

MDB Quick Start Guide



Automated Transactions (ITL) GmbH

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1. Protocol Specification

The NV7/8/9/10 is compliant to the following protocol specification:

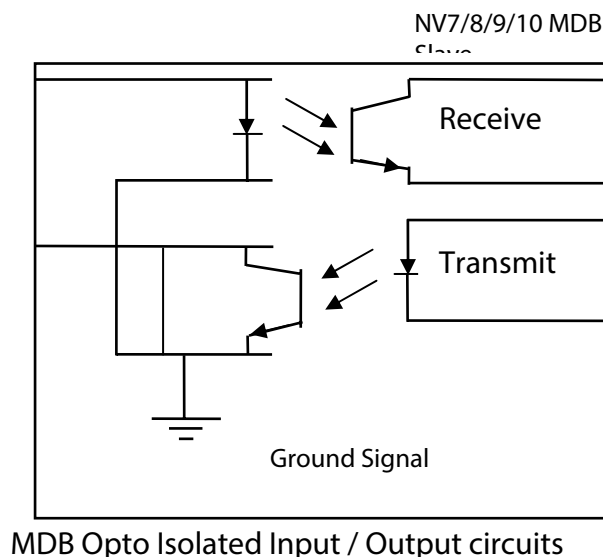
NAMA MDB/ICP Version 1.0 BNV Level 1.

The full protocol specification can be obtained from:

National Automatic Merchandising Association.
20 N. Wacker Drive, Suite 3500
Chicago, Illinois 60606-3120 USA
Tel: 312-346-3070
Email: Tech@vending.org

2. MDB – Multi-Drop Bus / Internal Communications Protocol (IF5)

MDB defines a serial bus interface used in electrically controlled vending machines (see figure below). This is a 9600 Baud Master-Slave system where the NV7/8/9/10 MDB banknote validator is a slave to a master controller. A master has the capability of communicating with 32 peripheral slaves. The master is defined as the Vending Machine Controller (VMC).



The NV7/8/9/10 MDB banknote Validators have a unique address – 00110XXX binary (30H). The VMC polls the bus to detect presence of the NV7/8/9/10 MDB Validators or get information on the current status of the Validators.

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The Validators will respond when asked for activity with an acknowledgment, a negative acknowledgment or a specific reply, depending on its current status. Bus crashes are avoided as the Validators respond to being polled only by the VMC.

The international country code must be set for the country in which the Validators will be operating. This is the international telephone code for that country. The code is represented as two bytes

For the USA the country code is 00 01

For Great Britain the code is 00 44

The scaling factor must also be specified for each Validator. All accepted note values must be evenly divisible by this number.

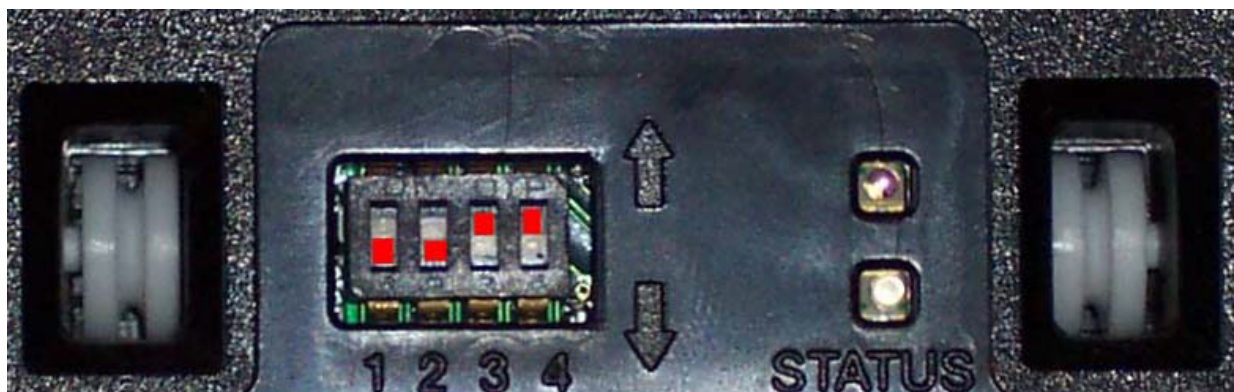
- This number would be set to 100 (Hex 64) for the Euro or Great Britain.
- The number would be set to 1000 (Hex 03E8) for Romania.
- The number of decimal places must also be programmed for each Validator
- The number would be set to 2 for Euro or USA
- The number would be set to 3 for Romania

Adopting the numbers above:

- £5 would be displayed as 5.00
- £10 would be displayed as 10.00
- \$1 would be displayed as 1.00
- 1K Romania would be displayed as 1.000

2.1. Dip Switch Settings

In order to use the unit in MDB mode the special interface options should be selected, set both dipswitches 3 and 4 up as shown below does this.

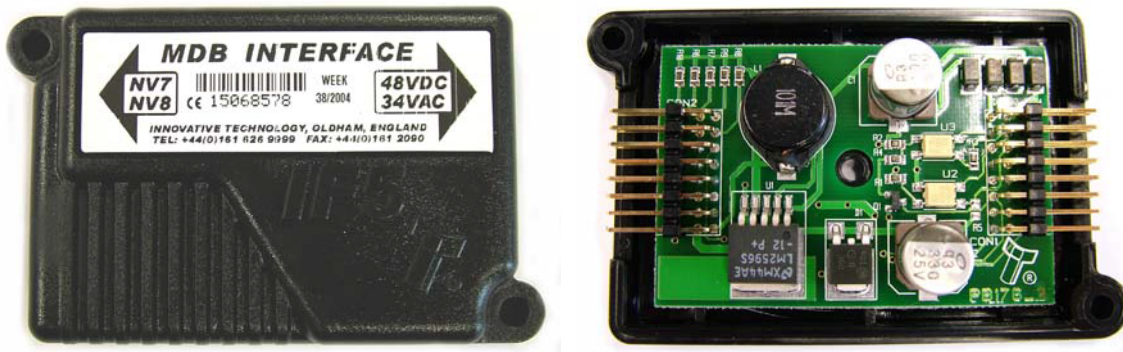


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2.2 MDB Voltage Converter

For using the NV7/8/9/10/8 in MDB mode an additional voltage converter (IF5) is needed! Please ensure that the IF5 box (see picture below) is connected between the validator and host!

The IF5 box includes the voltage regulator and the necessary opto-isolated components.

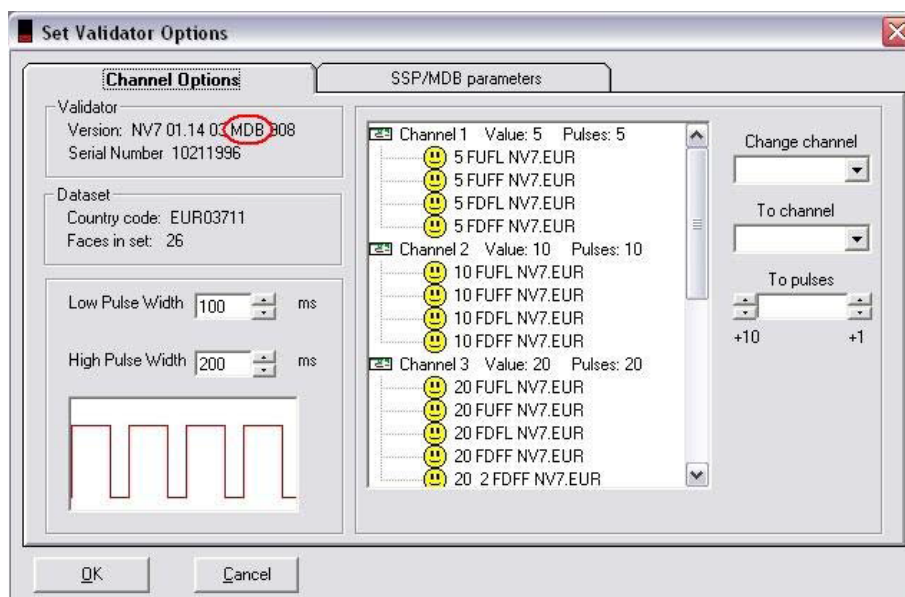


3. Checking For MDB Firmware

Check that the NV7/8/9/10 is downloaded with the MDB firmware. This can be done using the

NV Manager, select 'Set Validator Options' from the 'Tools' menu. The version of firmware in the NV7/8/9/10 is displayed; this should be identified as an MDB version as shown

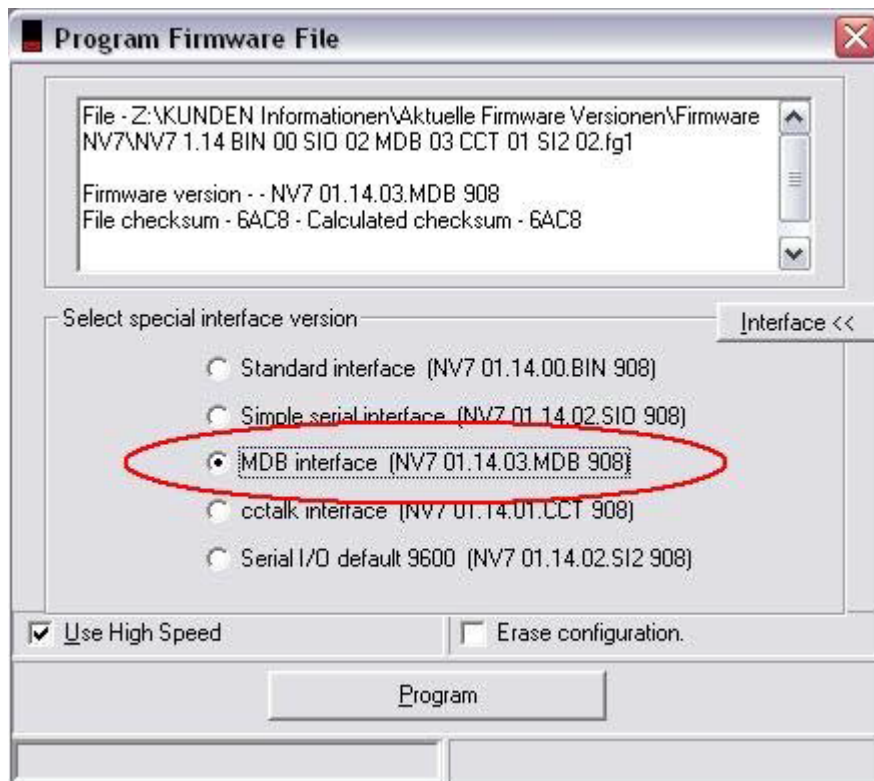
below. To use the NV Manager the NV7/8/9/10 must be set to SSP mode, setting dip switch 3 up and dip switch 4 down does this.



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4. Downloading MDB Firmware

If the NV7/8/9/10 does not have MDB firmware, then it is necessary to download. This can be done using the NV Manager. Before downloading the file, ensure that the MDB interface is selected as shown below. To use the NV Manager the NV7/8/9/10 must be set to SSP mode, setting dip switch 3 up and dip switch 4 down does this.



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5. Setting MDB Parameters

In order for the NV7/8/9/10 to correctly operate with any given host machine several parameters must be correctly set. These are: The individual values of each note (channel), the MDB country code, the MDB multiplier, and the MDB point position. The values of these parameters should be obtained from the supplier of the MDB control board in the machine. The NV7/8/9/10 is pre-programmed with values that will work with the majority of control boards, but may need to be modified in some cases. The default parameters can be modified using the NV Manager, select 'Set Validator Options' from the 'Tools' menu, then click the 'SSP/MDB parameters' tab. To use the NV Manager the NV7/8/9/10 must be set to SSP mode, setting dip switch 3 up and dip switch 4 down does this. The dialogue box is shown below.

The screenshot shows a Windows-style dialog box titled "Set Validator Options" with a close button (X) in the top right corner. It has two tabs: "Channel Options" and "SSP/MDB parameters", with the latter being the active tab. The "SSP/MDB parameters" tab is divided into three main sections. The first section, "SSP value per channel", contains a 4x3 grid of input fields for channels 1 through 12. Channel 1 has values 5, 5, 100, 9, 0, 13, 0. Channel 2 has 10, 6, 0, 10, 0, 14, 0. Channel 3 has 20, 7, 0, 11, 0, 15, 0. Channel 4 has 50, 8, 0, 12, 0, 16, 0. The second section, "MDB Parameters", has three input fields: "MDB County Code" with value 0978, "MDB Multiplier" with value 100, and "MDB Point Position" with value 2. The third section, "MDB Options", contains three checkboxes: "Disable Escrow" (unchecked), "Disable Escrow Time-out" (unchecked), and "Fast Reset" (unchecked). At the bottom left of the dialog, there are two input fields: "Value multiplier" with value 1 and "Address" with value 0, followed by a "Set Address" button. At the very bottom of the dialog are "OK" and "Cancel" buttons.

Channel	1	2	3	4	5	6	7	8	9	10	11	12
1	5	5	100	9	0	13	0					
2	10	6	0	10	0	14	0					
3	20	7	0	11	0	15	0					
4	50	8	0	12	0	16	0					

The operation of the NV7/8/9/10 can be modified from the NAMA specification in order to support some common differences in host machine. These are as follows:

- Disable escrow: when this is checked, the MDB interface is forced to have no escrow function.
- Disable escrow time-out: When checked, a note held in the escrow position will not be returned after a time-out period, it must be accepted or rejected by the host.
- Fast Reset: Some host MDB systems require the peripherals to reset and respond within 50ms. Checking this box will allow the validator to respond to these systems.