



## iVIZION™ 2 Series







# Banknote Validator Foundation of Intelligent Validation Integration Guide

(Revision A)



REVISION HISTORY		
Rev No.	Date	Reason for Update
A	Nov. 18, 2022	Initial Document

## International Compliance

- RoHS Directive  or  or  or 
- UL & c-UL Marks 
- CE Mark 
- UKCA Mark 
- CB Scheme
- FCC Directive

This product must not be used in residential areas.

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.

### FCC CAUTION

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

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## Electrical Current Symbol

Direct Current:  indicates Direct Current values on product labels.

The JCM Website for patents is: <http://www.jcm-hq.co.jp/english/patents/>

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# iVIZION™2 Series Banknote Validator

## Foundation of Intelligent Validation

### Table of Contents

	Page
<b>1 GENERAL INFORMATION .....</b>	<b>1</b>
<b>Description .....</b>	<b>1</b>
<b>iVIZION2 Unit .....</b>	<b>1</b>
<b>Product Descriptions.....</b>	<b>2</b>
Model Descriptions.....	2
Software Descriptions .....	2
<b>Precautions.....</b>	<b>3</b>
Definitions for Warning, Caution and Note Signs.....	3
Definitions for General Symbols.....	3
User Cautions .....	3
Installation.....	3
Mounting, Dismounting & Transportation.....	3
Placing Foreign Objects into the Unit.....	4
Operation .....	4
Preventive Maintenance .....	4
Banknote Fitness Requirements.....	5
<b>Primary Features.....</b>	<b>5</b>
<b>Component Names .....</b>	<b>6</b>
<b>2 SPECIFICATIONS .....</b>	<b>8</b>
Technical Specifications.....	8
Environmental Specifications .....	9
Electrical Specifications .....	10
Structural Specifications.....	10
RFID Specifications.....	10
<b>3 INSTALLATION .....</b>	<b>11</b>
<b>Installation Procedure .....</b>	<b>11</b>
Grounding .....	11
External Harness Installation .....	11
iVIZION2 Installation .....	11
Side Installation.....	11
Rear Installation .....	12
Security Lock Installation .....	12
Unlock Procedure .....	12
<b>Settings.....</b>	<b>13</b>
Denomination Settings.....	13
Interface Settings .....	13
<b>Primary LED Indications.....</b>	<b>13</b>
<b>Recommended Wires.....</b>	<b>14</b>
With JCM External Harness.....	14
Not using JCM External Harness.....	14
<b>4 CONNECTOR PIN ASSIGNMENTS.....</b>	<b>15</b>
USB Connection.....	15
Photo-Coupler Isolation Connection .....	16

# Table of Contents

	Page
RS232C Connection .....	17
cc-Talk Connection .....	18
TTL Connection.....	19
Bezel Connector (CN7).....	20
<b>5 PREVENTIVE MAINTENANCE .....</b>	<b>21</b>
Retrieving Banknotes .....	21
Clearing a Banknote Jam .....	21
Cleaning .....	21
Cleaning Procedure .....	22
iVIZION2 Sensor Locations .....	23
<b>6 INTERFACE SCHEMATIC CIRCUIT DIAGRAMS.....</b>	<b>25</b>
USB Schematic Circuit Diagram .....	25
Photo-Coupler Isolation Schematic Circuit Diagram .....	26
RS232C Schematic Circuit Diagram .....	26
cc-Talk Schematic Circuit Diagram .....	27
TTL Schematic Circuit Diagram .....	27
Bezel LED Schematic Circuit Diagram.....	28
<b>7 OPERATIONAL FLOWCHARTS .....</b>	<b>29</b>
iVIZION2 Operational Flowchart; Stand-by and Initialization .....	29
iVIZION2 Operational Flowchart; Validation .....	30
<b>8 TROUBLESHOOTING .....</b>	<b>31</b>
<b>Introduction .....</b>	<b>31</b>
<b>Troubleshooting Overview.....</b>	<b>31</b>
<b>Malfunction LED Error Codes .....</b>	<b>31</b>
<b>LED Indication Conditions .....</b>	<b>31</b>
<b>LED Error and Reject Codes .....</b>	<b>32</b>
LED Error Codes; General .....	32
LED Error Codes; ICB.....	33
LED Error Codes; Banknote Jam .....	34
LED Reject Codes; Banknote .....	35
LED Reject Codes; Barcode Ticket.....	36
<b>9 UNIT DIMENSIONS AND MAINTENANCE SPACE REQUIREMENT .....</b>	<b>38</b>
SS Type with Standard Box .....	38
SS Type with Large Box.....	39
<b>10 TECHNICAL CONTACT INFORMATION .....</b>	<b>40</b>
Americas .....	40
JCM American .....	40
Europe, Middle East, Africa & Russia .....	40
JCM Europe GmbH .....	40
UK & Ireland.....	40
JCM Europe (UK Office).....	40
Asia and Oceania.....	40
JCM American (Australia Office) .....	40
JAPAN CASH MACHINE CO., LTD.(HQ).....	40

# Table of Contents

	Page
11 INDEX .....	41

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# iVIZION™2 Series Banknote Validator

## Foundation of Intelligent Validation

### List of Figures

		Page
Figure 1	iVIZION2 Unit .....	1
Figure 2	Unacceptable Banknotes .....	5
Figure 3	iVIZION2 Component Names .....	6
Figure 4	Grounding .....	11
Figure 5	External Harness Installation .....	11
Figure 6	Side Installation.....	11
Figure 7	Rear Installation .....	12
Figure 8	Security Lock Installation .....	12
Figure 9	Lock Hole Cap Installation .....	12
Figure 10	Unlock Rotation Direction.....	12
Figure 11	Retrieving Banknote.....	21
Figure 12	Clearing a Banknote Jam 1 .....	21
Figure 13	Clearing a Banknote Jam 2.....	21
Figure 14	General Cleaning Image .....	22
Figure 15	iVIZION2 Sensor Locations.....	23
Figure 16	USB Schematic Circuit Diagram .....	25
Figure 17	Photo-Coupler Isolation Schematic Circuit Diagram .....	26
Figure 18	RS232C Schematic Circuit Diagram .....	26
Figure 19	cc-Talk Schematic Circuit Diagram.....	27
Figure 20	TTL Schematic Circuit Diagram .....	27
Figure 21	Bezel LED Schematic Circuit Diagram.....	28
Figure 22	iVIZION2 Operational Flowchart; Stand-by and Initialization .....	29
Figure 23	iVIZION2 Operational Flowchart; Validation .....	30
Figure 24	SS Type with Standard Box Outside Dimension and Maintenance Space3 .....	8
Figure 25	SS Type with Large Box Outside Dimension and Maintenance Space .....	39

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# iVIZION™2 Series Banknote Validator

## Foundation of Intelligent Validation

### List of Tables

		Page
Table 1	Model Number Specifications .....	2
Table 2	Type Number Specifications .....	2
Table 3	Software Number Specifications .....	2
Table 4	iVIZION2 Component Names .....	7
Table 5	iVIZION2 Technical Specifications .....	8
Table 6	iVIZION2 Environmental Specifications .....	9
Table 7	iVIZION2 Electrical Specification .....	10
Table 8	iVIZION2 Structural Specification .....	10
Table 9	RFID Specifications .....	10
Table 10	Denomination Settings (by DIP Switch) .....	13
Table 11	Interface Settings .....	13
Table 12	Primary LED Indications .....	13
Table 13	USB Connection Pin Assignments .....	15
Table 14	Photo-Coupler Isolation Connection Pin Assignments .....	16
Table 15	RS232C Connection Pin Assignments .....	17
Table 16	cc-Talk Connection Pin Assignments .....	18
Table 17	TTL Connection Pin Assignments .....	19
Table 18	Bezel Connector Pin Assignments .....	20
Table 19	iVIZION2 Sensor Descriptions and Cleaning Methods .....	24
Table 20	LED Indication Conditions .....	31
Table 21	LED Error Codes; General .....	32
Table 22	LED Error Codes; ICB .....	33
Table 23	LED Error Codes; Banknote Jam .....	34
Table 24	LED Reject Codes; Banknote .....	35
Table 25	LED Reject Codes; Barcode Ticket .....	36

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# iVIZION™2 Series Banknote Validator

## Foundation of Intelligent Validation

### *Integration Guide*

Revision A


## 1 GENERAL INFORMATION

### Description

This section provides a general overview of the iVIZION™2 Series Banknote Validator (iVIZION2), pictured in Figure 1. This section is designed to help the user navigate through this guide with ease. It includes the following information:

- iVIZION2 Unit (p. 1)
- Product Descriptions (p. 2)
- Precautions (p. 3)
- Primary Features (p. 5)
- Component Names (p. 6)

In order to make operating this device and navigating within this manual easier, the following illustrations are used:

- **Safety Instructions** need to be observed in order to protect the operators and the equipment; these are identified with **Bold** text and the pictographs (Refer to “Definitions for Warning, Caution and Note Signs” on page 3).
- **Special Notes** affect the use of the iVIZION2 Unit; these are identified with *italic* text and the following pictograph: 
- **Steps** require the operator to perform specific actions; these are identified with sequential numbers (1, 2, 3, etc.).

### iVIZION2 Unit



Figure 1 iVIZION2 Unit

## Product Descriptions

### Model Descriptions

Table 1 Model Number Specifications

No.	Model: iVIZION - * * * - ** No. (1) (2) (3) (4)
(1)	Validation Sensor Type 2: CIS and UV Point Sensor 3: CIS (featured UV Sensor)
(2)	CPU Board (Memory and more) 0: [DDR3] 4GBit/[FLASH] 128Mbit (Standard) 1: [DDR3] 4GBit/[FLASH] 256Mbit
(3)	Validator 0: SS Type (Standard)
(4)	Stacking Type SS: Security Stacker Down (SS)

### Type Descriptions

Table 2 Type Number Specifications

No.	Type: * * * - 00 - * * 0 * * No. (1) (2) (3) (4) (5) (6) (7) (8) (9)
(1)	Cash Box Capacity* 5: 500 notes (New Banknote). Standard Box. 9: 900 notes (New Banknote). Large Box.
(2)	Cash Box Type 0: ICB 256[Byte] (Standard) ICB Tag in Box 1: ICB 2K[Byte] (Standard) ICB Tag in Box 9: ICB Not Supported
(3)	Cash Box Handle 0: Standard (Green) 1: Red Handle 9: No Handle
(4)	MGU Type (Motor Gear Unit) 00: Standard
(5)	Bezel (Option) 0: No Bezel 1: With Bezel
(6)	ICB (RFID Module) 0: Not Supported 1: Supported (Standard)
(7)	SD Memory 0: No SD Memory
(8)	Input/Output Signal Selection P: Photo-Coupler Isolation (Standard) R: RS232C
(9)	External Harness Type 0: No Harness 1: Standard Harness (One side cut, No USB Cable) 2: Reserved 3: Harness with USB Cable and Connector (One side cut) 4: SS Harness (One side cut, No USB Cable) 5: SS Harness with USB Cable and Connector 6: Harness with USB Cable and Connector 2

\*. The number of stacked Notes depends on the Banknote's condition.

## Software Descriptions

Table 3 Software Number Specifications

No.	Software: iVIZION-*** (***) - ** ID-*** V***-** No. (A) (B) (C) (D) (E)
(A)	Model Number*
(B)	Country Code (Denomination)†
(C)	Stacking Type (See Table 1)
(D)	Interface Protocol Name‡
(E)	Software Version




\*. Refer to "Model Descriptions" on page 2.

†. The Country Code is indicated by three (3) Alphabetical Characters officially assigned ISO 3166-1 alpha-3. For the multiple package, the Country Codes are followed by an underscore "-" (i.e. USA\_RUS\_MEX).




‡. For the multiple protocols, the Interface Protocol Names are followed by an underscore "-" (i.e. ID-003\_0E4).

## Precautions

### Definitions for Warning, Caution and Note Signs

	<b>WARNING</b>	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
	<b>CAUTION</b>	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury and/or equipment damage.
	<b>NOTE</b>	Indicates information considered important to perform and function optimal. Read carefully to prevent malfunctions or improper operation.

### Definitions for General Symbols




	Signifies a general prohibition (prohibited action)
	Signifies a mandatory action
	Signifies a general warning




### User Cautions

Careful measures were taken in the design of this product to ensure its quality; however, the following cautions pertain to all users and should be followed for safe operation.




 <b>WARNING</b>	
	Careful measures were taken in the design of this product to ensure its quality; however, ensure that a fail-safe design is used for the Host Machine to assure safety.





### Installation

 <b>WARNING</b>	
	Do not use the Unit where it may be exposed to airborne evaporated or sporadic chemicals and/or oil.
	This unit is not designed for outdoor installation. Be sure the Host Machine contains enough protection to avoid wet or dusty conditions when installing it in both open-air and indoor spaces.



 <b>CAUTION</b>	
	<ul style="list-style-type: none"> <li>Do not allow the Unit to endure a range of temperature and humidity beyond the environmental limits specified (Refer to “Environmental Specifications” on page 9).</li> <li>Do not use the Unit in environments that may be subject to extreme temperature changes.</li> </ul>
	<ul style="list-style-type: none"> <li>Be sure the Host Machine is designed with careful consideration for retrieving a Banknote and/or cleaning a Banknote jam.</li> <li>Be sure to connect the Frame Housing to the Frame Ground of the Host Machine (Refer to “Grounding” on page 11).</li> <li>Be careful not to use excessive outside pressure on the Unit, or subject it to excessive vibration during transportation.</li> <li>Ensure that the Host Machine is designed considering the risk of electronic components that can cause induced noise. The noise generated by the components on the Host Machine may affect and degrade the Validation performance.</li> <li>Ensure that the power cables comply with the recommended specifications to avoid reset. (Refer to “Recommended Wires” on page 14). Cut off all the not-connected unused cables to avoid static electrical effects or short circuit possibilities that could cause damage to the Unit.</li> </ul>

### Mounting, Dismounting & Transportation





 <b>WARNING</b>	
	<p><b>Disconnect Main Plug From Electrical Outlet</b></p> <p>Be sure to remove electrical power from the Unit and disconnect a USB Cable before mounting or removing the Unit including any optional or sub assembly.</p>
	Do not carry the Unit by holding the Cash Box. The Cash Box accidentally becomes disassembled and drops away.




 <b>CAUTION</b>	
	<ul style="list-style-type: none"> <li>• While transporting, do not apply too much pressure to the unit, or subject it to excess vibration.</li> <li>• Do not throw or apply excessive force to the unit.</li> </ul>
	<p style="text-align: center;"><b>Disconnect Main Plug From Electrical Outlet</b></p> <p>Plugging or unplugging the communication connector while electrical power is being applied to the Unit may cause damage to the Unit.</p>
	<p>Be sure to carry or transport the Unit with the Cash Box installed. Exerting external pressure on the equipment without the Cash Box in place may cause it to distort.</p>



**Placing Foreign Objects into the Unit**

 <b>WARNING</b>	
	<ul style="list-style-type: none"> <li>• Do not insert anything except Banknotes or Tickets into the Insertion Slot. Inserting Receipts, Paper Clips, Rubber Bands, Credit Cards, etc. into the Unit may damage the Banknote Transport path.</li> <li>• Do not inject water or liquid agents of any kind into the Unit, as this may cause extreme damage to the Unit.</li> </ul>



**Operation**

 <b>CAUTION</b>	
	<ul style="list-style-type: none"> <li>• Do not drop or apply external pressure on the Cash Box. The Banknotes stacked up inside of the Cash Box may collapse.</li> <li>• Do not manually refill the Cash Box with the Banknotes.</li> </ul>
	<p style="text-align: center;"><b>Pinch Point Hazard</b></p> <p>Be careful to avoid any personal injury to fingers when closing any part such as Transport Unit or Validation Unit.</p>
	<p>When closing or installing any part with latches or locking tabs, ensure that it clicks firmly into place.</p>


 <b>WARNING</b>	
	<p>Do not redesign or disassemble the Unit. Unauthorized use by inadequately trained personnel, or use outside the original manufacturer's intent for operation voids the warranty.</p>
	<p style="text-align: center;"><b>Disconnect Main Plug From Electrical Outlet</b></p> <p>Be sure to remove electrical power from the Unit before beginning a maintenance procedure. The equipment can produce abnormal operating signals while in maintenance mode that may cause personal injury.</p>
	<p>If the Unit is exposed to water or other liquids, use a clean, dry micro-fiber cloth to wipe off and absorb excess liquids immediately. Any remaining liquids may affect and degrade the Sensors and Validation performance.</p>

 <b>CAUTION</b>	
	<ul style="list-style-type: none"> <li>• When reassembling a disassembled unit, ensure that each part is carefully placed in its proper location.</li> <li>• Be sure that each part is placed in the proper location after maintenance.</li> <li>• To keep the Unit's performance and Banknote acceptance at optimal rates, clean and maintain the Unit regularly, especially in smoky environments such as where excessive Automobile exhaust emission or Cigarette Smoke may exist (Refer to "Cleaning" on page 21).</li> </ul>

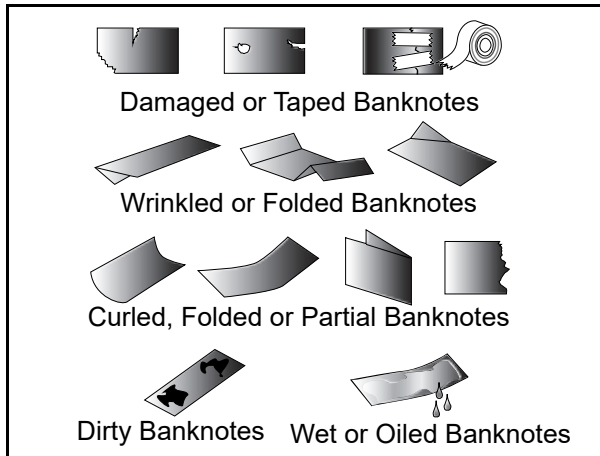
### Banknote Fitness Requirements

 <b>CAUTION</b>	
	<b>The following Banknote types may not validate correctly, or worse, can cause a Banknote jam and/or damage to the Unit's Transport Path, and should be avoided:</b>
<ul style="list-style-type: none"> <li>• Torn</li> <li>• Worn</li> <li>• Taped</li> <li>• Excessive folds or wrinkles</li> <li>• Dirty</li> <li>• Wet and/or Oiled</li> <li>• Adhering foreign objects</li> <li>• Excessive miscuts, misaligns and/or misprints</li> </ul>	

- Advanced Contact Image Sensor (CIS) provides 100% Banknote RBG-full-color-image capture.
- Longer Product lifetime; 5 years or 1 million Banknotes.

 **NOTE:** The consumable items are not included.

- Direct firmware downloads from a PC via USB connection.
- Strengthened compatibility with FUZION® technology.




**Figure 2** Unacceptable Banknotes

### Primary Features

The iVIZION2 Series of Banknote Validator contains the following primary features:

- The iVIZION2 Unit is backwards compatible with all previous iVIZION Series Unit. Upgrade of the current iVIZION Unit to the new iVIZION2 Unit can be accomplished by just replacing the Validator.
- Fastest “Bill to Bill” processing speed; 1.5 seconds or faster.

	<b>CAUTION:</b> For 12V DC users, confirm your power supply capacity before upgrading from your iVIZION Unit to the iVIZION2 Unit. The Current Limit Mode is available in order to control current consumption and, however, this affects the processing speed (refer to “Technical Specifications” on page 8, “Electrical Specifications” on page 10 and “Connector Pin Assignments” on page 15 for details).
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### Component Names

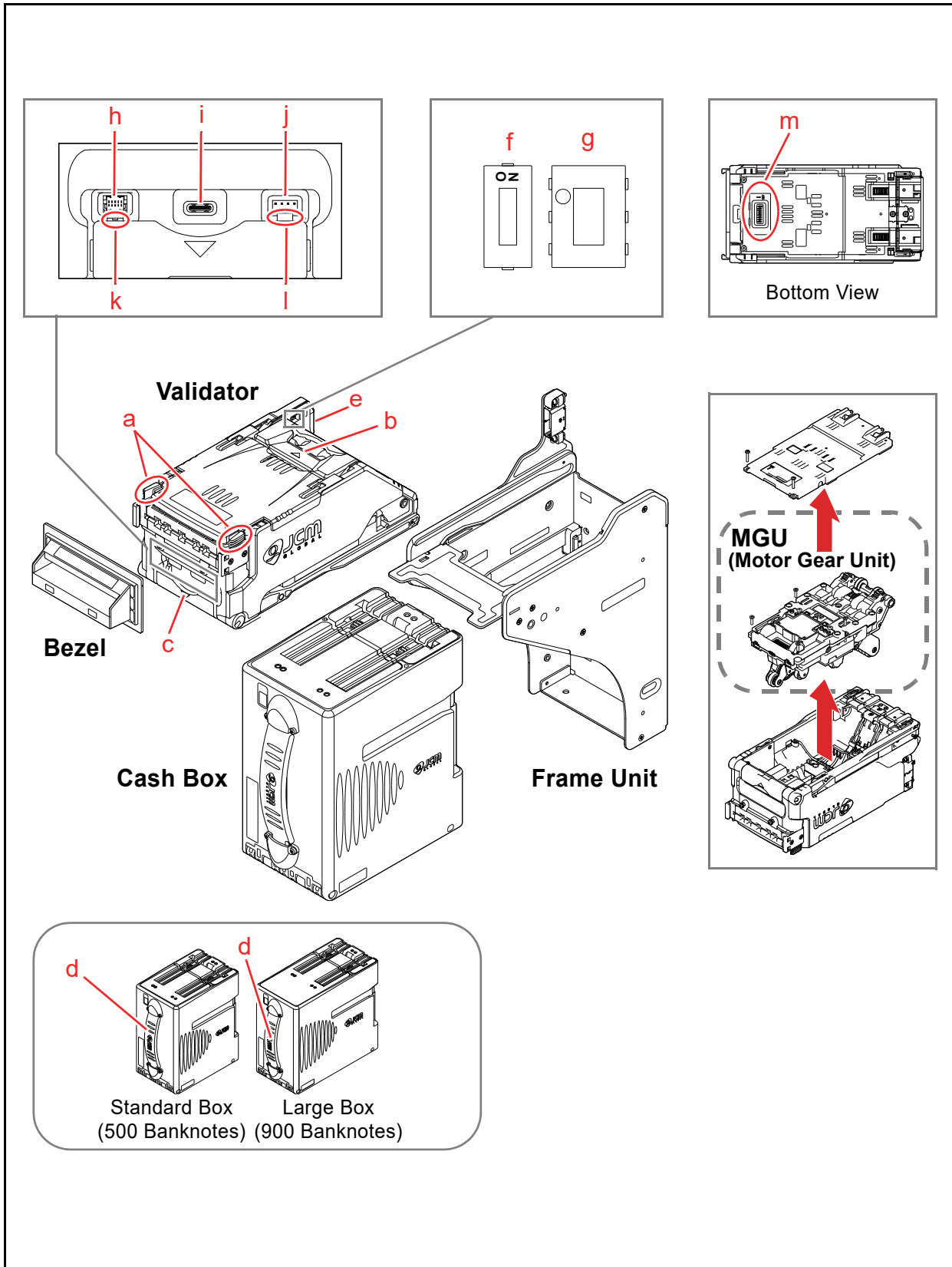


Figure 3 iVIZION2 Component Names



**Table 4** iVIZION2 Component Names

<b>a</b>	Upper Guide Access Lever (Front)
<b>b</b>	Upper Guide Access Lever (Rear)
<b>c</b>	Validator Release Lever
<b>d</b>	Cash Box Handle
<b>e</b>	Interface Connector
<b>f</b>	Interface Switch 1 (Interface Settings)
<b>g</b>	Interface Switch 2 (Interface Settings)
<b>h</b>	Optional Connector
<b>i</b>	USB Type-C Connector (Maintenance)
<b>j</b>	Bezel Connector
<b>k</b>	Power ON LED
<b>l</b>	Status LED
<b>m</b>	DIP Switch (Denomination Settings)

## 2 SPECIFICATIONS

This section provides specifications of the iVIZION™2 Series Banknote Validator (iVIZION2).

### Technical Specifications

**Table 5** iVIZION2 Technical Specifications

Banknote	<b>Acceptance Rate *</b>	98% or greater (The following Banknote types are excluded) <ul style="list-style-type: none"> <li>• Banknotes with excess or poor magnetism or unclear graphics</li> <li>• Double (dual) Notes</li> <li>• Dirty, scrubbed, wet, stained, torn, holed, worn-out, folded, or excessively creased or wrinkled Banknotes</li> <li>• Banknotes having folded corners or edges</li> <li>• Banknotes having the wrong cut dimensions or printing displacement</li> <li>• Returned Banknotes because of incorrect or failed insertion.</li> </ul>
	<b>Types Accepted:</b>	Long side SS Type: 110mm - 170mm (4.33 - 6.69 in.) Short side: 60mm - 85mm (2.36 - 3.34 in.)
	<b>Insertion Direction†:</b>	Four-way
Barcode Ticket†:	<b>Acceptance Rate:</b>	98% or greater (The following Ticket types are excluded) <ul style="list-style-type: none"> <li>• Barcodes having wrinkles or folds</li> </ul>
	<b>Standard Specification:</b>	<ul style="list-style-type: none"> <li>• Read code: Interleaved 2 of 5 (TiTo)</li> <li>• Narrow Bar: 0.5mm - 0.6mm (0.019-0.023 in.)</li> <li>• Wide Bar to Narrow Bar ratio = 3:1</li> <li>• Characters: 18 Characters</li> <li>• Print Position: Middle (Divides a Ticket equally from the left, right, top and bottom of the Ticket's center)</li> <li>• Print Width: Wider than 10mm (0.39in.)</li> </ul>
	<b>Insertion Direction:</b>	Four-way
	<b>2D Barcode</b>	QR Code, PDF417 and Data Matrix <ul style="list-style-type: none"> <li>• Minimum Module Size: 1mm x 1mm</li> </ul>
<b>“Bill-to-Bill” Processing Speed**:</b>	Normal Mode: 1.5 seconds or faster Current Limit Mode (12V DC 3A): 1.9 seconds or faster	
<b>Escrow:</b>	1 Note	
<b>Validation Method:</b>	Optical	
<b>Fraud Detection:</b>	Equipped (Anti-pullback System, Optical Detection)	
<b>Cash Box Type††:</b>	Secure Cash Box Intelligent Cash Box (ICB) (RFID available)	
<b>Cash Box Capacity††:</b>	Standard Box: 500 Banknotes Large Box: 900 Banknotes	
<b>Interface:</b>	<ul style="list-style-type: none"> <li>• USB (USB Specification Rev. 2.0 Compliance) (Full Speed/12Mbps)</li> <li>• Photo-Coupler Isolation</li> <li>• RS232C</li> <li>• cc-Talk</li> <li>• TTL</li> </ul>	
<b>Diagnostic Indicators:</b>	Power LED, Status LED, Bezel LED (Optional)	

\*. The Banknotes accepted at the second attempt are included. The Acceptance Rate Test was conducted with more than 100 Banknotes. Refer to the “Software Information Sheet” for each Country’s Acceptance Rate parameters. In cases of software with security components, such as anti-counterfeit-bill, the acceptance rate may be lower.

†. Refer to the “Software Information Sheet” for the supported denominations and the detailed Banknote insertion direction per currency.

‡. Refer to the “iVIZION2 Barcode Specifications” for more details.

\*\*.. From Banknote insertion to capable of accepting a next Banknote. Excluded Host Communication time lag. The “from Banknote insertion to enable of next insertion” is a processing speed per Banknote when 10 Banknotes are consecutively inserted. To change the mode, use the JCM Tool Suite app (“Utility” menu).

††. A key and a lock are not included (A tang is provided). Refer to “Security Lock Installation” on page 12 for the installation. (1 Key Hole Cap is fitted in place to cover existing holes when shipped).

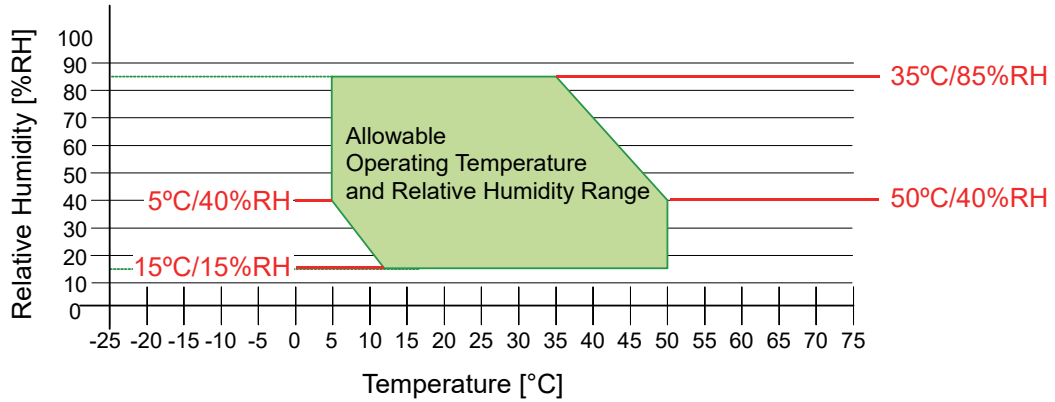
‡‡. The number of Banknotes or Barcode Tickets stacked depends on its condition.

## Environmental Specifications

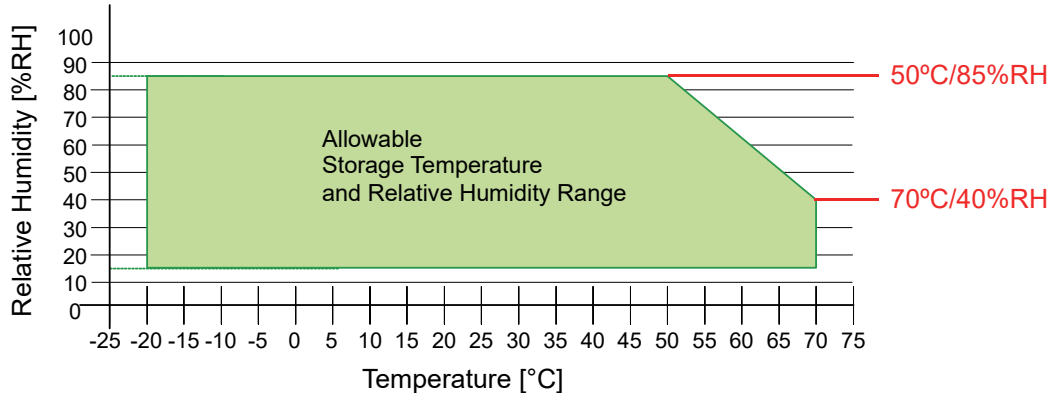
**Table 6** iVIZION2 Environmental Specifications

<b>Operating Temperature:</b>	+5°C to +50°C (+41°F to +122°F)
<b>Storage Temperature:</b>	-20°C to +70°C (-4°F to +158°F)
<b>Relative Operating Humidity:</b>	15%RH to 85%RH (non-condensed)
<b>Relative Storage Humidity:</b>	15%RH to 85%RH (non-condensed)
<b>Visible Light Sensitivity:</b>	Avoid contact with direct sunlight (Interior lighting must be incandescent with a Radiant Angle of 15 Degree or more having an illumination index of 3000 Lux or less)
<b>Installation:</b>	Indoors Only. Do Not expose to the elements (including the internal Unit assemblies). No Cabinet Vibration.

**Operating Hydrothermal Condition Table**



**Storage Hydrothermal Condition Table**



## Electrical Specifications



**This Unit is designed for use with a Limited Power Source!**



*NOTE: Refer to “Recommended Wires” on page 14 for your original harness.*

**Table 7** iVIZION2 Electrical Specification

Supply Voltage:		12V DC (-5%) - 24V DC (+10%) (Greater than 80W recommended)	
Current Consumption	Normal Mode *	<b>12V DC</b> <ul style="list-style-type: none"> <li>Standby = 0.6A</li> <li>Operation = 2.3A</li> <li>Peak = 4.9A</li> </ul>	<b>24V DC</b> <ul style="list-style-type: none"> <li>Standby = 0.3A</li> <li>Operation = 1.1A</li> <li>Peak = 3.2A</li> </ul>
	Current Limit Mode:	<b>12V DC (Reference)</b> <ul style="list-style-type: none"> <li>Standby = 0.6A</li> <li>Operation = 2.1A</li> <li>Peak = 3.0A</li> </ul>	-

\*. Measured on a new and factory default iVIZION2 Unit.

## Structural Specifications

**Table 8** iVIZION2 Structural Specification

Weight:	Approx. 4.2kg (9.3lbs)
Mounting:	Horizontal Maximum gradient limitation within 50 degrees
Outside Dimensions:	Refer to “SS Type with Standard Box” on page 38. OR Refer to “SS Type with Large Box” on page 39.

## RFID Specifications

**Table 9** RFID Specifications

Frequency:	13.56MHz ±7kHz
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### 3 INSTALLATION

This section provides installation and operating instructions for the iVIZION™2 Series Banknote Validator (iVIZION2). The information within this section contains the following features:

- Installation Procedure (p. 11)
- Settings (p. 13)
- Primary LED Indications (p. 13)
- Recommended Wires (p. 14)

#### Installation Procedure

##### Grounding



**CAUTION: Be sure to connect the Frame Housing to the Frame Ground of the Host Machine.**

1. Install the Toothed Washer (Figure 4 a) and the Grounding Wire (Figure 4 b) into one of the Ground Holes on the side in order.
2. Tighten the single (1) Screw (Figure 4 c) to secure the Wire and the Washer.

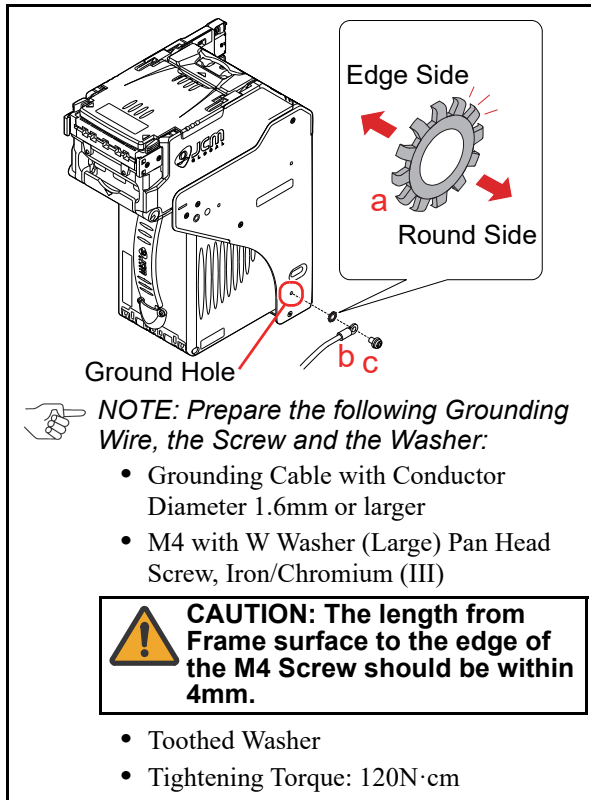


Figure 4 Grounding

##### External Harness Installation

1. Remove the Validator.
2. Secure the External Harness to the Frame Grounding Plate (FG PLT) (Figure 5 a) using the two (2) Floating Collars (Figure 5 b), the single (1) M2.6x12 W Washer Screw (Figure 5 c), the single (1) M2.6x10 W Washer Screw (Figure 5 d), the single Ring Terminal Wire (Figure 5 A) and the single (1) M2.6 Nylon Nut (Figure 5 e).

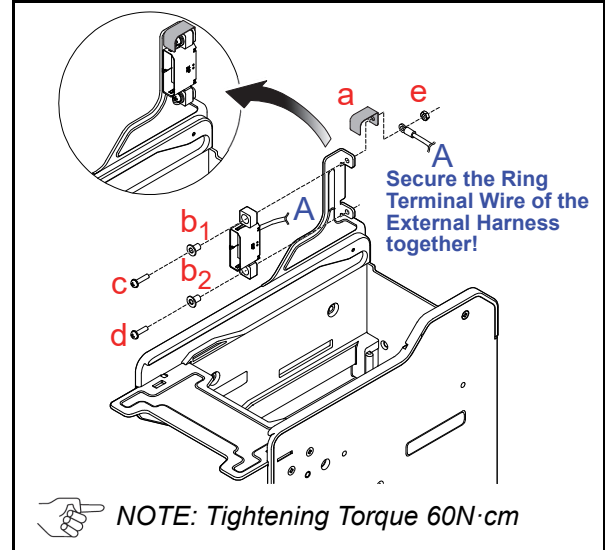


Figure 5 External Harness Installation

##### iVIZION2 Installation

Mounting holes are provided in each Frame Unit to attach the iVIZION2 Unit to a related Machine. Select and perform the following steps to install the Unit.



*NOTE: The iVIZION2 Unit or its assembly needs to be detached for cleaning or maintenance if there is no sufficient space.*

##### Side Installation

1. Secure the left and the right side of the Frame into its intended related Machine's location using six (6) M4 Screws on both sides of the Frame (3 Screws on each side).

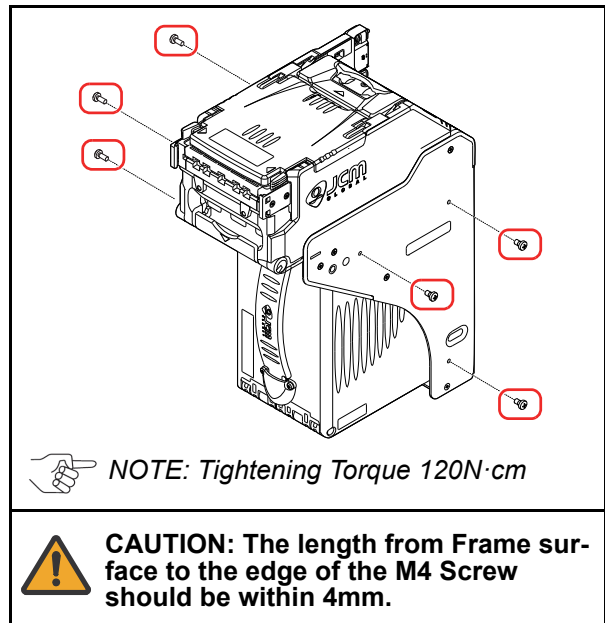


Figure 6 Side Installation

### Rear Installation

1. Remove the Cash Box.
2. Put the four (4) UNC6-32 Flat Head Screws into the back end of the Frame from its inside and secure the Frame into its intended location using Nuts.

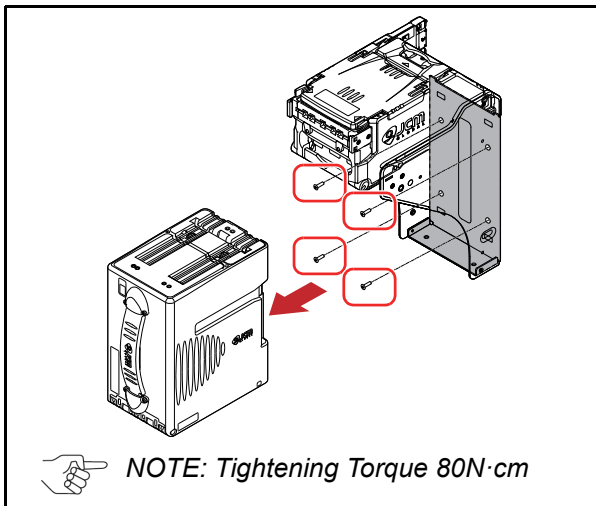


Figure 7 Rear Installation

### Security Lock Installation

One or two security locks can be installed onto a iVIZION2 Cash Box. When installing a security lock, the following attachment accessories may be required:

- Key Spacer
- Tang
- KEY CAP (provided)

Choose a Lock that fits a standard size hole dimension format (Figure 8). In addition, when two locks are installed, both locks must be identical.

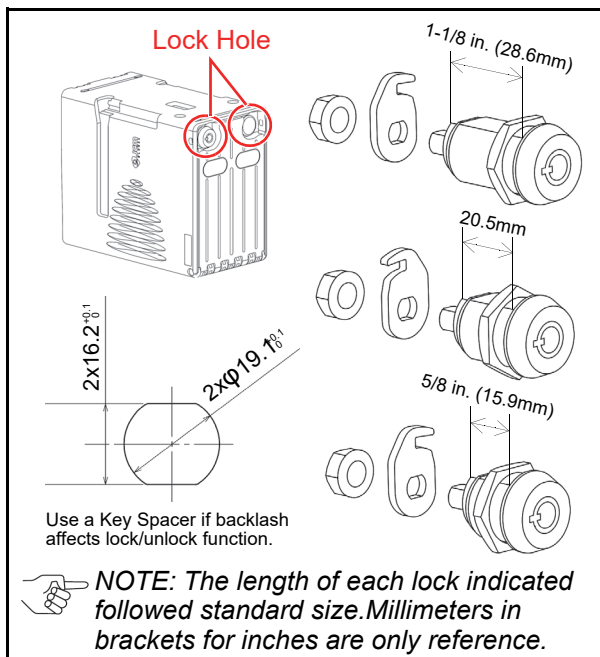


Figure 8 Security Lock Installation

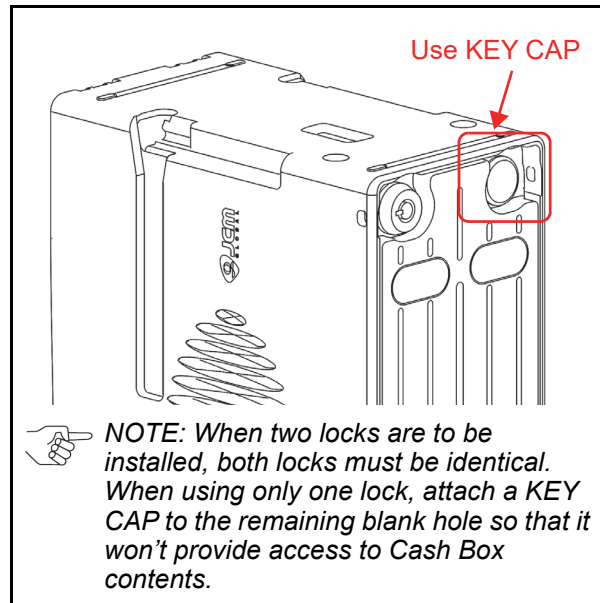


Figure 9 Lock Hole Cap Installation

### Unlock Procedure

**CAUTION:** There are many lock designs, and Key Spacer washers may be required for some lock types. Locks vary greatly in price, security, keying policies, etc. The customer is responsible for selecting a Lock with performance that fits the intended purpose. JCM does not test or endorse any specific brand of Lock for its security characteristics.

Each Lock has a different rotation direction to unlock. Make sure when the lock(s) are installed the rotation is in the correct direction(s) (Figure 10).

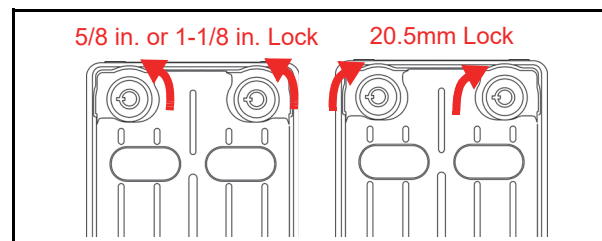



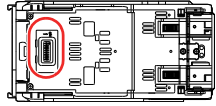
Figure 10 Unlock Rotation Direction

# Settings

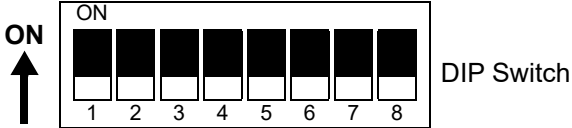
## Denomination Settings

 **NOTE:** The settings may vary based on Software. Refer to each Country's "Software Information Sheet" for making the proper switch settings.

**Table 10** Denomination Settings (by DIP Switch)




Validator Bottom View



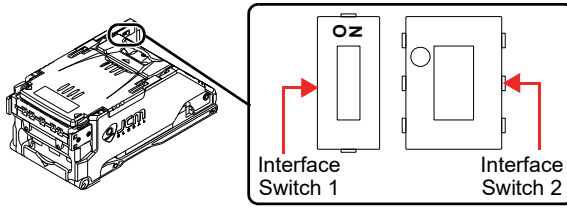
Switch No.	ON/OFF	Description
1	ON	VEND 1 INHIBIT
	OFF	VEND 1 ACCEPT
2	ON	VEND 2 INHIBIT
	OFF	VEND 2 ACCEPT
3	ON	VEND 3 INHIBIT
	OFF	VEND 3 ACCEPT
4	ON	VEND 4 INHIBIT
	OFF	VEND 4 ACCEPT
5	ON	VEND 5 INHIBIT
	OFF	VEND 5 ACCEPT
6	ON	VEND 6 INHIBIT
	OFF	VEND 6 ACCEPT
7	ON	VEND 7 INHIBIT
	OFF	VEND 7 ACCEPT
8	OFF*	OFF (Fixed)

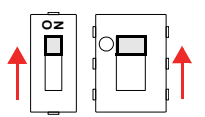
\*. Never Switched to ON.

## Interface Settings

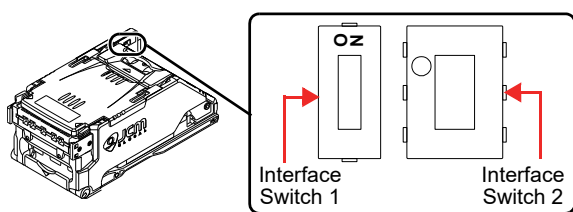
 **NOTE:** No need to set the Interface Switches for USB and TTL as their circuitry are independent. For cc-Talk, it is set via the specific software.

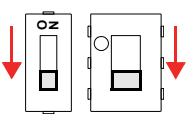
**Table 11** Interface Settings



Interface	ON/OFF
Photo-Coupler	


**Table 11** Interface Settings



Interface	ON/OFF
RS232C	

## Primary LED Indications

The iVIZION2 LEDs illuminate different colors when various operating and error conditions occur.


 **NOTE:** Refer to "Primary LED Indications" on page 13 for the LED flashing patterns and how to resolve errors.

**Table 12** Primary LED Indications

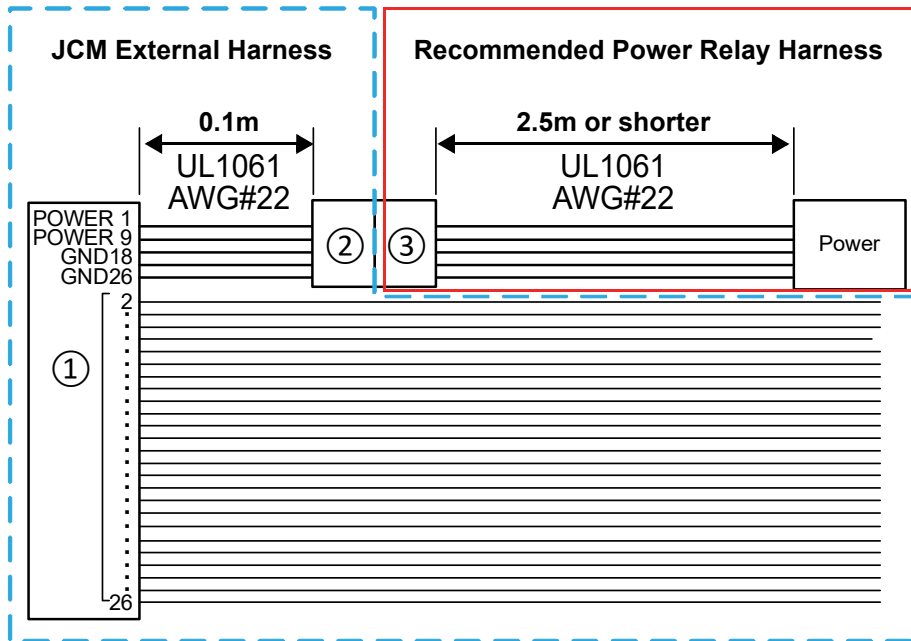
Condition	LED Indications	
	Power LED*	Status LED
OFF	● OFF	● OFF
Initializing	● Green ON	● Blue Flashes
Stand-by	● Green ON	● OFF
Reject	● Green ON	● Green Flashes
Banknote Jam	● Green ON	● Yellow Flashes
Abnormal Error	● Green ON	● Red Flashes
ICB Error	● Green ON	● Blue Flashes
PCB Damaged	● Green ON	● White Flashes
Downloading	● Green ON	● Red Flashes
Performance Test (Stand-by)	● Green ON	● Green Flashes
		● Blue ON


\*. The Power LED lights Green when Power is supplied to the Unit.

## Recommended Wires

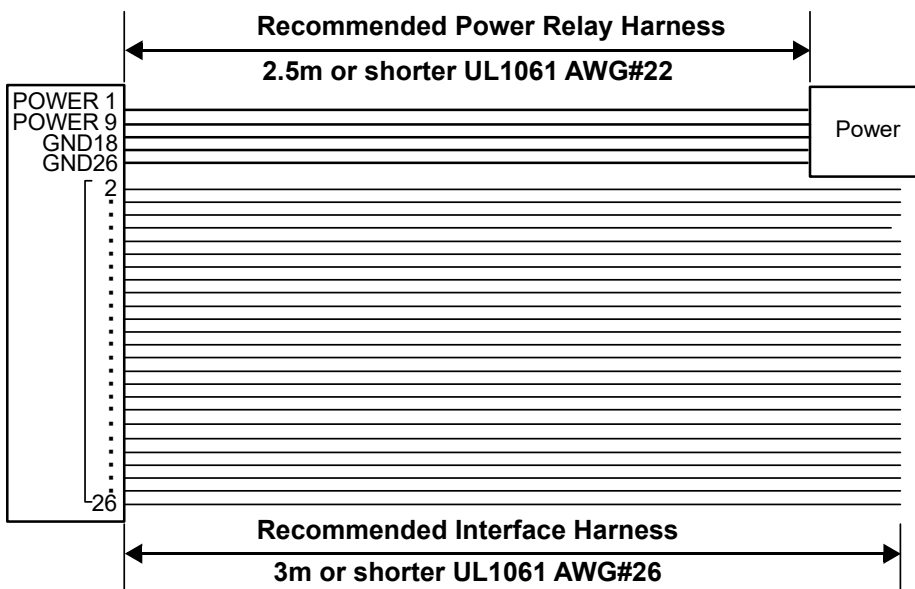
 **CAUTION:** The wiring harness must be UL1061 AWG#22 with the specified length (the acceptable electrical resistance of a wire: Approximately 150mΩ). For 12V DC, the thinner or longer wiring harness than recommended specifications may cause the iVIZION2 Unit to reset caused by voltage drop.

### With JCM External Harness



Connector	Housing	Terminal	Manufacture
①	 NOTE: Refer to P.15 "4 Connector Pin Assignments".		
②	70107-0003	16-02-0107	Molex
③	50579404	16-02-0086	Molex

### Not using JCM External Harness





## 4 CONNECTOR PIN ASSIGNMENTS

This section provides pin assignments of the iVIZION™2 Series Banknote Validator (iVIZION2).

### USB Connection

**Table 13** USB Connection Pin Assignments

Pin No.	Signal Name	I/O*	Function
1	24VDC	POWER	12V DC - 24V DC Power
2	M-RESET	IN	Banknote Validator Master Reset Input Signal Line
3	USB1-	IN/OUT	USB1 Connection Input/Output Signal Line
4	USB1+	IN/OUT	USB1 Connection Input/Output Signal Line
5	USB1 GND	SG†	USB1 Connection Ground (0V DC)
6	TTL-TXD	OUT	-
7	TTL-RXD	IN	-
8	LED POWER	OUT	LED Drive Line (anode)
9	24VDC	POWER	12V DC - 24V DC Power
10	232GND	SG†	-
11	TXD	OUT	-
12	I/F +12V	IN	Interface Power Supply (+12V DC)
13	VBUS1	IN	USB1 Connection Vbus Signal Line (+5V DC)
14	VBUS0	IN/OUT	USB0 Connection Vbus Signal Line (+5V DC) to FUZION
15	TTL-G	SG†	-
16	LED-	IN	LED Drive Line (cathode)
17	ccTalk(P)	IN/OUT	-
18	POWER GND	POWER	0V DC Power
19	I/F GND	SG†	-
20	RXD	IN	-
21	USB0+	IN/OUT	USB0 Connection Input/Output Signal Line to FUZION
22	USB0-	IN/OUT	USB0 Connection Input/Output Signal Line to FUZION
23	USB0 GND	SG†	USB0 Connection Ground (0V DC) to FUZION
24	SU SELECT	IN	No Connection = SS
25	ccTalk(S)	IN/OUT	-
26	POWER GND	POWER	0V DC Power

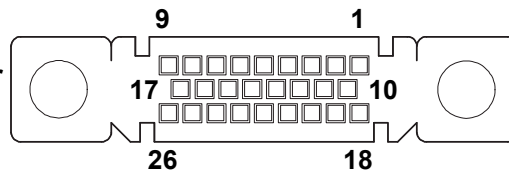
\*. I/O (input/output) is the terminal as viewed from the Unit's side.

†. SG = Signal Ground

## Photo-Coupler Isolation Connection

**Table 14** Photo-Coupler Isolation Connection Pin Assignments

Interface/Power Connector  
(Frame Side)



Socket Housing (Validator): DR1B026JA1 (JCM)

Socket Housing (Frame): DR1R026PA1 (JCM)

Contact Type (Validator): D02-22-26P-10000 (JAE) (Except Pin #1, #9, #18 and #26)

Contact Type (Frame): D02-22-22P-10000 (JAE) (Pin #1, #9, #18 and #26)

Recommended Wire: Refer to "Recommended Wires" on page 14

Pin No.	Signal Name	I/O*	Function
1	24VDC	POWER	12V DC - 24V DC Power
2	M-RESET	IN	Banknote Validator Master Reset Input Signal Line
3	USB1-	IN/OUT	-
4	USB1+	IN/OUT	-
5	USB1 GND	SG†	-
6	TTL-TXD	OUT	-
7	TTL-RXD	IN	-
8	LED POWER	OUT	LED Drive Line (anode)
9	24VDC	POWER	12V DC - 24V DC Power
10	232GND	SG†	-
11	TXD	OUT	Serial Connection Output Signal Line
12	I/F +12V	IN	Interface Power Supply (+12V DC)
13	VBUS1	IN	-
14	VBUS0	IN/OUT	USB0 Connection Vbus Signal Line (+5V DC) to FUZION
15	TTL-G	SG†	-
16	LED-	IN	LED Drive Line (cathode)
17	ccTalk(P)	IN/OUT	-
18	POWER GND	POWER	0V DC Power
19	I/F GND	SG†	Photo-Coupler Isolation Connection Ground
20	RXD	IN	Serial Connection Input Signal Line
21	USB0+	IN/OUT	USB0 Connection Input/Output Signal Line to FUZION
22	USB0-	IN/OUT	USB0 Connection Input/Output Signal Line to FUZION
23	USB0 GND	SG†	USB0 Connection Ground (0V DC) to FUZION
24	SU SELECT	IN	No Connection = SS
25	ccTalk(S)	IN/OUT	-
26	POWER GND	POWER	0V DC Power

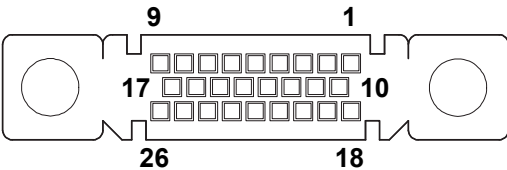
\*. I/O (input/output) is the terminal as viewed from the Unit's side.

†. SG = Signal Ground

## RS232C Connection

**Table 15** RS232C Connection Pin Assignments

**Interface/Power Connector  
(Frame Side)**



Socket Housing (Validator): DR1B026JA1 (JCM)  
 Socket Housing (Frame): DR1R026PA1 (JCM)  
 Contact Type (Validator): D02-22-26P-10000 (JAE) (Except Pin #1, #9, #18 and #26)  
 Contact Type (Frame): D02-22-22P-10000 (JAE) (Pin #1, #9, #18 and #26)  
 Recommended Wire: Refer to "Recommended Wires" on page 14

Pin No.	Signal Name	I/O*	Function
1	24VDC	POWER	12V DC - 24V DC Power
2	M-RESET	IN	Banknote Validator Master Reset Input Signal Line
3	USB1-	IN/OUT	-
4	USB1+	IN/OUT	-
5	USB1 GND	SG†	-
6	TTL-TXD	OUT	-
7	TTL-RXD	IN	-
8	LED POWER	OUT	LED Drive Line (anode)
9	24VDC	POWER	12V DC - 24V DC Power
10	232GND	SG†	RS232C Connection Ground
11	TXD	OUT	Serial Connection Output Signal Line
12	I/F +12V	IN	Interface Power Supply (+12V DC)
13	VBUS1	IN	-
14	VBUS0	IN/OUT	USB0 Connection Vbus Signal Line (+5V DC) to FUZION
15	TTL-G	SG†	-
16	LED-	IN	LED Drive Line (cathode)
17	ccTalk(P)	IN/OUT	-
18	POWER GND	POWER	0V DC Power
19	I/F GND	SG†	-
20	RXD	IN	Serial Connection Input Signal Line
21	USB0+	IN/OUT	USB0 Connection Input/Output Signal Line to FUZION
22	USB0-	IN/OUT	USB0 Connection Input/Output Signal Line to FUZION
23	USB0 GND	SG†	USB0 Connection Ground (0V DC) to FUZION
24	SU SELECT	IN	No Connection = SS
25	ccTalk(S)	IN/OUT	-
26	POWER GND	POWER	0V DC Power

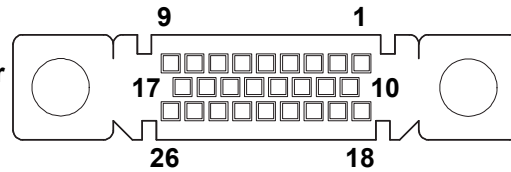
\*. I/O (input/output) is the terminal as viewed from the Unit's side.

†. SG = Signal Ground

## cc-Talk Connection

**Table 16** cc-Talk Connection Pin Assignments

Interface/Power Connector  
(Frame Side)



Socket Housing (Validator): DR1B026JA1 (JCM)

Socket Housing (Frame): DR1R026PA1 (JCM)

Contact Type (Validator): D02-22-26P-10000 (JAE) (Except Pin #1, #9, #18 and #26)

Contact Type (Frame): D02-22-22P-10000 (JAE) (Pin #1, #9, #18 and #26)

Recommended Wire: Refer to "Recommended Wires" on page 14

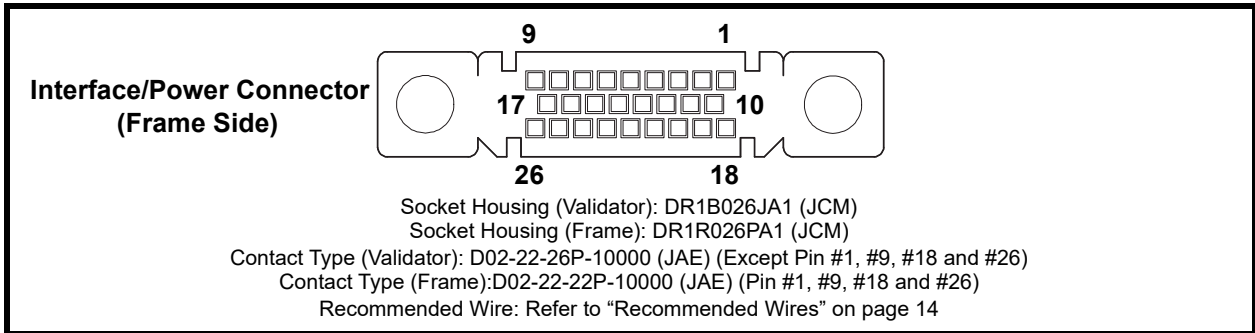
Pin No.	Signal Name	I/O*	Function
1	24VDC	POWER	12V DC - 24V DC Power
2	M-RESET	IN	Banknote Validator Master Reset Input Signal Line
3	USB1-	IN/OUT	-
4	USB1+	IN/OUT	-
5	USB1 GND	SG†	-
6	TTL-TXD	OUT	-
7	TTL-RXD	IN	-
8	LED POWER	OUT	LED Drive Line (anode)
9	24VDC	POWER	12V DC - 24V DC Power
10	232GND	SG†	-
11	TXD	OUT	-
12	I/F +12V	IN	Interface Power Supply (+12V DC)
13	VBUS1	IN	-
14	VBUS0	IN/OUT	USB0 Connection Vbus Signal Line (+5V DC) to FUZION
15	TTL-G	SG†	-
16	LED-	IN	LED Drive Line (cathode)
17	ccTalk(P)	IN/OUT	cc-Talk Connection Power Line
18	POWER GND	POWER	0V DC Power
19	I/F GND	SG†	-
20	RXD	IN	-
21	USB0+	IN/OUT	USB0 Connection Input/Output Signal Line to FUZION
22	USB0-	IN/OUT	USB0 Connection Input/Output Signal Line to FUZION
23	USB0 GND	SG†	USB0 Connection Ground (0V DC) to FUZION
24	SU SELECT	IN	No Connection = SS
25	ccTalk(S)	IN/OUT	cc-Talk Connection Signal Line
26	POWER GND	POWER	0V DC Power

\*. I/O (input/output) is the terminal as viewed from the Unit's side.

†. SG = Signal Ground

## TTL Connection

**Table 17** TTL Connection Pin Assignments



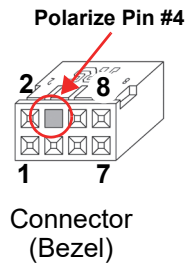
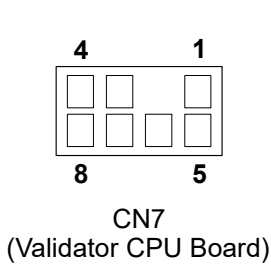
Pin No.	Signal Name	I/O*	Function
1	24VDC	POWER	12V DC - 24V DC Power
2	M-RESET	IN	Banknote Validator Master Reset Input Signal Line
3	USB1-	IN/OUT	-
4	USB1+	IN/OUT	-
5	USB1 GND	SG†	-
6	TTL-TXD	OUT	TTL Connection Output Signal Line
7	TTL-RXD	IN	TTL Connection Input Signal Line
8	LED POWER	OUT	LED Drive Line (anode)
9	24VDC	POWER	12V DC - 24V DC Power
10	232GND	SG†	-
11	TXD	OUT	-
12	I/F +12V	IN	Interface Power Supply (+12V DC)
13	VBUS1	IN	-
14	VBUS0	IN/OUT	USB0 Connection Vbus Signal Line (+5V DC) to FUZION
15	TTL-G	SG†	-
16	LED-	IN	LED Drive Line (cathode)
17	ccTalk(P)	IN/OUT	-
18	POWER GND	POWER	0V DC Power
19	I/F GND	SG†	-
20	RXD	IN	-
21	USB0+	IN/OUT	USB0 Connection Input/Output Signal Line to FUZION
22	USB0-	IN/OUT	USB0 Connection Input/Output Signal Line to FUZION
23	USB0 GND	SG†	USB0 Connection Ground (0V DC) to FUZION
24	SU SELECT	IN	No Connection = SS
25	ccTalk(S)	IN/OUT	-
26	POWER GND	POWER	0V DC Power

\*. I/O (input/output) is the terminal as viewed from the Unit's side.

†. SG = Signal Ground

## Bezel Connector (CN7)

**Table 18** Bezel Connector Pin Assignments



Header (Validator): A3B-8PA-2DS (61) (HRS)  
 Socket Housing (Bezel): A3B-8D-2C (HRS)  
 Contact Type (Bezel): A3B-2630SCFC (HRS)  
 Polarizing Key: A3-GPIN (HRS)  
 Recommended Wire: UL1007 AWG#24-#30



**NOTE:** The numbers marked on the Bezel Connector (Socket Housing) and that of CN7 (see Table 18 below) are differently located. The Polarizing Key should be inserted into Pin #4 of the Bezel Connector.

Pin No.	Signal Name	I/O*	Function
1	NC	-	-
2	-	-	Polarizing Key
3	NC	-	-
4	5V	OUT	5V DC Power Supply (Maximum 300mA)
5	VIN	OUT	LED Drive Power Supply (to iVIZION2) (Maximum 300mA)
6	GND	SG†	-
7	LED POWER	OUT	LED Power Supply 5V, Current Limitation Resistance (Maximum 20mA)
8	LED 1	IN	LED Drive Line (cathode) Maximum Sink Current: 300mA

\*. I/O (input/output) is the terminal as viewed from the Unit's side.

†. SG = Signal Ground

## 5 PREVENTIVE MAINTENANCE

This section provides the preventive maintenance of the iVIZION™2 Series Banknote Validator (iVIZION2).

- Retrieving Banknotes (p. 21)
- Clearing a Banknote Jam (p. 21)
- Cleaning (p. 21)

### Retrieving Banknotes

1. Remove the Cash Box from the Frame.
2. Unlock the Cash Box with a key.
3. Open the Cash Box Door and remove Banknotes.

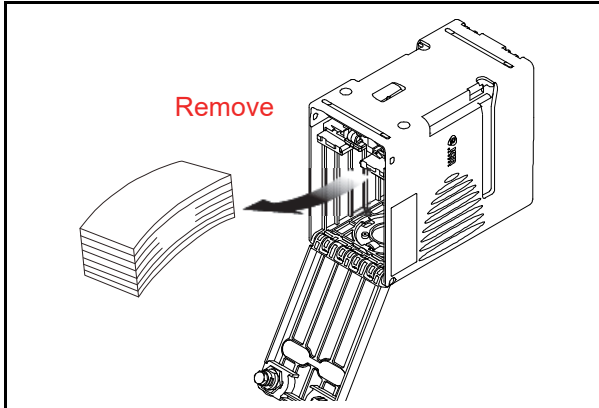


Figure 11 Retrieving Banknote

### Clearing a Banknote Jam

1. Open the Validator Unit's Upper Guide by pressing in on the two (2) Upper Guide Access Levers (Front) (Figure 12 a), and lift the Validator top up and open.
2. Remove the jammed Banknote. If the jammed Banknote is not found in there, go to Step 3.
3. Open the Transport Unit's Upper Guide by pressing in on the Upper Guide Access Lever (Figure 12 b) located in the center of the Upper Guide, and lift the Transport Section up and open.
4. Remove the jammed Banknote. If the jammed Banknote is not found in there, go to Step 5.

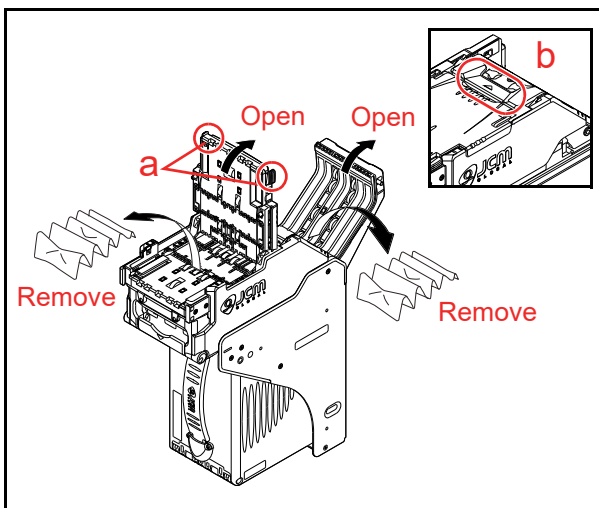


Figure 12 Clearing a Banknote Jam 1

5. If the jammed Banknote is not found in the higher Sections, pull the Cash Box out of the Frame (Figure 13 a).
6. Check at the rear side of the Frame and remove the jammed Banknote located there if any.
7. A jammed Banknote may also be present on top of the Cash Box; remove it if present at this location.

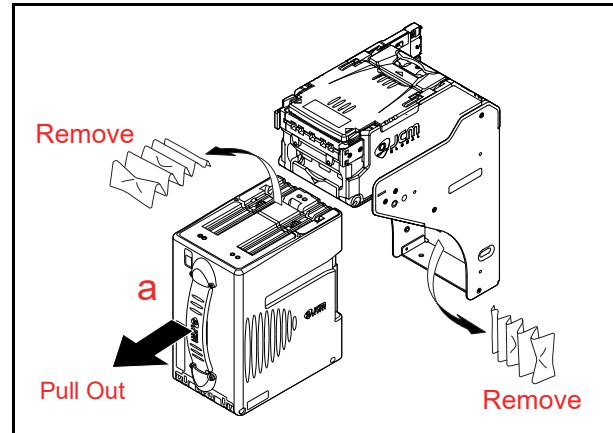


Figure 13 Clearing a Banknote Jam 2

### Cleaning

Use a dry, soft, lint-free cloth or a Cotton swab to wipe dirt and stains.

If necessary, blow the inside of the Unit clean with a non-flammable compressed air and remove clinging foreign objects.



**WARNING: Be sure to use non-flammable compressed air only.**



**WARNING: DO NOT let liquids or fluids drip into the Unit's interior; otherwise, the Unit may not operate correctly.**



**CAUTION: To keep the iVIZION2 Unit performance optimal, perform routine cleaning and maintenance:**

- At least once a month; and/or
- Whenever Sensors, Belts, Rollers or Banknote Path are dirty due to dust, foreign objects or similar debris adhering to them.

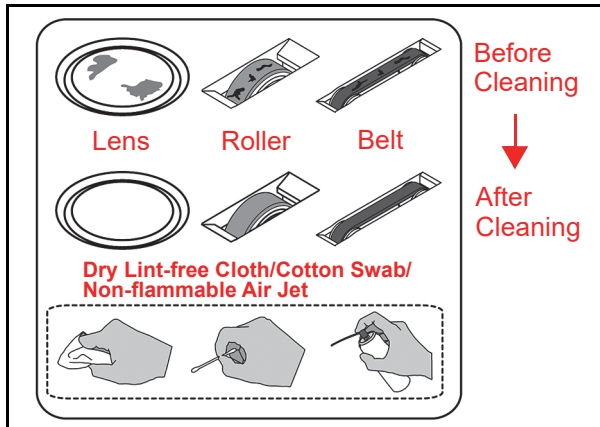


**CAUTION: Do not use alcohol, thinner or citrus based products for cleaning any Sensors or surfaces on a Banknote Path. The lenses can become clouded by chemical evaporation residue that may cause acceptance errors.**

## Cleaning Procedure

To clean the iVIZION2 Unit's Sensors, Rollers and Belts, proceed as follows:

1. Remove electrical power from the iVIZION2 Unit.
2. Remove the Validator and the Cash Box from the Frame.
3. Clean the Sensors properly.
4. Pressing in on the Upper Guide Access Lever (Front) and lift the Validation Unit up and open.
5. Clean the Sensors, the Rollers, the Belts and the Banknote Path properly.
6. Pressing in on the Upper Guide Access Lever (Rear) and lift the Transport Unit up and open.
7. Clean the Sensors, the Rollers, the Belts and the Banknote Path properly.



**Figure 14** General Cleaning Image



### iVIZION2 Sensor Locations

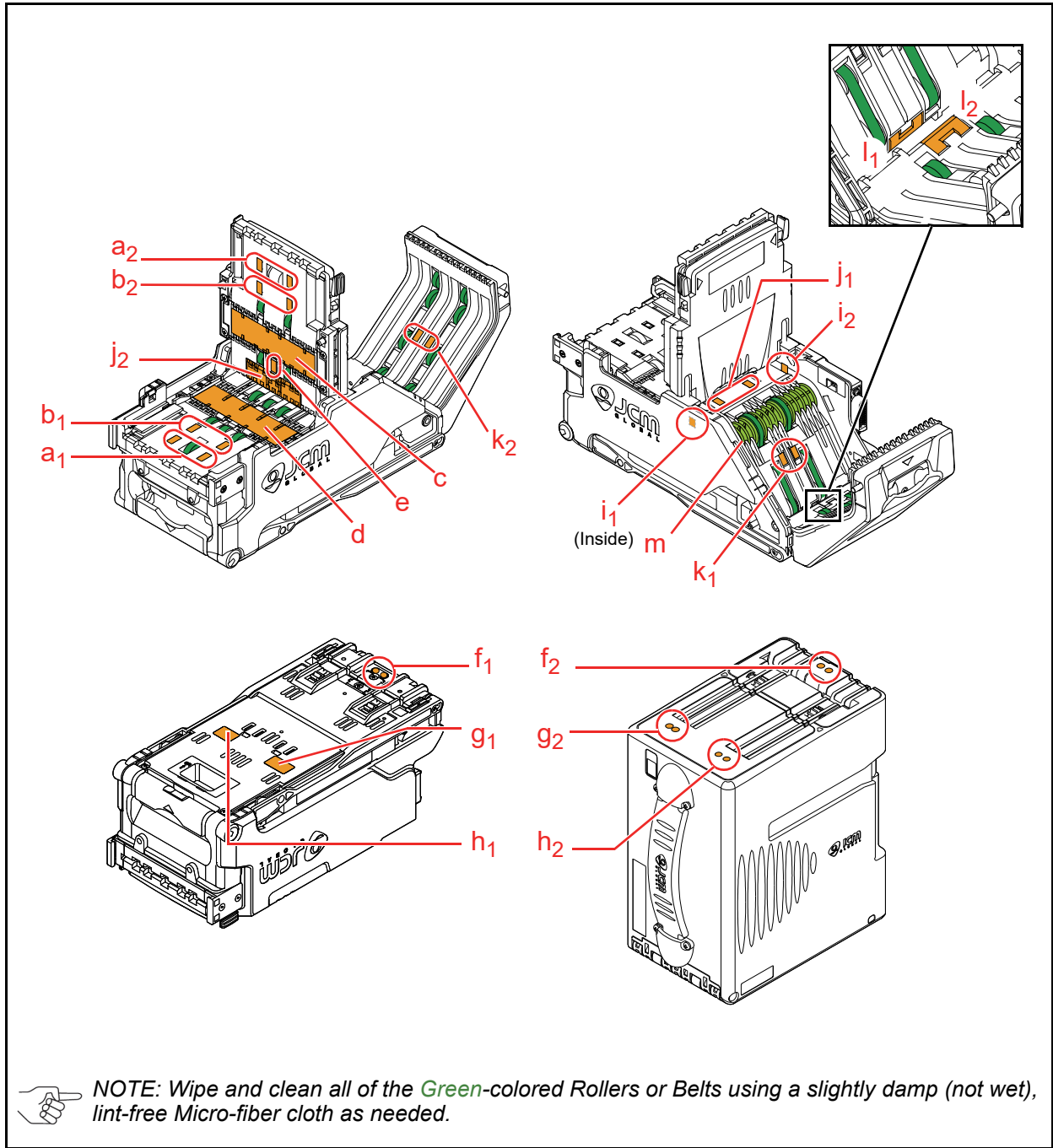


Figure 15 iVIZION2 Sensor Locations

**Table 19** iVIZION2 Sensor Descriptions and Cleaning Methods

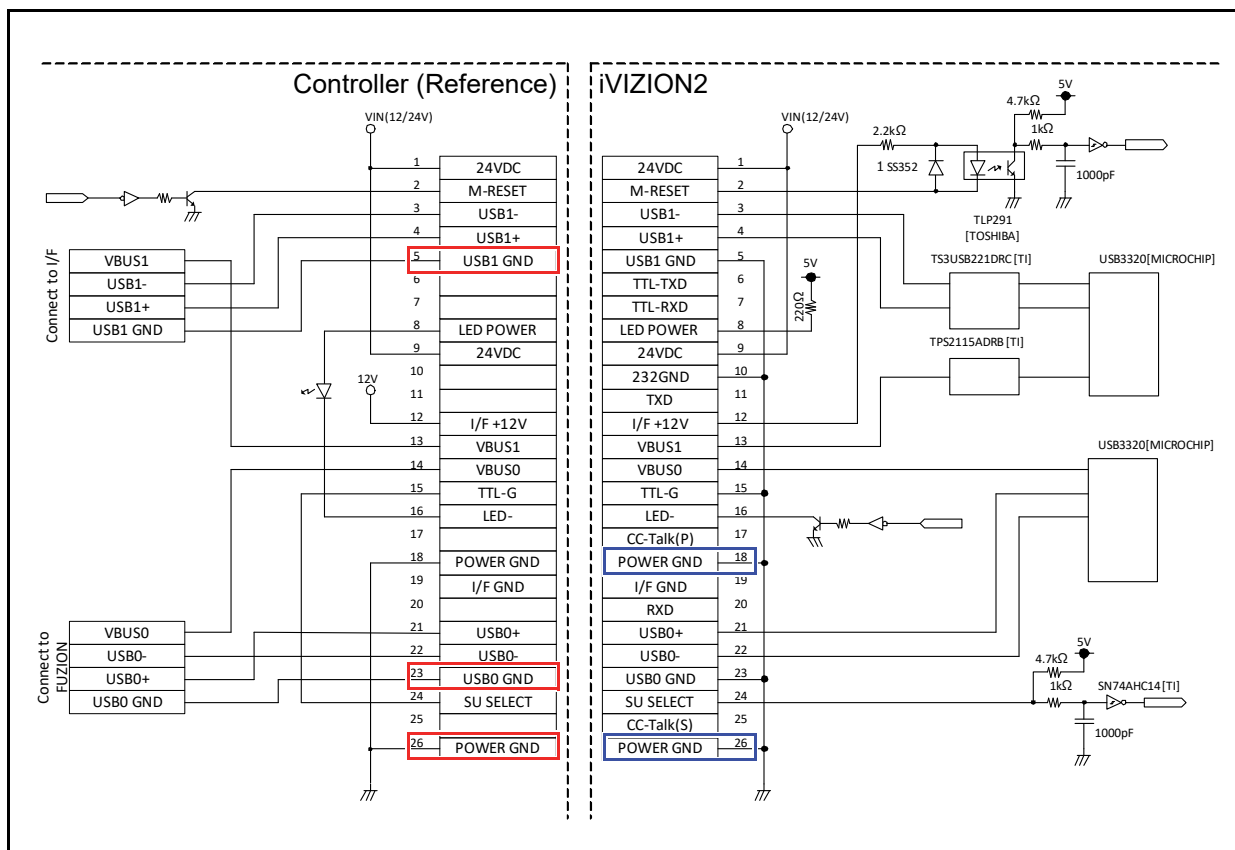
Assembly Unit	Sym.	Sensor	Cleaning Method
Validation Head	a <sub>1</sub>	Entrance Sensors	Wipe clean using a dry lint free cloth or cotton swab
	a <sub>2</sub>	Entrance Sensors Prism	
	b <sub>1</sub>	Centering Sensor	
	b <sub>2</sub>	Centering Sensor Prism	
	c	CIS (Upper) or CIS with UV Point Sensor (Upper)	
	d	CIS Sensor (Lower)	
	e	UV Point Sensor	1. Remove the Validator 2. Wipe clean using a dry lint free cloth or cotton swab
	f <sub>1</sub>	Box Home Position Sensor	
	g <sub>1</sub>	Cash Box Sensor	
	h <sub>1</sub>	Nearly Full Sensor	
Transport Module	i <sub>1</sub>	String Detection Sensor	Wipe clean using a dry lint free cloth or cotton swab
	i <sub>2</sub>	String Detection Sensor Prism	
	j <sub>1</sub>	PB-In Sensor	
	j <sub>2</sub>	PB-In Sensor Prism	
	k <sub>1</sub>	PB-Out Sensor	
	k <sub>2</sub>	PB-Out Sensor Prism	
	l <sub>1</sub>	Exit Sensor	
	l <sub>2</sub>	Exit Sensor Prism	
m	Anti-Stringing Mechanism		
Cash Box	f <sub>2</sub>	Box Home Position Sensor Prism	1. Remove the Validator 2. Wipe clean using a dry lint free cloth or cotton swab
	g <sub>2</sub>	Cash Box Sensor Prism	
	h <sub>2</sub>	Nearly Full Sensor Prism	

## 6 INTERFACE SCHEMATIC CIRCUIT DIAGRAMS

This section provides the interface schematic circuit diagram of the iVIZION™2 Series Banknote Validator (iVIZION2).

- USB Schematic Circuit Diagram (p. 25)
- Photo-Coupler Isolation Schematic Circuit Diagram (p. 26)
- RS232C Schematic Circuit Diagram (p. 26)
- cc-Talk Schematic Circuit Diagram (p. 27)
- TTL Schematic Circuit Diagram (p. 27)
- Bezel LED Schematic Circuit Diagram (p. 28)

### USB Schematic Circuit Diagram



**CAUTION:** Generally, a USB Connector is designed to have Ground make contact first when it is connected to a PC.

The USB line of the iVIZION2 is provided in a floating connector and the USB's GND and signal lines are connected at a same time. A circuit can get damaged due to electric surge and such when GND of the PC and of the iVIZION2 Unit are not equal potential. To avoid such damages, introduce one of the following instructions on a Host Machine side:

- In a cable, design a Host Machine's floating connector to connect its Pin #5 or #23 to #26; or
- On a PCB, design to connect PC's Ground to iVIZION2's POWER GND.

Figure 16 USB Schematic Circuit Diagram

### Photo-Coupler Isolation Schematic Circuit Diagram

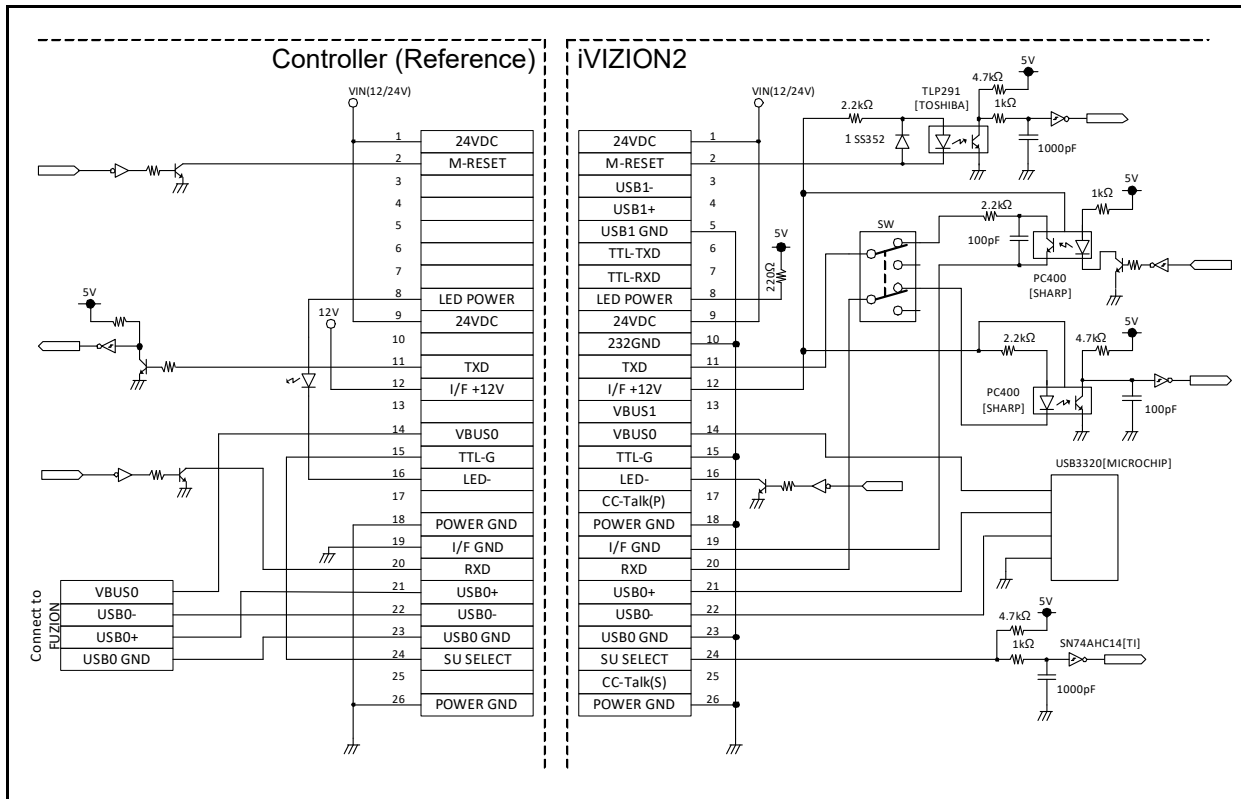


Figure 17 Photo-Coupler Isolation Schematic Circuit Diagram

### RS232C Schematic Circuit Diagram

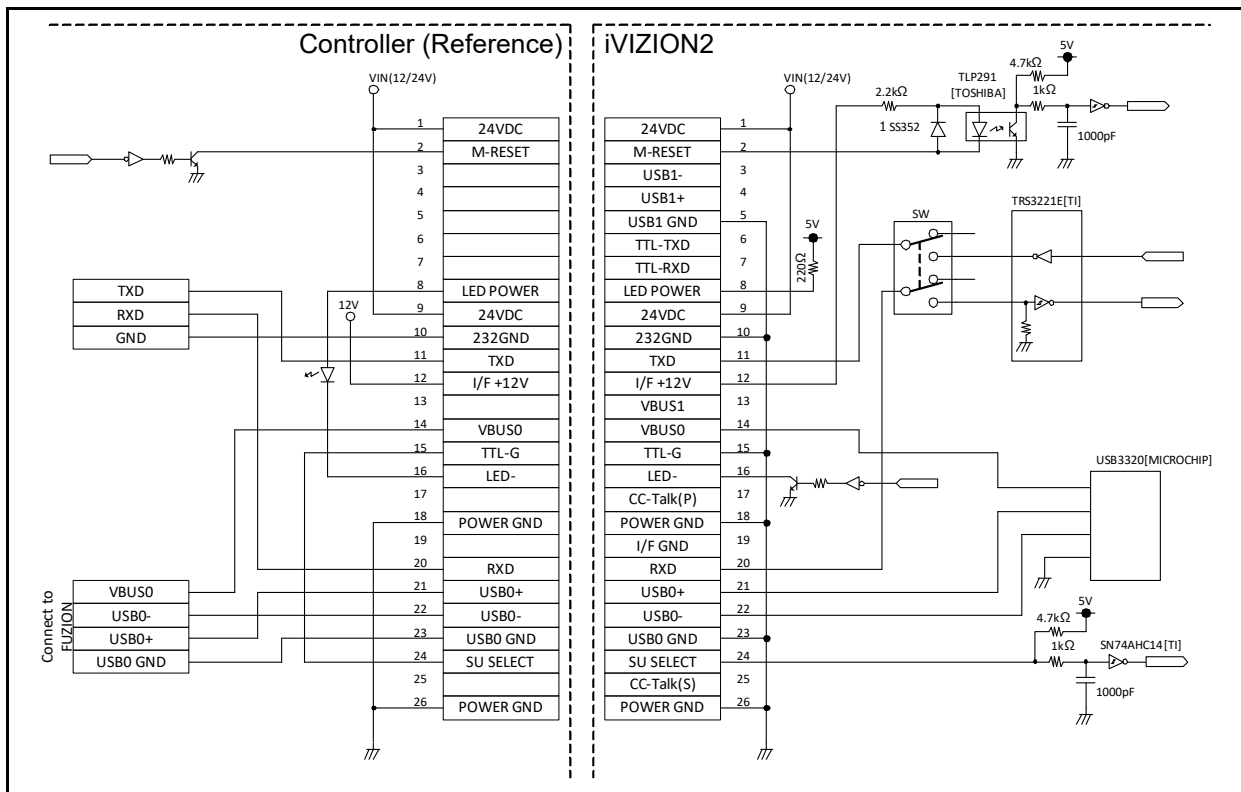


Figure 18 RS232C Schematic Circuit Diagram

### cc-Talk Schematic Circuit Diagram

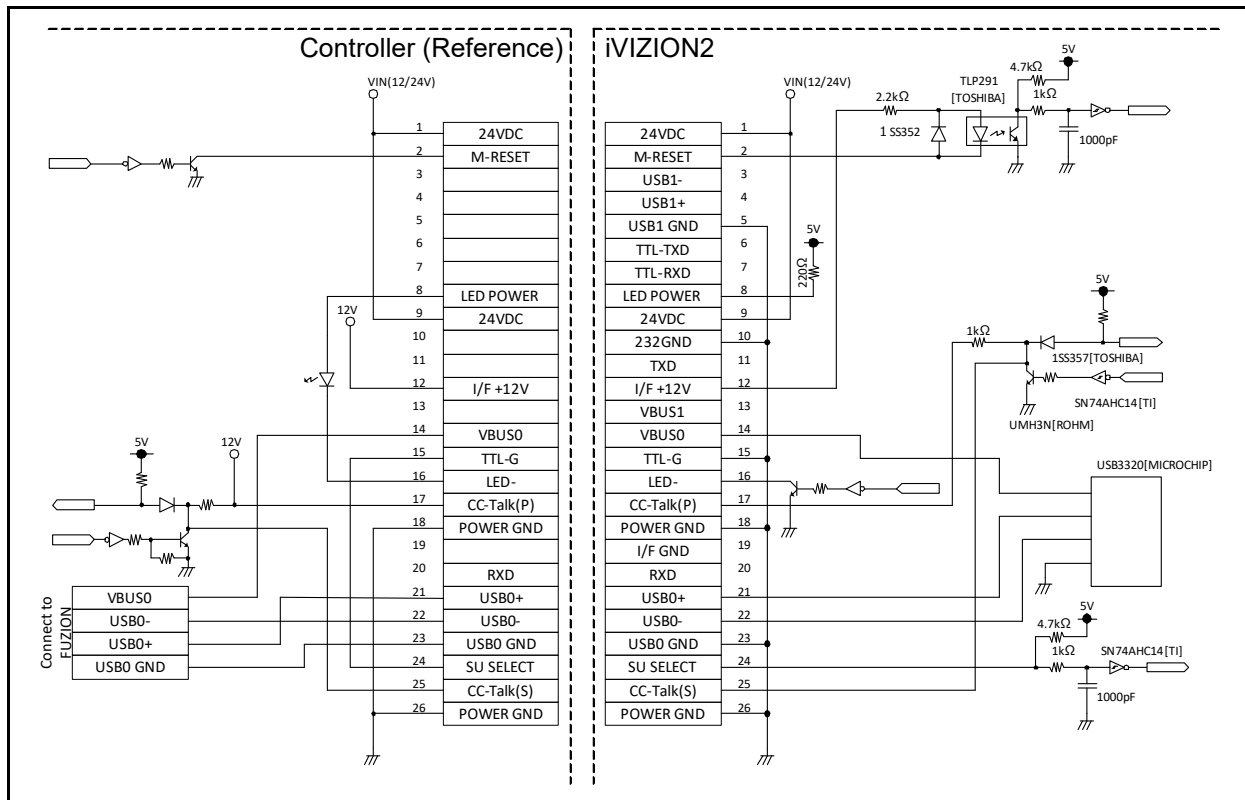


Figure 19 cc-Talk Schematic Circuit Diagram

### TTL Schematic Circuit Diagram

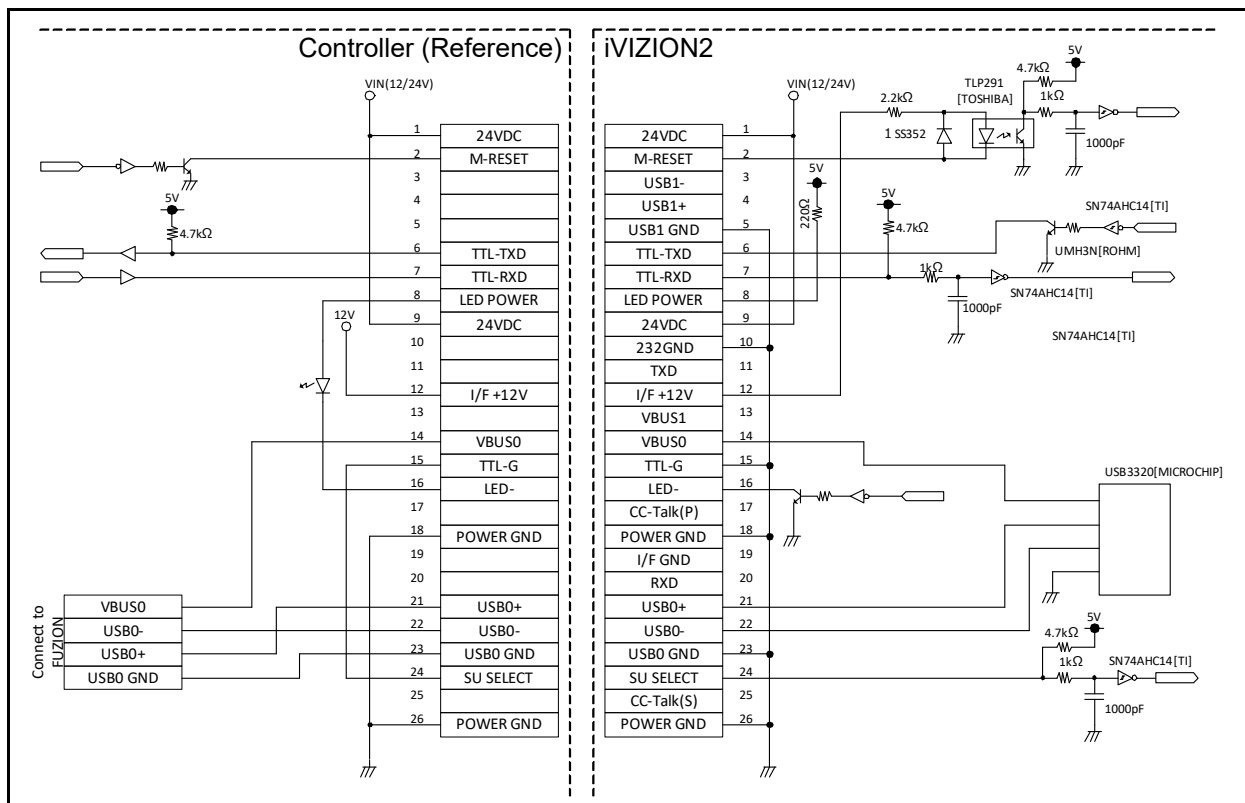
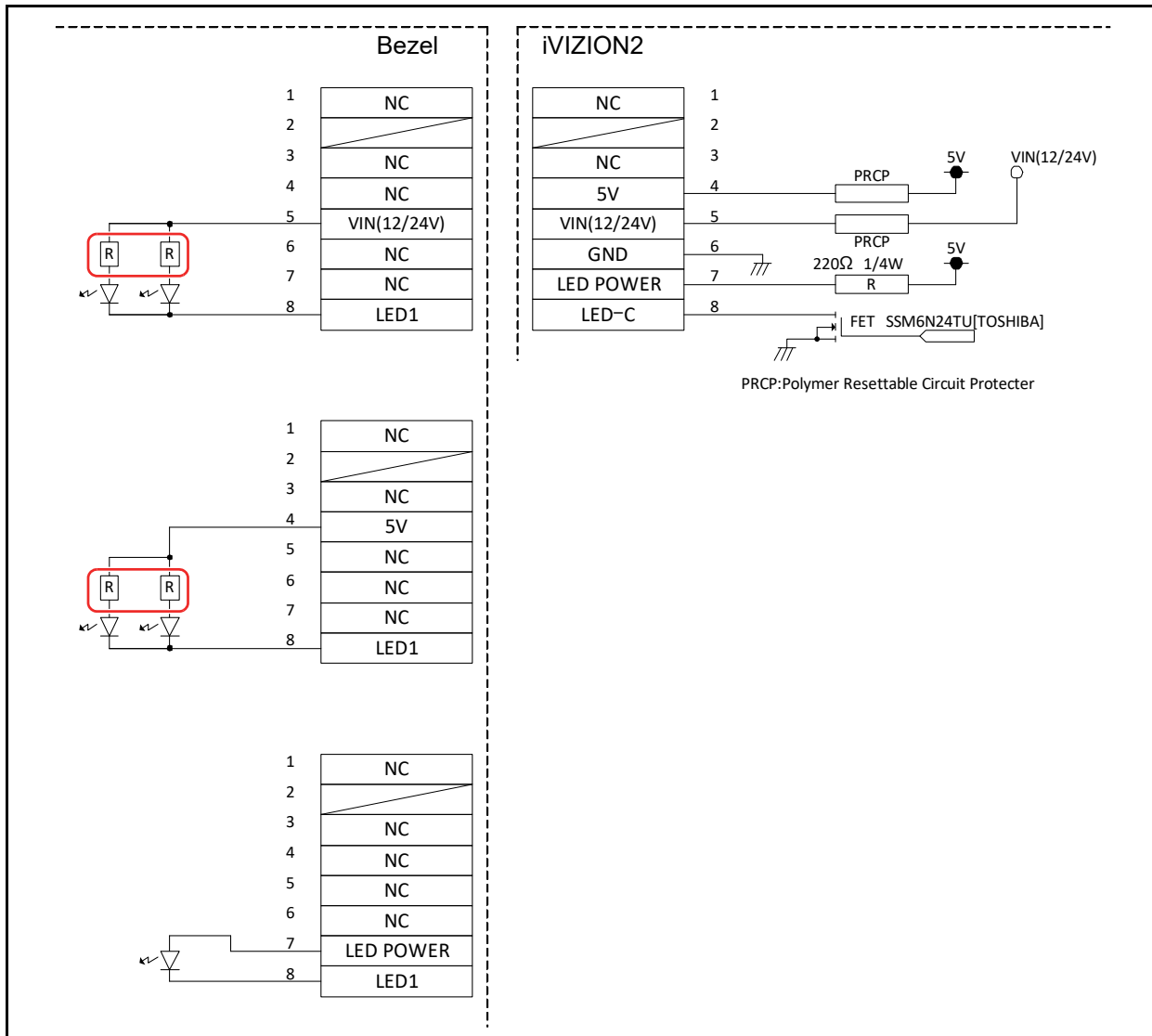


Figure 20 TTL Schematic Circuit Diagram

### Bezel LED Schematic Circuit Diagram



**CAUTION:** Select the Current Resistance Limitation Variable depending on the Voltage at the 5th pin connected to the Machine's input Power Supply.

- Maximum Output Supply
  - 4th pin: 5V 300mA
  - 5th pin: VIN 300mA
  - 7th pin: LED Power 20mA
- Maximum Sink Current
  - 8th pin: LED1 300mA

**Figure 21** Bezel LED Schematic Circuit Diagram

## 7 OPERATIONAL FLOWCHARTS

This section provides the operational flowcharts of the iVIZION™2 Series Banknote Validator (iVIZION2).

- iVIZION2 Operational Flowchart; Stand-by and Initialization (p. 29)
- iVIZION2 Operational Flowchart; Validation (p. 30)

### iVIZION2 Operational Flowchart; Stand-by and Initialization

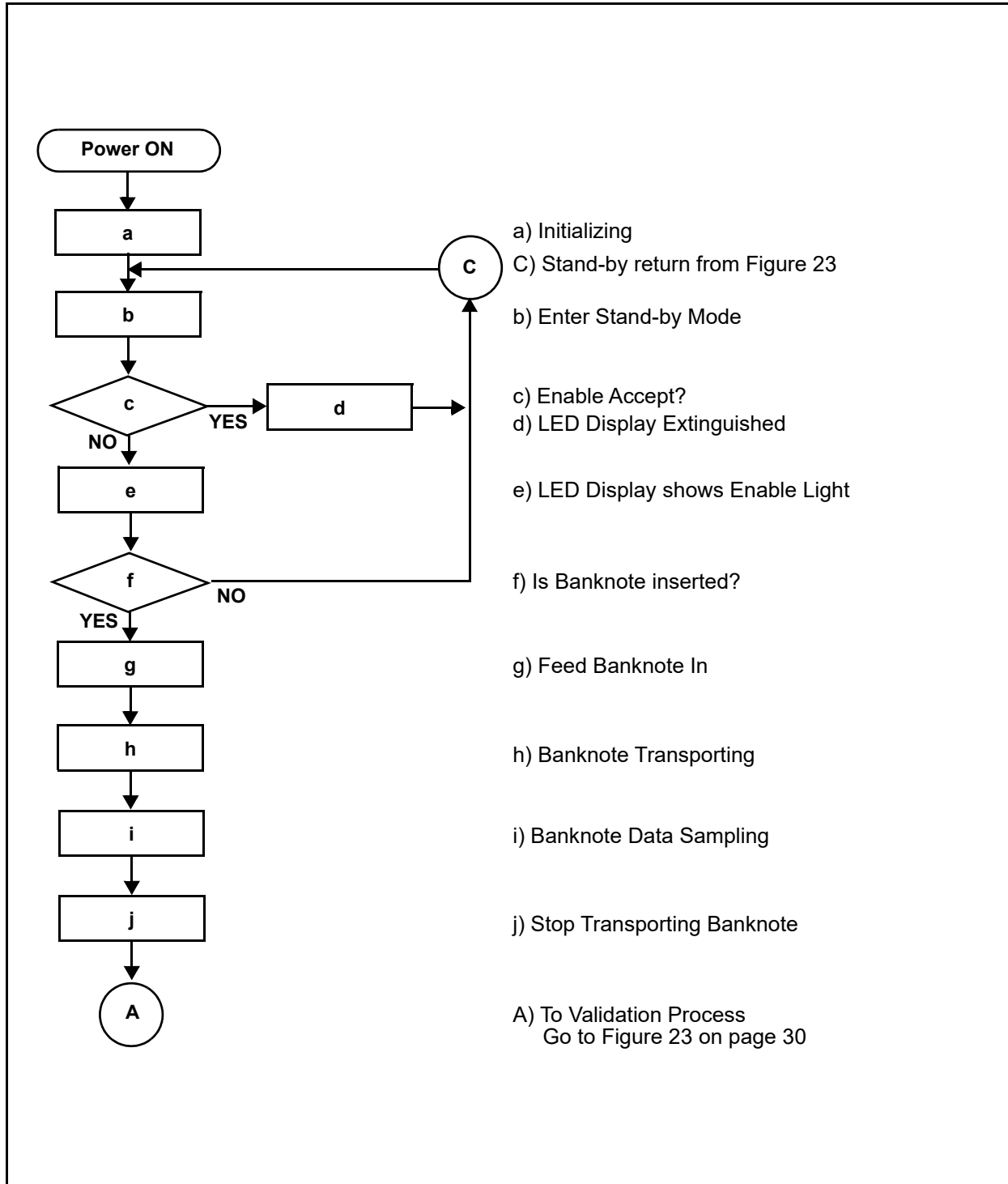
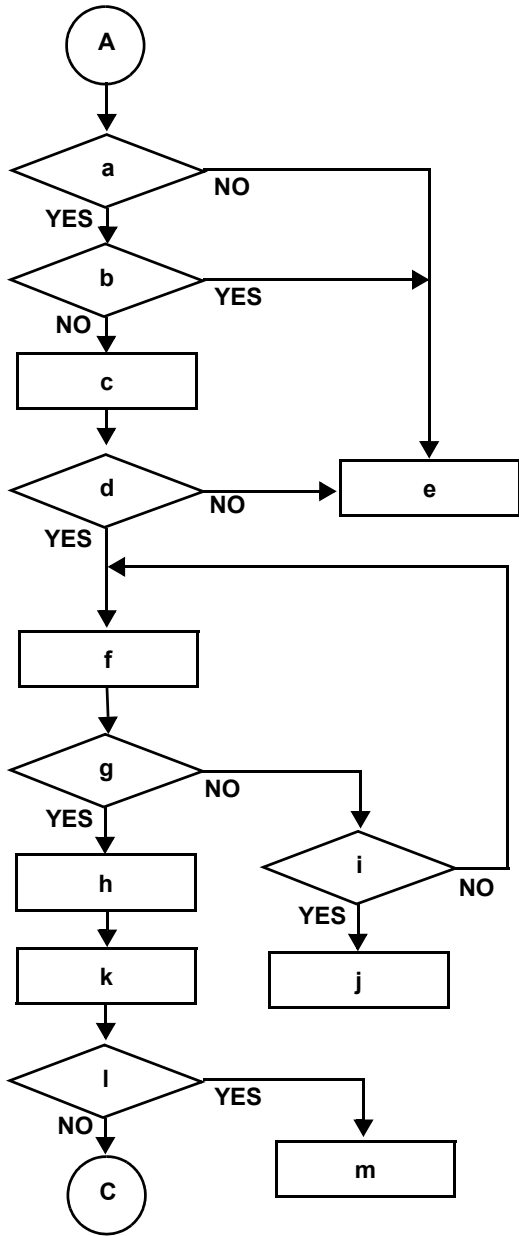


Figure 22 iVIZION2 Operational Flowchart; Stand-by and Initialization

### iVIZION2 Operational Flowchart; Validation



- A) Begin Validating
- a) Is Validation Result OK?
- b) Is Banknote Unacceptable?
- c) Output the Denomination Value Signal
- d) Receive Stacking Command?
- e) Reject Banknote
- f) Continue Transporting Banknote
- g) Is Banknote sent to Stacker?
- i) Retry 3 times?
- h) Output a VEND Signal
- j) Stop Performance: Output Abnormal Signal (\*1)
- k) Banknote Stacking
- l) Is Stacker Full?
- m) Stop Performance: Issue Output Stacker Full Signal (\*2)
- C) Return To Stand-by Mode (Figure 22).

\*1 When Abnormal Output Signal condition occurs, remove the Banknote causing the malfunction and re-apply power to the Unit, or send a Reset Command to the Banknote Validator.

\*2 When a Stacker Full signal occurs, remove the Banknotes from the Cash Box and re-install it into its fully seated position. The Unit will the automatically re-initialize itself.


Figure 23 iVIZION2 Operational Flowchart; Validation



# 8 TROUBLESHOOTING

This section provides Troubleshooting instructions for the iVIZION™2 Series Banknote Validator (iVIZION2).

- Introduction (p. 31)
- Troubleshooting Overview (p. 31)
- Malfunction LED Error Codes (p. 31)
- LED Indication Conditions (p. 31)
- LED Error and Reject Codes (p. 32)

 **NOTE:** Refer to “Cleaning” on page 21 and “iVIZION2 Sensor Locations” on page 23 for the cleaning method and the location of the Sensors.

## Introduction

Most Banknote Validator failures are due to minor causes. Before replacing any parts, make sure that all assembly and circuit board connectors are properly fitted and the harness is properly connected.

Lower than expected Banknote acceptance by the validation portion of the iVIZION2 is often caused when dust or debris adheres to the Sensors, Rollers or Belts.

Clean the Validator, then observe the operating state of the Validator in detail when re-initializing power. This observation is important in locating any failure causes and the possible fault area.

If the Validator has to be repaired by disassembling it, always re-calibrate the Sensors following repair.

## Troubleshooting Overview

The iVIZION2 allows the operator to perform fault diagnosis by checking various fault Table listings against the symptom, and survey the cause(s) of any failure occurrences during the process.

After determining the cause of the failure, repair the Unit by replacing any appropriate parts, execute the Performance Test to confirm the iVIZION2 performance, then calibrate the Sensors.

## Malfunction LED Error Codes

The iVIZION2 contains two (2) Front Panel Indicators (i.e. a Green Power LED and a Status LED that exhibits four (4) colors).






















The Power LED always lights a Green Color when power is applied to the iVIZION2 Unit.

The Status LED lights solid or flashes one combination of four (4) Colors when errors, Banknote jams or a reject occurs. The iVIZION2 Status, Error Codes, Banknote Jam Codes or Reject Codes are indicated by the number and/or Color of the Status LED solid or flashing light Color conditions.

## LED Indication Conditions

Table 20 lists the Green Power ON LED and the various Four (4) Color LED Status/Error Code indications for the iVIZION2 Unit.

**Table 20** LED Indication Conditions

Symptoms	Power ON LED	Status LED	Causes and Solutions
Normal Condition	 Green ON	 OFF	The Unit is set-up correctly (Stand-by).
Initializing	 Green ON	 Blue Flashes	The Unit is initializing.
Downloading	 Green ON	 Red Flashes	The Unit is performing a download.
		 Green Flashes	
Nearly Full Detection	 Green ON	 Yellow Flashes	The Unit has detected a Nearly-full Cash Box Condition.
Test Mode	 Green ON	 Blue ON	The Unit is in a “Performance Test Mode” status (Stand-by).
Error	 Green ON	 Red Flashes	An error occurred (refer to Table 21 “LED Error Codes; General”).
ICB Error	 Green ON	 Blue Flashes	An ICB error occurred (refer to Table 22 “LED Error Codes; ICB”).
Banknote Jam	 Green ON	 Yellow Flashes	A Banknote is jammed (refer to Table 23 “LED Error Codes; Banknote Jam”).
Reject	 Green ON	 Green Flashes	A Reject error occurred (refer to Table 24 “LED Reject Codes; Banknote” or Table 25 “LED Reject Codes; Barcode Ticket”).
The iVIZION2 Unit is not working	 OFF	 OFF	<p>The power is not being supplied. [Solution]</p> <ul style="list-style-type: none"> <li>• Ensure the harnesses are connected to the Interfaces.</li> <li>• Ensure that the power supply working voltage and range is appropriate.</li> <li>• Ensure the Interface harnesses are not disconnected between the Transport Unit and the Frame Unit.</li> <li>• Ensure that the higher Interface Board Fuse (F1) is not blown.</li> <li>• Ensure that all harnesses and/or connectors are on the Control CPU Board.</li> </ul>

## LED Error and Reject Codes

Identify the causes and solution for these indications from each Table's list and ensure that the relative assemblies are properly connected and/or harnessed, and that all of the Unit's Sensors are clean.







**NOTE:** If the error is not resolved, replace the relative Part(s) and Sensor(s).

### LED Error Codes; General

**Table 21** LED Error Codes; General

Status LED	Error	Solution	Relative Part/Sensor
Red Flashes (1)	Cash Box Full Detected a Cash Box Full Condition	<ul style="list-style-type: none"> <li>Retrieving the Banknotes from the Cash Box.</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> <li>Clean and calibrate the relative Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>Full Sensor</li> <li>CPU Board CN12</li> <li>MGU Board CN1 PT3, LED3</li> </ul>
Red Flashes (2)	Reserved	-	-
Red Flashes (3)	Sensor Adjust- ment Error Abnormal Sensor adjustment detected	<ul style="list-style-type: none"> <li>Clean and calibrate the Sensors of the Validator.</li> </ul>	<ul style="list-style-type: none"> <li>Validator</li> </ul>
Red Flashes (4)	Speed Error Abnormal Transport Speed Adjustment detected	<ul style="list-style-type: none"> <li>Remove any foreign objects if any.</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> </ul>	<ul style="list-style-type: none"> <li>Feed Motor</li> <li>Transport Encoder Board CN1</li> <li>MGU Board CN3</li> </ul>
Red Flashes (5)	FRAM Error (Not calibrated) The Validator is not calibrated	<ul style="list-style-type: none"> <li>Clean and calibrate the relative Part(s) and Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>Validator</li> </ul>
Red Flashes (6)	Transport Error The Motor locked while transporting or stacking a Banknote	<ul style="list-style-type: none"> <li>Remove any foreign objects if any.</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> </ul>	<ul style="list-style-type: none"> <li>Feed Motor</li> <li>Transport Encoder Board CN1</li> <li>MGU Board CN3</li> </ul>
Red Flashes (7)	Reject Error The Motor Locked while rejecting a Banknote	<ul style="list-style-type: none"> <li>Remove any foreign objects if any.</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> </ul>	<ul style="list-style-type: none"> <li>Feed Motor</li> <li>Transport Encoder Board CN1</li> <li>MGU Board CN3</li> </ul>
Red Flashes (8)	Stacker Error (Pusher Plate Movement) The Motor locked while stacking a Banknote	<ul style="list-style-type: none"> <li>Remove any foreign objects if any.</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> </ul>	<ul style="list-style-type: none"> <li>Stack Motor</li> <li>Stack Encoder Board CN1</li> <li>MGU Board CN4</li> </ul>
Red Flashes (9)	Pusher Plate Position Error Cannot detect the Position Sensor while moving the Pusher Plate	<ul style="list-style-type: none"> <li>Firmly re-seat the Validator or the Cash Box.</li> <li>Remove jammed Banknotes or foreign objects if any.</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> <li>Clean and calibrate the relative Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>Box Home Position Sensor</li> <li>Stack Home Position Sensor Board LED1, PT1</li> <li>CPU Board CN2</li> <li>Stack Motor</li> <li>Stack Encoder Board CN1</li> <li>MGU Board CN4</li> </ul>
Red Flashes (10)	No Cash Box The Cash Box is not seated	<ul style="list-style-type: none"> <li>Firmly re-seat the Validator or the Cash Box.</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> <li>Clean and calibrate the relative Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>Cash Box Sensor</li> <li>Validation CPU Board PL4, PT3, PT4, CN2</li> <li>Control CPU Board CN4</li> </ul>
Red Flashes (11)	Reserved	-	-

**Table 21** LED Error Codes; General (Continued)

Status LED	Error	Solution	Relative Part/Sensor
 Red Flashes (12)	Anti-Stringing Error Fraud detected.	<ul style="list-style-type: none"> <li>• Check that there is any trace of fraud activity such stringing.</li> <li>• Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> <li>• Clean and calibrate the relative Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>• String Detection Sensor</li> </ul>
 Red Flashes (13)	Reserved	-	-
 Red Flashes (14)	Damaged PCB An IC is malfunctioning	<ul style="list-style-type: none"> <li>• Replace the relative PCB(s) if necessary as they may be damaged.</li> </ul>	<ul style="list-style-type: none"> <li>• CPU Board</li> <li>• MGU Board</li> <li>• CIS Board</li> <li>• Transport Encoder Board</li> <li>• Stack Encoder Board</li> <li>• Stack Home Position Sensor Board</li> </ul>
 Red Flashes (15)	ROM/RAM Error A ROM or RAM is malfunctioning	<ul style="list-style-type: none"> <li>• Replace the CPU Board if necessary as it fails to start.</li> </ul>	<ul style="list-style-type: none"> <li>• CPU Board</li> </ul>

**LED Error Codes; ICB**

**Table 22** LED Error Codes; ICB
















Status LED	Error	Solution	Relative Part/Sensor
 Blue Flashes 1 Time	RFID Module Error Unable to communicate with RFID	<ul style="list-style-type: none"> <li>• Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> </ul>	<ul style="list-style-type: none"> <li>• RFID Module</li> <li>• CPU Board CN12</li> <li>• MGU Board CN6</li> </ul>
 Blue Flashes 2 Times	ICB Function (Settings) Error The ICB Function Setting is incorrect	<p>To enable the ICB Function:</p> <ul style="list-style-type: none"> <li>• Enable the ICB Function.</li> <li>• Reset the Cash Box.</li> <li>• Replace the relative Part(s) if the solutions above does not resolve the error.</li> </ul> <p>To disable the ICB Function:</p> <ul style="list-style-type: none"> <li>• Disable the ICB Function.</li> <li>• Set the Cash Box to INHIBIT.</li> <li>• Replace the relative Part(s) if the solutions above does not resolve the error.</li> </ul>	<ul style="list-style-type: none"> <li>• RFID Module</li> <li>• CPU Board CN12</li> <li>• MGU Board CN6</li> </ul>
 Blue Flashes (3)	ICB R/W Error Unable to communicate with ICB	<ul style="list-style-type: none"> <li>• Check that the RFID Transmitter and Module in the Cash Box perform properly.</li> <li>• Replace the relative Part(s) if the solutions above does not resolve the error.</li> </ul>	<ul style="list-style-type: none"> <li>• RFID Module</li> <li>• CPU Board CN12</li> <li>• MGU Board CN6</li> </ul>
 Blue Flashes (4)	ICB Data Error Incorrect ICB Data	<ul style="list-style-type: none"> <li>• Replace the Cash Box with a cleared Cash Box</li> <li>• Replace the relative Part(s) if the solutions above does not resolve the error.</li> </ul>	<ul style="list-style-type: none"> <li>• RFID Module</li> <li>• CPU Board CN12</li> <li>• MGU Board CN6</li> </ul>
 Blue Flashes (5)	ICB Number Error The number of the Game Machine is different	<ul style="list-style-type: none"> <li>• Replace the Cash Box with the one that has been reset or has the matching machine number.</li> <li>• Replace the relative Part(s) if the solutions above does not resolve the error.</li> </ul>	<ul style="list-style-type: none"> <li>• RFID Module</li> <li>• CPU Board CN12</li> <li>• MGU Board CN6</li> </ul>
 Blue Flashes (6)	ICB Initialize Error The Cash Box has not been reset	<ul style="list-style-type: none"> <li>• Replace the Cash Box with the one that has been reset.</li> <li>• Replace the relative Part(s) if the solutions above does not resolve the error.</li> </ul>	<ul style="list-style-type: none"> <li>• RFID Module</li> <li>• CPU Board CN12</li> <li>• MGU Board CN6</li> </ul>

Table 22 LED Error Codes; ICB (Continued)

Status LED	Error	Solution	Relative Part/Sensor
 Blue Flashes (7) . . (14)	Reserved	-	-













## LED Error Codes; Banknote Jam

Table 23 LED Error Codes; Banknote Jam








Status LED	Error	Solution	Relative Part/Sensor
 Yellow Flashes (1)	Reserved	-	-
 Yellow Flashes (2)	Entrance Sensor/Centering Sensor Jam A Banknote jam occurred near the Entrance and/or Centering Sensor	<ul style="list-style-type: none"> <li>Remove a jammed Banknote or foreign object if any.</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> <li>Clean and calibrate the relative Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>Entrance Sensor</li> <li>Centering Sensor</li> <li>Sensor Board LED1, PT1, CN1</li> <li>Validation CPU Board CN7</li> </ul>
 Yellow Flashes (3)	Reserved	-	-
 Yellow Flashes (4)	PB-In Sensor Jam A Banknote jam occurred near the PB-In Sensor	<ul style="list-style-type: none"> <li>Remove a jammed Banknote or foreign object if any.</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> <li>Clean and calibrate the relative Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>PB-In Sensor</li> <li>Sensor Board LED2, PT1, CN1</li> <li>Validation CPU Board CN7</li> </ul>
 Yellow Flashes (5)	Reserved	-	-
 Yellow Flashes (6)	PB-Out Sensor/Exit Sensor Jam A Banknote jam occurred near the PB-Out and/or Exit Sensor	<ul style="list-style-type: none"> <li>Remove a jammed Banknote or foreign object if any.</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> <li>Clean and calibrate the relative Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>PB-Out Sensor</li> <li>Exit Sensor</li> <li>Validation CPU Board PL3, PT1, CN2</li> <li>Control CPU Board CN4</li> </ul>
 Yellow Flashes (7)	Cash Box Inside Jam A Banknote jam occurred in the Cash Box	<ul style="list-style-type: none"> <li>Remove a jammed Banknote or foreign object if any.</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> <li>Clean and calibrate the relative Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>Stack Motor</li> <li>Pusher Plate</li> <li>Box Home Position Sensor</li> </ul>
 Yellow Flashes (8) . . (15)	Reserved	-	-

## LED Reject Codes; Banknote



Table 24 LED Reject Codes; Banknote

Status LED	Error	Solution	Relative Part/Sensor
 Green Flashes (1)	Banknote Insertion Error Banknote is rejected by a skew detection	<ul style="list-style-type: none"> <li>Clean the relative Sensor(s) if they are dirty or foreign objects are adhering to them.</li> <li>Calibrate the relative Sensor(s) as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Sensors of the Validator</li> </ul>
 Green Flashes (2)	UV Point Sensor Error A Banknote was rejected by the UV Point Sensor	<ul style="list-style-type: none"> <li>Clean the relative Sensor(s) if they are dirty or foreign objects are adhering to them.</li> <li>Calibrate the relative Sensor(s) as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Sensors of the Validator</li> </ul>
 Green Flashes (3)	Banknote remaining Error (Validator) A Banknote was rejected as the Validator detected a remaining Banknote left inside	<ul style="list-style-type: none"> <li>Clean the relative Sensor(s) if they are dirty or foreign objects are adhering to them.</li> <li>Calibrate the relative Sensor(s) as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Sensors of the Validator</li> </ul>
 Green Flashes (4)	Reserved	-	-
 Green Flashes (5)	Transport Time-Out Error The timing of transporting a Banknote was not appropriate	<ul style="list-style-type: none"> <li>Clean the relative Sensor(s) if they are dirty or foreign objects are adhering to them.</li> <li>Calibrate the relative Sensor(s) as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Sensors on the Transport Path</li> </ul>
 Green Flashes (6)	Denomination Error A Banknote was rejected due to the denomination verification result	<ul style="list-style-type: none"> <li>Clean the relative Sensor(s) if they are dirty or foreign objects are adhering to them.</li> <li>Calibrate the relative Sensor(s) as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Sensors of the Validator</li> </ul>
 Green Flashes (7)	Reserved	-	-
 Green Flashes (8)	Photo Level Error A Banknote was rejected due to the transmissive level result	<ul style="list-style-type: none"> <li>Clean the relative Sensor(s) if they are dirty or foreign objects are adhering to them.</li> <li>Calibrate the relative Sensor(s) as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Sensors of the Validator</li> </ul>
 Green Flashes (9)	INHIBIT Error A Banknote was rejected due to the INHIBIT Settings (Banknote acceptance is inhibited). No Command is returned to Escrow	<ul style="list-style-type: none"> <li>Check that the INHIBIT settings on a Host Machine or iVIZION2 DIP Switches is appropriate.</li> </ul>	<ul style="list-style-type: none"> <li>INHIBIT Settings on the Host Machine</li> <li>INHIBIT Settings on the iVIZION2 Unit</li> </ul>
 Green Flashes (10)	Reject Request The Host Machine requested for reject	<ul style="list-style-type: none"> <li>Check that the INHIBIT settings on a Host Machine is appropriate.</li> </ul>	<ul style="list-style-type: none"> <li>INHIBIT Settings on the Host Machine</li> </ul>
 Green Flashes (11)	Reserved	-	-
 Green Flashes (12)	Reserved	-	-











**Table 24** LED Reject Codes; Banknote (Continued)

Status LED	Error	Solution	Relative Part/Sensor
 Green Flashes (13)	Banknote Length Error A Banknote was rejected because it was longer than the acceptable length	<ul style="list-style-type: none"> <li>Check that the Banknote is a proper length</li> </ul>	<ul style="list-style-type: none"> <li>Length of the Banknote</li> </ul>
 Green Flashes (14)	Reserved	-	-
 Green Flashes (15)	Authentic Banknote Identify Error A Banknote was rejected due to the authentic Banknote Validation result	<ul style="list-style-type: none"> <li>Clean the relative Sensor(s) if they are dirty or foreign objects are adhering to them.</li> <li>Calibrate the relative Sensor(s) as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Sensors of the Validator</li> </ul>
 Green Flashes (16)	Detected Holed-Note A Banknote was rejected because it was holed	<ul style="list-style-type: none"> <li>Clean the relative Sensor(s) if they are dirty or foreign objects are adhering to them.</li> <li>Calibrate the relative Sensor(s) as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Sensors of the Validator</li> </ul>
 Green Flashes (17)	Detected Worn-Out-Note A Banknote was rejected because it was worn out	<ul style="list-style-type: none"> <li>Clean the relative Sensor(s) if they are dirty or foreign objects are adhering to them.</li> <li>Calibrate the relative Sensor(s) as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Sensors of the Validator</li> </ul>
 Green Flashes (18)	Detected Dog-Ear-Note A Banknote was rejected because its corner was folded	<ul style="list-style-type: none"> <li>Clean the relative Sensor(s) if they are dirty or foreign objects are adhering to them.</li> <li>Calibrate the relative Sensor(s) as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Sensors of the Validator</li> </ul>
 Green Flashes (19)	Detected Dyed-Note A Banknote was rejected because it was inked	<ul style="list-style-type: none"> <li>Clean the relative Sensor(s) if they are dirty or foreign objects are adhering to them.</li> <li>Calibrate the relative Sensor(s) as needed.</li> </ul>	<ul style="list-style-type: none"> <li>Sensors of the Validator</li> </ul>

**LED Reject Codes; Barcode Ticket****Table 25** LED Reject Codes; Barcode Ticket

Status LED	Error	Solution	Relative Part/Sensor
 Green Flashes (1)	Unconfigured Barcode Ticket Barcodes cannot be detected or were detected on both sides facing up and down.	<ul style="list-style-type: none"> <li>Check that a proper Barcode Ticket is used.</li> <li>Check that the Barcode Ticket is not damaged or looks unnatural (abnormal printing, etc).</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> <li>Clean and calibrate the relative Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>Barcode Ticket</li> <li>CIS</li> <li>MGU Gear</li> <li>Belts of the Validator</li> <li>Motors of the Validator</li> </ul>
 Green Flashes (2)	Format Error A Barcode Ticket was rejected due to the number of characters and/or wide-to-narrow ratio	<ul style="list-style-type: none"> <li>Check that a proper Barcode Ticket is used.</li> <li>Check that the Barcode Ticket is not damaged or looks unnatural (abnormal printing, etc).</li> <li>Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> <li>Clean and calibrate the relative Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>Barcode Ticket</li> <li>CIS</li> <li>MGU Gear</li> <li>Belts of the Validator</li> <li>Motors of the Validator</li> </ul>

**Table 25** LED Reject Codes; Barcode Ticket (Continued)

Status LED	Error	Solution	Relative Part/Sensor
 Green Flashes (3)	Reserved	-	-
 Green Flashes (4)	Start/Stop Bit Detection Error A start or stop bit of a Barcode Ticket cannot be detected	<ul style="list-style-type: none"> <li>• Check that a proper Barcode Ticket is used.</li> <li>• Check that the Barcode Ticket is not damaged or looks unnatural (abnormal printing, etc).</li> <li>• Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> <li>• Clean and calibrate the relative Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>• CIS</li> <li>• MGU Gear</li> <li>• Belts of the Validator</li> <li>• Motors of the Validator</li> </ul>
 Green Flashes (5)	Character Detection Error Unable to detect a Barcode Ticket character	<ul style="list-style-type: none"> <li>• Check that a proper Barcode Ticket is used.</li> <li>• Check that the Barcode Ticket is not damaged or looks unnatural (abnormal printing, etc).</li> <li>• Check that the relative Part(s) are properly assembled and/or Harness are connected.</li> <li>• Clean and calibrate the relative Sensor(s).</li> </ul>	<ul style="list-style-type: none"> <li>• CIS</li> <li>• MGU Gear</li> <li>• Belts of the Validator</li> <li>• Motors of the Validator</li> </ul>
 Green Flashes (6)	Reserved	-	-
 Green Flashes (7)	Reserved	-	-
 Green Flashes (8)	Double Ticket Error Two or more overlapping Barcode Tickets were inserted	<ul style="list-style-type: none"> <li>• Check that two or more Barcode Tickets are not overlapped.</li> <li>• Insert the Barcode Ticket properly.</li> </ul>	<ul style="list-style-type: none"> <li>• Barcode Ticket</li> </ul>
 Green Flashes (9)	Reserved	-	-
 Green Flashes (10)	Reserved	-	-
 Green Flashes (11)	Upside-Down Insertion A Barcode Ticket was inserted upside-down	<ul style="list-style-type: none"> <li>• Insert a Barcode Ticket having its Barcode side facing up.</li> </ul>	<ul style="list-style-type: none"> <li>• Insertion Direction of the Barcode Ticket</li> </ul>
 Green Flashes (12) . . (15)	Reserved	-	-

## 9 UNIT DIMENSIONS AND MAINTENANCE SPACE REQUIREMENT

This section provides the outside dimensions and the required maintenance space of the iVIZION™2 Series Banknote Validator (iVIZION2).

- SS Type with Standard Box (p. 38)
- SS Type with Large Box (p. 39)

### SS Type with Standard Box

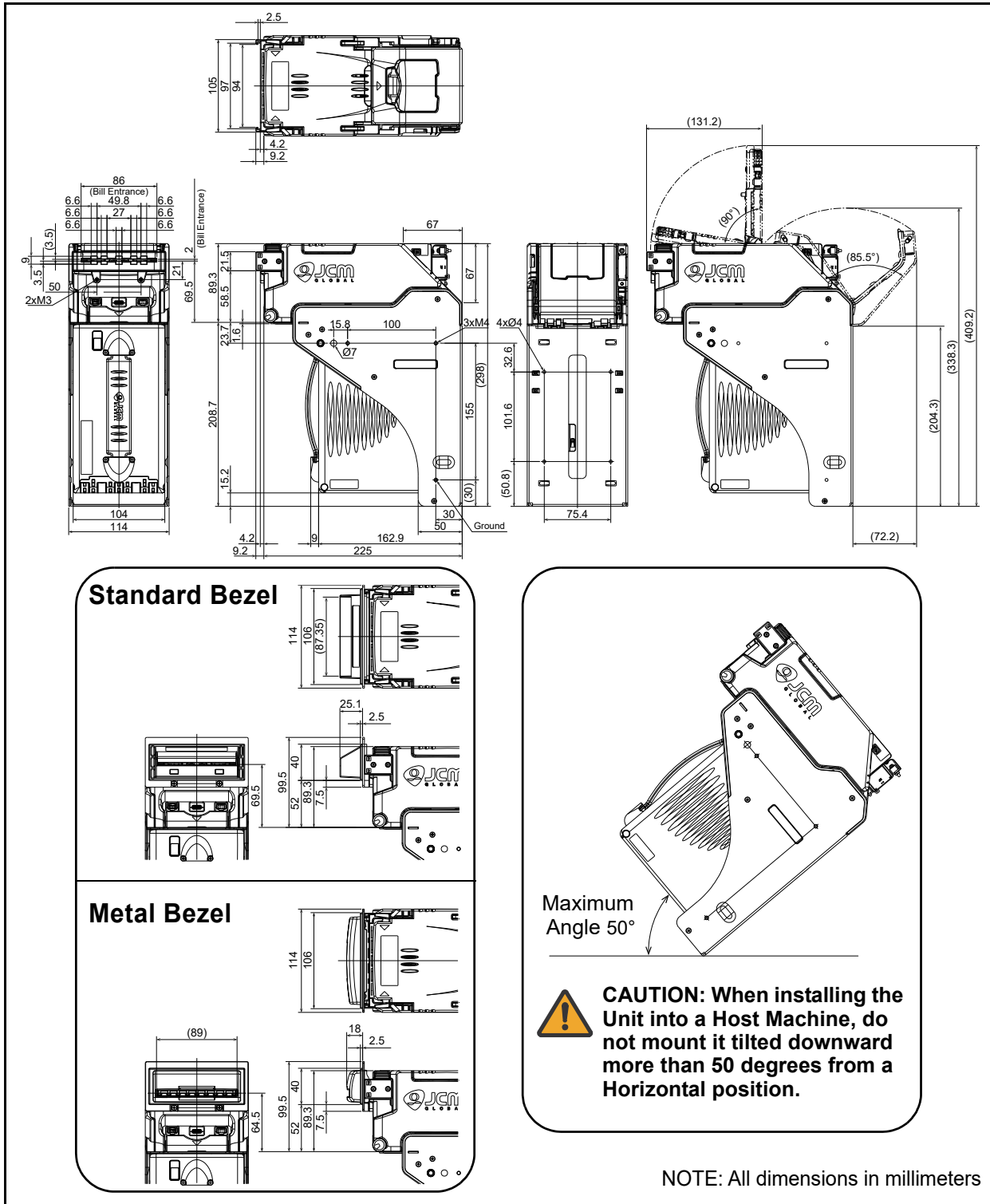
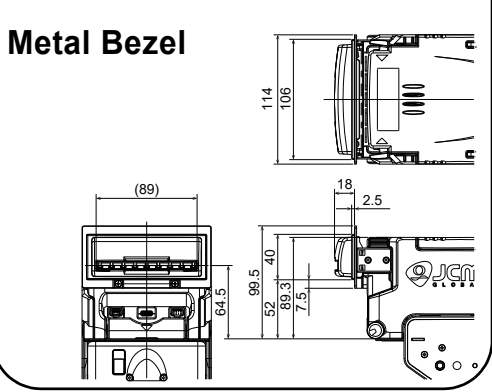
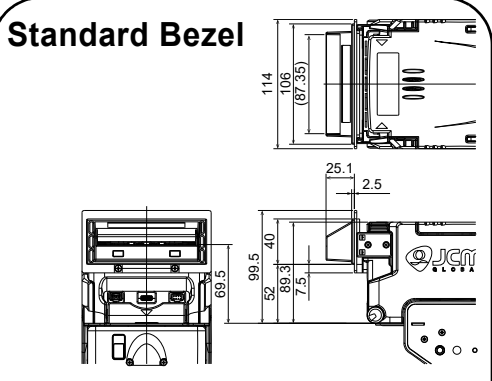
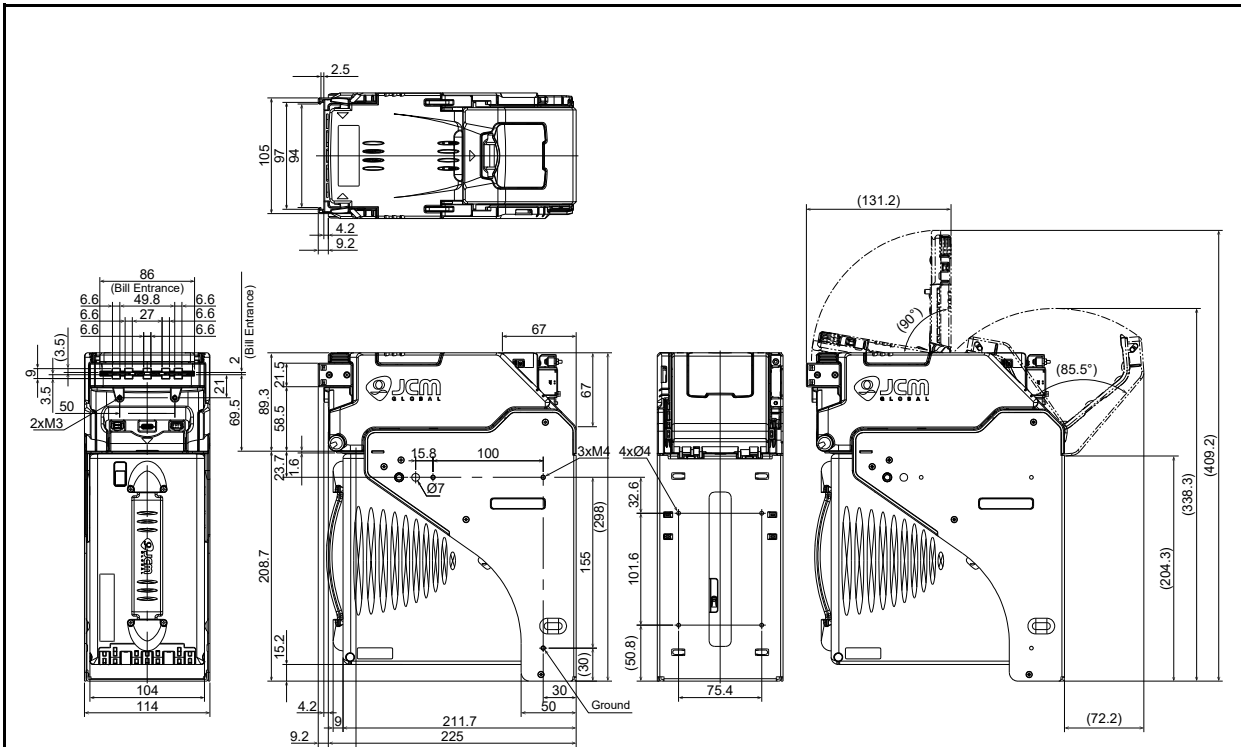


Figure 24 SS Type with Standard Box Outside Dimension and Maintenance Space



### SS Type with Large Box



Maximum Angle 50°

**CAUTION:** When installing the Unit into a Host Machine, do not mount it tilted downward more than 50 degrees from a Horizontal position.

NOTE: All dimensions in millimeters

Figure 25 SS Type with Large Box Outside Dimension and Maintenance Space

## 10 TECHNICAL CONTACT INFORMATION

To obtain further technical information regarding the iVIZION2, please contact the nearest location listed below:

### Americas

#### JCM American

Phone: +1-702-651-0000

Fax: +1-702-644-5512

925 Pilot Road,  
Las Vegas, NV 89119

E-mail: [support@jcmglobal.com](mailto:support@jcmglobal.com)

### Europe, Middle East, Africa & Russia

#### JCM Europe GmbH

Phone: +49-211-530-645-60

Fax: +49-211-530-645-65

Mündelheimer Weg 60  
D-40472 Düsseldorf Germany

E-mail: [support@jcmglobal.eu](mailto:support@jcmglobal.eu)

### UK & Ireland

#### JCM Europe (UK Office)

Phone: +44 (0) 190-837-7331

Fax: +44 (0) 190-837-7834

Luminous House, 300 South Row,  
Milton Keynes MK9 2FR,  
United Kingdom

E-mail: [support@jcmglobal.eu](mailto:support@jcmglobal.eu)

### Asia and Oceania

#### JCM American (Australia Office)

Phone: +61-2-9648-0811

Fax: +61-2-9647-1438

Unit 21, 8 Avenue of the Americas Newington,  
NSW 2127 Australia

E-mail: [sales-asiapac@jcmglobal.com](mailto:sales-asiapac@jcmglobal.com)

### JAPAN CASH MACHINE CO., LTD.(HQ)

Phone: +81-6-6703-8400

Fax: +81-6-6707-0348

2-3-15, Nishiwaki, Hirano-ku, Osaka 547-0035  
JAPAN

E-mail: [Shohin@jcm-hq.co.jp](mailto:Shohin@jcm-hq.co.jp)

The JCM Website for all locations is:

<http://www.jcmglobal.com>

# iVIZION™2 Series Banknote Validator

## Foundation of Intelligent Validation

### Index

#### 11 INDEX

#### B

Banknote Jam  
clearing a ...21

#### C

Cleaning  
methods of, and equipment required for ...21  
Contact Information  
Address and Telephone Numbers for ...40

#### D

Dimensions  
entire unit clearance  
illustrated drawing for ...38, 39

#### F

Faults  
Table Listing of ...31  
Flowchart  
Operational ...29, 30

#### I

Installation  
Process for ...11  
iVIZION2 Unit  
photo of a ...1

#### M

Model Descriptions  
Product Number Specifications of ...2

#### N

Navigation  
within manual  
procedure for ...1

#### P

Pin Assignments  
Table listing primary connector ...15, 16, 17, 18, 19, 20  
Preventive Maintenance  
cleaning materials required for ...21

Primary Features  
iVIZION-2xx/3xx  
iVIZION2 Series of ...5

#### S

Safety  
pictographs indicating  
1 to 3 symbols inside boxed area ...1

Schematic Circuit Diagram  
schematic diagrams of ...25, 26, 27, 28

Software Descriptions  
Product Number Specifications of ...2

Special Notes  
italic text highlights  
finger points to ...1

Specifications  
Electrical  
information regarding ...10  
Environmental  
information regarding ...9  
RFID  
information regarding ...10  
Structural  
information regarding ...10  
Technical  
information regarding ...8

Steps  
sequential numbering of ...1

#### T

Troubleshooting  
Instructions for ...31  
Type Descriptions  
Product Number Specifications of ...2

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