# Innovative Technology

## POWERING TRANSACTIONS AND INTERACTIONS

# CBA9 Range User Manual

Document Revision - v.1

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# Change History

| Version | Date | Comment |
|---------|------|---------|
| 1 | 18 Dec 2024 | Initial Release |

> ℹ️ Uncontrolled Document Once Exported.
> Please visit the Support Hub for the latest Information.

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# CBA9 Range Product Information

## Contents

## Product Overview

The CBA9 has been designed for the Southeast Asia market simplifying cash handling for OEM's that export throughout the region. Initially available for China, Indonesia, Malaysia, Philippines, Singapore, Taiwan, Thailand & Vietnam, the CBA9 is a cost-effective bill acceptor and boasts a quick transaction time (2-3 seconds) and improved note-to-note processing capabilities. Due to the product's modular design, the CBA9 can be upgraded to add a note recycler to suit customer needs.

## Key Features

- Designed for Southeast Asia
- Enhanced sensing technology
- Exceptional field reliability
- MDB remote update
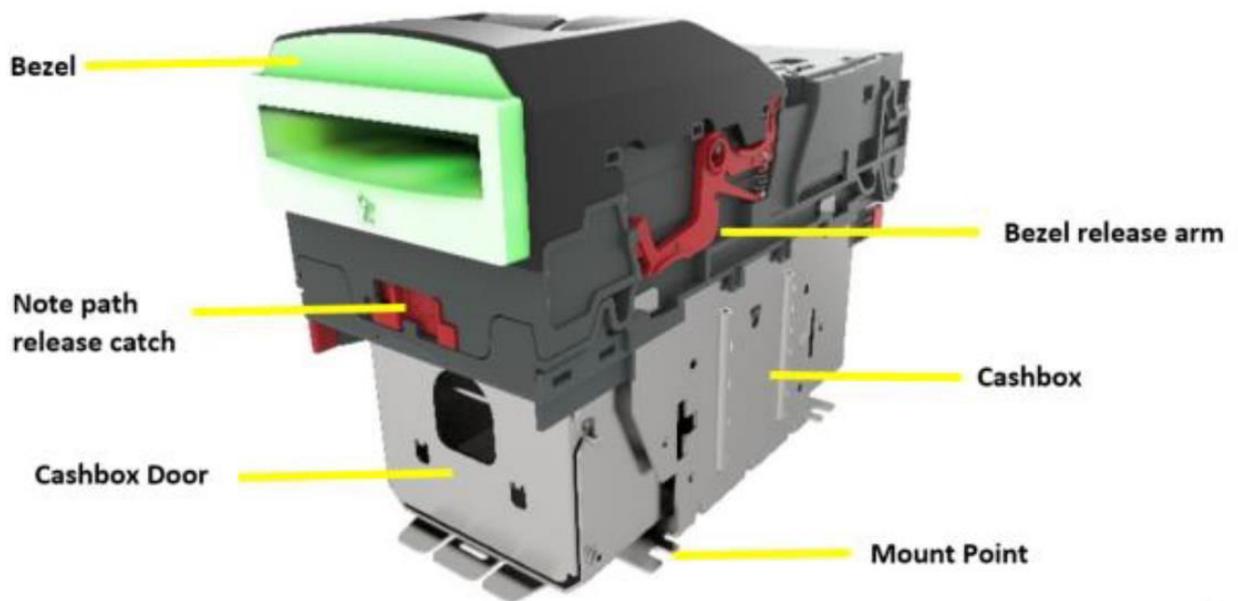- Future proof
    - Add on recycler available. (CBA11)

## Typical Applications

The CBA validator can be used in a variety of situations where high security and high-volume bank note acceptance and validation are needed. Some typical applications are:
• Amusement
• Vending
• Retail & Kiosk
• Parking and Ticketing
• Self-Serve and Retail

# Component Overview

## CBA9



Bezel

Note path release catch

Cashbox Door

Bezel release arm

Cashbox

Mount Point

## CBA11



Note float

Config Button

Manual winding socket

Door release catch

Note float release catch

Mount Point
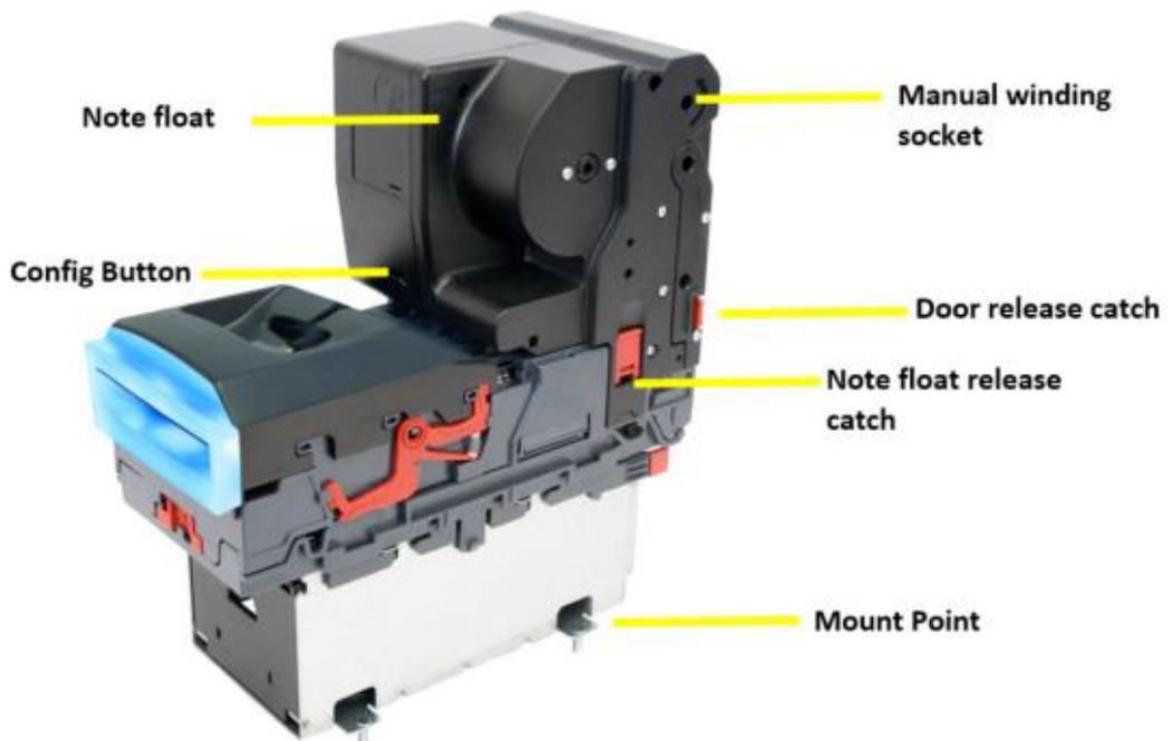
# Bezel Options

| ITL Part Number | Description | Image |
|---|---|---|
| PA02665 | Green vertical bezel assembly (Standard) |  |
| PA00188 | NV9USB Vertical Up Bezel (82mm) |  |
| PA00189 | NV9USB Standard Horizontal Bezel (82mm) |  |
| PA00190 | NV9USB Vertical Up Snout Bezel (82mm) |  |

# Bezel Options

| ITL Part Number | Description | Image |
|---|---|---|
| PA00191 | NV9USB Vertical Down Snout Bezel (82mm) | |
| PA00268 | NV9USB Horizontal Bezel (69mm) | |
| PA00296 | NV9USB Vertical Up/Down Flat Bezel (66mm) | |
| PA00323 | NV9USB Vertical Up/Down Flat Bezel (69mm) | |

| ITL Part Number | Description | Image |
|---|---|---|
| PA00896 | NV11 Standard Bezel |  |
| PA04280<br><br>WR02015 Required | NV9USB+ Rainbow Bezel (82mm) |  |
| PA02383 | NV9 Vertical rainbow bezel (69mm) |  |
| PA02388 | NV9 Vertical rainbow bezel (78mm) |  |

| ITL Part Number | Description | Image |
|---|---|---|
| PA00984 | NV9USB Facia Short |  |
| PA00985 | NV9USB Facia Long |  |
| PA03822 | NV9 Vertical (BV50 Fitment) Bezel Assembly |  |

## Metal Cashbox Options

> Some national currencies differ in thickness and circulation practices. Depending on usage, this can impact cash box capacities by 10-15%. Consult with your ITL representative for more details.

| ITL Part Number | Description | Image |
|---|---|---|
| PA00185 | NV9 USB 300 Clip On Cashbox |  |

| ITL Part Number | Description | Image |
| --- | --- | --- |
| PA00186 | NV9 USB 300 Lockable Cashbox |  |
| PA00192 | NV9 USB 300 Slide Cashbox |  |
| PA00193 | NV9USB 600 Clip on Cashbox |  |
| PA00194 | NV9USB 600 Slide In Cashbox |  |

| ITL Part Number | Description | Image |
|---|---|---|
| PA00898 | NV11+ Standard 300 Clip on Cashbox | |

## Moulded Cashbox Options

> **Please use the moulded cashbox for new implementations or projects**
> - Moulded cashbox ready Rear Housing Assembly required - PA04350

| ITL part number | Description | Details |
|---|---|---|
| PA03576 | NV9S 300 Note Clip-on Moulded Cashbox | |
| PA03577 | NV9S 600 Note Clip-on Moulded Cashbox | |
| PA03578 | NV9S 1500 Note Clip-on Moulded Cashbox | |

| ITL part number | Description | Details |
|---|---|---|
| PA03579<br><br>📄 Chassis sold separately - MC03432 | NV9S 300 Note Slide-in Moulded Cashbox |  |
| MC03432 | 300 Note Slide-in Chassis - NV9S Moulded Cashbox | |
| PA03580<br><br>📄 Chassis sold separately - MC03433 | NV9S 600 Note Slide-in Moulded Cashbox |  |
| MC03433 | 600 Note Slide-in Chassis - NV9S Moulded Cashbox | |
| PA04388 | NV9S Moulded Cashbox Door Lock Assembly<br><br>📄 Only suitable for moulded cashboxes |  |

# CBA9 Range Technical Data

## Contents

## Dimensions

3D drawings in .stp format are available upon request. Please contact support@innovative-technology.com.

> If you specify the required bezel and cashbox type in your enquiry we may send you the correct download link directly in our reply. For all bezel and cashbox options please refer to the CBA9 Range Product Leaflets.



| A | 300 SLIDE-IN CASH BOX |
| B | 600 SLIDE-IN CASH BOX |
| C | 1000 SLIDE-IN CASH BOX |

ACCEPTS NOTES UP TO 82mm x 160mm LONG
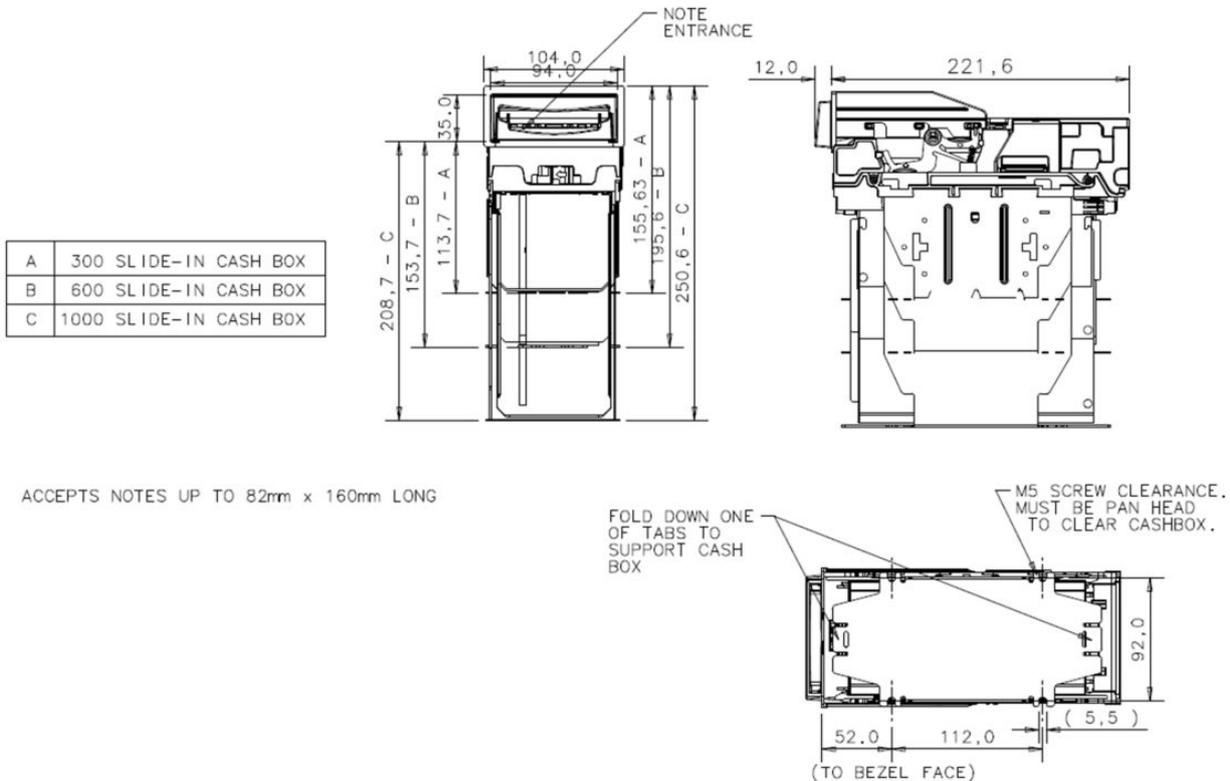
## Vertical Bezel Mounting Positions
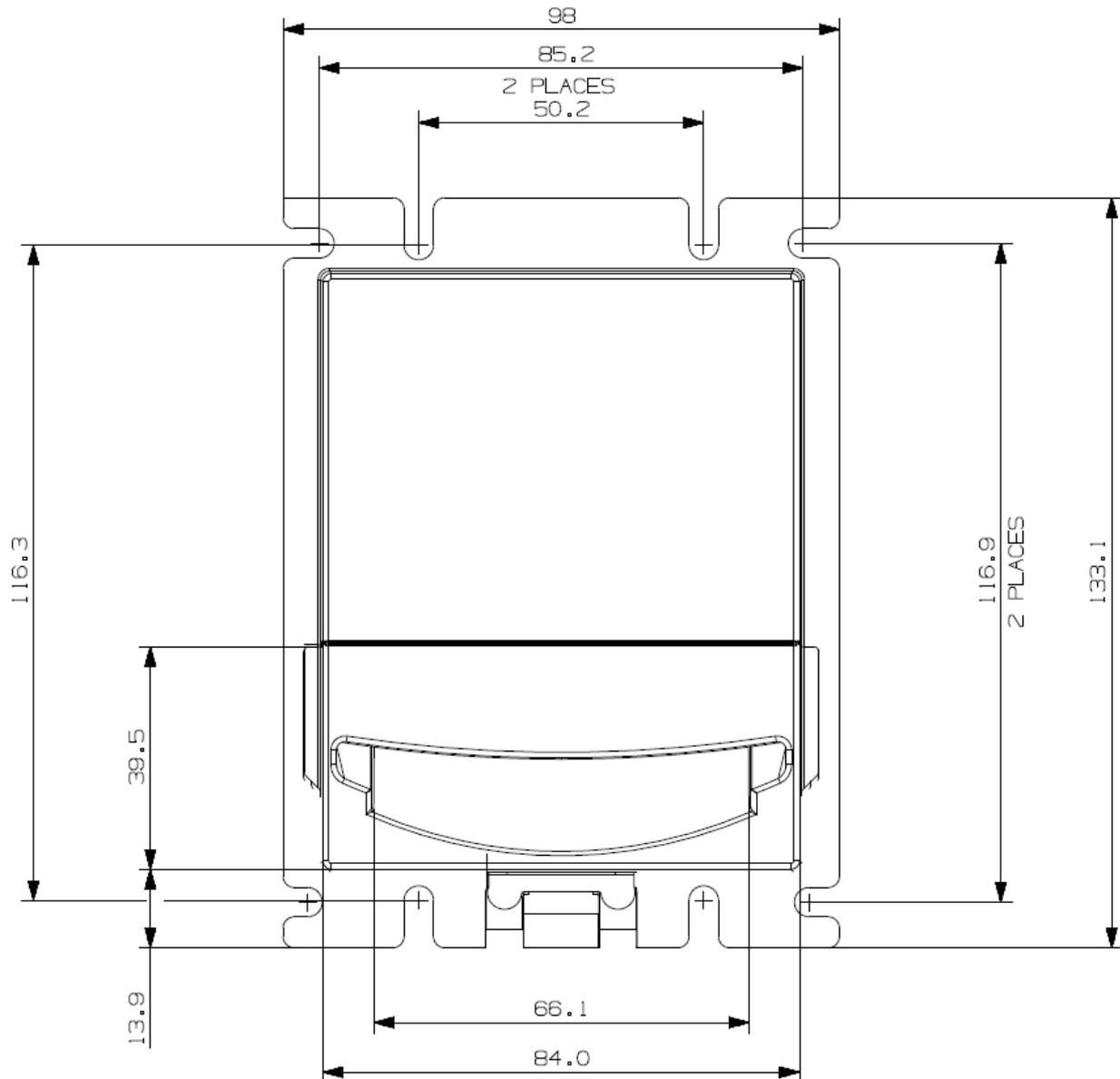


## Weight

### CBA9

| Unit | Weight |
| --- | --- |
| CBA9, 300 Clip Cashbox with Bezel | 1.14kg |
| CBA9, 300 Slide Cashbox with Bezel | 1.86kg |
| CBA9, 600 Clip Cashbox with Bezel | 1.72kg |
| CBA9, 600 Slide Cashbox with Bezel | 2.14kg |

## CBA11

| Unit | Weight |
|---|---|
| CBA11, 300 Clip Cashbox with Bezel | 2.22kg |

## Environmental Requirements

| Environment | Minimum | Maximum |
|---|---|---|
| Temperature | -5°C | +60°C |
| Humidity | 5% | 95% Non-Condensing |

## Power Requirements

### Supply Voltages

| Supply Voltage | Minimum | Nominal | Maximum |
|---|---|---|---|
| Supply Voltage (V DC) | 10.8VDC | 12VDC | 13.2VDC |
| Supply Ripple | 0V | 0V | 0.25V @100Hz |

### Supply Currents

#### CBA9

| Supply Current | Minimum | Nominal | Maximum |
|---|---|---|---|
| Standby | --- | --- | 0.2A |
| Running | --- | --- | 1.0A |
| Peak | --- | --- | 1.5A |

#### CBA11

| Supply Current | Minimum | Nominal | Maximum |
|---|---|---|---|
| Standby | --- | --- | 0.35A |
| Running | --- | --- | 3.0A |

| Supply Current | Minimum | Nominal | Maximum |
|---|---|---|---|
| Peak | --- | --- | 3.5A |

## Power Supply Guidance

The CBA9 Range of products require a stable 12V DC power supply. Please check the power requirements of your host machine and other peripherals to dimension a suitable power environment for your machine setup.

TDK Lambda manufactures suitable power supplies. Please see table below for further details.

| Power Supply Unit | Specification | RS Stock Code | Farnell Stock Code | Suitable For |
|---|---|---|---|---|
| TDK Lambda SWS50-12 | +12VDC / 4.3A | 466-5869 | 1184645 | CBA9 CBA11 |

## Interface Logic Levels

| | Logic Low | Logic High |
|---|---|---|
| Inputs | 0v to +0.5v | +3.7v to +12v |
| Outputs with 2K2Ω pull-up resistor | +0.6v | Pull-up voltage of host interface |
| Maximum Current Sink | 50mA per Output | |

## Reliability Data

The below data refers to the Mean Cycles Between Failure (MCBF) and the Mean Cycles Between Intervention (MCBI). The difference between the two is that a failure would usually require the unit being replaced. Whereas an intervention would be an issue that is easily clearable such as a reset or clearing a note path jam.

A cycle is classed as a note or ticket being either accepted or dispensed. For example; if a unit accepts a note and then dispenses a note as change, it is classed as two cycles.

### CBA9

MCBF:      200,000 Cycles
MCBI:      100,000 Cycles

It is important to note that when adding a recycler or printer, you are doubling the number of modules. Thus, the MCBF/MCBI will naturally be halved.

### CBA11

MCBF:      100,000 Cycles
MCBI:      50,000 Cycles

# Media Requirements

## Notes

|  | Minimum | Maximum |
|---|---|---|
| Length | 90mm | 170mm |
| Width | 62mm | 82mm |

The CBA9 range supports multiple currencies and denominations as per the specifications detailed in the table above. Furthermore polymer and windowed notes are in use in a number of countries and so are already fully supported on the CBA9 range of validators.

# CBA9 Range Mechanical Installation

## Contents

## Compatibility

### Hardware Compatibility

#### Machine Mounting

Assuming the suitable bezel (and cashbox) type has been ordered the CBA can be used as fitting replacement for the following products:
- NV7
- NV7M
- NV9
- BV20
- BV100
- NV9 USB

The CBA may not be used as fitting replacement for the following products:
- NV150
- NV10 USB
- NV200

> Considerations will need to be made when adding either the recycler or printer module, as this will increase the space requirements inside the host machine.
>
> Innovative Technology Ltd. has a policy of continuous product improvement. Due to design changes older model or product bezels (and cashboxes) may not be compatible with the CBA. However, new product deliveries always include a bezel (and cashbox) that must be used.

#### Machine Interfacing

By design the CBA is pin to pin compatible with the suitable fitting replacement products listed above. No changes to existing machine harnessing are required.

## Power Supply

It is vital that the CBA is connected to a power supply being able to provide the required power environment. A weak power supply causes malfunctioning of the CBA such like note rejects or missing credits. If the CBA is used as a fitting replacement for an older model or product we recommend to check the power supply specifications of the machine. The power supply of the machine might be designed for the older model or product but not suitable for the CBA. The CBA might have higher power consumption. Refer to Power Requirements for full power requirement details of the CBA.

> ▤  A weak power supply may cause malfunction!

## Software Compatibility

### Interface Protocols

When using the CBA as a fitting replacement for an older model or product some events such like credits may be given earlier. This is due to improved firmware routines and faster motors being used. This may cause missing events such like credits in those host machines where timeouts are defined for the older model or product. Please contact the machine manufacturer for full compatibility of the CBA.

> ▤  Timing issues may cause missing events such like credits!

### Re-programming

For re-programming the units always use the latest version of Validator Manager, available for download from our website. Newer products may not be fully supported on older versions of Validator Manager. For further details on Re-programming, refer to Dataset/Firmware Programming.

## Bezel Mounting

### Bezel Fitting

| 1 | **Locator lugs** | |
|---|---|---|
| | Place bezel down onto validator, ensuring locating lugs go into spaces provided. |  |

| 2 | **Lock bezel in place** |  |
|---|---|---|
| | Slide bezel backwards until you hear release latch arm, click into place. | |
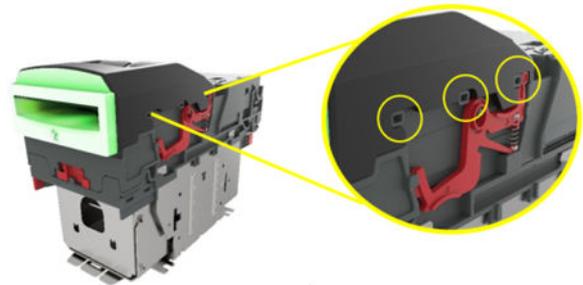
## Bezel Removal

| 1 | **Release clips** |  |
|---|---|---|
| | Pull release clip upwards (1) | |
| | With release clip held upwards, you can pull bezel towards front of unit (2). | |
| 2 | **Lift bezel** |  |
| | Now bezel is free of locating lugs, lift bezel upwards (3). | |
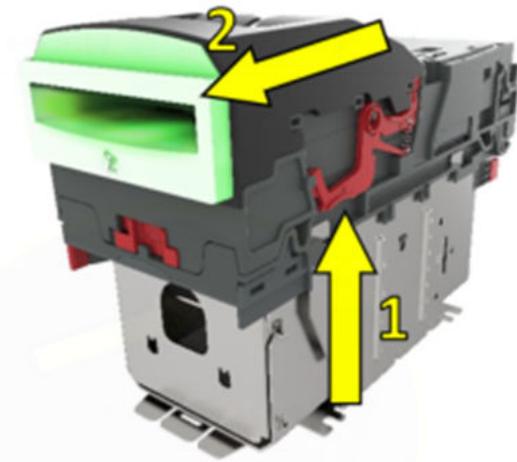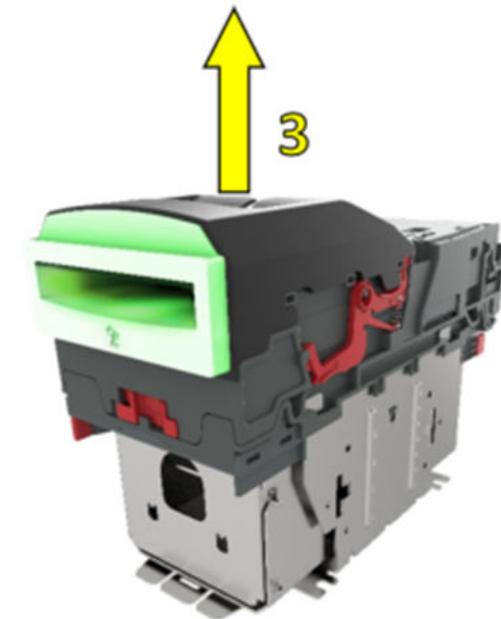
# Cashbox Mounting

Below you will find details on how to fit the different cashboxes mentioned in Cashbox Options.

Slide cashboxes are made up of 2 parts. The outer housing and the cashbox itself, which slides in and out of the housing. These are used for when the unit is mounted horizontally.

Clip on cashboxes attach directly onto the validator. These are mainly used for when the unit is mounted vertically.

## Cashbox Fitting

| | | |
|---|---|---|
| 1 | **Slide Cashbox**<br><br>The outer housing has 2 x lugs on either side and these need to be pushed up into the cashbox slots as per the image.<br><br>Then slide housing forwards to lock into place.<br><br>The outer housing is mounted inside the machine and you simply slide the removable cashbox, inside the outer housing. |  |
| 2 | **Clip-on Cashbox**<br><br>The clip-on cashbox attaches directly to the validator and is identical to the process above. |  |
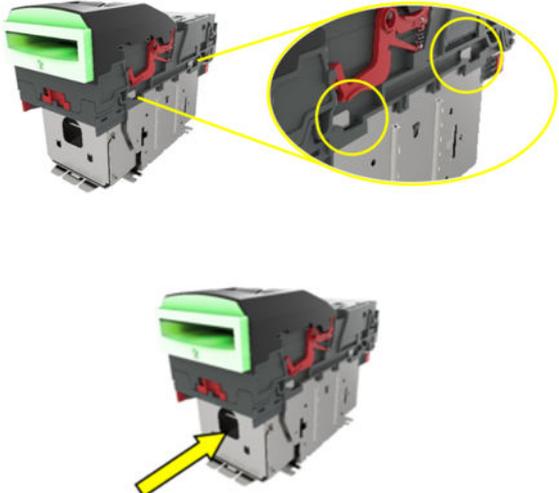
# Cashbox Removal

| | | |
|---|---|---|
| **1** | **Slide Cashbox**<br><br>Remove the cashbox from the outer housing.<br>Pull cashbox release catch away from validator and slide cashbox out.<br><br>Push the tab (1) seen in the image whilst sliding the outer housing back, so that the locating tabs are free to move away from the validator. |  |
| **2** | **Clip-on Cashbox**<br><br>Simply slide the cashbox back so that the locating tabs are no longer locked in position.<br>You can then pull cashbox away from unit. |  |
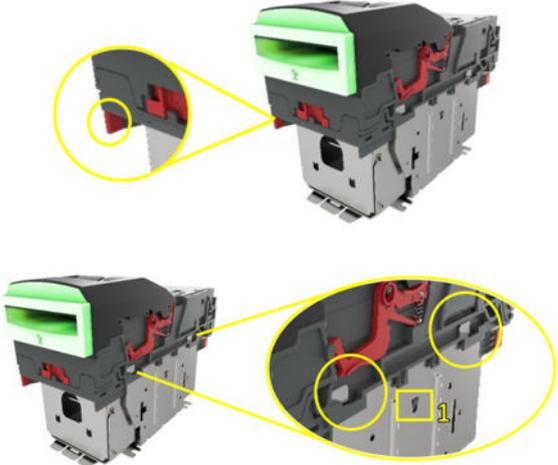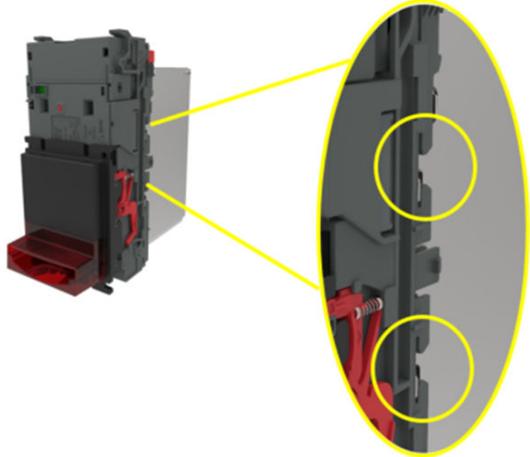
# Lock Mounting

The CBA9 range has an option for a 300-lockable cashbox. This is designed for a 300-**slide** cashbox option.

ITL Part Number: PA00186

# Lock Fitting

| | | |
|---|---|---|
| **1** | **Screw Holes**<br><br>The lockable door attaches to the cashbox housing via 3 x screw holes, as shown.<br><br>These can be found on all 4 sides of the cashbox.<br><br>Front Right; Front Left; Rear Right; Rear Left. |  |

| 2 | **Locking Cam Slot** |  |
|---|---|---|
| | You'll also see 4 x slots for each position too. This is where the lock slides into, in order to lock the door in place. | |
| | ▤ You want to use the 3 x mounting screw points, on the opposite side of where your lock will be. | *For example:* if you want the lock to be Front Right – you would mount the door on the Front Left, so that the door swings round and locks on the side you specified. |
| 3 | **Lock** |  |
| | Using front right as an example, this specifies the location of the lock (2).<br>In this case, the door is mounted as seen (1). | |
| | Lock specification details can be found below in Lock Specifications. | |
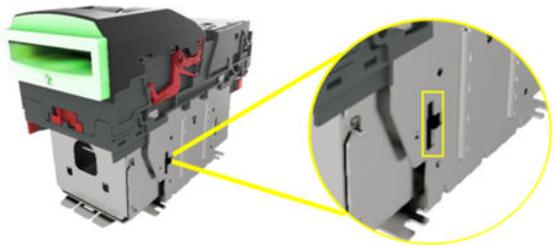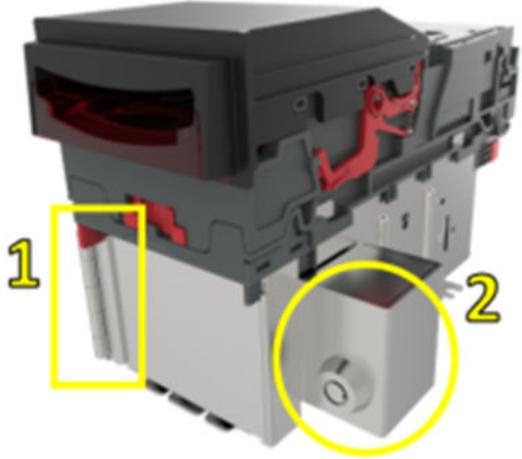
## Lock Specifications

Locks for the CBA9 range cashbox are available from Innovative Technology Ltd.

ITL Part Number: PA00650

> ▤ PA00650 is a universal lock across a number of our products therefore the website may stock it under a different product's spare list.
>
> However, there are various lock manufacturers and distributors. Refer to Lock Specifications for details.

## Lock Cam

The following Lock Cam needs to be ordered from Innovative Technology Ltd. additionally to the lock for full locking capability.

ITL Part Number: MC00186

# Machine Mounting

## Horizontal Configuration

The slide cashbox configuration has 4 mounting points, for each corner.

These should be used to secure the validator to a base/shelf inside the host machine.
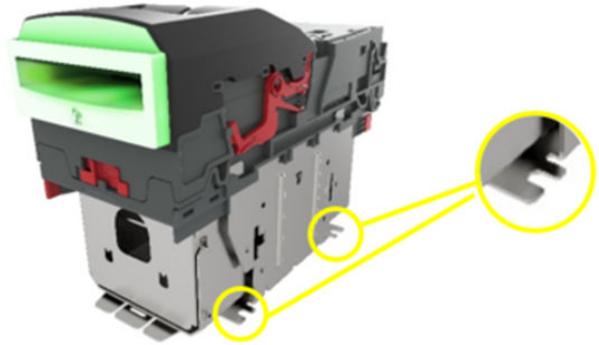
## Vertical Configuration

The vertical bezels available to the NV9 range all have mounting locations to allow you to mount the unit to the back of the door.
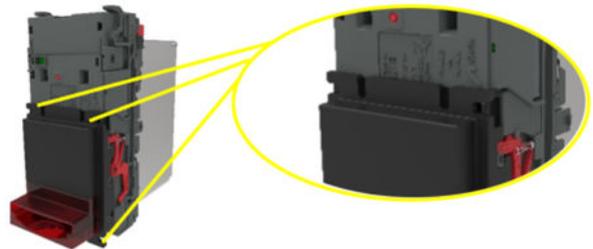
# Earth Bonding

It is very important that the CBA9 is properly bonded to earth. Lack of proper bonding can cause communication issues and other failures.

Lack of proper earth bonding causes failures!

# CBA9 Range Software Installation and Configuration

## Contents

## Introduction

The CBA leaves the factory pre-programmed with the latest dataset and firmware files. However, it is important to ensure your device is kept up to date with the latest dataset and firmware. This section will give you a brief overview of the various update possibilities with the CBA. For detailed instructions please refer to the relevant manual package supplied with the software or contact support@innovative-technology.com.

## Software Downloads

All software from Innovative Technology Ltd is free of charge and can be downloaded from the Support Hub once registered and logged in.

## Dataset/Firmware Programming

### Validator Manager

#### General Description

Validator Manager is a utility which allows the user to reprogram any of ITL's validators, hoppers as well as coin and note recycler. Please note that admin rights are required during installation. The validator must be in SSP for the Validator Manager to detect the device.

#### System Requirements

• Windows 8.1 or above
• .Net Framework 4.5 or above
• 256mb ram
• 50mb hard disk free
• Connected CBA with active com port

> We have seen instances where one of the dll's (itdata1.dll) used in Validator Manager are flagged as a Trojan, this is a false positive and if this happens you will need to add a rule to your antivirus to allow the file to run.

## Hardware Setup

### IF17

Connect the power supply to the IF17. Connect the USB cable to the IF17 and to your computer or laptop. Connect the Binary cable from the IF17 to the validator.
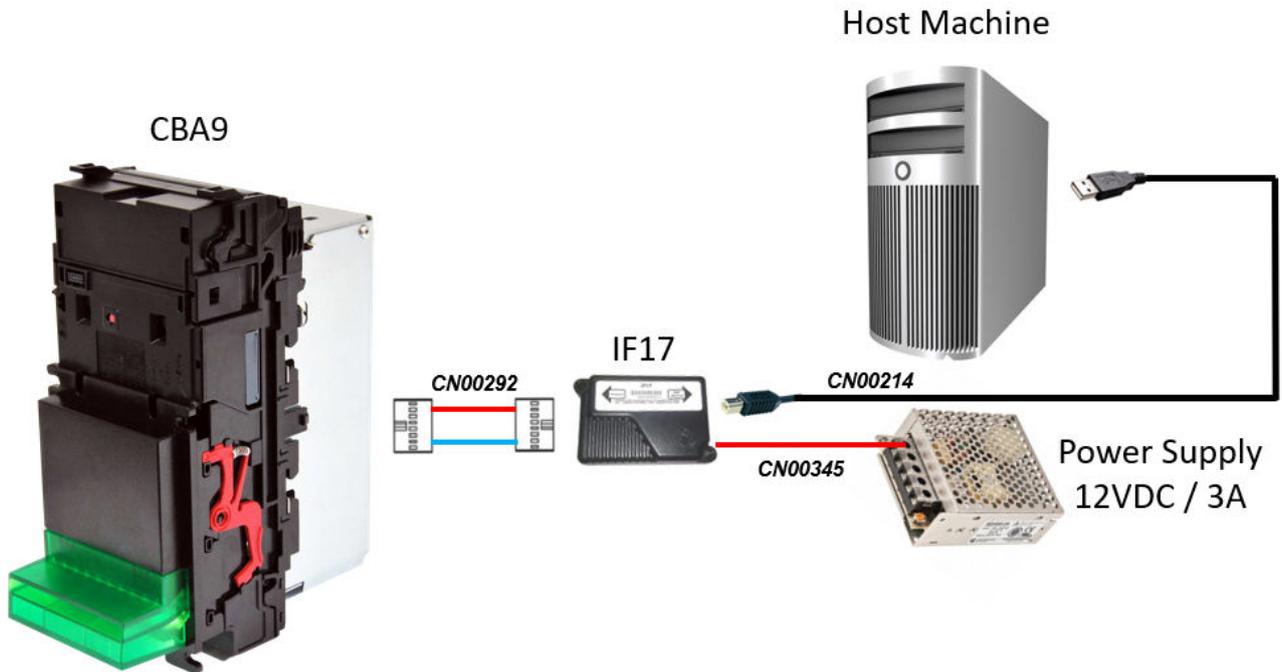


Direct USB
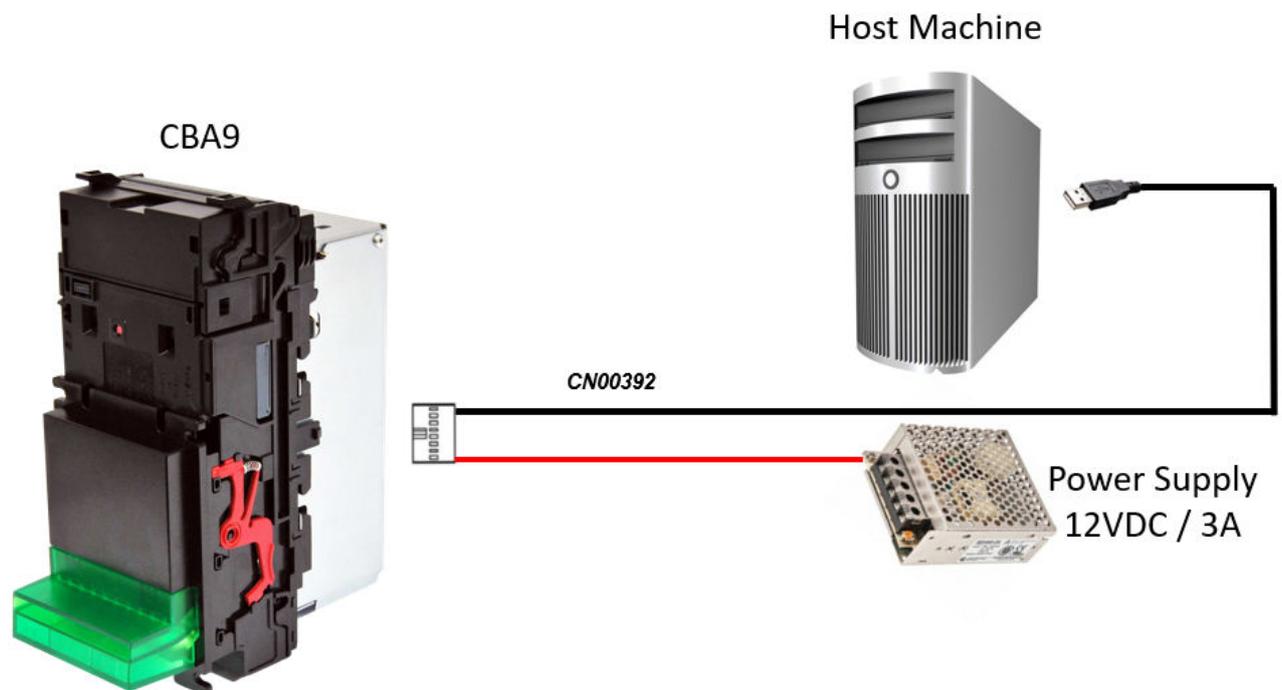


> The connection methods are identical between CBA9 and CBA11 products.

## Switching to Programming Mode (SSP)

Before programming via Validator Manager, the device needs to be switched to its programming mode (SSP interface). Please refer to Switching to Programming Mode (SSP) for the procedure for doing this.

## Programming the Device

Once you have switched the unit into SSP, open Validator Manager and click detect devices. This will scan all active com ports for a unit, if your validator fails to connect please ensure the correct drivers are installed and the unit is in SSP.

By selecting the Program tab, you can reprogram the validator. To begin the upload, click open file, then browse to the file location before clicking OK.
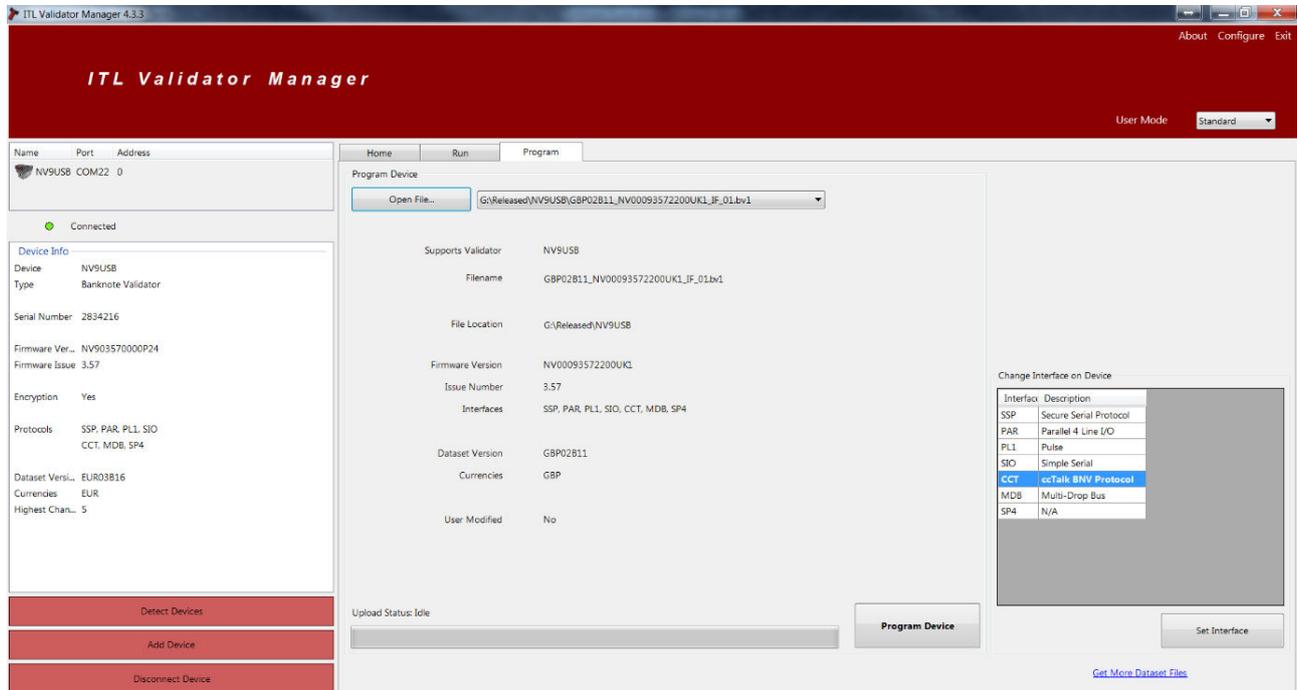


Once the file has been selected its information will be populated and the Program device tab will become active. Finally hit 'Program Device', the unit's bezel will now begin to flash signalling the update has begun.

> Interrupting the download process can result in the unit entering a non-functional state, once the process has started it cannot be halted.

When completed the unit will restart and a pop up box will appear saying Device Programming Complete.

# DA3

## General Description

The DA3 is a hand-held validator programming system that enables the user to re-program ITL banknote validators in the field, without the use of a PC. Dataset and firmware files for different validator models can be stored on the DA3. Once programmed the user can update or override existing software as well as test the functionality of the validator, away from the host machine.

## System Requirements

- Windows 8.1 or above
- .Net Framework 4.5 or above
- 256mb ram
- 50mb hard disk free
- Connected DA3 with active com port
- Data Flash Card (PA01121) *optional*

# Re-programming via DA3

To program using the DA3 programmer, you first need to load the DA3 with the necessary files. You will need to use one of our software tools, Device Programming System (DPS) which can be downloaded from our website.



Once the files are loaded onto the DA3, the validator can be updated. Simply remove the host machine cable and plug this into the "Host machine" port on the DA3 as shown in the image above. You will then need a ribbon cable to connect the DA3 to the validator itself, via the "validator" port. The DA3 should now be sat in-line between host and validator, with the DA3 being powered from the host connector.

Now ensure that the unit is in SSP (programming mode - see Switching to Programming Mode) and on the front side of the DA3, use the mode select button to choose either BNV Match Download or BNV Override download – based on how you set the DA3 up – and simply press the large play button in the middle. Once the download has begun, you will see the blue LED's start to swirl and will continue to do so until download is complete.

The play button will turn **GREEN** if the download has been completed successfully. If for whatever reason there is an error, the play button will turn **RED** and the download method LED will be flashing an error code for further diagnosing. A table of error codes can be found below:

**1 Long flash** followed by –

| Number of SHORT flashes | Indicated Status / Error |
|:---:|:---|
| 2 | No validator connection found |
| 3 | No valid download files found |
| 4 | Download fail |
| 5 | Memory card fail |

# Remote Updates

## General Description

The CBA range of products all support remote update, which is the ability to send an update file via protocol commands. This means that you do not physically have to be stood at the machine, as the host initiates the download via the protocol.

## Software Requirements

Remote update relies on a series of packets to be transmitted to the validator and thus only the serial protocols such as SSP and ccTalk allow this feature.

Details of how this is implemented can be found in our SSP implementation guide (GA00973).

You will have to check with the machine manufacturer as to whether this is a feature their software supports.

# CBA9 Range Protocols and Interfacing

## - Contents

## Introduction

The CBA9 Range supports standard industry protocols. Interfaces that are not listed may be available upon request. For any queries regarding interfaces that are not listed please contact support@innovative-technology.com.

> 📋 The use of an encrypted protocol (preferable eSSP) is strongly recommended to achieve the highest security.

## SSP and eSSP

### General Description

Smiley® Secure Protocol (SSP) and Encrypted Smiley® Secure Protocol (eSSP) are field proven secure interfaces specifically designed by Innovative Technology Ltd. to address the problems by cash handling systems in gaming machines. Problems such as acceptor swapping, re-programming acceptors and line tapping are all addressed. This interface is recommended for all new designs. Innovative Technology Ltd. provides full SDK packages upon request including Interface Specification, Implementation Guide as well as source code examples for C++ and C#.NET. Please contact support@innovative-technology.com for further information.

### Pin Assignment
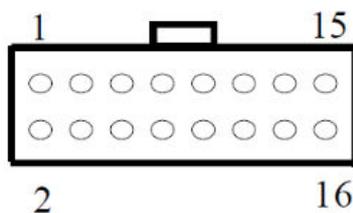


| Pin | Name | Type | Description |
|---|---|---|---|
| 1 | Vend 1 | Output | Serial Data (link to Pin 5) |
| 2 | Vend 2 | Output | DA3 Data Logging |
| 3 - 4 | ⚠️ Not Used | | |

| Pin | Name | Type | Description |
|---|---|---|---|
| 5 | Inhibit 1 | Input | Serial Data (link to Pin 1) |
| 6 - 10 | ⚠ Not Used | | |
| 11 | USB + | Data | USB Data + |
| 12 | USB - | Data | USB Data - |
| 13 | USB Vcc | Power | USB Vcc (+5VDC) |
| 14 | ⚠ Not Used | | |
| 15 | + Vin | Power | +12V DC Supply |
| 16 | 0V | Power | 0V Supply (GND) |

▤ +12VDC and 0V (GND) must always be connected, also when using USB connections.

## Setup Examples

The drawings below highlights how to connect the CBA9 Range to an SSP or eSSP host machine using available cables and interfaces from Innovative Technology Ltd. Please refer to Cable Drawings for details.



Host Machine

CBA9

CN00392

Power Supply
12VDC / 3A
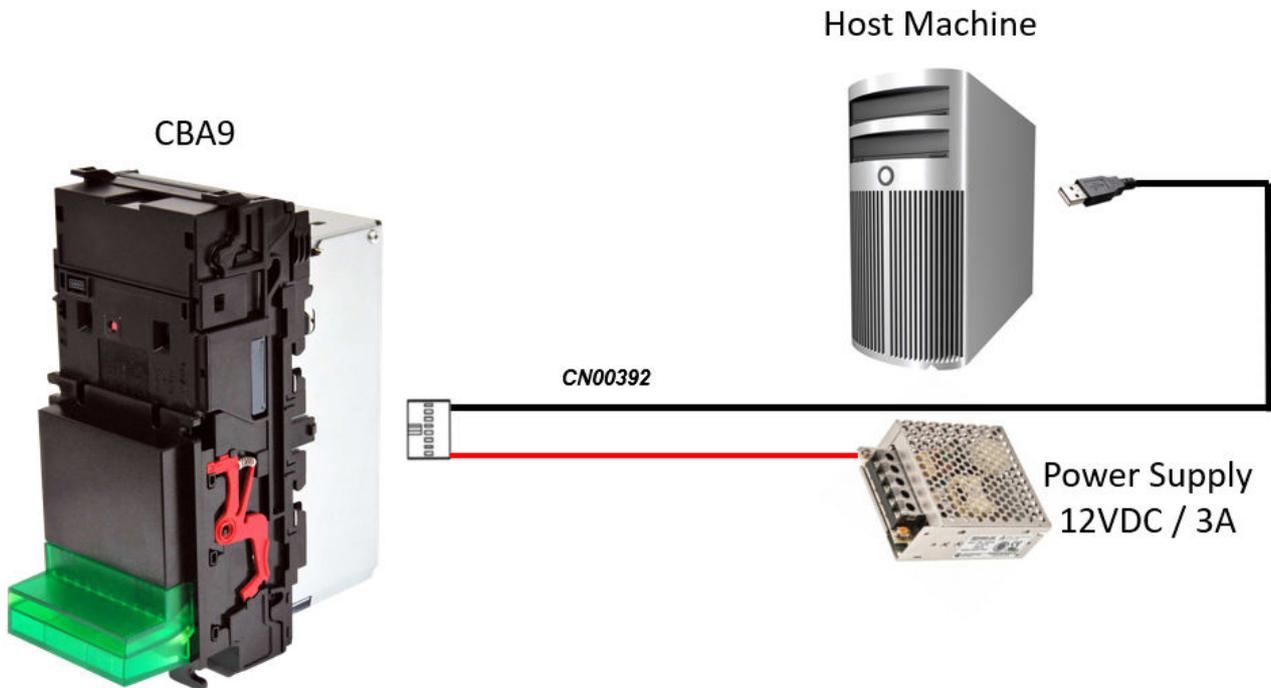
| Type | ITL Part  Number | Description |
|------|------------------|-------------|
| Cable | CN00392 | Validator to USB Cable |

| Type | ITL Part Number | Description |
|------|-----------------|-------------|
| Cable | CN00345 | DA3/IF17/IF18 Power cable |
| Cable | CN00292 | SSP to Binary interface cable |
| Cable | CN00214 | USB Type A to B |
| Interface | IF17 | TTL to USB Converter |
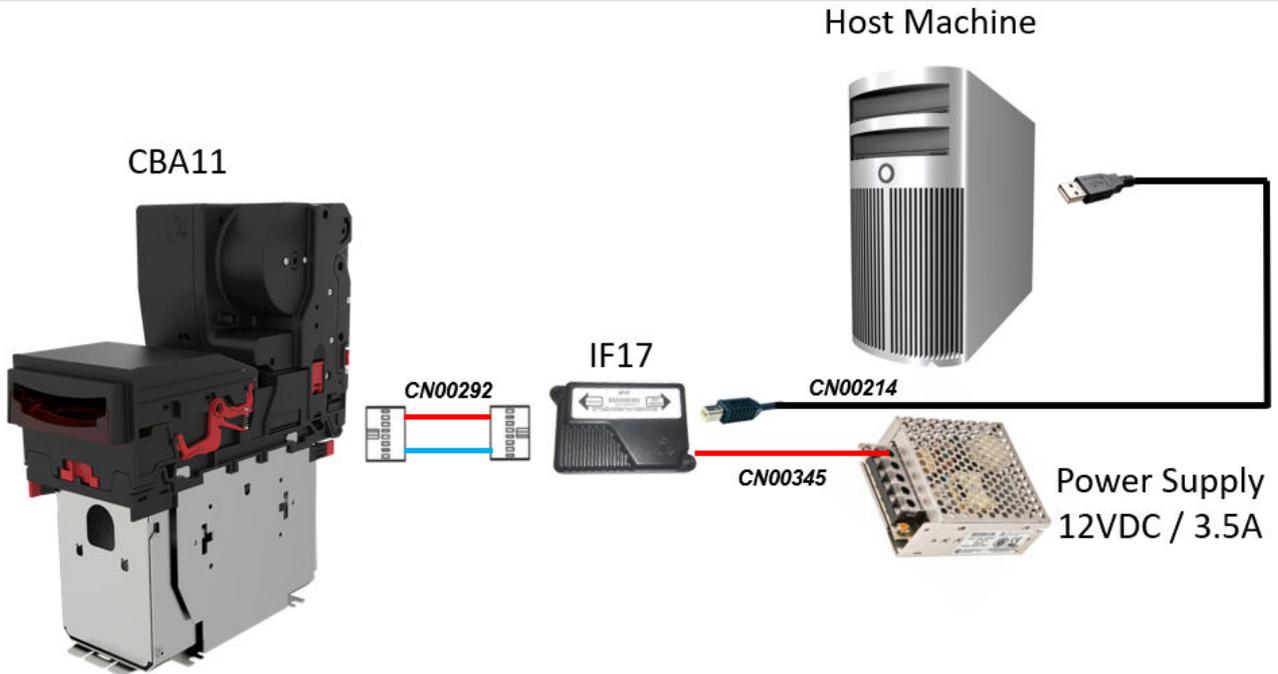
# ccTalk®

## General Description

ccTalk® is a serial communications protocol designed by Money Controls to allow 3-wire interfacing between a host and cash handling peripherals. Please contact support@innovative-technology.com for further information.

> Innovative Technology Ltd. provides full SDK packages including Interface Specification, Implementation Guide as well as source code examples for SSP respectively eSSP only!

## Pin Assignment



| Pin | Name | Type | Description |
|---|---|---|---|
| 1 | Vend 1 | Output | Serial Data (link to Pin 5) |
| 2 | Vend 2 | Output | DA3 Data Logging |
| 3 - 4 | ⚠ Not Used | | |
| 5 | Inhibit 1 | Input | Serial Data (link to Pin 1) |
| 6 - 10 | ⚠ Not Used | | |
| 11 | USB + | Data | USB Data + |
| 12 | USB - | Data | USB Data - |
| 13 | USB Vcc | Power | USB Vcc (+5VDC) |
| 14 | ⚠ Not Used | | |
| 15 | + Vin | Power | +12V DC Supply |
| 16 | 0V | Power | 0V Supply (GND) |

> 📄 +12VDC and 0V (GND) must always be connected, also when using USB connections.

## ccTalk® DES Encryption

When using ccTalk® DES encryption, the validator and host machine must exchange a secret key which forms the basis of the communication encryption. This exchange is performed in a Trusted Mode maintaining security. The Trusted Mode can only be entered by a physical access to the validator. Please refer to ccTalk® DES Encryption - Trusted Mode for details.

# CC4

## General Description

The CC4 protocol is an extension of ccTalk with additional status and payout commands to support the note float recycler unit and thus should be used if wanting to use the NV11+ in ccTalk. Please contact support@innovative-technology.com for the necessary protocol documentation.

> Innovative Technology Ltd. provides full SDK packages including Interface Specification, Implementation Guide as well as source code examples for SSP respectively eSSP only!

## Pin Assignments



| Pin | Name | Type | Description |
|-----|------|------|-------------|
| 1 | Vend 1 | Output | Serial Data (link to Pin 5) |
| 2 | Vend 2 | Output | DA3 Data Logging |
| 3 - 4 | ⚠ Not Used | | |
| 5 | Inhibit 1 | Input | Serial Data (link to Pin 1) |
| 6 - 10 | ⚠ Not Used | | |
| 11 | USB + | Data | USB Data + |
| 12 | USB - | Data | USB Data - |
| 13 | USB Vcc | Power | USB Vcc (+5VDC) |
| 14 | ⚠ Not Used | | |
| 15 | + Vin | Power | +12V DC Supply |
| 16 | 0V | Power | 0V Supply (GND) |

> +12VDC and 0V (GND) must always be connected, also when using USB connections.

# SIO and SI2

## General Description

SIO (Serial Input/Output) is a very basic and low level serial communication interface. Messages are not echoed back. SIO uses 300 baud whereby SI2 uses 9600 baud. Please contact support@innovative-technology.com for SIO Interface Specification or other details.

> 🔲 SIO and SI2 are outmoded and not recommended for new developments!

## Pin Assignments
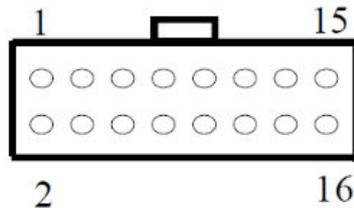


| Pin | Name | Type | Description |
|-----|------|------|-------------|
| 1 | Vend 1 | Output | Serial Data (Tx) |
| 2 | Vend 2 | Output | DA3 Data Logging |
| 3 | ⚠ Not Used | | |
| 5 | Inhibit 1 | Input | Serial Data (Rx) |
| 6 - 10 | ⚠ Not Used | | |
| 11 | USB + | Data | USB Data + |
| 12 | USB - | Data | USB Data - |
| 13 | USB Vcc | Power | USB Vcc (+5VDC) |
| 14 | ⚠ Not Used | | |
| 15 | + Vin | Power | +12V DC Supply |
| 16 | 0V | Power | 0V Supply (GND) |

# MDB

## General Description

MDB (Multi-Drop Bus) is used in the vending industry and is now an open standard in the NAMA (National Automatic Merchandising Association) so that all vending and peripheral equipment communicates identically. MDB uses a master-slave model where the VMC (Vending Mechanism Controller) is the master that can communicate with up to 32 slaves (e.g. banknote validator or coin acceptor). Please contact support@innovative-technology.com for further information.

> 📄 Innovative Technology Ltd. provides full SDK packages including Interface Specification, Implementation Guide as well as source code examples for SSP respectively eSSP only!

## Pin Assignment
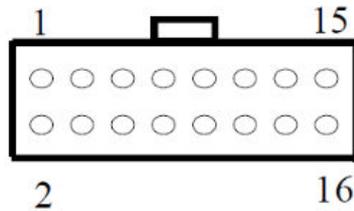


| Pin | Name | Type | Description |
|---|---|---|---|
| 1 | Vend1 | Output | Serial Data Out (Tx) |
| 2 - 4 | ⚠ Not Used | | |
| 5 | Inhibit1 | Input | Serial Data In (Rx) |
| 6 - 14 | ⚠ Not Used | | |
| 15 | +Vin | Power | +12V DC Supply |
| 16 | 0V | Power | 0V Supply (GND) |

## IF5 Interface

A CBA9 or CBA11 running MDB must use an IF5 MDB Voltage Converter, an external interface box which regulates the power supply and opto-isolates the communication lines. Typically, vending machine's power supplies are a higher voltage than the maximum for the CBA9 or CBA11 of 12v +/- 10%. The IF5 drops this higher voltage down to the required level.

> 📄 Always use an IF5 to connect a CBA9 or CBA11 to a MDB host machine!

| Type | ITL part number | Description |
|---|---|---|

| Interface | PA02061 | IF5 KIT - MDB Voltage Converter |
|-----------|---------|--------------------------------|

## Parallel

### General Description

Parallel is a 4-way output interface. The first 4 channels have their own individual output which means that only a maximum of 4 channels can be used. If a note is recognised the relevant Vend line is set to low for a period of 100 ± 3ms. Pulses outside these limits should be rejected as a precaution against false triggering.

> Parallel is an insecure interface and should not be used for new developments!

### Pin Assignments
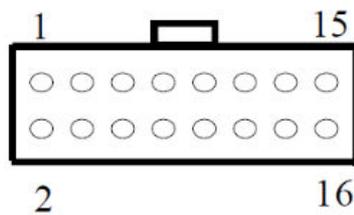


| Pin | Name | Type | Description |
|-----|------|------|-------------|
| 1 | Vend 1 | Output | Credit Output Channel 1 |
| 2 | Vend 2 | Output | Credit Output Channel 2 |
| 3 | Vend 3 | Output | Credit Output Channel 3 |
| 4 | Vend 4 | Output | Credit Output Channel 4 |
| 5 | Inhibit 1 | Input | Inhibit Input Channel 1 by holding HIGH, hold LOW to enable |
| 6 | Inhibit 2 | Input | Inhibit Input Channel 2 by holding HIGH, hold LOW to enable |
| 7 | Inhibit 3 | Input | Inhibit Input Channel 3 by holding HIGH, hold LOW to enable |
| 8 | Inhibit 4 | Input | Inhibit Input Channel 4 by holding HIGH, hold LOW to enable |

| Pin | Name | Type | Description |
|---|---|---|---|
| 9 | Busy | Output | Output Busy Signal. Active LOW when BV50 is in transporting, reading or stacking a note |
| 10 | Escrow | Input | Input Escrow Control. Enable escrow function by holding LOW |
| 11 - 14 | ⚠ Not Used | | |
| 15 | +Vin | Power | +12V DC Supply |
| 16 | 0V | Power | 0V Supply (GND) |

## Inhibit Control

The Inhibits can be used to either enable or disable the acceptance of those banknotes programmed on channels 1, 2, 3 and 4. The Inhibits are internally held high and must be set to low (GND) to enable banknote acceptance. If no Inhibit is set to low (GND) the Master Inhibit is set and the validator is disabled.

## Escrow Control

The CBA9 validator has a single note escrow facility. This allows the unit to hold onto the note once validated, and then only stack the note into a cashbox when the host machine confirms that the Vend operation has been completed. Please refer to Escrow Control for timing diagram and further details.

## IF10 Interface

The IF10 is an interface that allows serial SSP to be used in machines without the need of updating the machine software. The IF10 is connected between the validator and the host machine. The IF10 communicates with the validator in serial SSP which gives more security along the length of the cable. The IF10 should be mounted close to the host machine control board where the IF10 converts to the parallel connection.

| Type | ITL part number | Description |
|---|---|---|
| Interface | PA02319 | IF10 Kit – SSP To Parallel |

## Binary

## General Description

In the event that the machine needs more than 4 denominations to be recognised but the host machine cannot take advantage of the serial communication method then the CBA9 validator can be set to give a binary pattern output on the four parallel output pins. If the validator is set to Binary it will issue the vend signals as a binary pattern on the parallel outputs for 100 ± 3 ms. In this way a maximum of 15 different notes can be accepted and 4 notes individually inhibited.

The four channels have their own individual outputs. If a note is recognised the binary representation of the channel number will be pulled low for 100 ± 3 ms. Pulses outside these limits will be rejected as a precaution against false triggering due to noise.

For example, if a note programmed on channel 3 is credited, vend 1 ($2^0 = 1$ decimal) and vend 2 ($2^1 = 2$ decimal) will be active low for 100 ± 3 ms.

> 🗒 Binary is an insecure interface and should not be used for new developments!

## Pin Assignments
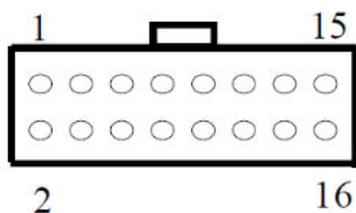


| Pin | Name | Type | Description |
|---|---|---|---|
| 1 | Vend 1 | Output | Credit Output binary $2^0 = 1$ decimal |
| 2 | Vend 2 | Output | Credit Output binary $2^1 = 2$ decimal |
| 3 | Vend 3 | Output | Credit Output binary $2^2 = 4$ decimal |
| 4 | Vend 4 | Output | Credit Output binary $2^3 = 8$ decimal |
| 5 | Inhibit 1 | Input | Inhibit Input Channel 1 |
| 6 | Inhibit 2 | Input | Inhibit Input Channel 2 |
| 7 | Inhibit 3 | Input | Inhibit Input Channel 3 |
| 8 | Inhibit 4 | Input | Inhibit Input Channel 4 |
| 9 | Busy | Output | Output Busy Signal |
| 10 | Escrow | Input | Input Escrow Control |
| 11 - 14 | ⚠ Not Used | | |
| 15 | +Vin | Power | +12VDC Supply |

| Pin | Name | Type | Description |
|---|---|---|---|
| **16** | **0V** | **Power** | **0V Supply (GND)** |

## Inhibit Control

The Inhibits can be used to either enable or disable the acceptance of those banknotes programmed on channels 1, 2, 3 and 4. The Inhibits are internally held high and must be set to low (GND) to enable banknote acceptance. If no Inhibit is set to low (GND) the Master Inhibit is set and the validator is disabled.

## Escrow Control

The CBA9 validator has a single note escrow facility. This allows the unit to hold onto the note once validated, and then only stack the note into a cashbox when the host machine confirms that the Vend operation has been completed. Please refer to Escrow Control for timing diagram and further details.

## IF9 Interface

The IF9 is an interface that allows serial SSP to be used in machines without the need of updating the machine software. The IF9 is connected between the validator and the host machine. The IF9 communicates with the unit in serial SSP which gives more security along the length of the cable. The IF9 should be mounted close to the host machine control board where the IF9 converts to the binary connection.

| Type | ITL part number | Description |
|---|---|---|
| Interface | PA02318 | IF9 Kit – SSP to Binary |

# Pulse

## General Description

Pulse can be used for the acceptance of up to 16 channels. When a note is recognised vend 1 (pin 1) will pulse a pre-set number of times. The amount of pulses as well as the high/low pulse ratio is configurable. For programming and configuration please refer to the Validator Manager guide.

> Pulse is an insecure interface and should not be used for new developments!

## Pin Assignments
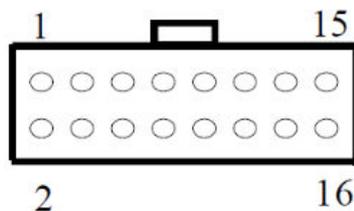


| Pin | Name | Type | Description |
|---|---|---|---|
| **1** | Vend 1 | Output | **Credit Output Pulse Stream** |

| Pin | Name | Type | Description |
|---|---|---|---|
| 2 - 4 | ⚠ Not Used | | |
| 5 | Inhibit 1 | Input | Inhibit Input Channel 1 |
| 6 | Inhibit 2 | Input | Inhibit Input Channel 2 |
| 7 | Inhibit 3 | Input | Inhibit Input Channel 3 |
| 8 | Inhibit 4 | Input | Inhibit Input Channel 4 |
| 9 | Busy | Output | Output Busy Signal |
| 10 | Escrow | Input | Input Escrow Control |
| 11 - 14 | ⚠ Not Used | | |
| 15 | +Vin | Power | +12VDC Supply |
| 16 | 0V | Power | 0V Supply (GND) |

## Inhibit Control

The Inhibits can be used to either enable or disable the acceptance of those banknotes programmed on channels 1, 2, 3 and 4. The Inhibits are internally held high and must be set to low (GND) to enable banknote acceptance. If no Inhibit is set to low (GND) the Master Inhibit is set and the validator is disabled.

## Escrow Control

The CBA9 validator has a single note escrow facility. This allows the unit to hold onto the note once validated, and then only stack the note into a cashbox when the host machine confirms that the Vend operation has been completed. Please refer to Escrow Control for timing diagram and further details.

## Credit Hold Function

If this function is enabled, the validator will take the notes as normal but then wait until the escrow line is toggled low/high before it will then give out the pulses per denomination as set. After the pulses have been given, the validator will wait for another low/high toggle until the full value of credit pulses are given.

For example, with a setting of 2 pulses per dollar, a five dollar bill will give 2 pulses 5 times.

A Typical use of this option would be for a Pool table with a game price of $1. You could insert a $5 note and press a button that toggles the escrow line and releases the pool balls, this would then allow you to play the first game. The Validator holds onto the remaining credits until the game has finished and the button is pressed again allowing the next game to begin, this continues until all the credits have been used.

The busy line remains low throughout the whole process and the CBA9 remains inhibited until all pulses are given.

## IF15 Interface

The IF15 is an interface that allows serial SSP to be used in machines without the need of updating the machine software. The IF15 is connected between the CBA9 and the host machine. The IF15 communicates with the validator in serial SSP which gives more security along the length of the cable. The IF15 should be mounted close to the host machine control board where the IF15 converts to the pulse connection.

| Type | ITL part number | Description |
|------|-----------------|-------------|
| Interface | PA02321 | IF15 Kit – SSP to Pulse |

# CBA9 Range Service Guide

## Contents

## Routine Maintenance

### Introduction

The CBA9 Range of products have been designed to minimize any performance variation over time. Much of this is achieved by careful hardware and software design. However, depending upon the environment the validator and/or its modules may at some time require cleaning, belt changing or note path clearing.

### Recommended Cleaning Intervals

Innovative Technology Ltd recommends to clean the optical lenses every month or as required. Dirt, dust or other residue leads to bad note acceptance and other performance degradation.

Please refer to Second Level Support for comprehensive cleaning instructions.

### Cleaning the Product

> Do not use solvent based cleaners such as alcohol, petrol, methylated spirits, white spirit or PCB cleaner. This will result in permanent damage to the CBA9, only use a mild detergent.
>
> Dirt, dust or other residue causes bad note acceptance rates and other performance degradation. The recommended cleaning interval is once a month!

| 1 | **Power Off** | |
|---|---|---|
| | Either unplug the interface cable or switch of power to device/machine. | |

| 2 | **Open the Note Path** |  |
|---|---|---|
|   | Slide the red catch to the left (1)<br>Lift up the top half of the unit (2) |  |
| 3 | **Clean note path and sensors** |  |
|   | Use a dry linen cloth and/or compressed air, to ensure there is no dirt or debris. Paying attention to sensor locations and drive belts. |  |

## Recommended Belt Changing Intervals

Innovative Technology Ltd recommends that you change the drive belts of the CBA9 every 6-12 months or as required, dependent on environmental factors.

If dirt can be seen to be building up or if the belts themselves have had excessive use and are starting to wear, then this time period may not apply and they would need to be swapped sooner.

Please refer to Second Level Support for comprehensive belt changing instructions.

## Changing the Drive Belts

| 1 | **Power Off** |  |
|---|---|---|
|   | Either unplug the interface cable or switch of power to device/machine. |  |

| 2 | **Open the Note Path** |  |
|---|---|---|
|  | Slide the red catch to the left (1) <br> Lift up the top half of the unit (2) |  |

| 3 | **Remove Lozenge** |  |
|---|---|---|
|  | Press grey release tab to remove lozenge from validator. |  |

| 4 | **Remove Old belts** |  |
|---|---|---|
|  | With the lozenge removed, press both drive wheels inwards to create slack in the belts. <br><br> This slack will allow you to remove belts from the lozenge. <br><br> 📄 Push the drive wheels down into your desk. |  |

| 5 | **Replace with new belts** |
|---|---|
| | Place new belts onto drive wheels, push them inwards to allow you enough slack to position belts into place. |
| | 🖩 Push the drive wheels down into your desk. |
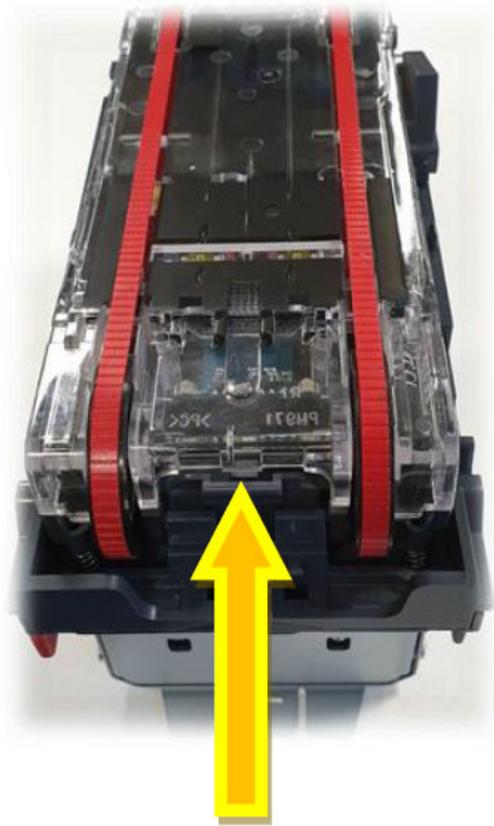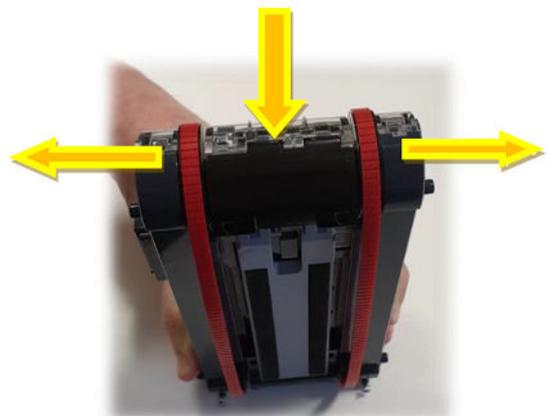
## Checking the Device Configuration

To check settings on a programmed unit:

| 1 | Power up the unit. |
|---|---|
| 2 | Click the red configuration button present inside of the unit twice. |
| 3 | Monitor the quantity of flashes made by the front bezel and check flash codes below: |

| Flashes | Interface | Interface Settings | | | | | | | | | | | |
|---------|-----------|------|------|-------------------|-----|-----------|---------------|---------------|--------------|--------------|-------------------|----------------|--------|
| | | Cct plain | Cct 8-bit | No Escrow Timeout | DES | Low Power | High Speed | Pulse High | Pulse Low | Pulse per £ | SIO start dis | Credit Hold | Binary |
| 1 | SSP | | | | | | | | | | | | |
| 2 | Pulse | | | | | | | ms/10 | ms/10 | value | | 3 | |
| 3 | MDB | | | | | | | | | | | | |
| 4 | IF30 | | | | | | | | | | | | |
| 5 | IF31 | | | | | | | | | | | | |
| 6 | Cctalk | 1 | 2 | 3 | 4 | | | | | | | | |
| 7 | SIO | | | 3 | | | 1 | | | | 2 | | |
| 8 | Parallel | | | 2 | | | | | | | | | 1 |
| 9 | SP4 | | | | | | | ms/10 | ms/10 | value | | 3 | |
| 10 | NS | | | | | | | | | | | | |
| 11 | IF32 | | | | | | 1 | | | | | | |

## Error Flash Codes

If the validator is an error state, the bezel will flash a combination of long and short flashes. The combination and their meanings can be found in the table below:

| Number of Flashes | Meaning | Corrective Action |
|-------------------|---------|-------------------|
| 1 | Note Float Error | Check the Note Float error |
| 2 | Note Jammed | Check the Note path and Cashbox, remove the jammed Note then repower the machine. |
| 3 | Internal Checksum Error | Download the dataset/firmware file to CBA11 |
| 4 | PSU Error | Check the power supply |

# Status LED Flash Codes

In addition to the bezel flash codes of the CBA9 validator, each of the modules have their own status LED to report any errors/status events relating specifically to that module. These can also be found in the tables below:

## CBA11

The status LED of the Note Float recycler module is behind the red button, located on the front of the module, as indicated in the image next to the table.

| Flashes | Indicated Status / Error | Image |
|---|---|---|
| Off | Normal Operation |  |
| Constant flash at 1Hz | Note Transport Error in Note Float | |
| 2 Flashes, pause (repeated) | Software Error | |
| 3 Flashes, pause (repeated) | Calibration Error | |
| 4 Flashes, pause (repeated) | Diverter Error | |
| 5 Flashes, pause (repeated) | Motor Timeout | |
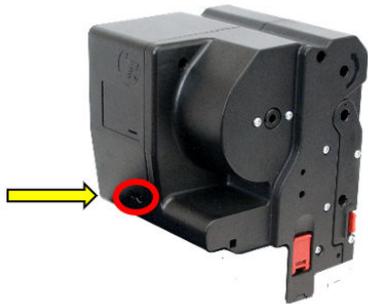
# Configuration Button

The CBA9 and CBA11 both have a configuration button that has several functions available to the user. These are detailed below:

## CBA9

- Toggle between primary protocol and programming mode (SSP)
    - Press and hold red config button
    - Wait until bezel illuminates, then release button.
    - Unit will flicker, reset and will have toggled upon reset.
- Check current protocol
    - Double click the red config button.
    - Bezel will flash a set number of times
    - Refer to table above, in Checking the Device Configuration.
- Enter configuration card mode
    - Press red config button once
    - Unit will begin to flash, waiting for a configuration card to be inserted.
    - Press button again once, to cancel.

## CBA11

Same as above, plus the following functions:

- Empty note float recycler and set counters to zero.
    - Press and hold red config button
    - Wait until bezel illuminates, keep hold of button.
    - Bezel LED will turn off, then release button.
- Acknowledge clearing of jam
    - If a jam has occurred in the note float (status LED flashing constant 1Hz) you will need to confirm that you've cleared it.

- Press button once, to acknowledge this action.

## Clearing a Jam

| 1 | **Power Off**<br><br>Either unplug the interface cable or switch of power to device/machine. | |
|---|---|---|
| 2 | **Open the Note Path**<br><br>Slide the red catch to the left (1)<br>Lift up the top half of the unit (2) |  |
| 3 | **Clear Jammed Note**<br><br>If note can be seen in upper note path, remove note and proceed to next step.<br><br>If note is in lower note path, lift the lozenge.<br><br>Push grey release tab (1)<br>Lift up lozenge unit (2) |  |
| 4 | **Re-apply Power**<br><br>Close unit back up and re-apply power to unit.<br><br>It will reset and should no longer be flashing a jam error message. | |
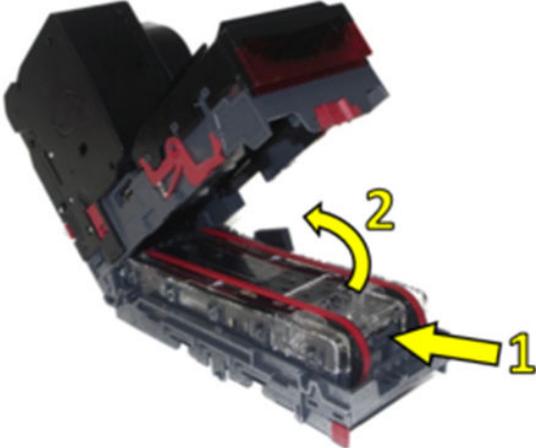
## Clearing a Checksum Error

The flash code will indicate what type of checksum error the unit is reporting.

This type of error usually occurs if the file is corrupt or an issue occurred during download. Retry download again. If error persists, please contact support.

| Bezel Flash Codes | | |
|---|---|---|
| **Long** | **Short** | **Checksum Type** |

| Bezel Flash Codes | | |
|---|---|---|
| 3 | 1 | Firmware |
| | 2 | Interface |
| | 3 | EEPROM |
| | 4 | Dataset |

## Testing After an Error Has Been Cleared

You can use our support tool, Validator Manager to run the unit and check operation.

Please refer to our Software Guide for full instructions on how to use ITL Validator Manager.

## Fault Finding Flow Chart

You can use the below chart as an aid, in order to help resolve a number of common issues you might experience.

| Problem | Possible Cause | Solution |
|---|---|---|
| **All notes rejected (Unit Enabled)** | Incorrect currency file | Check the required dataset is programmed using the Validator Manager software. |
| | Notes not included in currency file | Check the required note denomination and issue are included the the currency file. |
| | Notes inhibited by host machine | Check the host machine has not reached it's credit limit. If a coin hopper is fitted ensure it isn't empty. |
| | Bill path obstructed | Check there is no debris inside the upper and lower note path of the unit. |
| **Unit not enabling** | No power | Check there is power to the validator and this is within spec |
| | Incorrect interface programmed | Check which interface is needed by the host machine and ensure this is selected using Validator Manager. |
| **Note accepted but no credit** | PSU out of specification | Check there is power to the validator and that it is within spec. |
| | Sensors obscured / interference | Ensure the note path is clear of debris and that the sensors are clean of dirt. |
| **Acceptor runs slow or intermittently** | Foreign object in note path | Ensure the note path is clear of debris and the sensors are clean of dirt. |
| | Incorrect supply voltage | Check there is power to the validator and that it is within spec. |
| | Unit damage | If possible, replace damaged components or return the unit to an authorised repair centre. |
| **Bezel LEDs are flashing** | Various reasons | Refer to Bezel LED Flash Codes. |

# CBA9 Range Product Compliance

For more information on compliance, please visit the CBA9 Range Support Hub page.

# CBA9 Range Appendix

## Contents

## Cable Drawings

### CN00392 USB Type A to Validator Cable Assembly
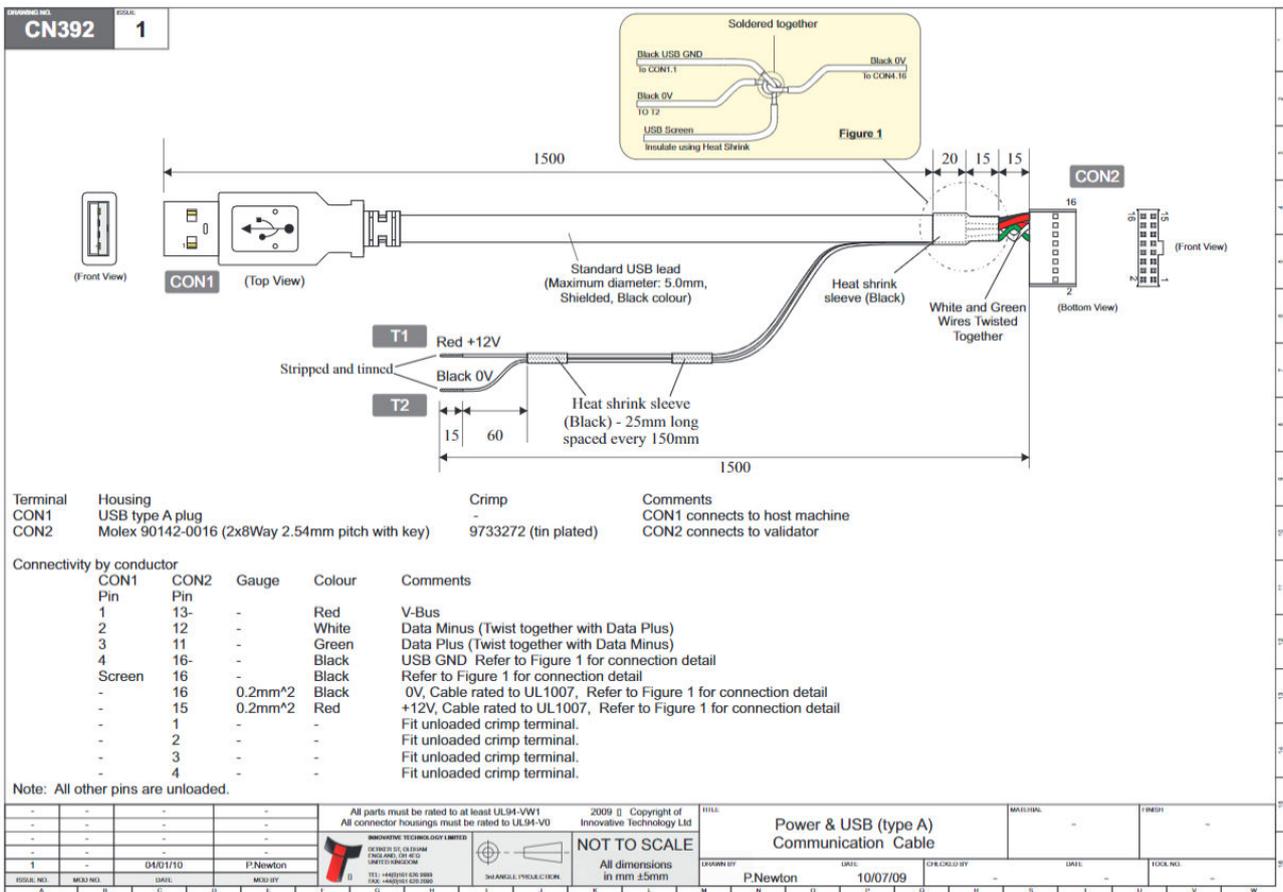
# CN00214 USB A to B Cable Assembly
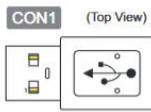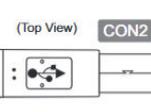
# WR00147 Smart Payout to NV200 Adapter Cable Assembly

**WR147** | **A1**
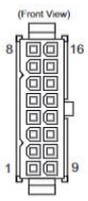
(Front View) (Top View) (Bottom View) (Front View)

CON1  CON2

15  15  15  55  15  15  15
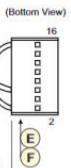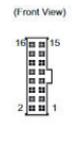
**Parts List**

| Item | QTY | Description | Vendor |
|------|-----|-------------|--------|
| A | 1 | 0039012166 plug housing (2x8way 4.2mm pitch Mini-Fit Jr) | Molex |
| B | 4 | 0039000126 male crimp (phosphor bronze, tin plated, 18-24AWG) | Molex |
| C | 2 | 30mm long, black heat shrink sleeve | - |
| D | 1 | 4-core AWM style 2462 22AWG cable | - |
| E | 1 | 90142-0016 housing (2x8way 2.54mm pitch with key) | Molex |
| F | 4 | 9733272 tin plated crimp | Molex |

**Connectivity**

| CON1 Pin | CON2 Pin | Gauge (AWG) | Colour | Comments |
|----------|----------|-------------|--------|----------|
| 16 | 1 | 24 | White | SSP_TXD_(Vend1) |
| 14 | 5 | 24 | Green | SSP_RXD_(Inhibit1) |
| 9 | 15 | 22 | Red | V_IN |
| 1 | 16 | 24/22 | Black | GND |

**Note to Manufacturers**
Certificates are needed for the following:
RoHS compliance   UL94-V0 rated (connector housing)   UL94-VW1 rated (all other parts)

All dimensions are in mm ±5mm, unless specified

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3rd Angle Projection
NOT TO SCALE

TITLE: Smart Payout to NV200 adapter harness

| DRAWN BY | DATE |
|----------|------|
| A Lunsong | 02/10/12 |
| CHECKED BY | DATE |
| - | - |

MATERIAL: All parts must be rated to at least UL94-VW1. All connector housings must be rated to UL94-V0. Must be RoHS compliant.
FINISH: -

| ISSUE NO. | MOD NO. | DATE | MOD BY |
|-----------|---------|------|--------|
| A1 | - | 02/10/12 | A Lunsong |

# CN00398 Dual eSSP Interface Cable Assembly



**Parts List**

| Item | QTY | Description | Vendor |
|------|-----|-------------|--------|
| A | 1 | 0039012165 housing | Molex |
| | | (2x8way 4.2mm pitch Mini-Fit receptacle) | |
| B | 4 | 0039000038 tin plated, female crimp | Molex |
| C | 1 | 10-13-165082160-0 (K5A T 16.5x8.2x16 toroidal core) | Paddiford Electronics/ |
| | | (2 turns (1 loop); cable tie to secure in place) | Z.Shen Enterprise |
| D | 10 | 15mm long, black heat shrink sleeve | - |
| | | (spread along the length of harness with typical separation of 82mm) | |
| E | 2 | Standard 22AWG wire | - |
| F | 1 | 553-0100-01 stackable black 4mm banana plug | Deltron |
| G | 1 | 553-0500-01 stackable red 4mm banana plug | Deltron |
| H | 2 | 4-core AWM style 2462 24AWG cable | - |
| I | 4 | 25mm long, black heat shrink sleeve | - |
| J | 1 | 90142-0008 housing | Molex |
| | | (2x4way 2.54mm pitch with key) | |
| K | 8 | 9733272 tin plated crimp | Molex |
| L | 1 | 90142-0016 housing | Molex |
| | | (2x8way 2.54mm pitch with key) | |

**Connectivity**

| CON1 Pin | CON2 Pin | CON3 Pin | CON4 Pin | CON5 Pin | Gauge (AWG) | Colour | Comments |
|------|------|------|------|------|------|------|------|
| 16 | 7 | - | - | 1 | 24 | Orange | SSP TX (Vend1) |
| 14 | 8 | - | - | 5 | 24 | Brown | SSP RX (Inhibit1) |
| 9 | - | - | 1 | - | 22 | Red | V_IN (12V) |
| 1 | 2 | 1 | - | 16 | 24/22 | Black | GND |

Note:
Pin 14 and 16 (CON1) each has two wires crimped together.
Pin 1 (CON1) has three wires crimped together. If crimp is unable to hold three wires together please use AWG 26 for the 4-core PVC cable.
Pin 1 (CON2) is fitted with crimp but not connected.
Pin 15 (CON5) is fitted with crimp but not connected.
All other pins are unloaded.
For the unused wire in the 4-core PVC cable, please trim excess or, if possible, please use a 3-core PVC cable.
Length for both PVC cable is the same

**Host machine (via CON5) controls both Hopper and Payout through different SSP addresses. Hence, SSP_TXD_(Vend1) on Payout and SSP TX on Hopper are both linked to pin 1 (Vend1) on CON5.**

**Comments**
CON1 mates with 6745-2160 straight header (on Smart Payout)
CON2 connects to SSP Hopper Interface Port
CON3 connects to V- (GND) of power supply
CON4 connects to V+ (12V) of power supply
CON5 connects to Host Machine

All parts must be rated to at least UL94-VW1
All connector housings must be rated to UL94-V0

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TITLE: Dual eSSP interface to both Smart Payout and Hopper assembly

NOT TO SCALE
All dimensions in mm ±2mm

DRAWN BY: A Lunsong  DATE: 15/09/09

ISSUE NO. 1 — DATE 04/01/10 — MOU BY A Lunsong

## Connector Specifications

| Type | Vendor | Part Number | Pins | Pitch | Polarising |
|------|--------|-------------|------|-------|------------|
| Housing | Leotronics | 2652-2161 | 2x8 | 2.54mm | With Key |
| Crimp | Leotronics | 2653-2000 | | | Female |
| Housing | Molex | 90142-0016 | 2x8 | 2.54mm | With Key |
| Crimp | Molex | 90119-2121 | | | Female |

# Lock Specifications



## Switching to Programming Mode (SSP)

To switch the validator to SSP, you can utilise the red configuration button. This allows the user to toggle back and forth between its primary interface and SSP. The process is as follows:

- Firstly, check the current interface by double clicking the red button
  - Unit will flash bezel an x number of times, to indicate what protocol it is.
    1 x flash is SSP

- If SSP is needed, Press and hold red button until bezel light illuminates
- As soon as the bezel illuminates, release button.
- Unit will flicker, reset and start up again in SSP

## ccTalk® DES Encryption - Trusted Mode

**Power Off**

Either unplug the interface cable or switch off the power.

**Open Note path**

Slide the red catch to the left (1)
Lift up the top half of the note path (2)

**Power On**

With the note path open, apply power

**Enter Trusted Mode**

Press and hold the configuration button until LED on underside of upper note path starts blinking.
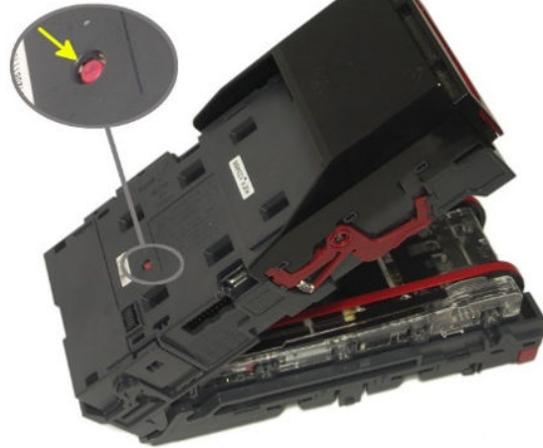
**Observe LED**

If successful, the LED described above will be blinking.

The unit will remain in trusted mode for 30 seconds or until DES key has been exchanged.
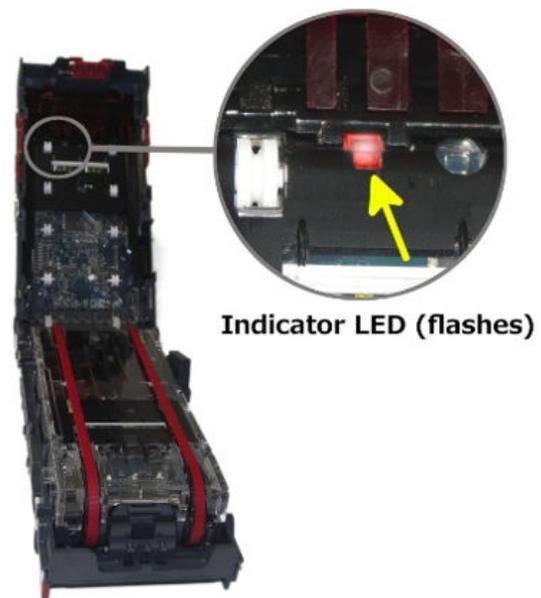
# Escrow Control

The CBA9 has a single note escrow facility. This allows the validator to hold onto the note once validated, and then only stack the note into a cashbox when the host machine confirms that the Vend operation has been completed. If no confirmation of the Vend is received, then the note will be returned to the user after 30 seconds. If the host machine itself aborts the transaction by setting the corresponding inhibit input high, the note is returned immediately. The sequence of operation is as follows:

```
                          ┌──────────┐
                          │  Start   │
                          └────┬─────┘
                               │
                          ┌────▼──────┐
                          │ Pin 10 Held│
                          │    Low     │
                          └────┬──────┘
                               │
                ┌────┐    ┌────▼──────┐
                │ No │    │ Check Credit│
                │    │    │   Line/s    │
                └─┬──┘    └────┬──────┘
                  │            │
                  │     ◇──────▼──────◇
                  └─────  Pulse Received?
                         ◇─────┬──────◇
                               │ Yes
                               │
          ◇────────────────────▼────────────────────◇     ┌──────────────┐
  ┌────┐   Want to Accept Note?                             │ No response in│
  │ No │  ◇────────────┬───────────────────────────◇───────│     30s       │
  └─┬──┘               │ Yes                                └──────┬───────┘
    │                  │                                           │
┌───▼──────┐    ┌──────▼─────┐                            ┌────────▼────┐
│ Channel  │    │ Hold Pin 10 │                           │ Note Rejects │
│ Inhibit  │    │    High     │                           └──────────────┘
│  High    │    └──────┬─────┘
└──────────┘           │
                ┌──────▼──────┐
                │ Check Credit │
      ┌────┐    │   Line/s     │
      │ No │    └──────┬──────┘
      └─┬──┘           │
        │       ◇──────▼──────◇    ┌──────────────┐
        └───────  Pulse Received? ──│ No response in│
                ◇──────┬──────◇     │     30s       │
                       │ Yes        └──────┬───────┘
                ┌──────▼─────┐             │
                │   Credit    │     ┌───────▼────────┐
                └──────┬─────┘     │ Note Forcibly   │
                       │            │ Removed By       │
                ┌──────▼─────┐     │ Customer         │
                │ Hold Pin 10 │     └───────┬────────┘
                │    Low      │             │
                └──────┬─────┘             │
                       │                    │
                  ┌────▼─────┐
                  │   End    │
                  └──────────┘
```
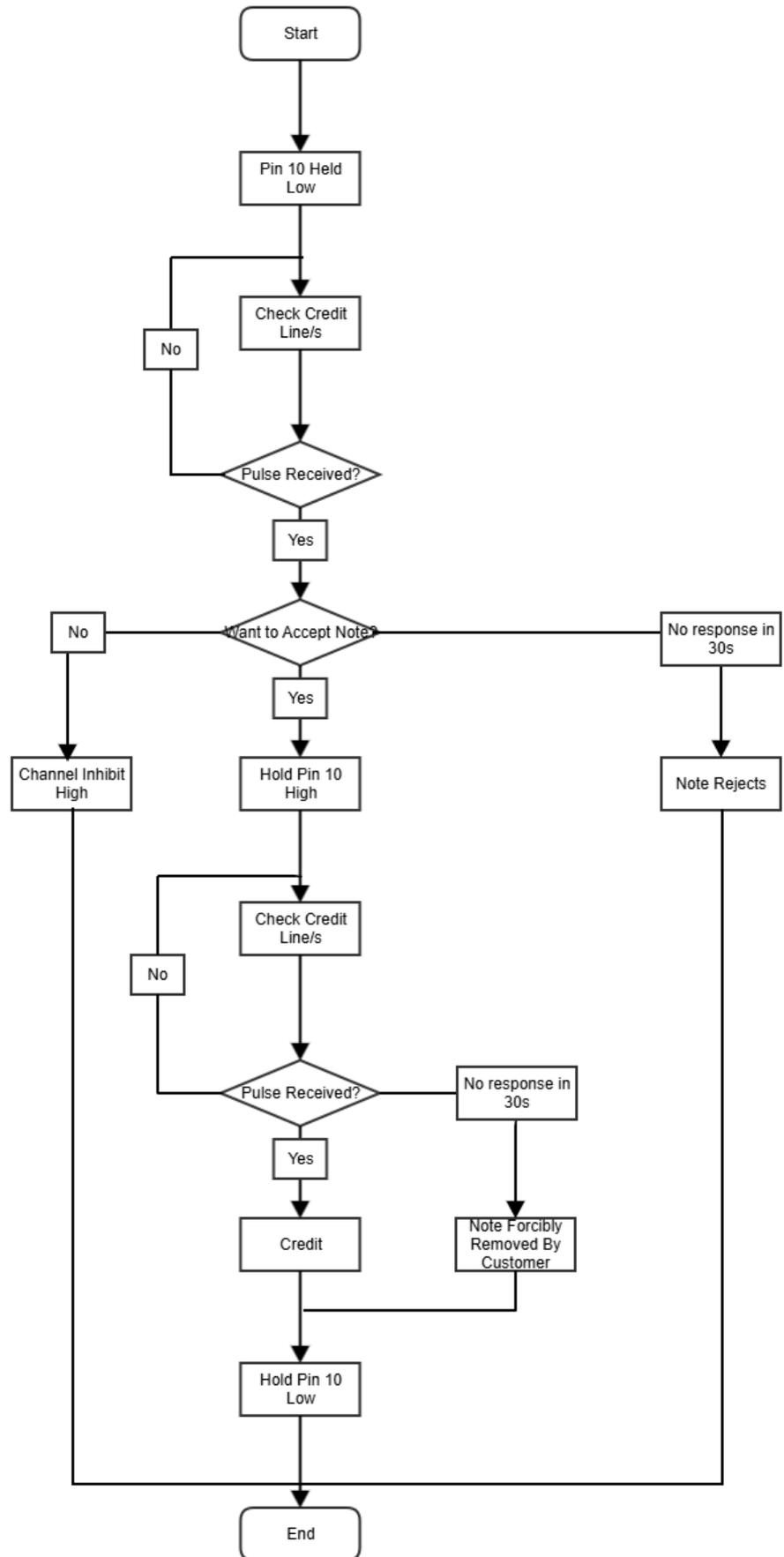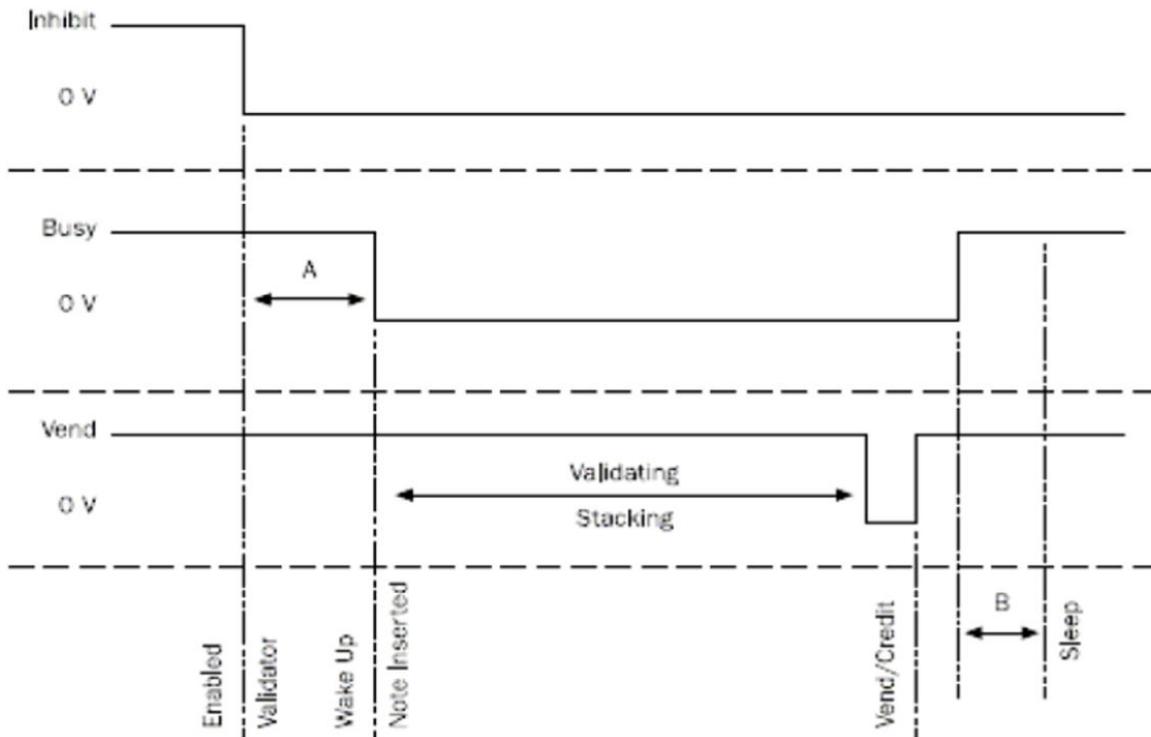
> 📓 Only book the credit on the second vend pulse!

## Escrow Timing Diagram
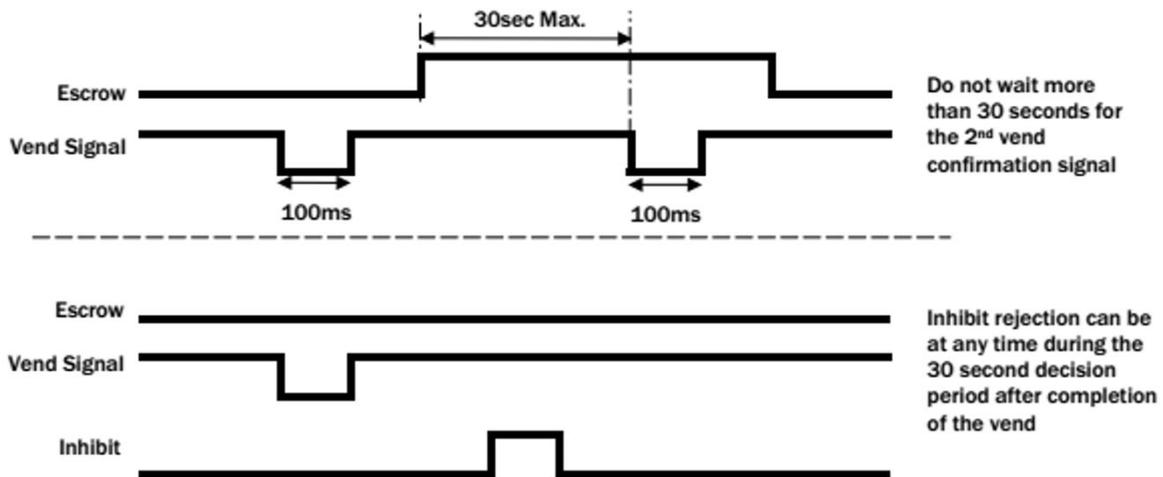

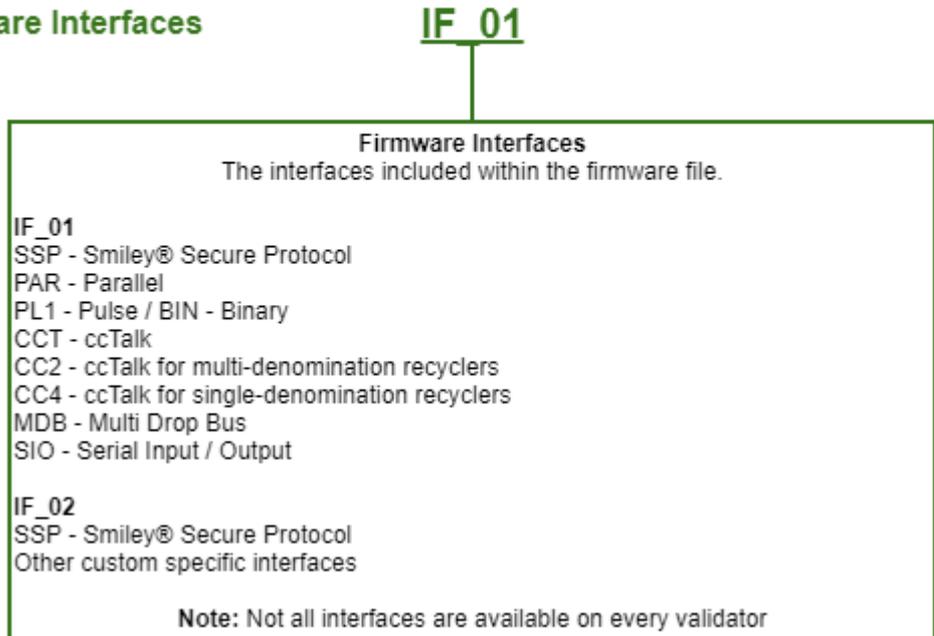
## Low Power Mode Timing Diagram

# File Naming Convention

**CNY06K42**_**CBA0093832584000**_**IF_01**.bv1
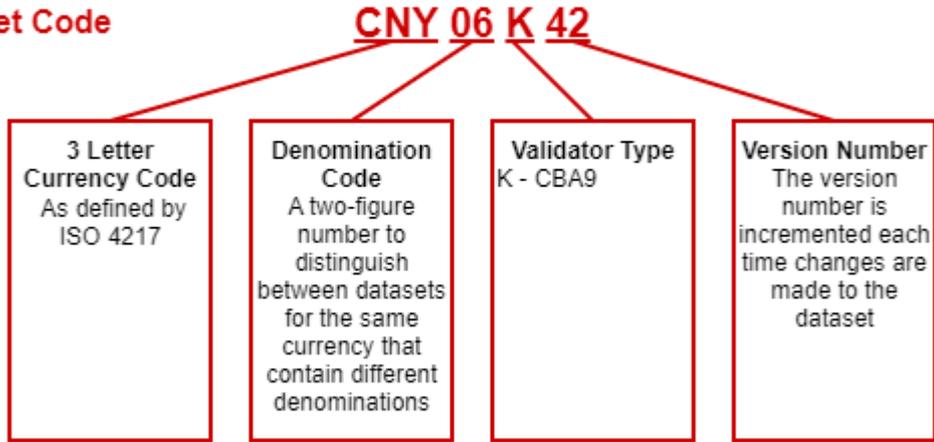
| Dataset Code | Firmware Code | Firmware Interfaces |
|---|---|---|

## Dataset Code

**CNY 06 K 42**

| 3 Letter Currency Code | Denomination Code | Validator Type | Version Number |
|---|---|---|---|
| As defined by ISO 4217 | A two-figure number to distinguish between datasets for the same currency that contain different denominations | K - CBA9 | The version number is incremented each time changes are made to the dataset |

## Firmware Code

**CBA009 383 2584000**

| Validator Type | Firmware Version | Internal Number |
|---|---|---|
| CBA009 - CBA9 | 3 digit number incremented with each release of firmware | Internal ITL reference number |

## Firmware Interfaces

**IF_01**

**Firmware Interfaces**
The interfaces included within the firmware file.

IF_01
SSP - Smiley® Secure Protocol
PAR - Parallel
PL1 - Pulse / BIN - Binary
CCT - ccTalk
CC2 - ccTalk for multi-denomination recyclers
CC4 - ccTalk for single-denomination recyclers
MDB - Multi Drop Bus
SIO - Serial Input / Output

IF_02
SSP - Smiley® Secure Protocol
Other custom specific interfaces

**Note:** Not all interfaces are available on every validator

# CBA9 Range Disclaimer and Safety Information

## Contents

- Disclaimer
- Product Safety Information

## Disclaimer

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## Product Safety Information

Throughout this user manual, attention should be drawn to key safety points when using or maintaining the product.

These safety points will be highlighted in a box:

> 🗎 This is an example text.

This user manual and the information it contains is only applicable to the model stated on the front cover and must not be used with any other model.

| ⚠ Danger! | IR and UV Radiation |
|---|---|
|  | • Possible skin or eye damage due to presence of IR and UV radiation internally. Disconnect power before servicing <br> • Use PPE measures <br> • Follow safety precautions given in IEC 62471 |