

SECTION 2

NV10 USB MANUAL SET

FIELD SERVICE MANUAL

INTELLIGENCE IN VALIDATION

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NV10 USB MANUAL SET – SECTION 2

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2. FIELD SERVICE MANUAL

This section is one part of a complete manual set: typically, a field service engineer who is maintaining the product would use this section.

This section contains the essential information that the field engineer needs to clean, maintain and fault find an NV10 USB Validator that is installed in a host machine.

The NV10 USB Validator has been designed to minimise any problems or performance variations over time. This has been achieved by careful hardware and software design; this attention to the design means there is very little user maintenance required.

2.1 Cleaning

The NV10 USB Validator has been designed in a way to prevent damage and airborne contamination reaching the optical sensors; however, depending upon the environment the NV10 USB may require occasional cleaning or belt changing.



Caution!

Do not use solvent based cleaners on any part of the NV10 USB unit.

Do not use solvent based cleaners such as alcohol, petrol, methylated spirits, white spirit or PCB cleaner. Using these solvents can cause permanent damage to the unit; only use a mild detergent solution as directed below.

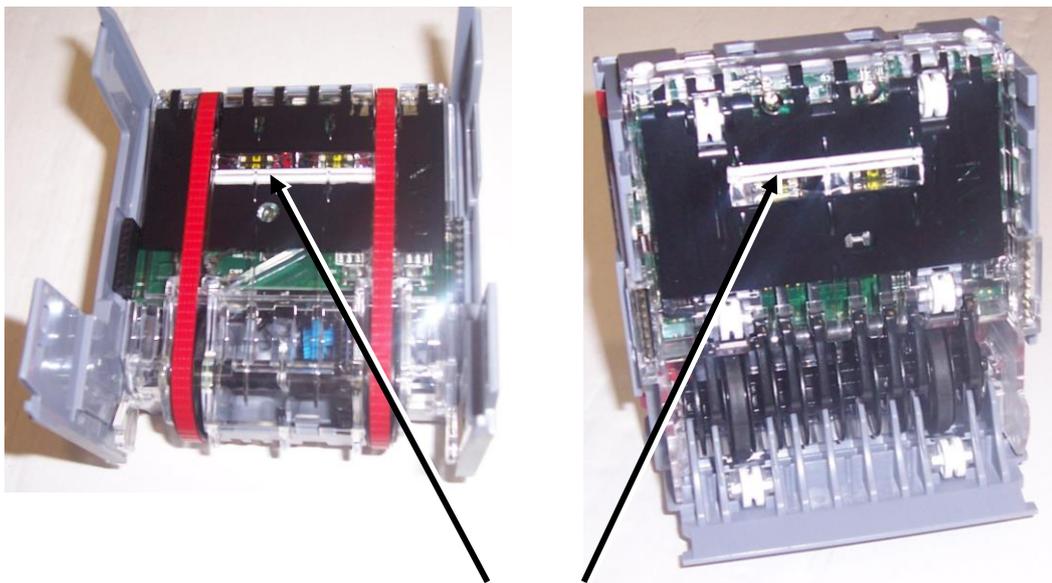
To clean the NV10 USB, release the bezel, open the note path by pushing downwards on both Red catches and the inwards towards the body of the NV10 USB (see Figure 10) and lift and expose the note paths, place them on a clean dry surface. The note path will now be exposed for cleaning, (see Figure 11).



Figure 10 – NV10 USB Release Catches

Carefully wipe the surfaces with a soft lint free cloth that has been dampened with a water and mild detergent solution (i.e. household washing up liquid). Take particular care around all sensor lenses (see Figure 11), ensuring they are clean and dry. If a lens has become badly scratched do not attempt to polish it. Contact ITL for further advise as there may be damage to the optical properties of the lens.

CUTION: WHEN CLEANING THE “RECESSED” FRONT SENSOR, USE A SMALL SOFT BRUSH OR COTTON WOOL BUD.



Optical Sensors

Figure 11 – NV10 USB Sensor Location

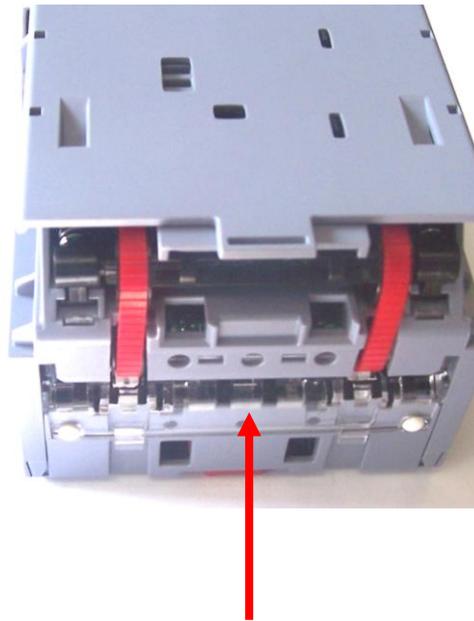
	<p>WARNING!</p>
<p>Disconnect power BEFORE any cleaning operation</p>	

Unless stated otherwise, you should disconnect the power **BEFORE** carrying out any cleaning operations to avoid the risk of causing damage to the validator.



2.2 Belt Cleaning

- Ensure the validator is enabled (i.e. Bezel lights are illuminated).
- Remove bezel.
- Insert a piece of paper, narrower than the width between the two red belts, in the centre of the note path to activate the drive motor.
- Use a lint free cloth dampened with water and mild detergent solution; such as household washing up liquid, and hold it against each drive belt as it turns.
- Repeat steps 3 and 4 until all dust and debris has been removed from both belts.
- Repeat step 3 using a DRY lint free cloth to remove any excess moisture.

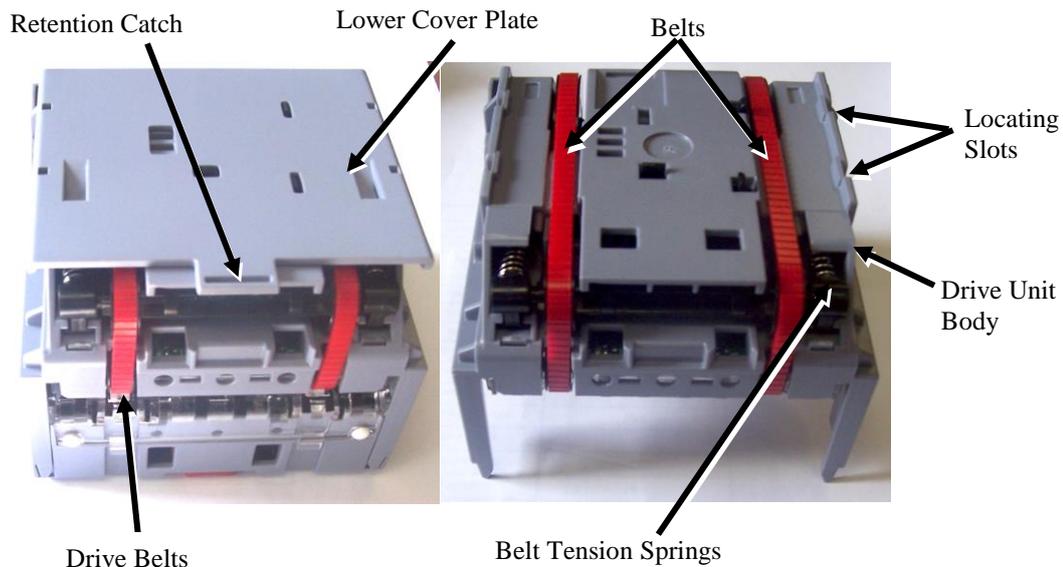


Insert Paper Here

Figure 12 – Belt Access

2.3 Belt Changing

- With the NV10 note paths exposed (see **Error! Reference source not found.**) place the unit on a clean dry surface.
- Remove the lower cover plate by lifting up the retention catch and carefully sliding it back (see **Error! Reference source not found.**).
- Push the 2 belt tension springs inwards then slide each belt off the drive unit body, smallest wheels first.
- Replace the belts by fitting them over the drive unit body legs, smallest wheels first.
- Place the lower cover plate into the locating slots (2 each side) pushing forward and down, the plate will "click" confirming correct insertion.
- Connect the upper and lower note path back together.



2.4 Re-Initialisation

The NV10 USB has an in-built self-calibration system that maintains the optical sensors at their best operating point. However if the NV10 USB is disassembled for any reason it will need to be re-calibrated. Re-calibration may only be performed under license from ITL, contact support@innovativetechnology.co.uk for further details.

2.5 Fault Finding - Flash Codes

The NV10 USB Validator has inbuilt fault detection. If there is a configuration or other error the NV10 USB front bezel will flash in a particular sequence to indicate the problem; a summary of the Bezel Flash Codes for the NV10 USB is shown below:

Flashes		Indicated Error	Comments
Long	Short		
0	0	None	
1	2	Note path jam	Remove obstruction and follow the cleaning procedure in subsection 2.1 of this manual
	3	Unit not initialised	Contact ITL technical support
	4	Internal sensor unable to calibrate	Ensure note path is firmly closed, then cycle the power to the unit. If the problem persists contact ITL technical support
3	1	Firmware checksum error	Download new firmware
	2	Interface checksum error or unable to set programmed interface	
	3	EEPROM checksum error	
	4	Dataset checksum error	
4	1	Power supply too low	Check power supply
	2	Power supply too high	

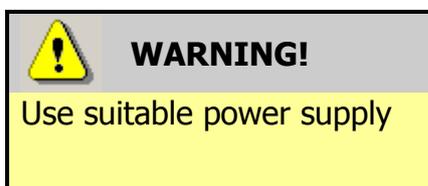


2.6 Technical Specifications

The full technical specifications for the NV10 USB Validator can be found in Section 6, Appendix B of this manual set. A brief summary is given here:

DC Voltage	Minimum	Nominal	Maximum
Absolute limits	10.8 V	12 V	14.2 V
Absolute limits (when fitted with IF5 interface)	18 V	---	48 V DC or 34 V AC
Supply ripple voltage	0 V	0V	0.25 V @ 100 Hz
Supply Current			
Standby	200 mA		
Running	1 A		
Peak (motor stall)	1.5 A		

Interface Logic Levels	Logic Low	Logic High
Inputs	+0 V to +0.5 V	+3.7 V to +12 V
Outputs (2.2 kΩ pull-up)	+0.6 V	Pull-up voltage of host interface
Maximum current sink	50 mA per output	



Ensure that the supply voltage to the NV10 USB is not lower than 10.8 V and that the power supply can provide sufficient current to avoid incorrect operation and excessive note rejects.

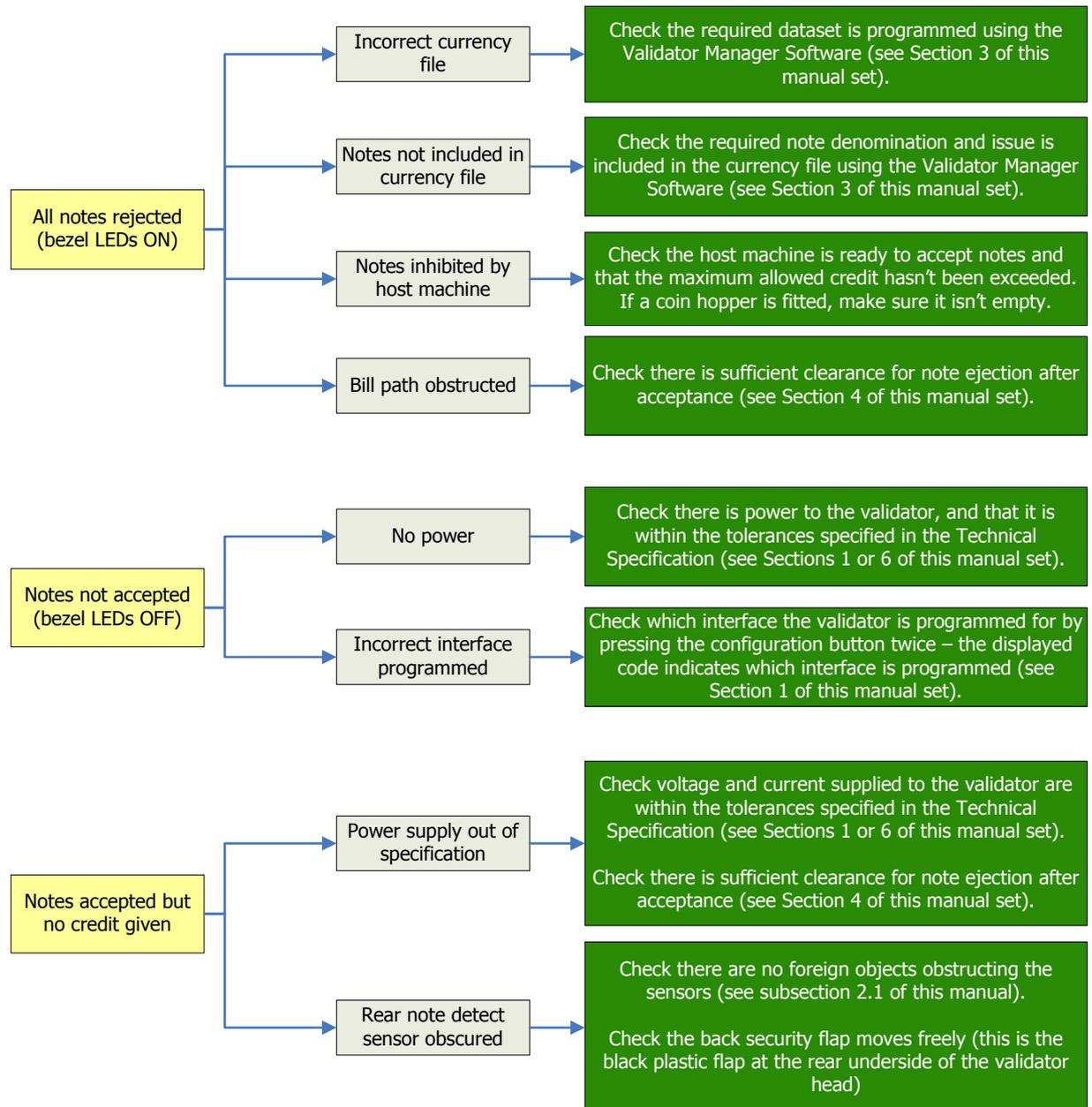
We recommend that your power supply is capable of supplying 12V DC at 3 A.

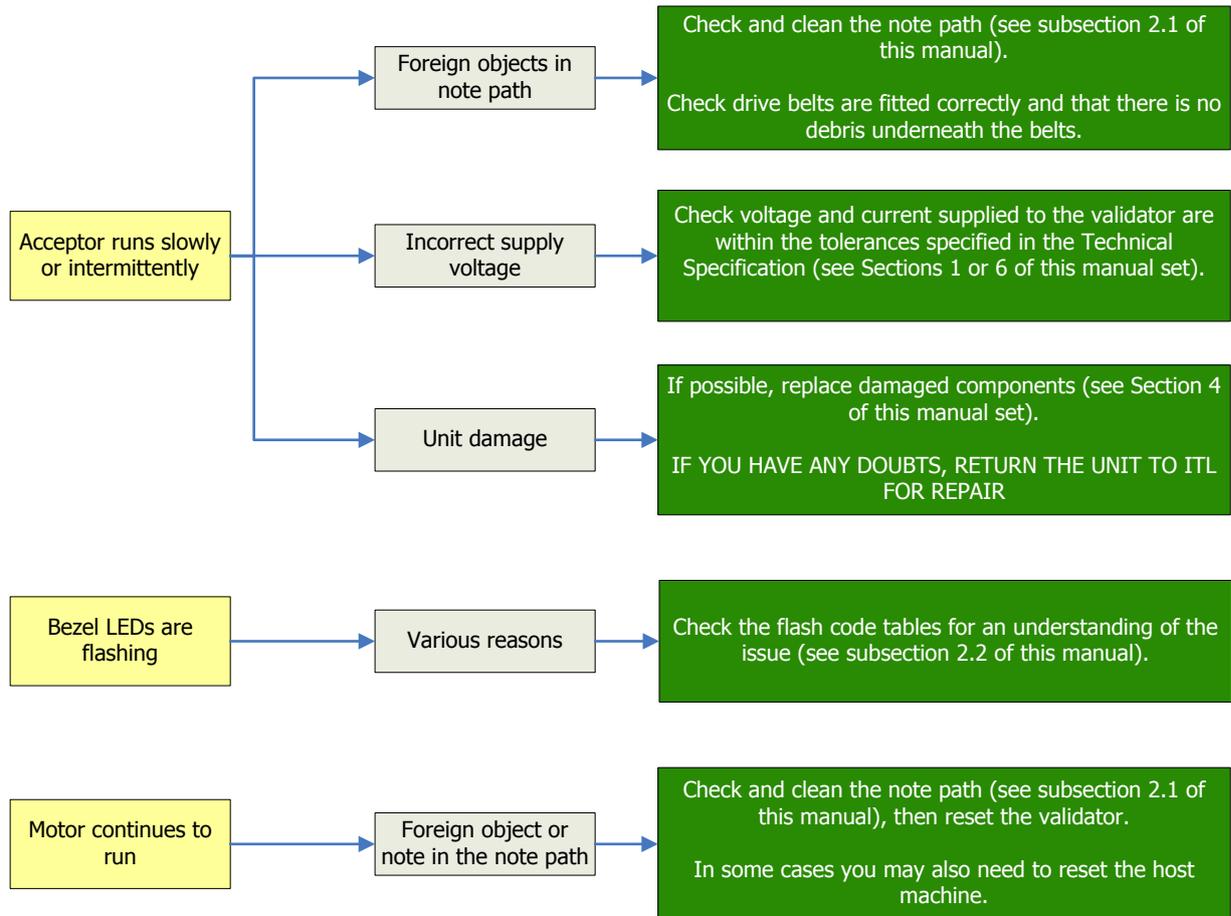
- For 12V operation, use TDK Lambda model SWS50-12. This power supply is available from a variety of suppliers including Farnell (stock code 1184645) and RS (stock code 466-5869).



2.7 Fault Finding Flow Chart

Please use this flow chart with the Flash Codes in subsection 2.2 as an aid to help resolve any configuration or start up problems you might have after installing the NV10 USB validator





If you are unsure about the cause or how to resolve the problem, please contact ITL’s technical support department. Support contact details can be found on the ITL website (www.innovative-technology.co.uk), or on the last page of this section.

2.8 Frequently Asked Questions

a. Why are there no DIP switches on the unit?

- The NV10 USB has no dipswitches. The unit is configured with the configuration button mounted on right hand side of the unit – see subsection 1.3 of this manual for more information.

b. In what orientation can I use the NV10 USB validator?

- The NV10 USB can only be mounted horizontally. See subsection 1.1 – 1.3 of this manual for more information on mounting the validator – check the ITL website

c. Some or all notes are not accepted

- Check that no inhibits are set in the Validator Manager software (see Section 3 of this manual set). If the problem persists, contact ITL Support for further assistance.

d. How do I clean the validator?

- Follow the instructions given in subsection 2.1 of this manual.

2.9 Spare Parts

Full details of the interface cable connector pinouts, connector types / makes and other related information can be found in Section 4 of this manual set. The user can obtain the following parts for the NV10 USB validator:

ITL Part Number	Description	Details
CN392	Power and USB Communication Cable	USB 2.0 Compliant Type A to 16 way header cable

The diagram illustrates the cable CN392, which is a USB 2.0 Compliant Type A to 16 way header cable. It features a USB Type A connector (CON1) on one end and a 16-pin header connector (CON2) on the other. The cable length is 1500 units. The USB connector has a top view showing the USB symbol and a front view showing the physical shape. The 16-pin header connector (CON2) is shown in both front and bottom views, with pins numbered 1 through 16. The cable has two power wires: a red wire labeled 'Red +12V' (T1) and a black wire labeled 'Black 0V' (T2). The distance from the power wire junction to the 16-pin header is 1500 units. The distance from the USB connector to the 16-pin header is 1500 units. The cable has a 20-unit section, followed by two 15-unit sections, leading to the 16-pin header.

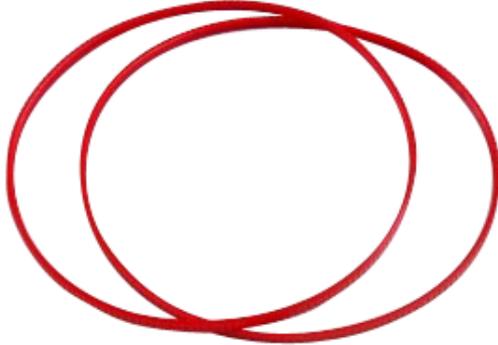
Bezels		
ITL Part Number	Description	
PA231	Standard Small Bezel	
PA266	Extended Small Bezel	



Information

Check website for options.

There are a couple of variants of bezel available for the NV10 USB validator. Please check the ITL website (www.innovative-technology.co.uk) for up to date information on the options available.

Drive Belts		
FD107	NV10 USB Red Drive Belt	



Accessories		
ITL Part Number	Description	
CN392	ITL to USB Cable	
PM599	Anti Strim Shield	
PA258	NV4 to NV10 USB Adaptor Plate	

MAIN HEADQUARTERS

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