



Innovative Technology

INTELLIGENCE IN VALIDATION



CBA9

*“Compact Bill Acceptor
designed for Southeast Asia”*

Available for the
following currencies:



- Enhanced sensing technology
- Exceptional field reliability



FEATURES

- Enhanced sensing technology
- Proven field reliability
- MDB remote download
- Free, fast & easy firmware updates high speed bill acceptance



BENEFITS

- High acceptance rates
- Cost effective bill validator
- Update over comms line
- Future proof - update via USB, PC or handheld programmer

Technical Specification

Power

Requirements: 12V
Standby: 0.2A
Running: 1A
Peak: 3A

Bezel Options

Horizontal/Vertical
Rainbow illumination

Cashbox Options

300/600 slide
300/600 clip

Protocol

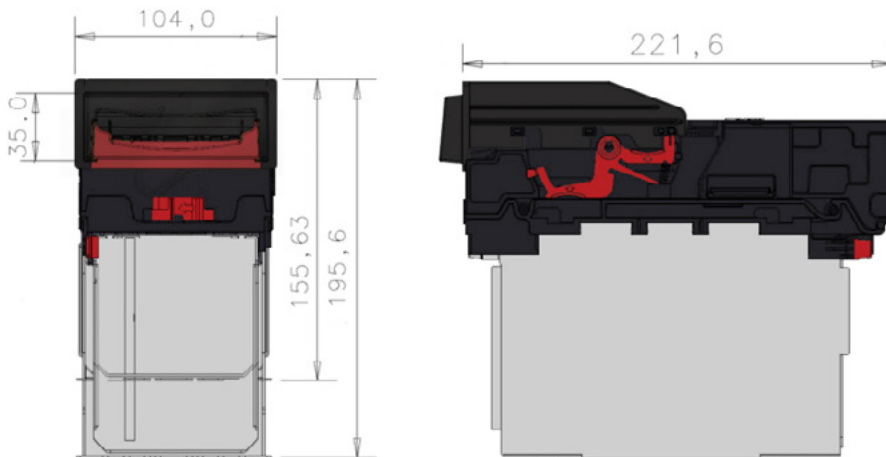
SSP
MDB
Pulse (PL1)

Interfaces

USB
Open Collector

Available Currencies

China	Taiwan
Indonesia	Vietnam
Thailand	Malaysia
Philippines	Singapore



- Weight: 1.7kg

**VIEW MORE
NOTE HANDLING
PRODUCTS >>**



Innovative Technology Ltd (UK)
Innovative Business Park
Derker Street
Oldham
OL1 4EQ



+44 (0) 161 626 9999



sales@innovative-technology.com



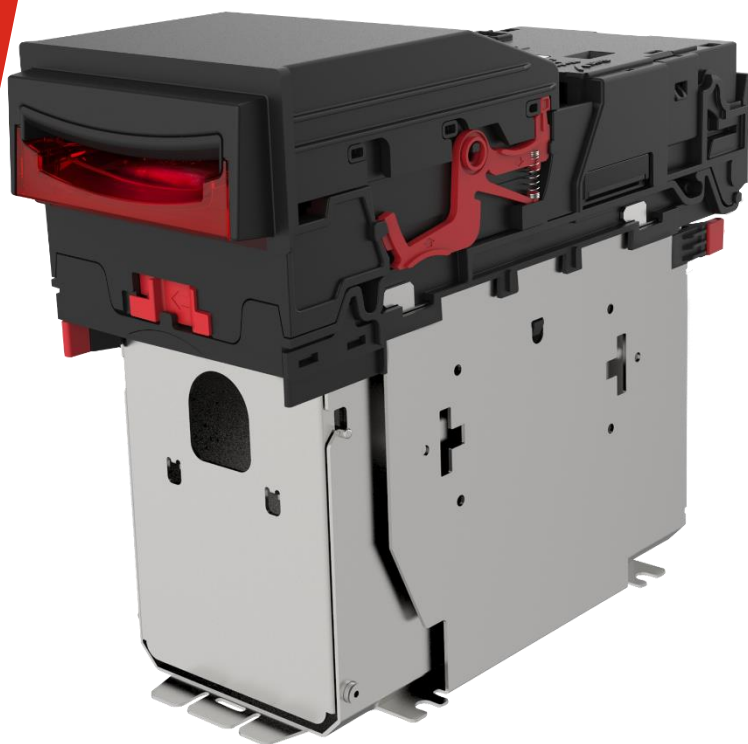
Innovative Technology

INTELLIGENCE IN VALIDATION



**CBA
Range**

GA02185



User Manual



Document Name:	CBA9 Range User Manual
Document Version:	2.1
Date of Release:	20.10.2020

TABLE OF CONTENTS

1	DOCUMENT INTRODUCTION	4
1.1	CONTACT INFORMATION.....	4
1.2	RELATED DOCUMENTS	4
1.3	MANUAL AMENDMENTS.....	4
1.4	COPYRIGHT	4
1.5	LIMITED WARRANTY	6
1.6	PRODUCT SAFETY INFORMATION	7
1.7	DISCLAIMER	7
2	PRODUCT INTRODUCTION	9
2.1	GENERAL DESCRIPTION.....	9
2.2	KEY FEATURES	9
2.3	TYPICAL APPLICATIONS	9
2.4	COMPONENT OVERVIEW	9
2.5	BEZEL OPTIONS.....	10
2.6	CASHBOX OPTIONS.....	11
3	MECHANICAL INSTALLATION	12
3.1	COMPATIBILITY	12
3.1.1	Hardware Compatibility.....	12
3.1.1.1	Machine Mounting.....	12
3.1.1.2	Machine Interfacing	12
3.1.1.3	Power Supply	13
3.1.2	Software Compatibility	13
3.1.2.1	Interface Protocols.....	13
3.1.2.2	Re-programming	13
3.2	BEZEL/NOZZLE MOUNTING.....	14
3.2.1	Bezel/Nozzle Fitting	14
3.2.2	Bezel/Nozzle Removal	15
3.3	CASHBOX/BASEPLATE MOUNTING.....	16
3.3.1	Cashbox/Baseplate Fitting	16
3.3.2	Cashbox Removal.....	17
3.4	LOCK MOUNTING.....	19
3.4.1	Lock Fitting.....	19
3.4.2	Lock Specifications.....	20
3.4.3	Lock Cam.....	20
3.5	MACHINE MOUNTING.....	21
3.5.1	Machine Mounting	21
3.5.2	Earth Bonding	21
4	SOFTWARE INSTALLATION AND CONFIGURATION	22
4.1	INTRODUCTION	22
4.2	SOFTWARE DOWNLOADS	22
4.3	DRIVERS	22
4.4	DATASET/FIRMWARE PROGRAMMING	22
4.4.1	Validator Manager	22



[<< Back to Contents](#)

4.4.1.1	General Description	22
4.4.1.2	System Requirements	22
4.4.1.3	Hardware Setup	23
4.4.1.4	Switching to Programming Mode (SSP).....	23
4.4.1.5	Programming the device	24
4.4.2	DA3	25
4.4.2.1	General Description	25
4.4.2.2	System Requirements	25
4.4.2.3	Re-programming via DA3	25
4.4.3	Remote Updates	26
4.4.3.1	General Description	26
4.4.3.2	Software Requirements	26

5 PROTOCOLS AND INTERFACING27

5.1	INTRODUCTION	27
5.2	SSP AND ESSP	27
5.2.1	General Description	27
5.2.2	Pin Assignments.....	27
5.2.3	Setup Examples.....	28
5.3	ccTALK®	29
5.3.1	General Description	29
5.3.2	Pin Assignments.....	30
5.3.3	ccTalk® DES Encryption.....	31
5.4	CC4	32
5.4.1	General Description	32
5.4.2	Pinout.....	32
5.5	SIO AND SI2	34
5.5.1	General Description	34
5.5.2	Pinout.....	34
5.6	MDB.....	36
5.6.1	General Description	36
5.6.2	IF5 Interface	36
5.7	PARALLEL.....	37
5.7.1	General Description	37
5.7.2	Pinout.....	37
5.7.3	Inhibit Control.....	38
5.7.4	Escrow Control.....	38
5.7.5	IF10 Interface	38
5.8	BINARY.....	39
5.8.1	General Description	39
5.8.2	Pinout.....	39
5.8.3	Inhibit Control.....	40
5.8.4	Escrow Control.....	40
5.8.5	IF9 Interface	40
5.9	PULSE	41
5.9.1	General Description	41
5.9.2	Pinout.....	41
5.9.3	Inhibit Control.....	42
5.9.4	Escrow Control.....	42
5.9.6	IF15 Interface	42

6 ROUTINE MAINTENANCE43

6.1	INTRODUCTION	43
6.2	RECOMMENDED CLEANING INTERVALS	43
6.3	RECOMMENDED BELT CHANGING INTERVALS.....	43



[<< Back to Contents](#)

7	FIRST LEVEL SUPPORT	44
7.1	BEZEL/STATUS LED FLASH CODES	44
7.2	STATUS LED FLASH CODES.....	45
7.3	CONFIGURATION BUTTON.....	45
8	SECOND LEVEL SUPPORT	47
8.1	INTRODUCTION	47
8.2	FAULT FINDING FLOW CHART	47
8.3	CLEARING A JAM	48
8.4	CLEANING THE CBA.....	49
8.5	CHANGING THE DRIVE BELTS	50
8.6	CLEARING A CHECKSUM ERROR.....	51
8.7	TESTING AFTER AN ERROR HAS BEEN CLEARED	51
8.8	RE-INITIALISATION OF THE SENSORS	52
9	TECHNICAL DATA	53
9.1	DIMENSIONS	53
9.2	WEIGHT	53
9.3	ENVIRONMENTAL REQUIREMENTS	53
9.4	POWER REQUIREMENTS	54
9.4.1	Supply Voltages.....	54
9.4.2	Supply Currents.....	54
9.4.3	Power Supply Guidance	54
9.5	INTERFACE LOGIC LEVELS	54
9.6	RELIABILITY DATA.....	54
9.7	MEDIA REQUIREMENTS	55
10	COMPLIANCES AND APPROVALS	56
10.1	EC DECLARATION OF CONFORMITY	56
11	APPENDIX	57
11.1	CABLE DRAWINGS	57
11.1.1	CN00392 USB Type A to Validator Cable Assembly	57
11.1.2	CN00214 USB A to USB B Cable Assembly.....	58
11.1.3	WR00147 Smart Payout to NV200 Adaptor Harness.....	59
11.1.4	CN00398 CN00398 Dual ESSP Interface.....	60
11.2	CONNECTOR SPECIFICATIONS	61
11.3	LOCK SPECIFICATIONS.....	61
11.4	SWITCHING TO PROGRAMMING MODE (SSP)	61
11.5	FILE NAMING CONVENTION.....	62
11.6	CC-TALK DES ENCRYPTION – TRUSTED MODE.....	62
11.7	ESCROW CONTROL	63
11.7.1	Escrow Timing Diagram	65
11.8	LOW POWER MODE TIMING DIAGRAM.....	65



1 DOCUMENT INTRODUCTION

1.1 Contact Information

Head Office

Innovative Technology Ltd

Innovative Business Park,

Derker Street, Oldham

OL1 4EQ, England

Email: sales@innovative-technology.com

Phone: +44 161 626 9999 (Main)

Email: support@innovative-technology.com

Phone: +44 161 507 1818 (Technical Support)

Further Innovative Technology Ltd. representatives can be found on our website.

www.innovative-technology.com

1.2 Related Documents

This document should be read together with the following:

For SSP/eSSP:

Protocol Manual – SSP (GA138) : SSP Interface Protocol Specification for integration

SSP Implementation Guide (GA973) : Information for programmers and integrators

For other third party interface protocols please contact support@innovative-technology.com.

1.3 Manual Amendments

Rev.	Date	Amendment Details	Issued by
1.0	18/03/2019	First Issue	TW
2.1	20/10/2020	Modify	TW

1.4 Copyright

This document is Copyright © Innovative Technology Ltd. 2020. No part of this publication may be reproduced in any form or by any means used to make any

User Manual CBA Range



[<< Back to Contents](#)

derivative such as translation, transformation, or adaptation without permission from Innovative Technology Ltd. The contents of this document may be subject to change without prior notice.



1.5 Limited Warranty

Innovative Technology Ltd warrants each of its hardware products to be free from defects in workmanship and materials under normal use and service for a period commencing on the date of purchase from Innovative Technology Ltd or its Authorized Reseller, and extending for the length of time stipulated by Innovative Technology Ltd.

A list of Innovative Technology Ltd offices can be found on the website. If the product proves defective within the applicable warranty period, Innovative Technology Ltd will repair or replace the product. Innovative Technology Ltd shall have the sole discretion whether to repair or replace, and any replacement product supplied may be new or reconditioned.

The foregoing warranties and remedies are exclusive and are in lieu of all other warranties, expressed or implied, either in fact or by operation of law, statutory or otherwise, including warranties of merchantability and fitness for a particular purpose.

Innovative Technology Ltd shall not be liable under this warranty if it's testing and examination disclose that the alleged defect in the product does not exist or was caused by the customer's or any third person's misuse, neglect, improper installation or testing, unauthorized attempts to repair, or any other cause beyond the range of the intended use. In no event will Innovative Technology Ltd be liable for any damages, including loss of profits, cost of cover or other incidental, consequential or indirect damages arising out the installation, maintenance, use, performance, failure or interruption of an Innovative Technology Ltd product, however caused.

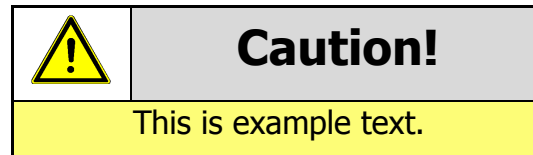


[<< Back to Contents](#)

1.6 Product Safety Information

Throughout this user manual, we may draw your attention to key safety points that you should be aware of when using or maintaining the product.

These safety points will be highlighted in a box, like this:



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 make or model.

1.7 Disclaimer

Innovative Technology Ltd is not responsible for any loss, harm, or damage caused by the installation and use of this product. This does not affect your local statutory rights. If in doubt, please contact Innovative Technology for details of any changes.

Innovative Technology Ltd has a policy of continual product improvement. As a result, the products supplied may vary from the specification described here.

Innovative Technology Ltd does not accept liability for any errors or omissions contained within this document. Innovative Technology Ltd shall not incur any penalties arising out of the adherence to, interpretation of, or reliance on, this standard.



	Safety Notice! Read before using this product!
Safety Notice - Warning. Ensure power is removed before allowing access to the inside of this product. Ensure any static build up is discharged before allowing access to any part of this product or media contained. Always earth this product/base plate in accordance with the manual.	
<p>For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:</p> <ul style="list-style-type: none">• The power supply terminals and/or connectors are: Not investigated for field wiring• The investigated Pollution Degree is: 2• The following end-product enclosures are required: Mechanical, Fire	
Sicherheitshinweis – Warnung: Es muss sichergestellt werden, dass das Gerät von der Versorgungsspannung getrennt wird, bevor ein Eingriff in das Innere des Gerätes erfolgt. Es muss sichergestellt werden, dass jegliche statische Aufladung des Gerätes entladen wird, bevor auf das Gerät oder auf innerhalb des Gerätes befindliche Objekte zugegriffen wird. Die Erdung des Gerätes muss immer gemäß Handbuch erfolgen.	
<p>Nur für die Verwendung in oder mit kompletter Ausstattung, dessen Eignung und Kombination von der UL LLC ermittelt wurde. Bei der Installation in einem Endprodukt, muss folgendes berücksichtigt werden:</p> <ul style="list-style-type: none">• Die Spannungsversorgungsklemmen und/oder Verbinder sind: Feldverkabelung wurde nicht untersucht• Der untersuchte Verschmutzungsgrad ist: 2• Folgende Anforderungen an die Gehäuse des Endproduktes sind gefordert: Mechanisch, Feuer	
Aviso de seguridad: Asegúrese de que la alimentación está desconectada y de que toda la energía estática es descargada antes de manipular este producto. Conecte a tierra la chapa base de la manera que se indica en el manual.	
<p>Solo para uso con dispositivos con los cuales la compatibilidad ha sido certificada por UL LLC. Tras su instalación en producto acabado, tener en cuenta lo siguiente:</p> <ul style="list-style-type: none">• Los conectores y terminales de alimentación son: No se ha investigado/especificado cableado externo.• El grado de contaminación determinado es: 2• Los siguientes manuales/certificados de producto final son requeridos: Mecánico, Fuego	
Avis de sécurité : Assurez-vous que l'alimentation est coupée et que toute l'énergie statique est déchargé avant de manipuler ce produit. Connecter à la terre, la plaque de base à la manière indiquée dans le manuel.	
<p>A utiliser Seulement avec les dispositifs dont la compatibilité a été certifiée par UL LLC. Après son installation dans le produit fini, prendre en considération ce qui suit:-</p> <ul style="list-style-type: none">• Les connecteurs et les bornes d'alimentation sont : cela n'a pas été étudié/spécifié câblage externe.• Le degré de contamination déterminé est: 2• Les manuels suivants / les certificats du produit final sont nécessaires : mécanique, incendie	
Bezpečnostní upozornění. Před manipulací uvnitř tohoto produktu se ujistěte, že je produkt odpojen od zdroje elektrického napětí. Ujistěte se, že jakýkoliv elektrostatický náboj byl vybit před manipulací s jakoukoliv částí tohoto produktu nebo obsaženým médiem. Vždy uzemněte tento produkt/základovou desku v souladu s návodem.	
<p>Pouze pro použití v nebo s kompletním vybavením, kde je přijatelnost kombinace určena UL LLC. Při instalaci v konečném produktu je třeba zvážit následující:</p> <ul style="list-style-type: none">• Napájecí svorky a/nebo konektory: Nejsou sledované pro externí kabeláž• Sledovaný stupeň znečištění je: 2• Následující krytí konečného produktu jsou požadované: Mechanické, Protipožární	
	Caution!
Accessibility to children not evaluated. To be evaluated in end product application.	



2 PRODUCT INTRODUCTION

2.1 General Description

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.

2.2 Key Features

Designed for Southeast Asia
Enhanced sensing technology
Exceptional field reliability
MDB remote update

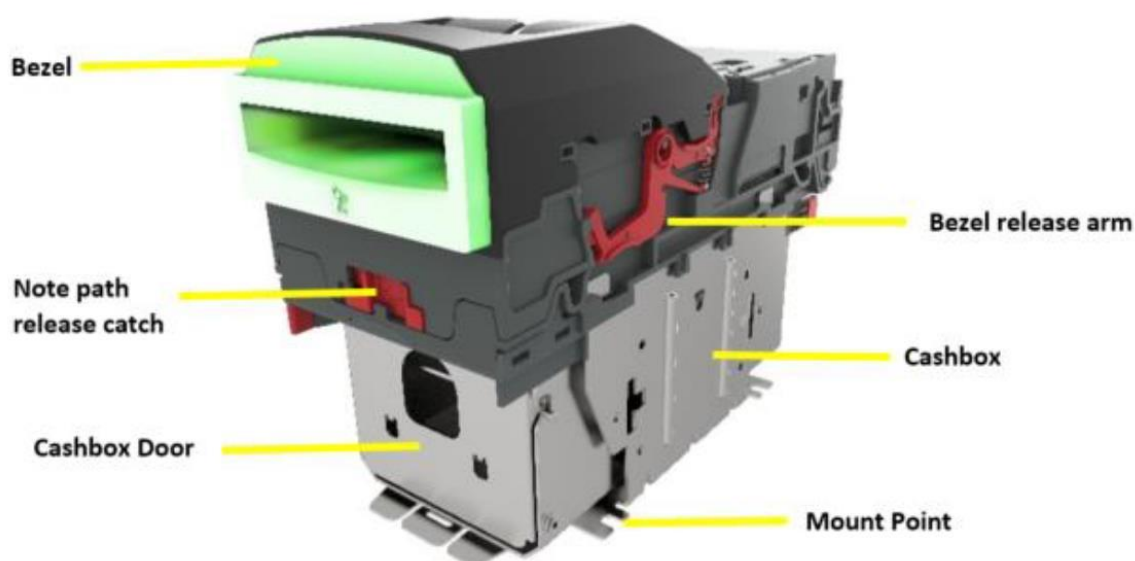
2.3 Typical Applications

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

2.4 Component Overview

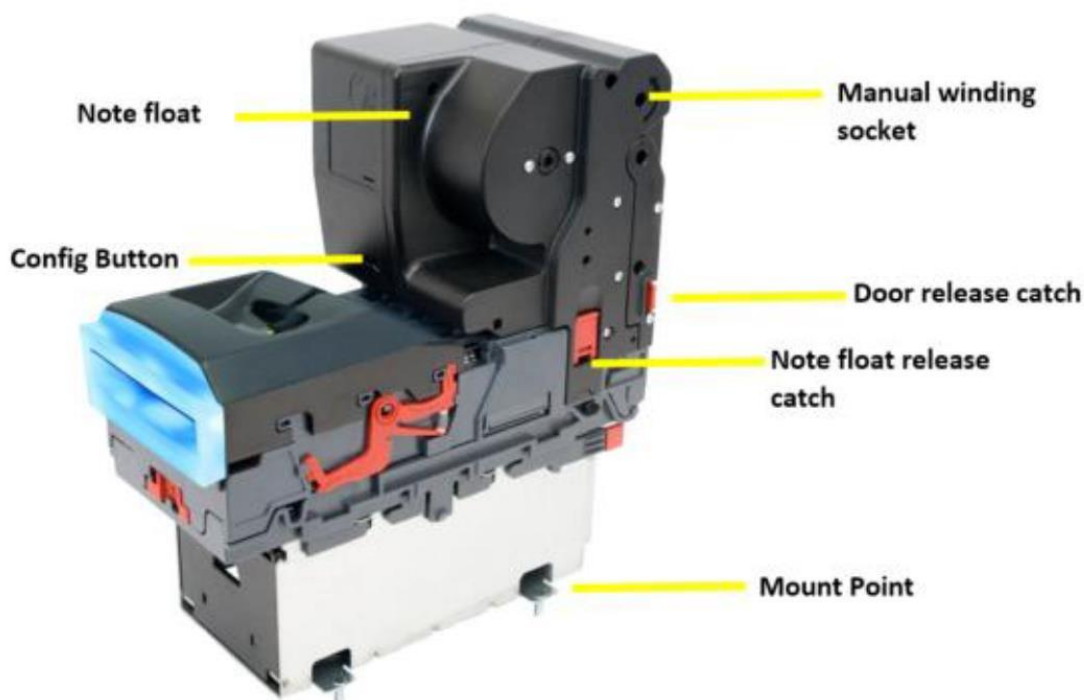
CBA9





[<< Back to Contents](#)

CBA11



2.5 Bezel Options

CBA Bezel fully compatible with NV9 range

ITL Part Number	Description	Details
PA00188	NV9USB Vertical Up Bezel (82mm)	http://innovative-technology.com/shop/bezels/nv9-vertical-up-bezel-detail
PA00189	NV9USB Standard Horizontal Bezel (82mm)	http://innovative-technology.com/shop/bezels/nv9-standard-horizontal-bezel-detail
PA00190	NV9USB Vertical Up Snout Bezel (82mm)	http://innovative-technology.com/shop/bezels/nv9-vertical-up-snout-bezel-detail
PA00191	NV9USB Vertical Down Snout Bezel (82mm)	http://innovative-technology.com/shop/bezels/nv9-vertical-down-snout-bezel-detail
PA00268	NV9USB Horizontal Bezel (69mm)	http://innovative-technology.com/shop/nv9-a-nv11-spares/nv9-horizontal-69mm-width-bezel-detail
PA00296	NV9USB Vertical Up/Down Flat Bezel (66mm)	http://innovative-technology.com/shop/nv9-a-nv11-spares/nv9-66mm-vertical-updown-flat-bezel-detail
PA00323	NV9USB Vertical Up/Down Flat Bezel (69mm)	http://innovative-technology.com/shop/nv9-a-nv11-spares/nv9-69mm-width-vertical-updown-flat-bezel-detail
PA00896	NV11 Standard Bezel	http://innovative-technology.com/shop/nv9-a-nv11-spares/nv9-usb-rainbow-bezel-detail



[<< Back to Contents](#)

PA01144	NV9USB+ Rainbow Bezel (82mm)	http://innovative-technology.com/shop/bezels/nv9-vertical-down-snout-bezel-detail
PA00984	NV9USB Facia Short	http://innovative-technology.com/shop/nv9-a-nv11-spares/nv9-usb-facia-short-detail
PA00985	NV9USB Facia Long	http://innovative-technology.com/shop/nv9-a-nv11-spares/nv9-usb-facia-long-detail

2.6 Cashbox Options

CBA Cashbox fully compatible with NV9 range

ITL Part Number	Description	Details
PA00185	NV9 USB 300 Clip On Cashbox	http://www.innovative-technology.com/shop/bezels/nv9-300-clip-on-cashbox-detail
PA00186	NV9 USB 300 Lockable Cashbox	http://www.innovative-technology.com/shop/bezels/nv9-300-lockable-cashbox-detail
PA00192	NV9 USB 300 Slide Cashbox	http://www.innovative-technology.com/shop/bezels/nv9-300-slide-cashbox-detail
PA00193	NV9 600 Clip on Cashbox	http://innovative-technology.com/shop/nv9-a-nv11-spares/nv9-600-clip-on-cashbox-detail
PA00194	NV9 600 Slide In Cashbox	http://innovative-technology.com/shop/nv9-a-nv11-spares/nv9-600-slide-in-cashbox-detail
PA00898	NV11 Standard 300 Clip on Cashbox	http://innovative-technology.com/shop/nv9-a-nv11-spares/nv11-standard-cashbox-detail



3 MECHANICAL INSTALLATION

3.1 Compatibility

3.1.1 Hardware Compatibility

3.1.1.1 Machine Mounting

Assuming the suitable bezel (and cashbox) type has been ordered the CBA can be used as fitting replacement for the following products:

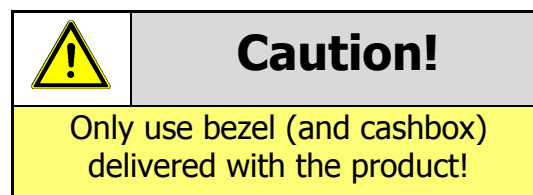
- NV7
- NV7M
- NV9
- BV20
- BV100
- NV9 USB

The CBA may not be used as fitting replacement for the following products:

- NV150
- NV10 USB
- NV200

Please note: 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.



3.1.1.2 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.



[<< Back to Contents](#)

3.1.1.3 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 [9.4](#) for full power requirement details of the CBA.

	Caution!
A weak power supply causes malfunctioning!	

3.1.2 Software Compatibility


3.1.2.1 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.

	Caution!
Timing issues may cause missing events such like credits!	

3.1.2.2 Re-programming

For re-programming the CBA always use the latest version of Validator Manager available for download on our website. Older versions may not support the CBA. For further details on Re-programming the CBA refer to [4.4](#).

	Caution!
Older versions of Validator Manager may not support the CBA!	

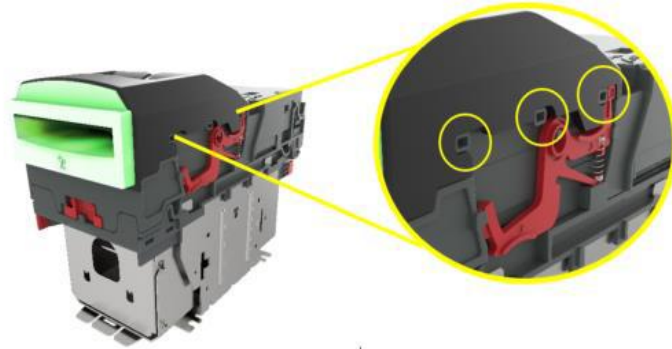


[<< Back to Contents](#)

3.2 Bezel/Nozzle Mounting

3.2.1 Bezel/Nozzle Fitting

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



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

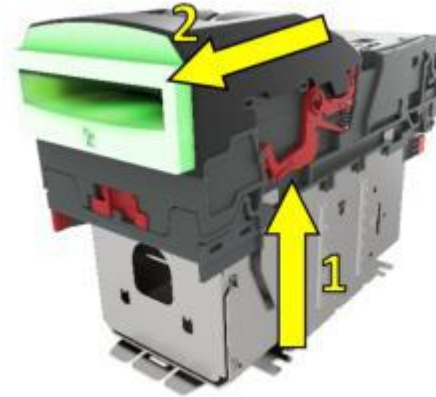




[<< Back to Contents](#)

3.2.2 Bezel/Nozzle Removal

- 1. Release clips**
Pull release clip upwards (1)
With release clip held upwards, you can pull bezel towards front of unit (2).



-
- 1. Lift Bezel**
Now bezel is free of locating lugs, lift bezel upwards (3).





[<< Back to Contents](#)

3.3 Cashbox/Baseplate Mounting

Below you will find details on how to fit the different cashboxes mentioned in [section 2.6](#).

Slide cashboxes are made up of 2 x 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.

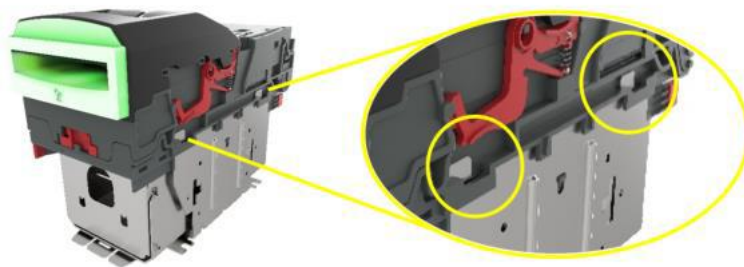
3.3.1 Cashbox/Baseplate Fitting

1. Slide Cashbox

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.

Then slide housing forwards to lock into place.

The outer housing is mounted inside the machine and you simply slide the removable cashbox, inside the outer housing.

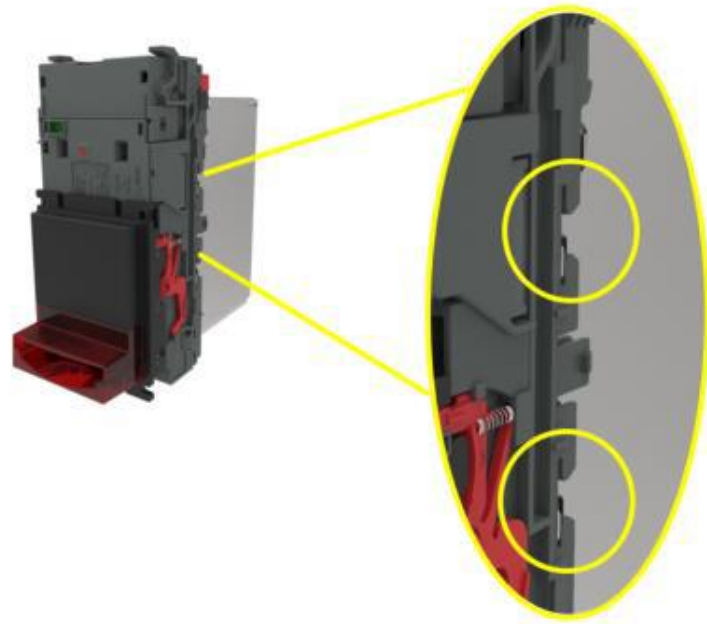




[<< Back to Contents](#)

2. Clip-on Cashbox

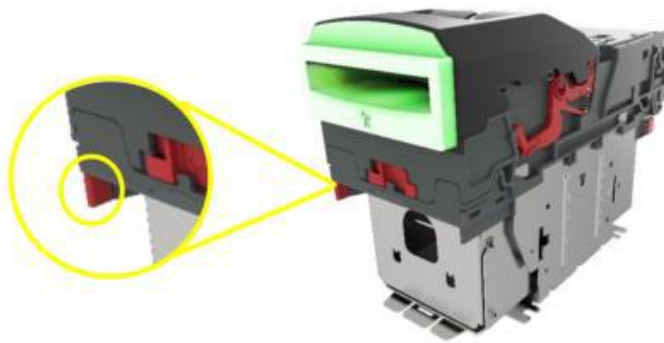
The clip-on cashbox attaches directly to the validator and is identical to the process above.



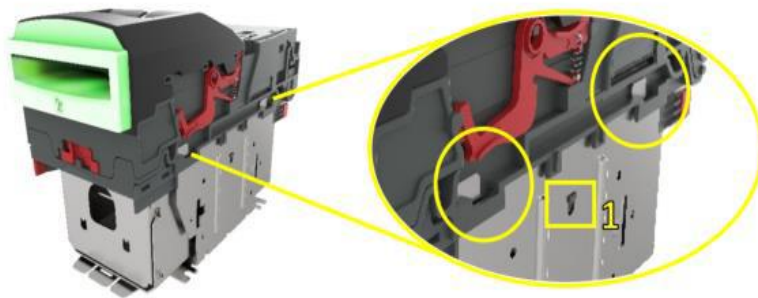
3.3.2 Cashbox Removal

1. Slide Cashbox

Remove the cashbox from the outer housing.
Pull cashbox release catch away from validator and slide cashbox out.



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.

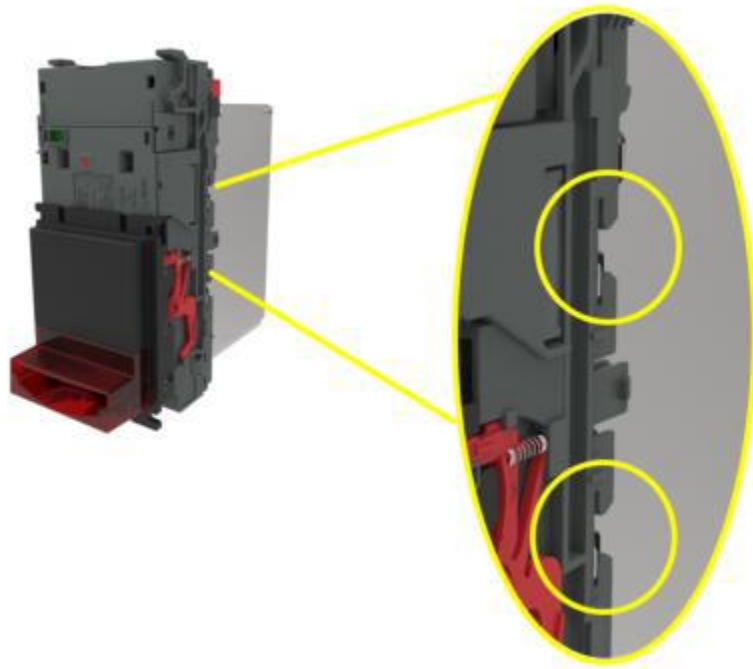




[<< Back to Contents](#)

2. Clip-on Cashbox

Simply slide the cashbox back so that the locating tabs are no longer locked in position. You can then pull cashbox away from unit.





[<< Back to Contents](#)

3.4 Lock Mounting

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

ITL Part Number: PA00186

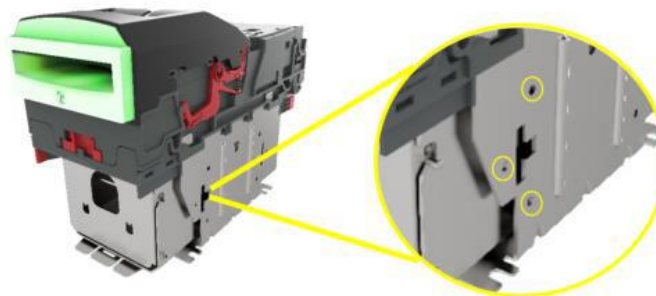
Webshop link: <https://innovative-technology.com/shop/nv9-a-nv11-spares/nv9-300-lockable-cashbox-detail>

Details on the locking position can be found below.

3.4.1 Lock Fitting

1. Screw Holes

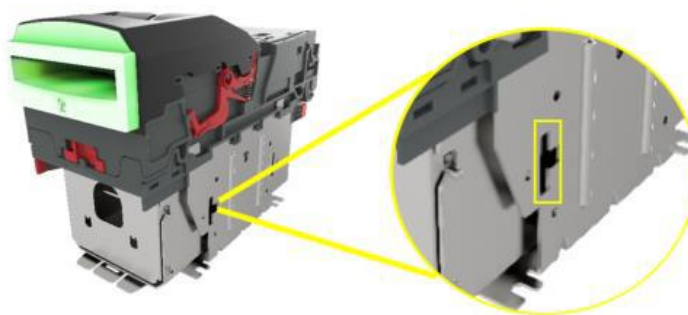
The lockable door attaches to the cashbox housing via 3 x screw holes, as shown. These can be found on all 4 x sides of the cashbox. Front Right; Front left Back right; back let.



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.

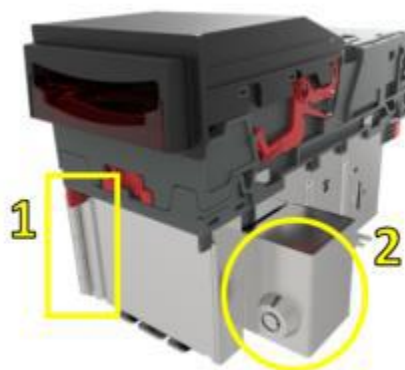
Please note: you want to use the 3 x mounting screw points, on the opposite side of where your lock will be.



For example: if you want the lock to be Front Right – you'd 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). In this case, the door is mounted as seen (1). Lock specification details can be found below in [section 3.4.2](#).





[<< Back to Contents](#)

3.4.2 Lock Specifications

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

ITL Part Number: PA00650

Webshop Link: <http://innovative-technology.com/shop/nv200-spares/lock-detail>

However, there are various lock manufacturers and distributors. Refer to [Appendix 11.3](#) for lock specification.

3.4.3 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

Webshop Link: <https://innovative-technology.com/shop/nv9-a-nv11-spares/locking-cam2013-10-14-08-48-365-detail>



[<< Back to Contents](#)

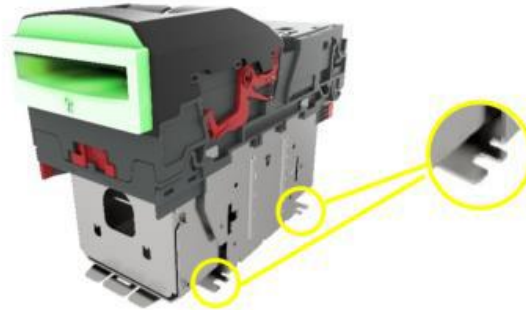
3.5 Machine Mounting

3.5.1 Machine Mounting

1. Horizontal Configuration

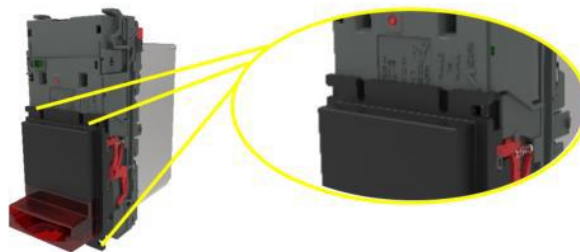
The slide cashbox configuration has 4 x mounting points, for each corner.

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




2. 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.



3.5.2 Earth Bonding

It is very important that the NV9USB+ is properly bonded to earth. Lack of proper bonding can cause communication issues and other failures.

	Caution!
Lack of proper earth bonding causes failures!	



4 SOFTWARE INSTALLATION AND CONFIGURATION

4.1 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.

4.2 Software Downloads

All software from Innovative Technology Ltd is free of charge and can be downloaded from the website www.innovative-technology.com/support/secure-download once registered and logged in. If you are not registered, please create an account via the Create an account form. A confirmation email will be sent to the registered email address once all contact details have been successfully submitted.

4.3 Drivers

The ITL drivers allow you to connect any of our validators to a compatible Windows device. If you are connecting via an IF17 then you will not need to follow this process as they are signed Microsoft Drivers and should install automatically. If this isn't the case or your computer is disconnected from the network, there is a standalone package included within the driver downloads.

4.4 Dataset/Firmware Programming


4.4.1 Validator Manager

4.4.1.1 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.

4.4.1.2 System Requirements

- Windows 7 or above
- .Net Framework 4 or above
- 256mb ram
- 50mb hard disk free
- Connected CBA with active com port

	Caution!
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	

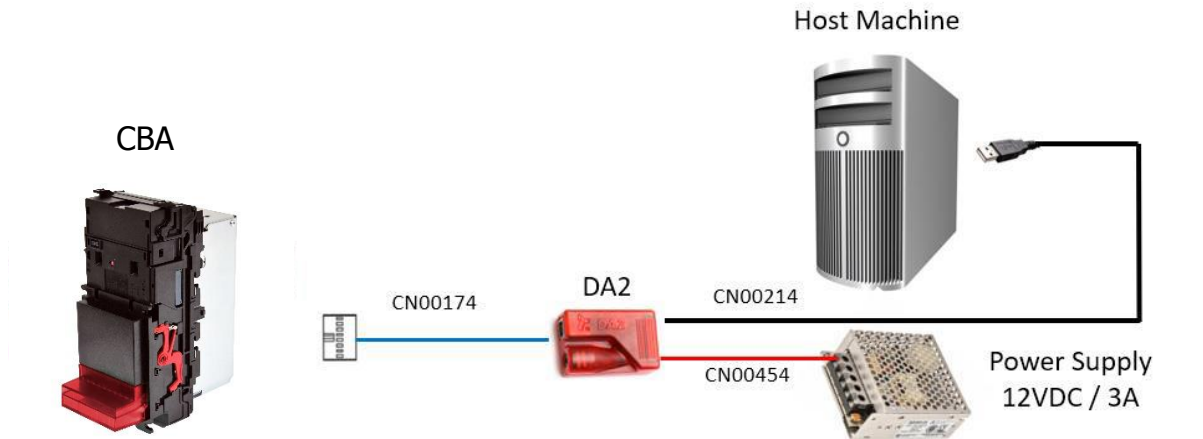


[<< Back to Contents](#)

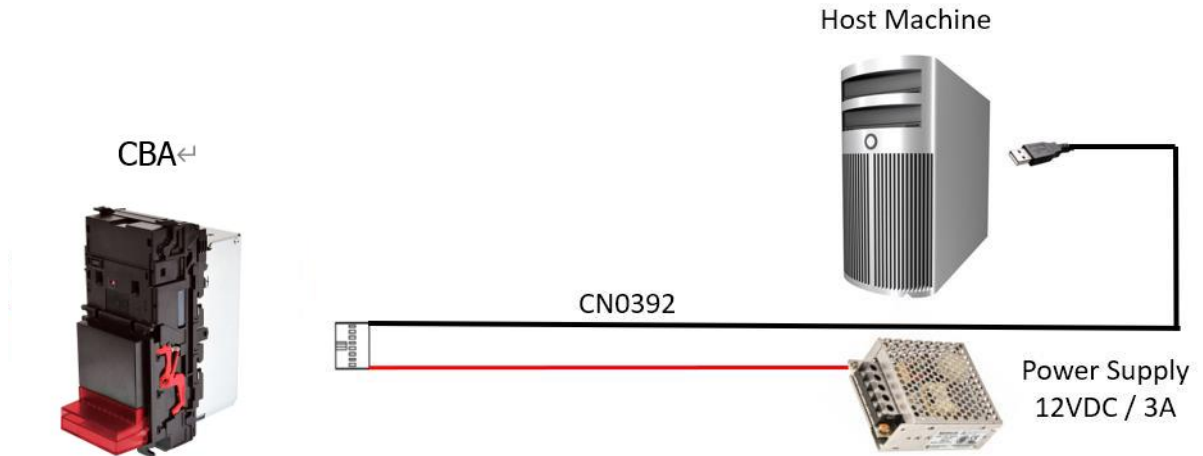
this happens you will need to add a rule to your antivirus to allow the file to run.

4.4.1.3 Hardware Setup

Connect the power supply to the DA2/IF17. Connect the USB cable to the DA2/IF17 and to your computer or laptop. Connect the Ribbon cable from the DA2 to the validator.



Direct USB:



Please note: the connection methods are identical between CBA9 and CBA11 products.

4.4.1.4 Switching to Programming Mode (SSP)

Before programming via the Validator Manager the CBA needs to be switched to its programming mode (SSP interface). Please refer to [APPENDIX 11.4](#) for the procedure for doing this.

User Manual CBA Range

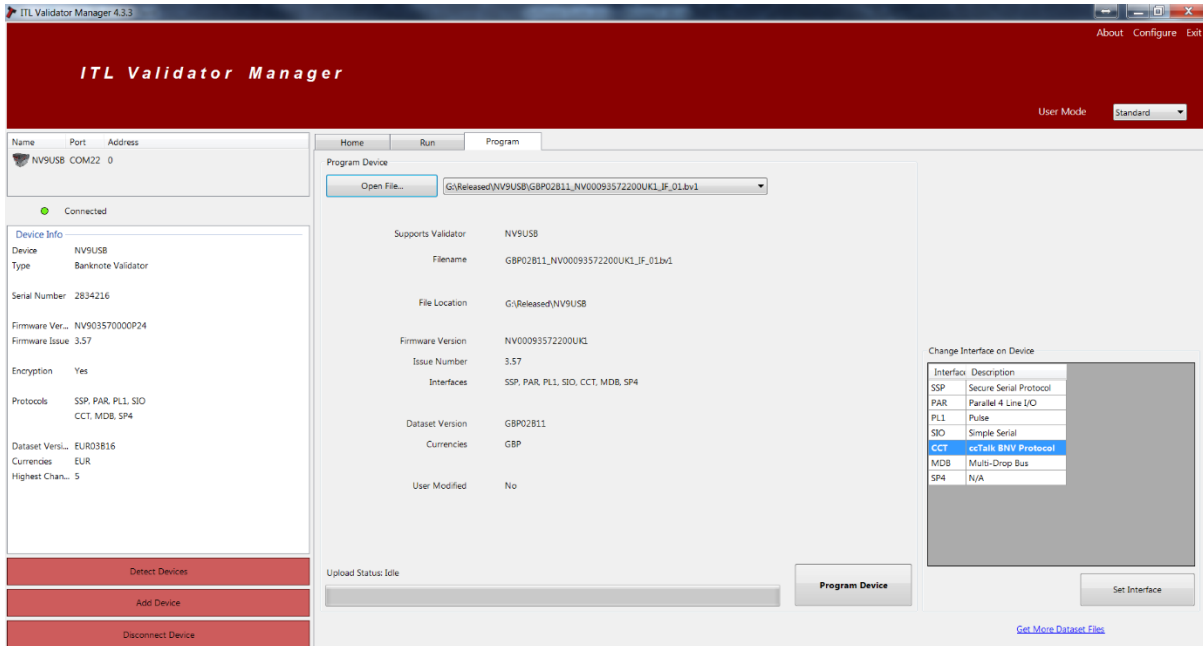


[<< Back to Contents](#)

4.4.1.5 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 CBA 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 CBA. To begin the upload, click open file, then browse to the file location (usually Downloads) 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 signaling the update has begun.

	<h2>Caution!</h2>
<p>Interrupting the download process can result in the unit entering a non-functional state, once the process has started it cannot be halted.</p>	

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



[<< Back to Contents](#)

4.4.2 DA3

4.4.2.1 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.

4.4.2.2 System Requirements

- Windows XP SP3 or above
- .Net Framework 4
- 256mb ram
- 50mb hard disk free
- Connected DA3 with active com port
- Data Flash Card (PA01121) **optional**

4.4.2.3 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.

For information on programming the DA3, you can refer to our Software Manual – GA02037.



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



[<< Back to Contents](#)

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 [appendix 11.4](#)) 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

4.4.3 Remote Updates

4.4.3.1 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.

4.4.3.2 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.



5 PROTOCOLS AND INTERFACING

5.1 Introduction

The CBA 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.

	Caution!
The use of an encrypted protocol (preferable eSSP) is strongly recommended to achieve the highest security!	

5.2 SSP and eSSP

5.2.1 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++, C#.NET and Linux. Please contact support@innovative-technology.com for further information.

5.2.2 Pin Assignments



Pin	Name	Type	Description
1	Vend 1	Output	Serial Data Out (Tx)
2	Vend 2	Output	DA3 Data Logging
3	Vend 3	Output	Not Used
4	Vend 4	Output	Not Used



[<< Back to Contents](#)

5	Inhibit 1	Input	Serial Data In (Rx)
6	Inhibit 2	Input	Not Used
7	Inhibit 3	Input	Not Used
8	Inhibit 4	Input	Not Used
9	Busy	Output	Not Used
10	Escrow	Input	Not Used
11	USB +	Data	USB Data +
12	USB -	Data	USB Data -
13	USB Vcc	Power	USB Vcc (+5VDC)
14	Factory Use Only		Do not connect
15	+ Vin	Power	+12/24VDC Supply
16	0V	Power	0V Supply (GND)

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

5.2.3 Setup Examples

The drawings below highlights how to connect the CBA to an SSP or eSSP host machine using available cables and interfaces from Innovative Technology Ltd. For cable drawings please refer to [Appendix 11.1](#).

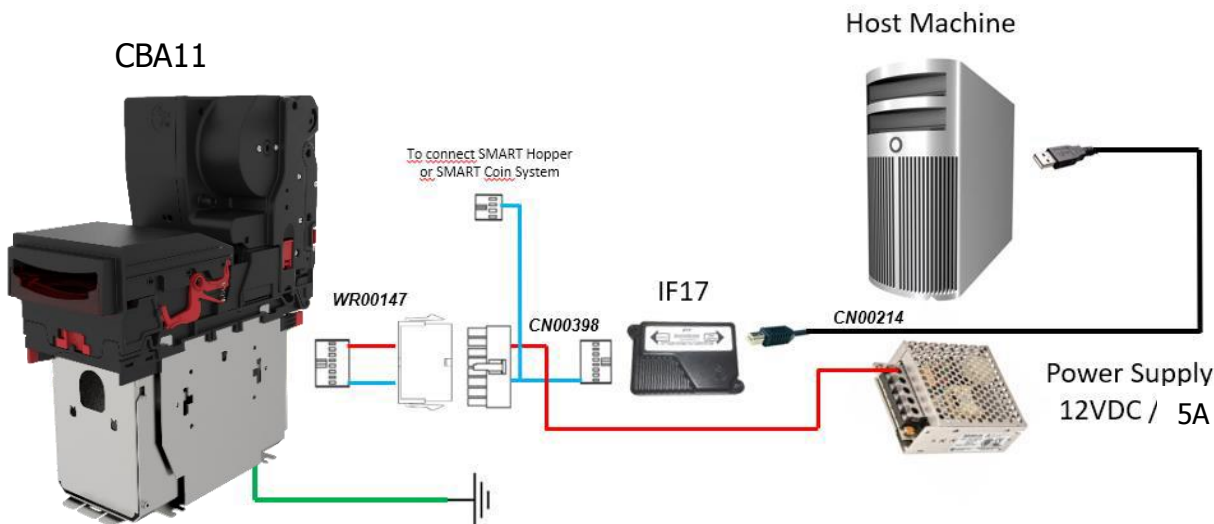


User Manual CBA Range



[<< Back to Contents](#)

Type	ITL Part Number	Description	Details
Cable	CN00392	Validator to USB Cable	http://www.innovative-technology.com/de/shop/cables/nv9-nv10-usb-host-cable-detail



Type	ITL Part Number	Description	Details
Cable	CN00398	Dual SSP Interface Cable	http://www.innovative-technology.com/shop/cables/dual-essp-interface-for-smart-hopper-a-smart-payout-detail
Cable	WR00147	SMART Payout to NV200 Adapter	http://www.innovative-technology.com/shop/cables/smart-payout-to-nv200-adaptor-detail
Cable	CN00214	USB Type A to B	http://www.innovative-technology.com/shop/cables/usb-a-to-b-cable-assembly-detail
Interface	IF17	TTL to USB Converter	http://www.innovative-technology.com/shop/accessories/if17-interface-converter-detail

5.3 ccTalk®

5.3.1 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.

	Caution!
Innovative Technology Ltd. provides full SDK packages including Interface Specification,	



Implementation Guide as well as source code examples for SSP respectively eSSP only!

5.3.2 Pin Assignments



Pin	Name	Type	Description
1	Vend 1	Output	Serial Data (link to Pin 5)
2	Vend 2	Output	DA3 Data Logging
3	Vend 3	Output	Not Used
4	Vend 4	Output	Not Used
5	Inhibit 1	Input	Serial Data (link to Pin 1)
6	Inhibit 2	Input	Not Used
7	Inhibit 3	Input	Not Used
8	Inhibit 4	Input	Not Used
9	Busy	Output	Not Used
10	Escrow	Input	Not Used
11	USB +	Data	USB Data +
12	USB -	Data	USB Data -
13	USB Vcc	Power	USB Vcc (+5VDC)
14	Factory Use Only		Do not connect
15	+ Vin	Power	+12/24VDC Supply
16	0V	Power	0V Supply (GND)

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



[<< Back to Contents](#)

5.3.3 ccTalk® DES Encryption

When using ccTalk® DES encryption, the CBA 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 CBA. Please refer to [Appendix 11.6](#) for details.



[<< Back to Contents](#)

5.4 CC4

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 CBA11 in ccTalk. Please contact support for the necessary protocol documentation.

5.4.1 General Description

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

5.4.2 Pinout




Pin	Name	Type	Description
1	Vend 1	Output	Serial Data (link to Pin 5)
2	Vend 2	Output	DA3 Data Logging
3	Vend 3	Output	Not Used
4	Vend 4	Output	Not Used
5	Inhibit 1	Input	Serial Data (link to Pin 1)
6	Inhibit 2	Input	Not Used
7	Inhibit 3	Input	Not Used
8	Inhibit 4	Input	Not Used
9	Busy	Output	Not Used
10	Escrow	Input	Not Used
11	USB +	Data	USB Data +
12	USB -	Data	USB Data -
13	USB Vcc	Power	USB Vcc (+5VDC)

User Manual CBA Range



[<< Back to Contents](#)

14	Factory Use Only		Do not connect
15	+ Vin	Power	+12/24VDC Supply
16	0V	Power	0V Supply (GND)

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





[<< Back to Contents](#)

5.5 SIO and SI2

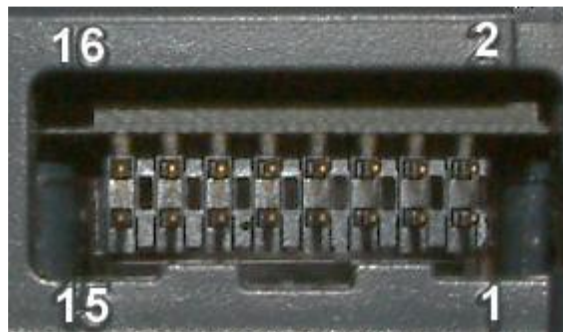
5.5.1 General Description

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.

	Caution!
SIO and SI2 are outmoded and not recommended for new developments!	

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

5.5.2 Pinout



Pin	Name	Type	Description
1	Vend 1	Output	Serial Data Out (Tx)
2	Vend 2	Output	DA3 Data Logging
3	Vend 3	Output	Not Used
4	Vend 4	Output	Not Used
5	Inhibit 1	Input	Serial Data In (Rx)
6	Inhibit 2	Input	Not Used

User Manual CBA Range



[<< Back to Contents](#)

7	Inhibit 3	Input	Not Used
8	Inhibit 4	Input	Not Used
9	Busy	Output	Not Used
10	Escrow	Input	Not Used
11	USB +	Data	USB Data +
12	USB -	Data	USB Data -
13	USB Vcc	Power	USB Vcc (+5VDC)
14	Factory Use Only		Do not connect
15	+ Vin	Power	+12/24VDC Supply
16	0V	Power	0V Supply (GND)




[<< Back to Contents](#)

5.6 MDB

5.6.1 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.

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

5.6.2 IF5 Interface


CBA running MDB can use an IF5, an external interface box, which regulates the power supply and opto-isolates the communication lines. Typically vending machine's power supply higher voltage than the maximum for the NV9USB+ of 12v +/- 10%. The IF5 drops this higher voltage down to the required level.



5.7 Parallel

5.7.1 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 $100 \pm 3\text{ms}$. Pulses outside these limits should be rejected as a precaution against false triggering.

	Caution!
Parallel is an unsecure interface and should not be used for new developments!	

5.7.2 Pinout



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
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	USB +	Data	Not Used
12	USB -	Data	Not Used
13	USB Vcc	Power	Not Used
14	Factory Use Only		Do not connect
15	+ Vin	Power	+12VDC Supply
16	0V	Power	0V Supply (GND)



[<< Back to Contents](#)

5.7.3 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 CBA is disabled.

5.7.4 Escrow Control

The CBA has a single note escrow facility. This allows the CBA 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 [Appendix 10.8](#) for timing diagram and further details.

5.7.5 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 CBA and the host machine. The IF10 communicates with the CBA 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.




5.8 Binary

5.8.1 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 CBA can be set to give a binary pattern output on the four parallel output pins. If the CBA 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.

	Caution!
Binary is an unsecure interface and should not be used for new developments!	

5.8.2 Pinout



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



[<< Back to Contents](#)

10	Escrow	Input	Input Escrow Control
11	USB +	Data	Not Used
12	USB -	Data	Not Used
13	USB Vcc	Power	Not Used
14	Factory Use Only		Do not connect
15	+ Vin	Power	+12VDC Supply
16	0V	Power	0V Supply (GND)

5.8.3 Inhibit Control

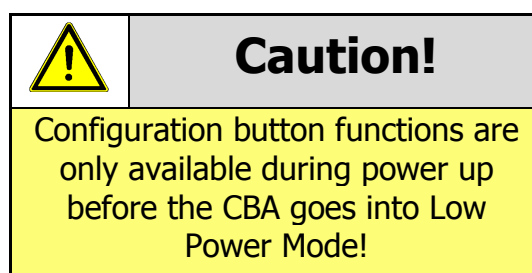
The Inhibits can be used to either enable or disable the acceptance of those banknotes programmed on channels 1, 2, 3 and 4. The Inhibits are internally held high and must be set to low (GND) to enable banknote acceptance. If no Inhibit is set to low (GND) the Master Inhibit is set and the CBA is disabled.

5.8.4 Escrow Control

The CBA has a single note escrow facility. This allows the CBA 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 [Appendix 11.7](#) for further details.

5.8.5 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.



5.8.5 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 CBA and the host machine. The IF9 communicates with the CBA 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 IF10 converts to the binary connection.



5.9 Pulse

5.9.1 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 [Section 4](#) of this User Manual.

	Caution!
Pulse is an unsecure interface and should not be used for new developments!	

5.9.2 Pinout



Pin	Name	Type	Description
1	Vend 1	Output	Credit Output Pulse Stream
2	Vend 2	Output	Not Used
3	Vend 3	Output	Not Used
4	Vend 4	Output	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	USB +	Data	Not Used
12	USB -	Data	Not Used
13	USB Vcc	Power	Not Used
14	Factory Use Only		Do not connect
15	+ Vin	Power	+12VDC Supply
16	0V	Power	0V Supply (GND)



5.9.3 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 CBA is disabled.

5.9.4 Escrow Control

The CBA has a single note escrow facility. This allows the CBA 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 [Appendix 11.7](#) for further details.

5.9.5 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 NV9USB+ remains inhibited until all pulses are given.

5.9.6 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 NV9USB+ 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.



6 ROUTINE MAINTENANCE

6.1 Introduction

The CBA has been designed to minimise any performance variation over time. Much of this is achieved by careful hardware and software design. However, depending upon the environment the CBA may at some time require cleaning, belt changing or note path clearing.

6.2 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 [8.4](#) for comprehensive cleaning instructions.

6.3 Recommended Belt Changing Intervals

Innovative Technology Ltd recommends that you change the drive belts of the CBA every 6-12 months or as required, dependant 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 [8.5](#) for comprehensive belt changing instructions.



7 FIRST LEVEL SUPPORT

7.1 Bezel/Status LED Flash Codes

The CBA supports various flash codes that are displayed to the user via the entry bezel. A detailed description of these can be found below.

Interface Flash Codes:

If you double press the red config button the bezel will flash a series of times. Below is a lookup table:

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 jammed Note then repower machine.
3	Internal Checksum	Download dataset/firmware file to CBA11
4	PSU Error	Check the power supply is 12VDC 3.5A. no more than 13.2V



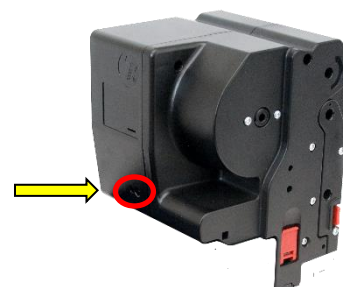
7.2 Status LED Flash Codes

In addition to the bezel flash codes of the CBA 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:

Note Float

The status LED of the note float 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
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



7.3 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 [section 7.1 – Bezel LED flash codes](#)
- 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.

User Manual CBA Range



[<< Back to Contents](#)

- 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.

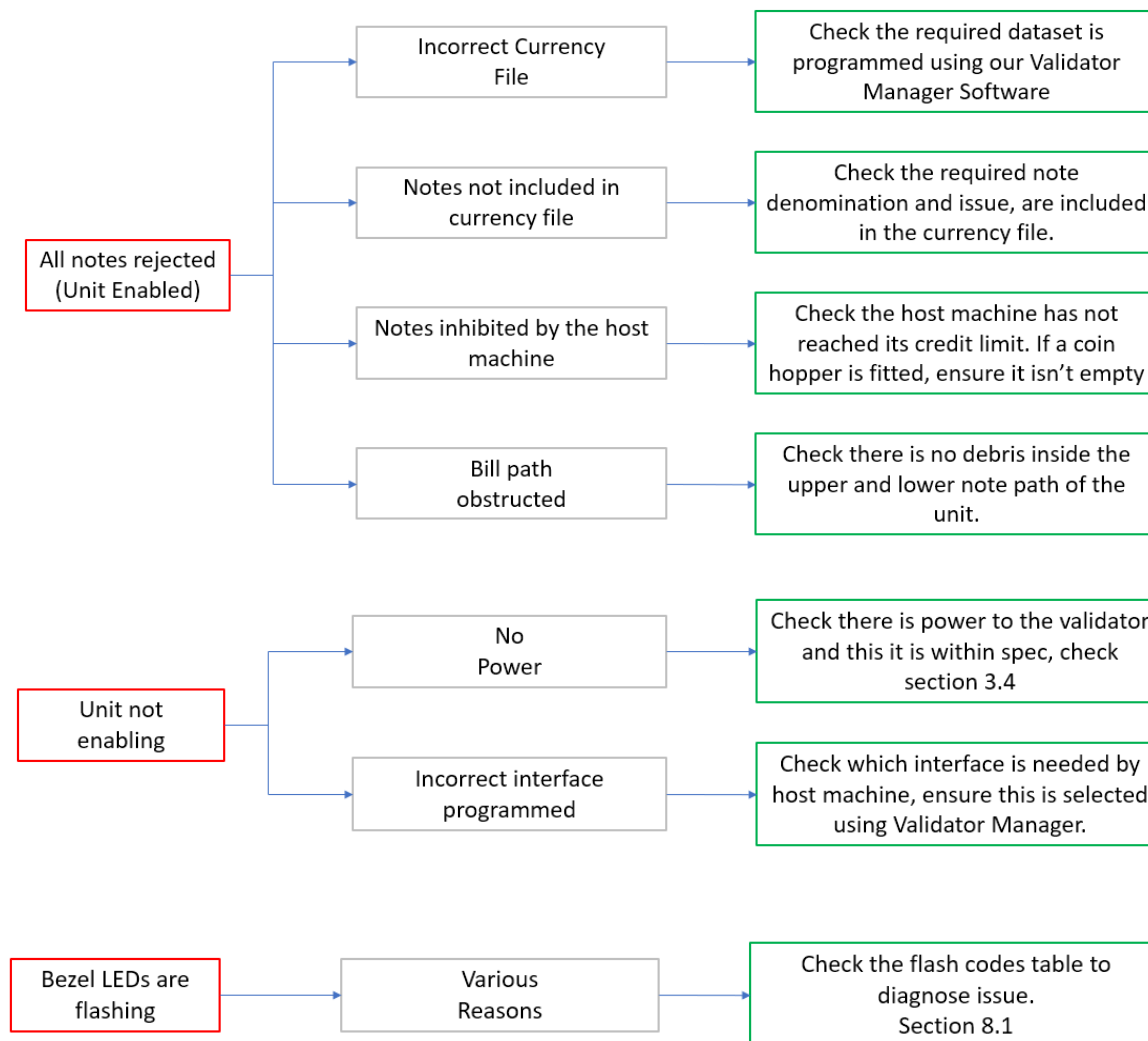


8 SECOND LEVEL SUPPORT

8.1 Introduction

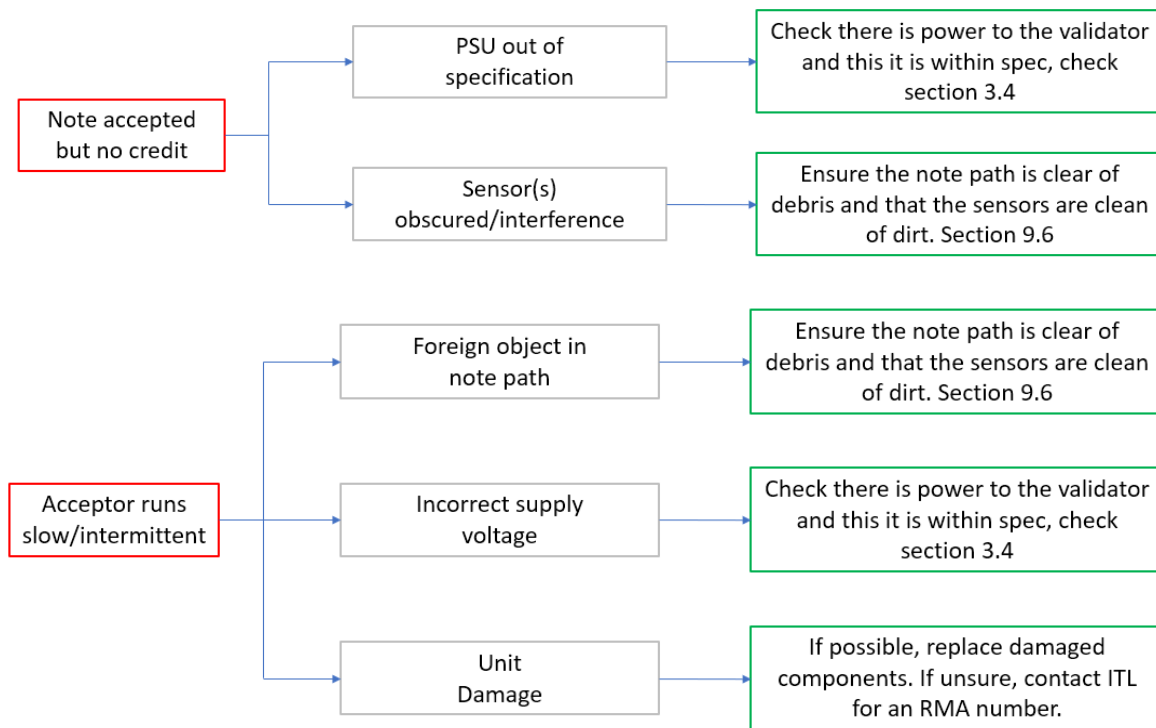
8.2 Fault Finding Flow Chart

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





[<< Back to Contents](#)



If you are unsure about the cause or how to resolve an issue, please contact the support team: support@innovative-technology.com

8.3 Clearing a Jam

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)
- Lift up the top half of the unit (2)

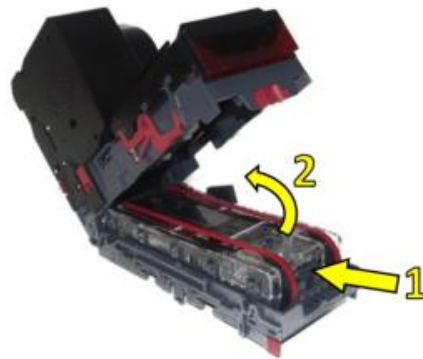




[<< Back to Contents](#)

3. Clear Jammed Note

If note can be seen in upper note path, remove note and proceed to next step.
If note is in lower note path, lift the lozenge.
Push grey release tab (1)
Lift up lozenge unit (2)



4. Re-apply Power

Close unit back up and re-apply power to unit.
It will reset and should no longer be flashing a jam error message.

8.4 Cleaning the CBA

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)
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.





	Caution!
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 CBA, only use a mild detergent.	

	Caution!
Dirt, dust or other residue causes bad note acceptance rates and other performance degradation. The recommended cleaning interval is once a month!	

8.5 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)
Lift up the top half of the unit (2)



3. Remove Lozenge

Press grey release tab (1) to remove lozenge from validator.





[<< Back to Contents](#)

4. Remove Old belts

With the lozenge removed, press both drive wheels inwards (2) to create slack in the belts.



This slack will allow you to remove belts from the lozenge.

TIP: Pushing the drive wheels down into your desk, helps.

5. Replace with new belts

Place new belts onto drive wheels, push them inwards to allow you enough slack to position belts into place.

TIP: Pushing the drive wheels down into your desk, helps.

8.6 Clearing a Checksum Error

1. Bezel Flash Code

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

Long	Short	Checksum Type
3	1	Firmware
	2	Interface
	3	EEPROM
	4	Dataset

1. Re-program Unit

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.

8.7 Testing after an error has been cleared

1. Run/test unit

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

Please refer to our GA02037 - Software Guide for full instructions on how to use ITL Validator Manager.



[<< Back to Contents](#)

8.8 Re-initialisation of the sensors

1. Calibrate Unit

Use ITL Diagnostics tool, to re-calibrate the validator, using the appropriate calibration paper (LB00149)

Please refer to our GA02037 - Software Guide for full instructions on how to use ITL Diagnostics.

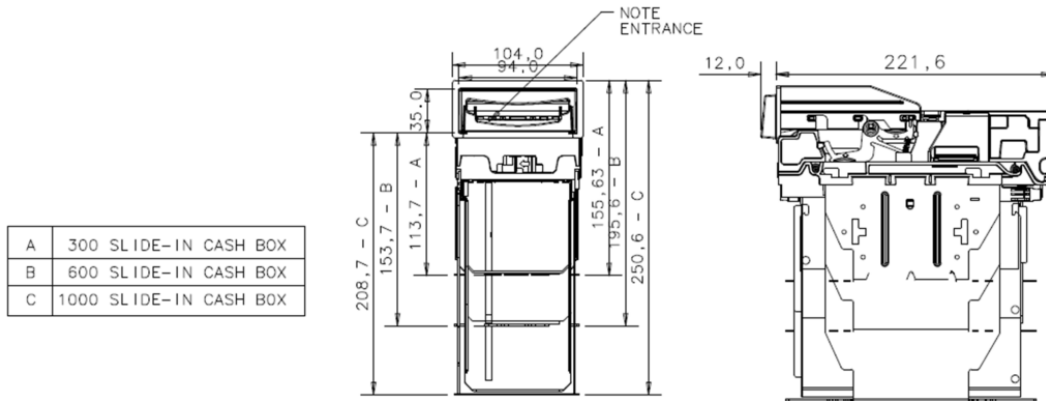


[<< Back to Contents](#)

9 TECHNICAL DATA

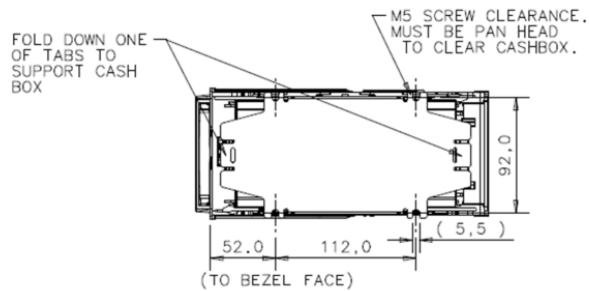
9.1 Dimensions

Note: If required, IGES 3D models are available on request from ITL technical support; support@innovative-technology.com



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



9.2 Weight

CBA9

CBA9 300 clip with bezel – 1.41kg

CBA9 300 slide with bezel – 1.86kg

CBA9 600 clip with bezel – 1.72kg

CBA9 600 slide with bezel – 2.14kg

CBA11

CBA9 300 clip with bezel + note float – 2.22kg

9.3 Environmental Requirements

Environment	Minimum	Maximum
Temperature	-5°C	60°C
Humidity	5%	95% Non-condensing



9.4 Power Requirements

9.4.1 Supply Voltages

Supply Voltage	Minimum	Nominal	Maximum
Supply Voltage (V DC)	+ 11.8 V DC	+ 12 V DC	+ 13.2 V DC
Supply Ripple Voltage	0 V	0 V	0.25 V @ 100 Hz

9.4.2 Supply Currents

Supply Current	Minimum	Nominal	Maximum
Standby			0.2 A
Running			1.0 A
Peak			5.0 A

9.4.3 Power Supply Guidance

The CBA requires a stable 12V DC / 4.0 A 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.

Remove any power supplies from the table below which are not relevant to the product of this user manual

Power Supply Unit	Specification	RS Stock Code	Farnell Stock Code
TDK Lambda SWS50-12	+12 V DC / 4.3 A	466-5869	1184645
TDK Lambda SWS75-12	+12 V DC / 6.3 A	466-5904	1184648
TDK Lambda SWS150-24	+24 V DC / 6.3 A	466-5982	1184653
TDK Lambda SWS300-24	+24 V DC / 13.0 A	494-4651	1085928

- Earth bonding

9.5 Interface Logic Levels

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	

9.6 Reliability Data

The below data refers to the Mean Cycles Between Failure (MCCBF) 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.



[<< Back to Contents](#)

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, you are doubling the number of modules. Thus, the MCBF/MCBI will naturally be halved.

CBA11

MCBF: 100,000 Cycles

MCBI: 50,000 Cycles

9.7 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.



10 COMPLIANCES AND APPROVALS

10.1 EC Declaration of Conformity

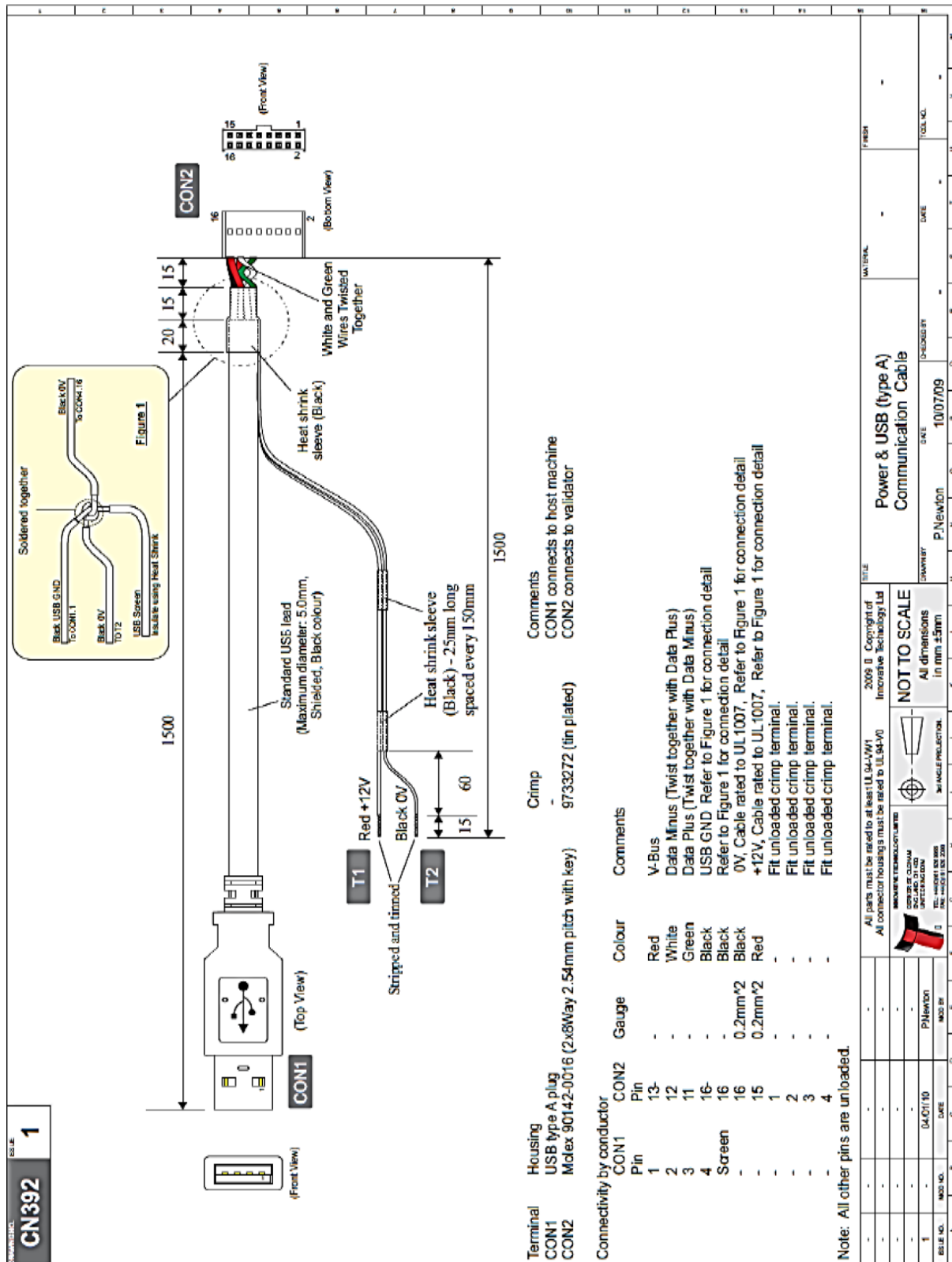
- RoHS
- EN Directives
- UL
- REACH
- WEEE



11 APPENDIX

11.1 Cable Drawings

11.1.1 CN00392 USB Type A to Validator Cable Assembly



User Manual CBA Range

[<< Back to Contents](#)

11.1.2 CN00214 USB A to USB B Cable Assembly

ISSUE
CN00214
1

T

Item	QTY	Description	Vendor
A	1	USB Type A Male Connector	-
B	1	USB Shielded High Speed 2.0 Cable 28AWG1P+28AWG3/2	-
C	1	USB Type B Male Connector	-

Comments

Note to Manufacturers
 Certificates are needed for the following:
 ■ RoHS compliance ■ UL94-V0 rated (connector housing) ■ UL1581-VW1 rated (all other parts)

REWORKING INSTRUCTIONS
 1. PREPARE TO WORK
 2. PREPARE WORK AREA
 3. PREPARE TOOLS
 4. PREPARE TO WORK
 5. PREPARE TO WORK
 6. PREPARE TO WORK

FILE
 3x Page Page Size
 NOT TO SCALE

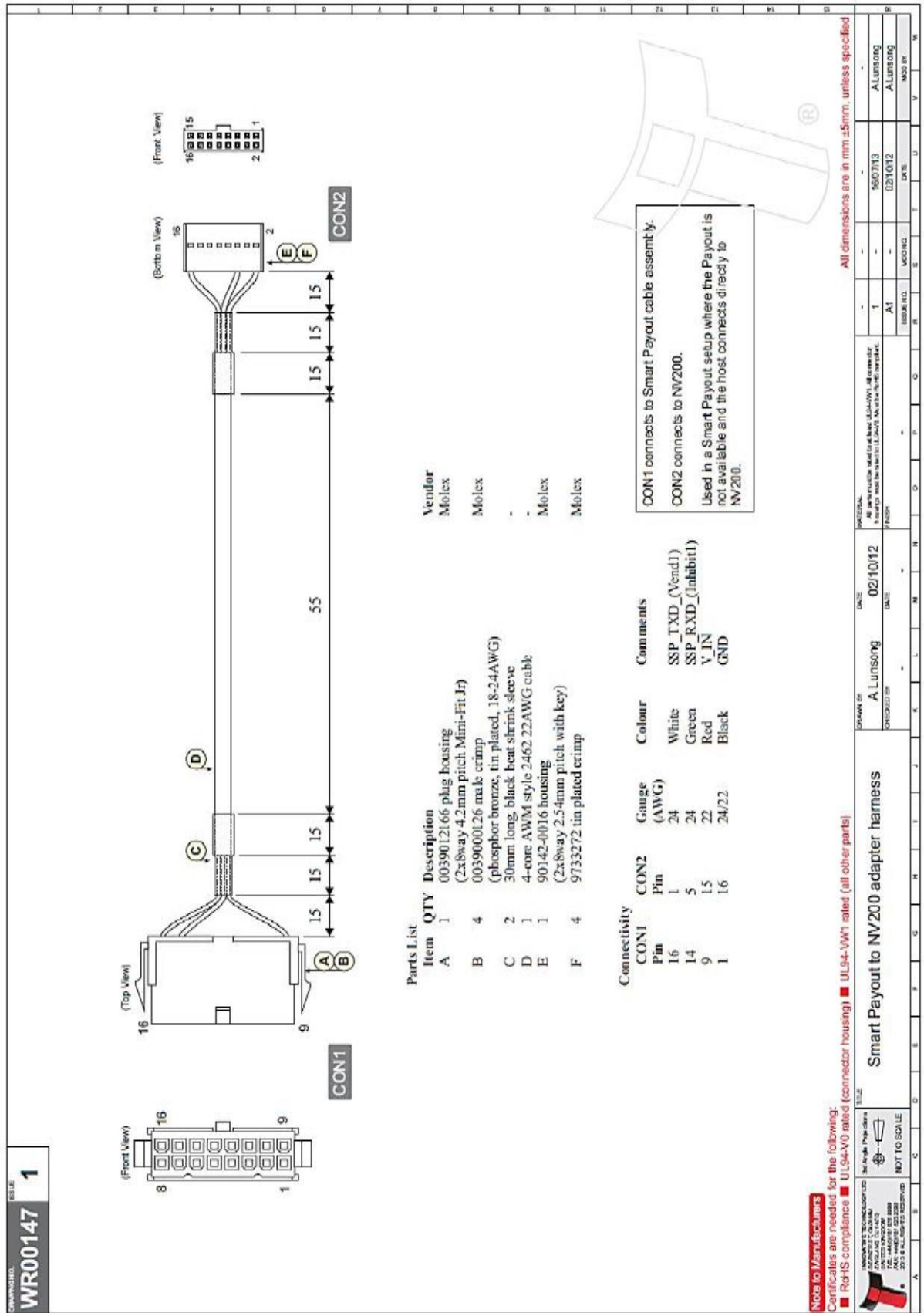
All dimensions are in mm ±5mm, unless specified

DATE	ISSUED BY	MODIFIED BY	DATE	MODIFIED BY	DATE	MODIFIED BY
15/03/2013	A	-	10/01/2018	-	-	-
15/03/2012	-	-	15/03/2012	-	-	-

User Manual CBA Range

[<< Back to Contents](#)

11.1.3 WR00147 Smart Payout to NV200 Adaptor Harness



User Manual CBA Range

[<< Back to Contents](#)

11.1.4 CN00398 CN00398 Dual ESSP Interface

DRAWING NO. **CN398**

2

SCALE

Parts List		Connectivity		Comments					
Item	QTY	CON1 Pin	CON2 Pin	CON3 Pin	CON4 Pin	CON5 Pin	Gauge (AWG)	Colour	Comments
A	1	16	7	-	-	1	24	Orange	SSP TX (Vend1)
B	4	14	8	-	-	5	24	Brown	SSP RX (Inhibit)
C	1	9	-	1	1	-	22	Red	V_IN (12V)
D	10	1	2	1	-	16	24/22	Black	GND
E	2	-	-	-	-	-	-	-	-
F	1	-	-	-	-	-	-	-	-
G	1	-	-	-	-	-	-	-	-
H	2	-	-	-	-	-	-	-	-
I	4	-	-	-	-	-	-	-	-
J	1	-	-	-	-	-	-	-	-
K	8	-	-	-	-	-	-	-	-
L	1	-	-	-	-	-	-	-	-

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

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

2009 Copyright of Innovative Technology Ltd

NOT TO SCALE
All dimensions in mm ±0.1mm

34 ANGLE PROJECTION

All parts must be rated to at least UL94VW1
All connector housings must be rated to UL94V0

MOLEX TECHNOLOGIES LIMITED
8000 S. ALHAMBRA AVENUE
MOLDOCK, IL 60455-4000
TEL: 630-975-0000
FAX: 630-975-0001

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

DRAWN BY: A LUNSONG DATE: 15/09/09 CHECKED BY: DATE: TOOL: ML

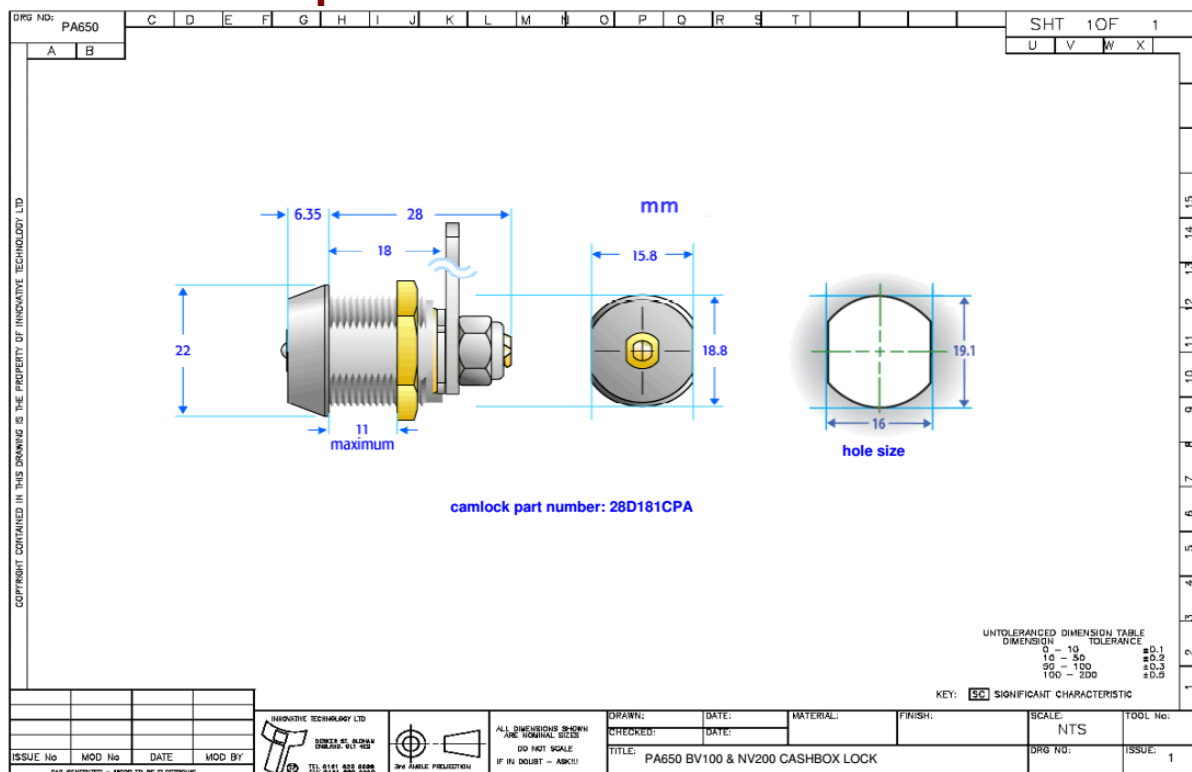


<< [Back to Contents](#)

11.2 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

11.3 Lock Specifications



11.4 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. a. 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



[<< Back to Contents](#)

11.5 File Naming Convention

EXAMPLE:

DATASET FIRMWARE INTERFACE
CNY06K18_CBA0093682322000_IF_01
XXX YY Z ## ***

XXX – Currency code

*** – Firmware version

YY – Dataset Code

Z – Validator Identification

– Dataset Revision

VALIDATOR IDENTIFICATION:

CNY06 K – CBA9



-CBA11



11.6 ccTalk DES Encryption – Trusted Mode

1. Power Off

- Either unplug the interface cable or switch off the power.

2. Open Note path

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





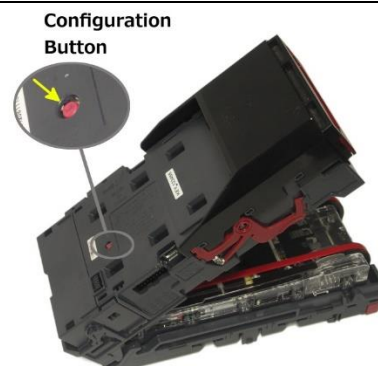
[<< Back to Contents](#)

3. Power On

- With the note path open, apply power

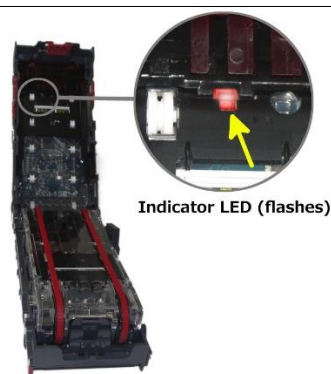
4. Enter Trusted Mode

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



5. 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.



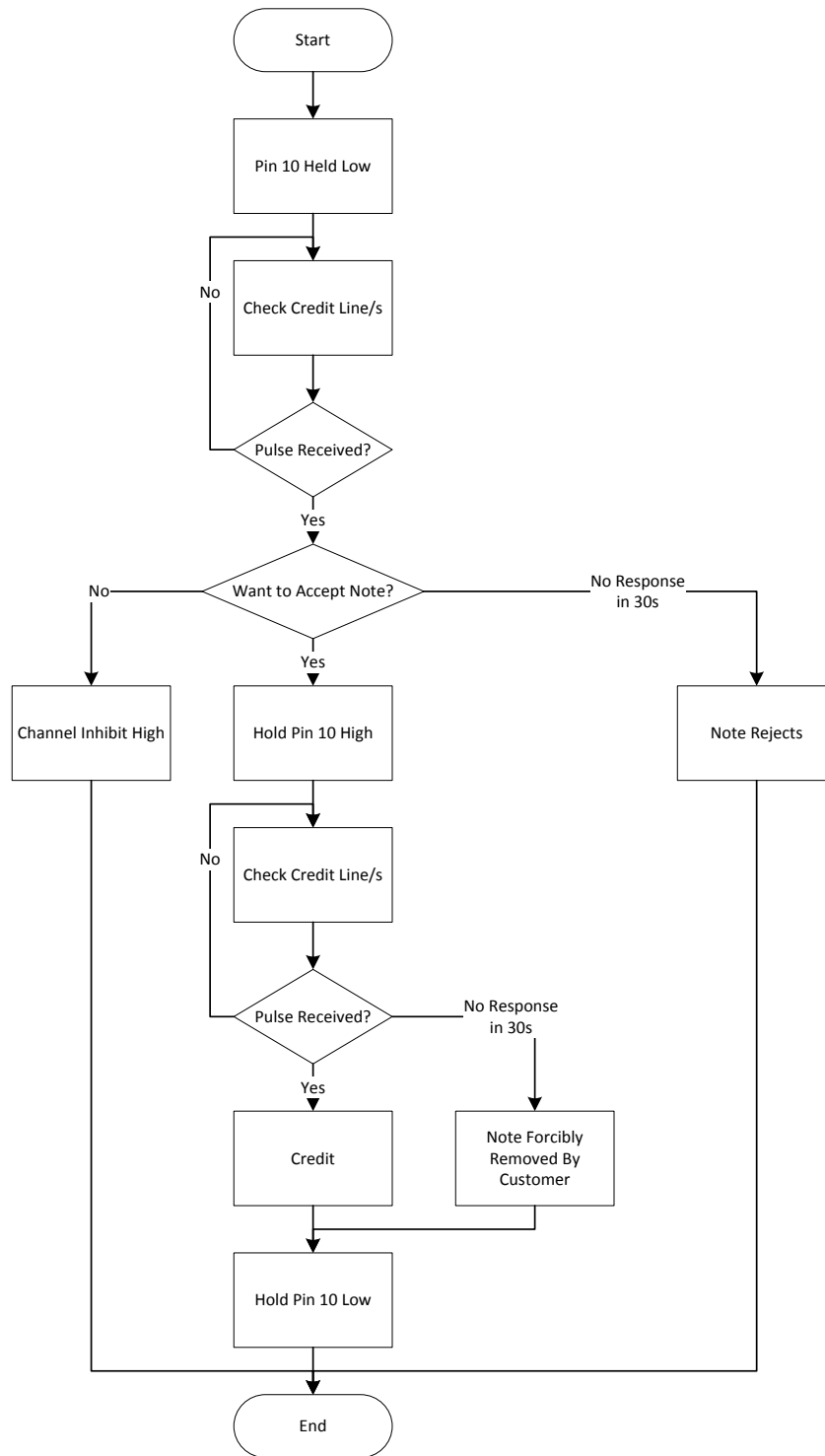
11.7 Escrow Control


The CBA has a single note escrow facility. This allows the CBA 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:

User Manual CBA Range



[<< Back to Contents](#)

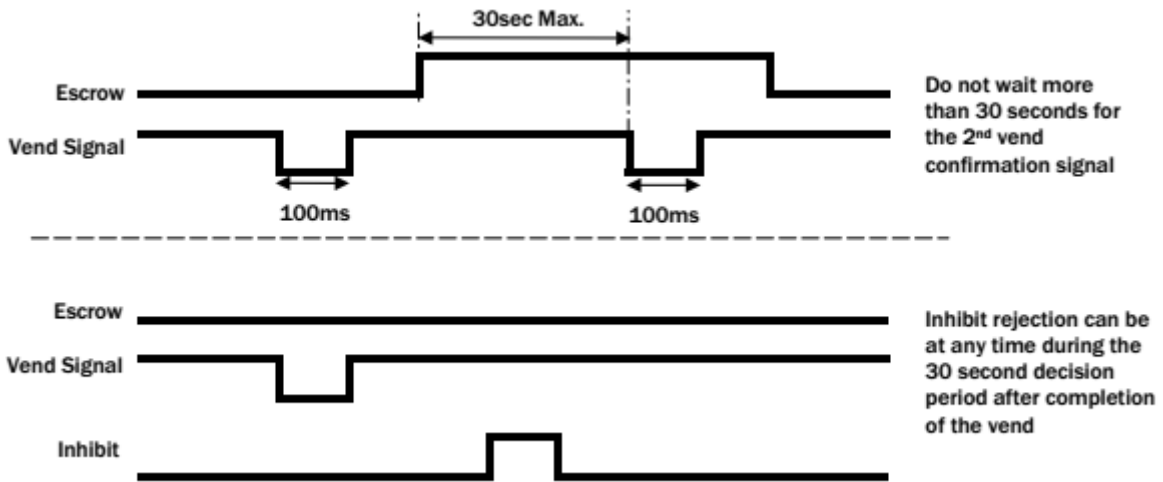


	Caution!
Only book the credit on the second Vend pulse!	



[<< Back to Contents](#)

11.7.1 Escrow Timing Diagram



11.8 Low Power Mode Timing Diagram

