# SECTION 6

# NV10 USB MANUAL SET

# TECHNICAL APPENDICES

## INTELLIGENCE IN VALIDATION

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# NV10 USB MANUAL SET – SECTION 6

## 6.  TECHNICAL APPENDICES

## APPENDIX A – PRODUCT APPROVALS

### CE Marking

The NV10 USB unit described in this manual set has been designed to comply with the relevant sections of the following Harmonised European Standards:

- EN60950-1:2001

- EN60335-1:2002

- EN60335-2-82:2003

The unit complies with all the applicable essential requirements of the Standards.

### RoHS

The following products, identified by the part numbers listed in the table below, are compliant with the European Union Directive 2002/95/EC of the Restriction of the use of certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment.

| Product | Description | Lead free date |
|---------|-------------|----------------|
| NV10 USB | Bank Note Acceptor Assembly | All NV10 USB |

We hereby declare that lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (Cr4-6), polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE), are not intentionally added to our products in amounts exceeding the maximum concentration values as defined by RoHS regulations (except where the application of any of those substances comes within the scope of the RoHS regulations exempted applications).

All compliant products are clearly marked on the product and/or packaging.

All the information provided in this statement of compliance is accurate to the best of our knowledge, as of the date of this publication being issued.

## WEEE

The European Union's directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) was adopted by the European Council and Parliament in 2003 with a view to improving the collection and recycling of Waste Electrical and Electronic Equipment throughout the EU, and to reduce the level of non-recycled waste. The directive was implemented into law by many EU member states during 2005 and 2006.

Products and packaging that display the symbol (shown left) indicates that this product must NOT be disposed of with other waste. Instead it is the user's responsibility to dispose of their Waste Electrical and Electronic Equipment by handing it over to an approved re-processor, or by returning it to the original equipment manufacturer for reprocessing.

## APPENDIX B – TECHNICAL SPECIFICATIONS

The information contained here does not form part of a contract and is subject to change without notice. Innovative Technology Ltd operates a policy of continual product development; as such specifications may change from time to time.

### Environment:

|  | Minimum | Maximum |
|---|---|---|
| Temperature | +3 °C | +50 °C |
| Humidity | 5 % | 95 % non condensing |

### Power Requirements:

| 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 |

⚠️ **WARNING!**

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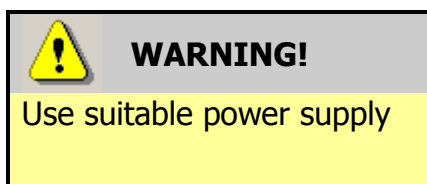
Ensure that the supply voltage to the NV10 USB is not lower than 10.8 V and that the power supply can provide sufficient current to avoid incorrect operation and excessive note rejects.

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).

### Logic Levels:

| 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 |

## General Specifications:

| Note Sizes | Minimum | Maximum |
|---|---|---|
| Width | 60 mm | 85 mm |
| Length | 115 mm | 170 mm |

| Weight | |
|---|---|
| NV10 USB | 1.7 kg |

| Interface Protocol | |
|---|---|
| | eSSP; SIO; ccTalk; Parallel; Pulse; Binary **** MDB |

| **Information**  External interface required. | ** NOTE: Using the NV10 USB with the MDB protocol is only possible by the use of an external **IF5** interface convertor. |
|---|---|

## APPENDIX C – GLOSSARY OF TERMS

| Term | Meaning |
| --- | --- |
| **A** | Ampere |
| **AC** | Alternating Current |
| **ACK** | Acknowledge |
| **AES** | Advanced Encryption Standard |
| **ASSY** | Assembly |
| **AV** | Average |
| **AWG** | American Wire Gauge |
| **AWP** | Amusement With Prizes |
| **BNV** | Bank Note Validator |
| **ccTalk** | Coin Controls Talk |
| **COMMS** | Communications |
| **CRC** | Cyclic Redundancy Check |
| **DC** | Direct Current |
| **DIA** | Diameter |
| **DIP** | Dual Inline Package |
| **ECB** | Electronic Code Book |
| **EEPROM** | Electrically Erasable Programmable Read Only Memory |
| **eSSP** | Encrypted Smiley® Secure Protocol |
| **FAQ** | Frequently Asked Questions |
| **GA** | General Assembly |
| **GND** | Ground |
| **Hz** | Hertz |
| **IF** | Interface |

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| Term | Meaning |
|------|---------|
| **ITL** | Innovative Technology Ltd |
| **LED** | Light Emitting Diode |
| **mA** | milliampere |
| **max** | maximum |
| **MDB** | Multi Drop Bus |
| **min** | minimum |
| **mm** | millimetre |
| **ms** | millisecond |
| **MOD** | Modified (or Modification) |
| **NV** | Note Validator |
| **PCB** | Printed Circuit Board |
| **PDF** | Portable Document Format |
| **PiPS** | Pay-in Pay-out System |
| **PROM** | Programmable Read Only Memory |
| **PSU** | Power Supply Unit |
| **QTY** | Quantity |
| **RAM** | Random Access Memory |
| **ROM** | Read Only Memory |
| **Rx** | Receive |
| **RoHS** | Restriction of the use of certain Hazardous Substances |
| **SIO** | Serial Input Output |
| **SSP** | Smiley$^{®}$ Secure Protocol |
| **SWG** | Standard Wire Gauge |
| **SWP** | Skill With Prizes |
| **SYNC** | Synchronize |

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| Term | Meaning |
|------|---------|
| **TTL** | Transistor Transistor Logic |
| **Tx** | Transmit |
| **USB** | Universal Serial Bus |
| **V** | Volt |
| **V_In** | Voltage In |
| **WEEE** | Waste Electrical and Electronic Equipment |

## APPENDIX D – ORDERING INFORMATION

The following information is required to order an NV10 USB validator:

| | | |
|---|---|---|
| **Product** | NV10 USB | Consists of NV10 USB validator and bezel |
| **Dataset** | Country code and variant | Alternatively supply details of the currency and note denominations you want the unit to accept |
| **Bezel Size** | 66 - 82 mm | Please check the NV10 USB product page on the ITL website for details of the bezels available |
| **Interface** | eSSP; SIO; ccTalk; MDB; Parallel; Pulse; Binary | Using the NV10 USB with the following protocol will require an external interface convertor : <br><br> **MDB** |

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## APPENDIX E – CONFIGURATION CARD

Please consult ITL technical document GA959 for further information on configuration card programming – the GA959 document includes a printable template for the configuration card and this can be downloaded from the Support section of the ITL website – **the sample shown here should not be used for programming as it is not to scale**.



**Configuration Card - instructions for use:**

1. Cut card around the outline - check the measurements are as printed. Make sure that 'Page scaling' is set to 'None' in your print options to ensure the correct size.

2. Fill in sections as required. Take care to fill in the sections correctly, keep inside the lines and fill boxes fully as shown here:



3. Power-up the validator and wait until it resets.

4. Press the configuration button once to enter programming mode (the bezel LEDs should flash at 1 second intervals).

5. Insert the card into the validator face up and in the direction indicated by the arrows.

6. The configuration card will be ejected and if the configuration was good the bezel LEDs will flash at a fast rate while programming takes place. After completion of programming the validator will reset.

| **Information** |
| --- |
| Check print settings. |

Make sure that 'Page scaling' is set to 'None' in your print options to ensure the correct size when printing the configuration card.

If an error has occurred, the card will be rejected and the bezel LEDs will flash slowly a number of times to indicate the cause of the error:

| Number of flashes | Indicated error |
| --- | --- |
| 2 | Invalid card read – card entered wrong way around, misread or wrong card version used |
| 3 | No interface selection was detected on the card |
| 4 | Multiple interface selections detected |
| 5 | Invalid interface detected – the selected interface is not available for this validator |
| 6 | Selected interface is not compatible with this validator version |
| 7 | Pulse configuration error – selected pulse options are invalid |
| 8 | ccTalk configuration error – the selected ccTalk options are invalid (ccTalk 8 bit checksum not allowed without ccTalk plain) |
| 9 | Low power mode not available for this validator version |

| **WARNING!** |
| --- |
| **Risk of unit damage** |

When in programming mode, do not turn off the power before the operation is complete as this will make the unit unusable.

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|---|---|

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