill Acceptance Tests.

Table 2 UBA Bill Acceptance Test DIP Switch Setting Table

UBA Bill Acceptance Test DIP Switch Settings								
DIP Switch								Bill Acceptance Test Activated
1	2	3	4	5	6	7	8	
X*	X	X					E/D†	Acceptance without a Cash Box
X	X	X	X				E/D†	Acceptance with a Cash Box

* X = ON

† E/D = Enable/Disable

Lecture Notes

BILL IDENTIFICATION IN BILL ACCEPTANCE MODE

- Identification is done by counting the flashes on the GREEN LED after a Bill is validated.
- The following examples are listed for US Dollars:
 - 1 flash = \$1
 - 2 flashes = \$5
 - 3 flashes = \$10
 - 4 flashes = \$20
 - 5 flashes = \$50
 - 6 flashes = \$100
 - 16 flashes = Bar Code Ticket



NOTE: Visit www.jcmglobal.com, then click the Support tab > Downloads > Software Information. Fill in the selection information, then click SEARCH. This displays the Software Data Sheet containing the DIP Switch settings for your particular selection.

Lecture Notes

TESTS

FUNCTIONAL TESTING

Table 3 provides a DIP Switch setting chart for performing UBA Functional Tests.

Table 3 UBA Functional Test DIP Switch Setting Chart

DIP Switch								Functional Test
1	2	3	4	5	6	7	8	
X*								E/D† Motor Forward Rotation Speed Test
	X							E/D Motor Reverse Rotation Speed Test
		X						E/D Stacker Performance Test
			X					E/D Run Test (Aging Test)
				X				E/D Anti Pull-back (PB) Unit Test (Anti-String Mechanism)
X				X				E/D Centering Mechanism Test
	X			X				E/D Solenoid Test (Tension Roller)
						X		E/D Sensor Test
X	X	X						E/D Bill Acceptance Test (No Cash Box)
X	X	X	X					E/D Bill Acceptance Test (Complete Unit)
X	X	X	X	X	X	X		E/D DIP Switch Test


* X = ON

† E/D = Enable/Disable

Lecture Notes

STACKER TEST

1	2	3	4	5	6	7	8
■	■	■	■	■	■	■	■



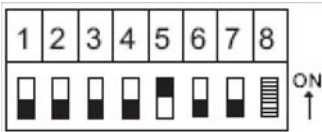
- Enter “Test Mode” (refer to page 10)
- Set DIP Switch 3 “ON”
- Set DIP Switch 8 “OFF” to activate
- Indications
 - Normal: GREEN LED = ON
 - Stacker Full: RED LED Flashes 1x
 - Stacker Jam: RED LED Flashes 2x
 - Stacker Lock: RED LED Flashes 4x
 - Cashbox Error: RED LED Flashes 10x
- Set DIP Switch 8 “ON” to stop the test.

Figure 6 Stacker Test Steps

Lecture Notes

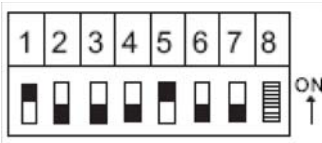
TRANSPORT TESTS

PB Unit Test (Anti-string mechanism)



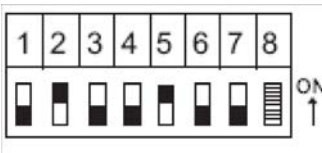
- Enter “Test Mode” (refer to page 10)
- Set DIP Switch 5 “ON”
- Set DIP Switch 8 “OFF” to activate
- Indications
 - Home position: GREEN = ON
 - Rotating: GREEN = OFF
 - PB Unit Error: RED LED Flashes 9x
- Set DIP Switch 8 “ON” to stop the test.

Centering Mechanism Test



- Enter “Test Mode” (refer to page 10)
- Set DIP Switch 1 and 5 “ON”
- Set DIP Switch 8 “OFF” to activate
- Indications
 - Wide open: GREEN = ON
 - Other: GREEN = OFF
 - Centering Mechanism Error: RED LED Flashes 14x
- Set DIP Switch 8 “ON” to stop the test.

Solenoid Test (Tension Roller)



- Enter “Test Mode” (refer to page 10)
- Set DIP Switch 2 and 5 “ON”
- Set DIP Switch 8 “OFF”
- Indications
 - Solenoid Sensor on: GREEN = ON
 - Solenoid Sensor off: GREEN = OFF
 - Solenoid Error: RED LED Flashes 13x
- Set DIP Switch 8 “ON” to stop the test.

Figure 8 Transport Test Steps

TRANSPORT SENSOR LOCATIONS

Figure 9 illustrates the UBA Sensor locations within the UBA Unit.

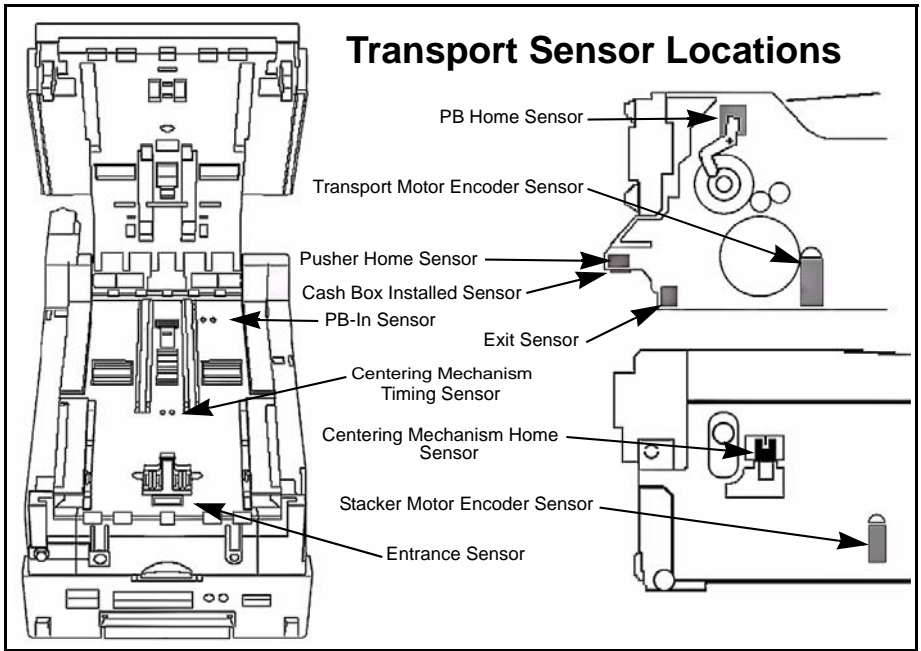


Figure 9 UBA Transport Sensor Locations

Lecture Notes

TRANSPORT SENSOR TEST

Table 4 provides a DIP Switch setting chart for performing various Transport Sensor Tests.

Table 4 Various Transport Sensor Tests

		<ul style="list-style-type: none"> • Enter “Test Mode” (refer to page 10) • Set DIP Switch 7 “ON” • Set DIP Switch 8 “OFF” to activate <ul style="list-style-type: none"> – Indications – See chart below • Set DIP Switch 8 “ON” to stop the test. 	
DIP Switch	Sensor Name	LED Color	LED “ON” Condition
1	Entrance Sensor	GREEN	Sensor Blocked
	Centering Mechanism Timing Sensor	RED	Sensor Blocked
2	PB-In (Anti Pull-Back -In) Sensor	GREEN	Sensor Blocked
	Exit Sensor	RED	Sensor Blocked
3	PB (Anti Pull-Back) Home Sensor	GREEN	Sensor Blocked
	Centering Mechanism Home Sensor	RED	Centering mechanism in home position
4	Transport Motor Encoding Sensor	GREEN	Detecting the encoder
	Stacker Motor Encoder Sensor	RED	Detecting the encoder
5	Pusher Home Sensor	GREEN	Pusher mechanism is in the home position
	Cash Box Installed Sensor	RED	Cash Box is installed

Lecture Notes

DIP SWITCH TEST

Table 5 provides a DIP Switch setting chart for performing a UBA DIP Switch Test.

Table 5 UBA DIP Switch Test Table

- Set all DIP Switches “ON”
- Apply power to the UBA
- Set DIP Switch 8 “OFF” to start test
 - Indications – Chart line #1
- Set DIP Switches 2, 4, 6 “OFF”
 - Indications – Chart line #2
- Set DIP Switches 2, 4, 6 “ON” and 1, 3, 5, 7 “OFF”
 - Indications Chart line #3
- Set all DIP Switches “OFF”
 - Indications Chart line #4

DIP Switch Pack #1								LED Status	
1	2	3	4	5	6	7	8		
							X*	GREEN LED = OFF	RED LED = OFF
	X		X		X		X	GREEN LED = ON	RED LED = OFF
X		X		X		X	X	GREEN LED = OFF	RED LED = ON
X	X	X	X	X	X	X	X	GREEN LED = ON	RED LED = ON

* X = OFF

Lecture Notes

FORCED DOWNLOAD MODE

Normally, the DIP Switches do not need to be set for downloading. However, the unit may need to be force downloaded if the current program becomes corrupted.

If the unit needs to be “Force Downloaded,” set the DIP Switches as shown in Table 6.

Table 6 provides DIP Switch settings for performing a Forced Download.

Table 6 UBA Forced Download DIP Switch Setting Table

UBA Forced Download DIP Switch Settings								
DIP Switch								Selected Download speed
1	2	3	4	5	6	7	8	
					X*	X*	X*	UBA Forced Download Mode

* X = ON

Lecture Notes

DOWNLOADING SOFTWARE INTO A UBA UNIT

Use either of the following methods for downloading Software into a UBA Unit, as described below:

- JCM Tool Suite™ Software Application
- JCM BlueWave 2.0™ Download Tool

Download Software with JCM Tool Suite™

1. Set DIP Switches 6, 7 and 8 to ON, as shown in Table 6 on page 20.
This step will reduce the time necessary to download software.
2. Connect the UBA USB Port to the PC using a Male 'A' to Male 'B' USB Cable.
3. Apply Power to the UBA Unit.
The **RED** and **GREEN** LEDs will flash alternately.
4. Launch the JCM Tool Suite Application (Figure 10).
The Device Information screen Communication Status: field will display as: Connected.

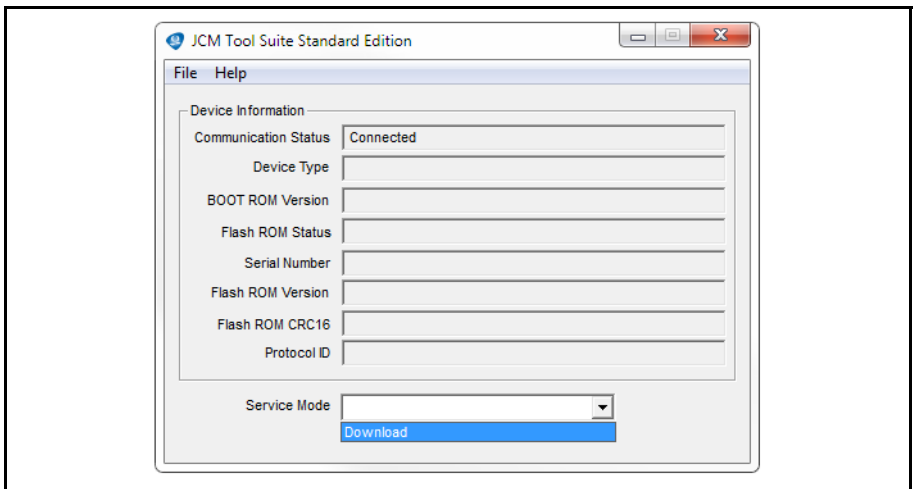


Figure 10 JCM Tool Suite Standard Edition Device Information Screen

5. Click the Service Mode drop down menu, then click Download (Figure 10).
The Download Program opens.
6. Click "Browse" and select the proper file on the PC to be downloaded to the UBA Unit.
7. Click "Open" on the Browser.
8. Click the "Download" Screen Button on the JCM Downloader Suite Edition Version x.xx window to begin the download (Figure 11 on page 22).
Download progress will be displayed by a **BLUE** Progress Bar. When complete, the message "Download Success. Reset Done. Waiting for USB Cable Disconnection." will be displayed.
9. Verify that the Device CRC (Figure 11 a) and the File CRC (Figure 11 b) match, indicating a successful download.

10. Reset DIP Switches to the Operating Position.

11. Reset Power on the UBA Unit.

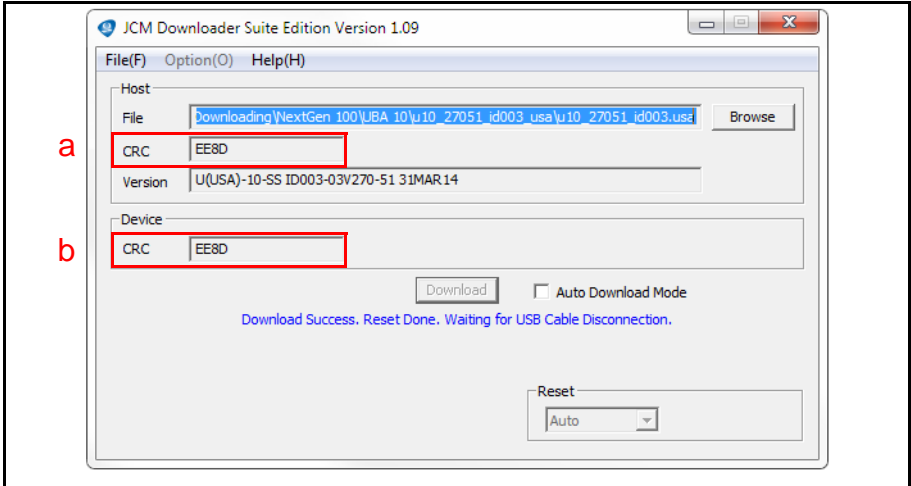


Figure 11 JCM Downloader Suite - Download Completed Successfully

Download Software with BlueWave 2.0™ Download Tool

1. Power on the BlueWave Download Tool.
2. Apply power to the UBA Unit.



NOTE: The UBA Unit may be in either Operational Mode (No DIP Switches ON) or Forced Download Mode (DIP Switches #6, #7 and #8 ON).

3. Connect the UBA USB Port to the BlueWave Download Tool using a Male 'A' to Male 'B' USB Cable.
4. When the Top LED on the BlueWave Download Tool turns **GREEN**, press the LOAD button.
5. When all three LEDs on the BlueWave Download Tool are ON, downloading is complete.



NOTE: Refer to the JCM Tool Suite Software Installation Guide (P/N 960-100923R) for more information on using the JCM Tool Suite Software Application. To access this manual, visit www.jcmglobal.com, then click the Support tab > Downloads > Installation Guides).

For information on using the BlueWave Download Tool, refer to the DT-200 BlueWave 2.0™ Download Tool Operator Guide (P/N 960-100924R). To access this manual, visit www.jcmglobal.com, then click the Support tab > Downloads > Product Manuals).

UBA CALIBRATION

The Sensors on the UBA Unit only require calibration if any of the following conditions occur:

- The CPU Circuit Board is replaced;
- Any Sensor PCB is replaced;
- If a Bench Repair is completed.


To calibrate the UBA Unit, the following tools are required:

- MAG Tool Kit (JAC Part No. 701-100086RA);
- JCM Tool Suite™ Software Application.



NOTE: The UBA must be installed in a Frame Assembly to perform calibration.

To calibrate the UBA Unit, proceed as follows:

1. Connect the UBA USB Port to the PC using a Male 'A' to Male 'B' USB Cable.
2. Ensure that all DIP Switches on the UBA Unit are OFF.
3. Apply Power to the UBA Unit.
4. Launch the JCM Tool Suite Application (Figure 10).
The Device Information screen Communication Status: field will display as: Connected.
5. Click the Service Mode drop down menu, then click Sensor Adjustment.
The Download Program opens.
6. To begin Calibration, click the "START"  Screen Button (Figure 12 a), then follow the screen prompts.

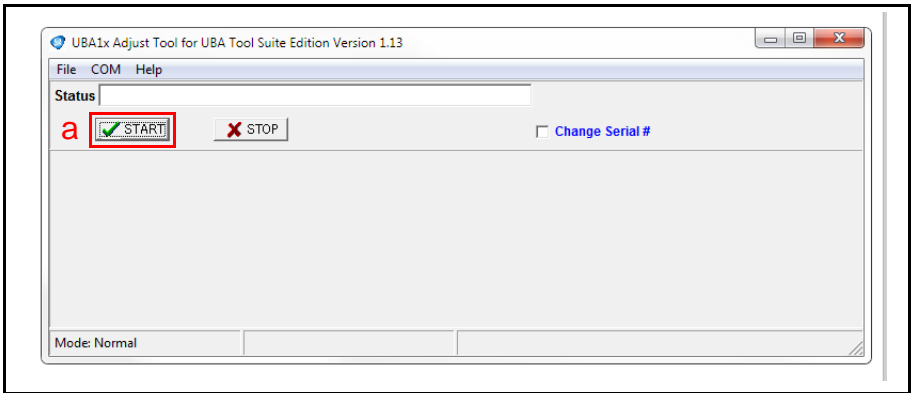


Figure 12 UBA1x Adjust for UBA Tool Suite Edition Version x.xx Screen



NOTE: If a UBA-14 or UBA-24 Unit is being calibrated, a popup box will appear when Calibration begins. Ensure that the correct UBA Model number is selected for the Unit being calibrated.

For additional information, refer to the UBA® Series Universal Bill Acceptor (UBA-1x-SS & UBA-x4-SS/SU) Operation and Maintenance Manual (P/N 960-000097R). To access the UBA Operation and Maintenance Manual, visit www.jcmglobal.com, then click the Support tab > Downloads > Product Manuals.

CALIBRATION ERROR TABLES

Table 7 lists the UBA Calibration Errors that may occur during Calibration.

Table 7 Calibration Error Table

Error Code	Displayed Message	Description/Cause
4-A	Gain Error (Value over 4.3V)	Light receiving Adjustment Error. Check for dirty or wrong Calibration Paper use.
4-B	Adjustment Error	Sensor Light Quantity Adjustment Error. Replace either the Upper or Lower Sensor PCB.
4-C	Black Level Error	Sensor Light Quantity Adjustment Error. Ensure that the Black Reference Paper is properly inserted.
4-E	Gain Error	Light Receiving Adjustment Error. Clean Sensors. Replace Upper or Lower Sensor PCB.
4-G	Front/Back/Pbin/Width Level Error	Triggering Sensor Light Receiving Error. Clean the Sensor. Wrong Calibration Paper being used during UV Sensor Adjustment. Replace the Exit Sensor. NOTE: The UBA must in installed in a Frame during Calibration.
6-A	Offset Error	Light Receiver Circuit Abnormality. Clean Sensors. Replace either the Upper or Lower Sensor PCB.
6-B		
6-C		
MAG	Adjustment Error	Magnetic Sensor Adjustment Error. Replace the Upper Sensor PCB.
	Adjustment Error Under 0.74V	
No Code	Gain Max Limit Error	Sensor Abnormality. White Reference Paper not inserted correctly.
	Bar Gain Max Limit Over Error	Sensor Abnormality. For UBA 1x, replace the Upper Sensor PCB. For UBA 24, replace the Lower Sensor PCB
	UV Gain Max Limit Over Error	Sensor Abnormality. Clean UV Sensor and White Reference Block. Ensure UV Reference Paper is inserted with its Label up, covering the White Reference Block.
	A/D Data Level Error	Light Receiving Level Error. Ensure the White Reference Paper is inserted completely and correctly placed.
	PBin/Width D/A Error	Triggering Sensor Adjustment Error. Clean PB In-Sensor or Reference Paper is not inserted correctly.
	Motor Speed Error	Transport Motor Speed Error.
	EEPROM Write Error	Adjustment Value Writing Error. Replace the Processor PCB.

SENTRY PERFORMANCE INDICATORS

Figure 13 illustrate the various operational performance LED indications that can appear on a Sentry control panel.



Figure 13 Sentry Performance Indicators



NOTE: Only one of these indicators will light at a time.

- Ambulance – **BLUE**
 - Validator shut down – communication loss or requires immediate attention
- Key – **RED**
 - Problem requires cash box access
- Crossed Circle – **RED**
 - ROM Verification error or jammed motor – shop repair required
- Eye – **RED**
 - Possible cheat attempt (Eye symbol will flash)
 - If eye lit only – multiple bill rejects in a short period of time
- Cross Hammer & Wrench – **RED**
 - Minor service required at the machine
- JCM Logo – **RED**
 - Cash Box full indicator.

Lecture Notes

UBA STARTUP MALFUNCTION ERRORS

Table 8 lists the possible UBA Startup malfunction LED Flash Codes.

Table 8 UBA Startup Malfunction LED Flash Codes

RED LED Flashes	GREEN LED Status	Failure Condition	Possible Causes
OFF	ON	Processor Malfunction	Replace CPU Board
1	ON	Boot ROM Failure	Replace CPU Board or EPROM on UBA-14/24 Unit
2	ON	Corrupted Program (Flash or EPROM)	UBA-10/14/24 - Reflash the UBA ROM or Replace the CPU Board. On UBA-11/25, Replace the EPROM.
3	ON	Internal RAM Failure	Replace CPU Board
4	ON	External RAM Failure	Re-Flash or Replace EPROM Memory
5	ON	Missing Boot EPROM (UBA-14/24)	Install a new Boot EPROM
3	OFF	ICB Error	ICB Disabled on Validator or Cash Box is Active*.
5	OFF	No Calibration	New Processor PCB exists, or Calibration was not performed.
11	OFF	ICB Cash Box Communication Error (Failure Type 02)*	ICB Enabled UBA, but NO Communication or Power to Cash Box exists.
12	OFF	ICB Cash Box Check Sum Error (Failure Type 07)*	ICB Cash Box Checksum Error. Replace Cash Box with a "Cleared" Box
13	OFF	ICB Cash Box Installed in Wrong Machine (Failure Type 08)*	Wrong or Active Cash Box installed. Install a "Cleared" Cash Box
14	OFF	ICB Cash Box Data Not Initialized (Failure Type 09)*	Un-Initialized ICB/NO Box Serial Number. Install a "Cleared" Cash Box
15	OFF	ICB Module (Failure Type AF)*	ICB Module Failure. Replace CPU PCB.

* NOTE: The Bezel Light will quickly flash three (3) times when an ICB Error occurs.

Lecture Notes

UBA OPERATIONAL MALFUNCTION ERRORS

Table 9 lists the possible UBA Operational Malfunction LED Flash Codes.

Table 9 UBA Operational Malfunction LED Flash Codes

RED LED Flashes	GREEN LED Status	Failure Condition	Possible Causes
1	OFF	Cash Box Full	Stacker Encoder Error or Full Cash Box
2	OFF	Stacker Pusher Mechanism fault, Transport Jam Type 1	Stacker Motor Failure, Stacker Encoder Failure and/or Stacker Jam
3	OFF	Transport Jam Type 2	Exit Sensor Board Failure or Banknote Jam at Exit Sensor
4	OFF	Stacker Encoder signal fault; Jam in the Acceptor	Acceptor Jam, Stacker Encoder Board fault and/or Harness misfits
5	OFF	Transport Motor speed too fast or slow	Transport Encoder Failure or Belt Jam
6	OFF	Transport Motor fault	Motor or CPU Board Failure
7	OFF	Sensor Failure	Check and/or Replace Upper & Lower Sensor Boards
8	OFF	Communications Error with CPU	Replace Upper Sensor Board or CPU Board
9	OFF	Anti-Pullback (PB) Unit Fault	PB Unit Jam, Anti-Pullback Home Sensor Failure or Lower Sensor Board Failure
10	OFF	Cash Box not seated or not present	Re-seat Cash Box or Cash Box Sensor Board Failure
11	OFF	ICB Module Communications Error	Missing or defective ICB Module
12	OFF	A Sensor detects movement in the wrong direction	Unit Cheated, Sensor blocked/ or out of sequence. Clean/check for debris
13	OFF	Centering Mechanism Solenoid fault	Clean Solenoid, Check linkage; possible Upper Sensor Board Error
14	OFF	Centering Mechanism fault	Jam in Centering Mechanism or Home Sensor Error
15	OFF	Reserved	N/A

Lecture Notes

UBA BARCODE TICKET/COUPON REJECT ERROR CODES

Table 10 lists the UBA Barcode Ticket/Coupon Reject Error Codes.

Table 10 UBA Barcode Ticket/Coupon Reject Error Codes

RED LED Status	GREEN LED Flashes	Failure Condition	Possible Causes
OFF	1	Barcode Function Not Set	Acceptance of Ticket is Disabled
OFF	2	Format unknown	Incorrect Barcode Format
OFF	3	Character Length	Improper Character Length
OFF	4	Start Character	Could not find the Start Character
OFF	5	Stop Character	Could not find the Stop Character
OFF	6	Barcode Type Error	Barcode Format Error
OFF	7	Reserved	N/A
OFF	8	Ticket Transparency	Double tickets detected
OFF	9	By DIP Switch	Check Switch Position Settings
OFF	10	Photo Level	Barcode Too Light
OFF	11	Upside-down Ticket	Index Mark on the wrong side
OFF	12	Reserved	N/A
OFF	13	Ticket Length	Ticket length is too long or too short
OFF	14	Reserved	N/A
OFF	15	Reserved	N/A

Lecture Notes

REJECT ERROR CODES

Table 11 lists the various UBA Reject Error Code conditions.

Table 11 Reject Error Code Table

RED LED Status	GREEN LED Flashes	Failure Condition	Possible Causes
OFF	1	Slant Banknote Insertion	Check Banknote Condition, Entrance Sensor and Validation Sensors - Re-Insert Banknote
OFF	2	Magnetic Sensor Pattern error	Clean Magnetic Head and Rollers or Replace Upper Sensor Board
OFF	3	Paper detected inside Acceptor at Standby	Clean ALL Transport Sensors - Check for debris in Transport Path
OFF	4	Optical Sensor Level error	Clean all Transport Sensors. Replace Upper & Lower Sensor Boards
OFF	5	Banknote Feed error (Timing)	Check and clean all Belts and Rollers - Check for debris in Transport Path
OFF	6	Banknote Identification error	Clean ALL Transport Sensor Lenses - Possible poor Banknote condition
OFF	7	Barcode Reading error	Clean Bar Code Sensor/Upper Sensor Board Error
OFF	8	Double Notes/Tickets detected	Clean Sensor Lenses - Check for double Banknotes
OFF	9	Inhibited Banknote	Clean all Transport Sensors. Check DIP Switch Settings and/or Game settings
OFF	10	Bill Return Command	Check DIP Switches for proper Settings. Bill inhibited by Host Machine
OFF	11	Reserved	N/A
OFF	12	Banknote Detection error	Clean ALL Transport path Sensors
OFF	13	Banknote Length error	Check and clean ALL Belts and Rollers
OFF	14	Photo Pattern Error	Check for dirty/clouded Lenses. Clean all Lenses.
OFF	15	UV Optical Sensor	Check and clean the UV Sensor and White Reflection Block in Transport

Lecture Notes

PERSONAL NOTES AND COMMENT AREA

Write any pertinent notes or comments regarding your particular installation here.

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