

GalaxyVend
MDB – pulse interface
fv1.005 - 8 prices

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I. Introduction

This device was designed to facilitate connection of MDB payment systems to pulse operated vending machines. It can have 2 working modes:

- As standalone (automatically converting the MDB to pulse vending machines).
- As a device for developer that want to handle MDB peripherals (payment systems) and send pulses to a vending machine.

The interface can handle up to 8 buttons (N/O – SPST) to select the amount that needs to be sent to the MDB card reader for authorization.

Standard package content:

- GalaxyVend MDB to pulse converter (PN: GV-P-MDB-PLSOUT-101).
- Connector with wires for buttons. The wires are connected to a shell compatible with the board on one side and free on the other end. You have to select your own buttons, according to your preferences (N/O - SPST button).
- No other cables are provided (for example to connect to the VMC). You need to manufacture your own cable or buy them separately from a cable supplier.

NOTE!!! → This device can handle one MDB bill validator, one MDB coin acceptor and one MDB cashless devices (Level 2 or Level 3 with always idle cashless device), with up to 8 configured prices (maximum 8 buttons can be connected to this device).

The device can also be ordered with MQTT (over WiFi support) to connect to our SaaS backend where you can connect to exchange JSON messages (subscription based service).

A proprietary RFID reader (MIFARE Classic) can be connected in order to read MIFARE Classic media serial numbers. Only working with SaaS backend subscription or with an USB application that you have to develop, in order to validate customers' available amount.

II. Hardware

A. Core board overview

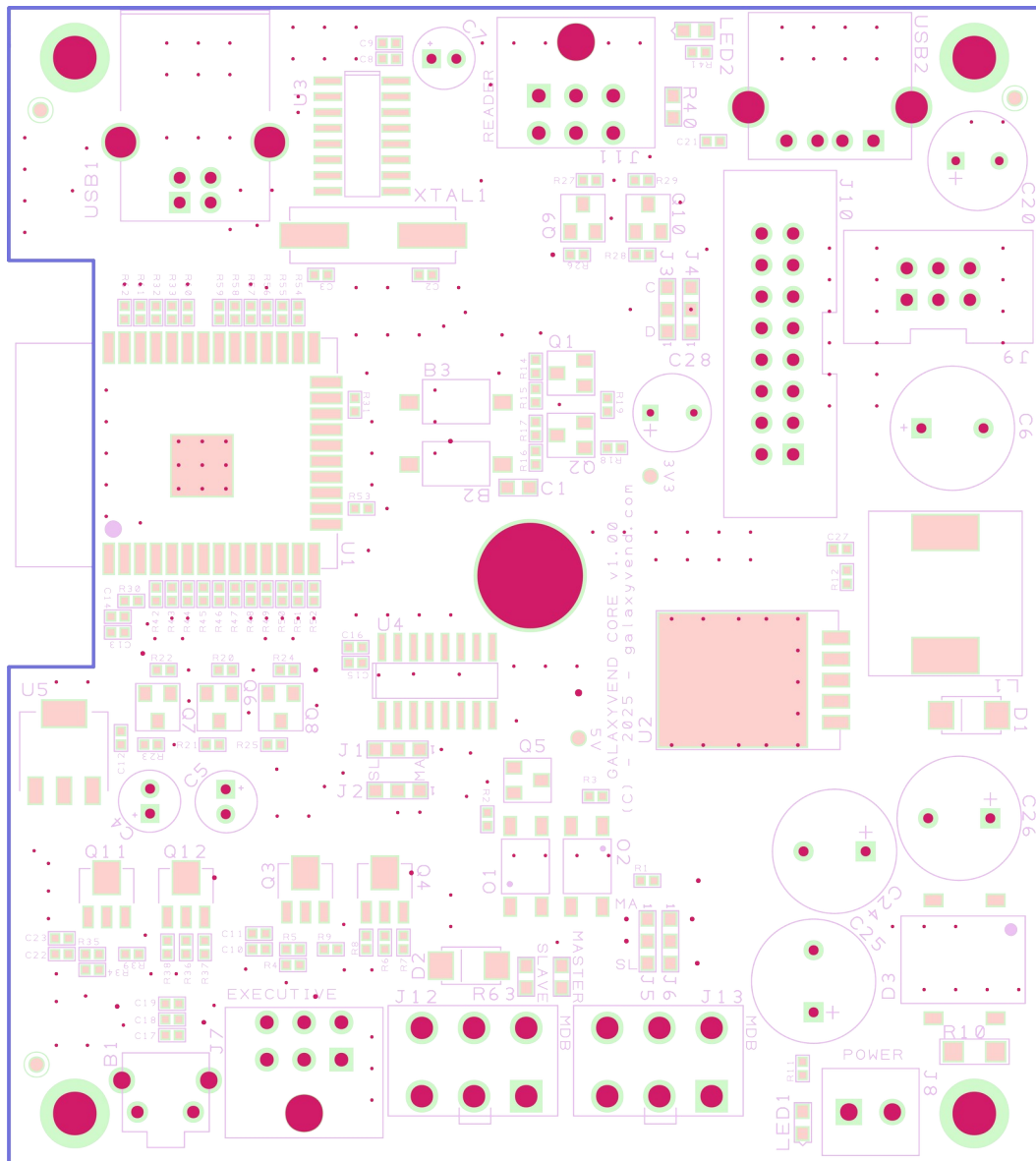


Figure 1: Core board overview

B. Core board connectors and buttons description

1. **J12, J13** – MDB connectors. You can connect MDB peripherals (payment systems) to any of these connectors (or both if your peripherals have no “Y” cables).
2. **J8** – POWER connector (do not exceed 32VDC or 24VAC). Polarity insensitive.
3. **B1** – Button to set the inhibit polarity. To set inhibits’ signal polarity, you need to wait for your vending machine to be idle (ready to sell) and press this button for 2 seconds. The interface will save current inhibit level as “working level”, then reboots.
4. **J11** – Connector for the proprietary RFID reader (sold separately).
5. **USB1** – Firmware upload and external communication.
6. **USB2** – power for external devices (max. 1.2A)

C. Expansion board overview

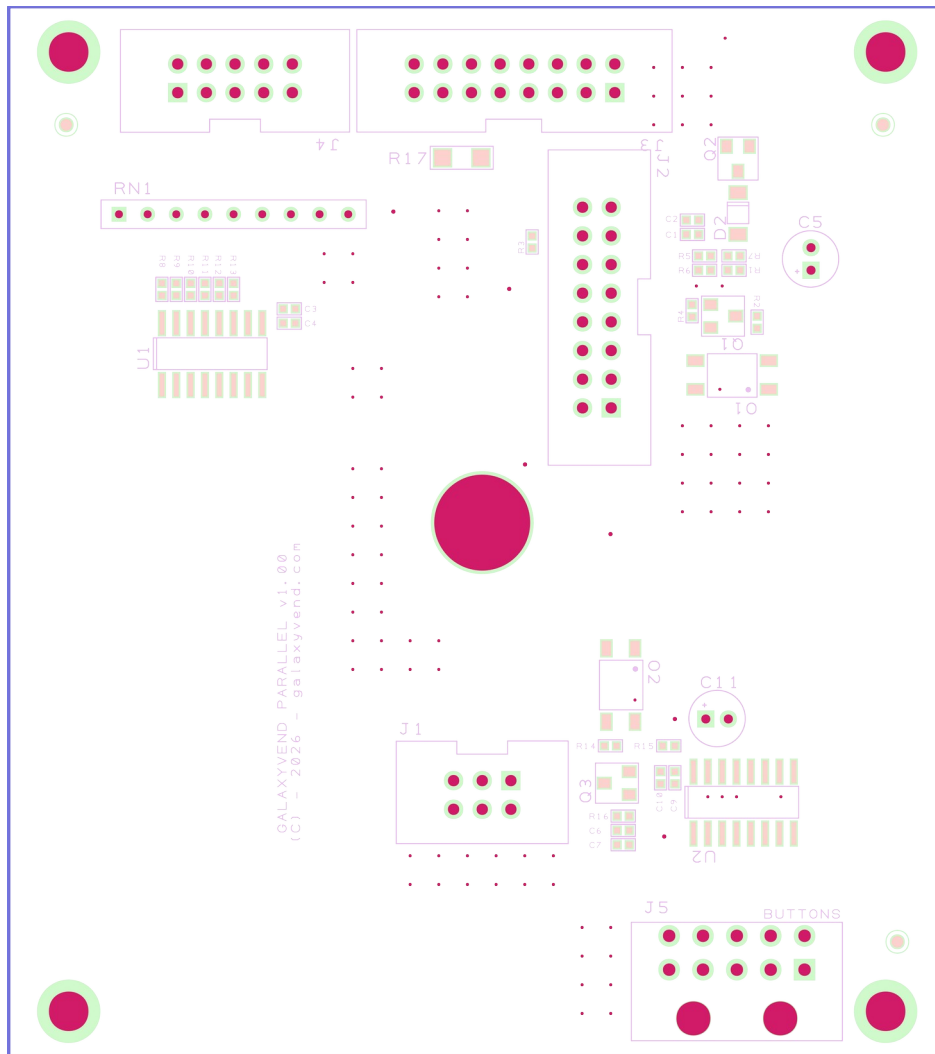


Figure 2: Expansion board overview

D. Expansion board connectors description

1. J4 – Pulse out connector, compatible with standard 10pin interface (compatible with Comestero RM5 pinout, for example)

- PIN #1 (square pin) – GND;
- PIN #2 – Power (in) (12VDC);
- PIN #3 – CH5 (out);
- PIN #4 – CH6 (out);
- PIN #5 – N/C;
- PIN #6 – inhibit signal (in);
- PIN #7 – CH1 (out);
- PIN #8 – CH2 (out);
- PIN #9 – CH3 (out);
- PIN #10 – CH4 (out);

2. J3 – Pulse out connector, compatible with all Innovative Technology bill validators pinout).

Important! Connecting this interface to a standard 16pin vending machine may damage the

interface, the vending machine or both. Use it only for vending machines that have Innovative Technology compatible interface.

- PIN #1 (square pin) – CH1 (out);
- PIN #2 – CH2 (out);
- PIN #3 – CH3 (out);
- PIN #4 – CH4 (out);
- PIN #5 – inhibit (in);
- PIN #6 – inhibit (in);
- PIN #7 – inhibit (in);
- PIN #8 – inhibit (in);
- PIN #9 to PIN #14 – N/C;
- PIN #15 – power (in) (12VDC);
- PIN #6 – GND;

III. Interface software configuration

This chapter describes configuration software (used to set interface's internal running parameters).

Before starting the application, you need to make sure the interface is connected over the USB cable and the power is applied to the power connector. Connection to the vending machine and MDB payment systems are not mandatory, but connecting the MDB payment systems will help you to live test the settings. Also, for Windows, you need to previously [INSTALL THIS DRIVER](#).

A. Initial screen

When application starts, it will display the following screen:

The screenshot shows the 'GALAXYVEND PULSE Configurator' window. It features a top connection bar with a 'Serial port search' button (1), a serial port dropdown menu (2), and a 'Connect' button (3). Below this is a configuration table with 8 columns labeled BTN1 through BTN8. The table rows are: Price (4), Pulse number (6), Pulse length (ms) (7), Pulse pause (ms) (8), and Cashless auto (9). Below the table are 'Cash channel' (15) and 'Cashless channel' (16) dropdowns, and an 'MDB level' dropdown (10). At the bottom are 'Read settings' (11), 'Write settings' (12), and 'Device reset' (13) buttons. A large empty area at the bottom is labeled 14.

	BTN1	BTN2	BTN3	BTN4	BTN5	BTN6	BTN7	BTN8
Price	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulse number	0	0	0	0	0	0	0	0
Pulse length (ms)	0	0	0	0	0	0	0	0
Pulse pause (ms)	0	0	0	0	0	0	0	0
Cashless auto	☐	☐	☐	☐	☐	☐	☐	☐

Cash channel: [dropdown] Cashless channel: [dropdown] MDB level: [dropdown]

[Read settings] [Write settings] [Device reset]

[Empty area]

Screen elements description

1. By pressing this button, the application performs a serial port search. If the interface is powered and connected over the USB, the application will detect it's serial port as well.
2. This is the combo list where you can select the correct serial port to connect. You must identify the serial port where the interface is connected using your operating system tools.
3. By pressing this button, the serial communication is opened on the the port selected in (2).
4. This labels identify the buttons for later configuration. Also, by clicking on any of this labels, you can simulate the corresponding button press, without physically connecting or pressing the buttons.
5. Each of these fields contains the price set for the corresponding button. All values must be set in ascending order. If the values are not set in ascending order, some of them may not be activated. For inactive buttons (if you are using less than 8 buttons/prices), you need to set the price and the pulse number to 0. This way, you are indicating that button/buttons are inactive and not used by the interface. **Important!!! All values must be in ascending order.**
6. Each of these fields contains the number of pulses to send when the corresponding price credit was accumulated.

7. Each of these fields contains the pulse length when the corresponding credit was accumulated. You can set different pulse lengths for each price/button. If the pulse length and pulse pause are set to 0, the interface will automatically pulse one second for each "Pulse number", without any pause. This way, the interface can be used as a timer. For example, if you set length and pause to 0 and pulse number to 5 for credit 1.00, then the interface will keep the output (pulse) pin to GND for 5 seconds. An additional relay may be connected to the pulse pin in order to control high power devices. The maximum supported current for the pulse output is 100mA at a maximum 50V voltage.
8. Each of these fields contains the pause the interface will introduce between pulses, when multiple pulses must be sent for a price.
9. Using one of these fields, you can set the default price for cashless transactions. When one of those check-boxes is checked and the Level 2 cashless device is starting a payment session, the interface will automatically try to authorize and amount represented by the price of the checked button. If no checkbox is checked, then the interface will wait for a button to be pressed.
10. Using this combo list you can set the interface MDB feature level for cashless peripherals manipulation. The supported feature levels are 2 and 3. Level 1 cashless payment systems are not supported.
11. Read settings button allows you to perform a complete interface settings read.
12. Write settings button allows you to perform a complete interface settings write.
13. Device reset button allows you to perform a complete interface reboot, highly recommended after performing and saving settings modifications.
14. Details log window. In this area, the application will display various information (about reading settings, writing settings, sales while live testing, etc.). Please read those messages in order to have information about the interface configuring and/or testing process.
15. **Selecting the channel where pulses generated by cash payments will be sent (can be the same channel with cashless one). Used when you have some telemetry system, to have separate reports for cash and cashless payments. Select the same value for cash and cashless if you don't need to have separate reports for cash/cashless payments. If you are using different channels for cash/cashless payments, you also need to configure your vending machine accordingly.**
16. **Selecting the channel where pulses generated by cashless payments will be sent (can be the same channel with cash one). Used when you have some telemetry system, to have separate reports for cash and cashless payments. Select the same value for cash and cashless if you don't need to have separate reports for cash/cashless payments. If you are using different channels for cash/cashless payments, you also need to configure your vending machine accordingly.**

B. Connecting to the interface over the serial port

Before connecting to the interface, please make sure you have connected it by an USB-B cable and the power is active on J2.

1. Press the “Serial port search” button. The application will search for all available serial ports in your system and will populate the serial port combo list with all serial ports names (see picture below). The last detected serial port is automatically selected in the list. Select the correct serial port I this list, if required.

The screenshot shows the 'MDB PULSE Configurator' application window. The 'Device connection' section at the top contains a 'Serial port search' button, a dropdown menu currently showing '/dev/ttyUSB0', and a 'Connect' button. Below this is a configuration table with 8 columns labeled BTN1 through BTN8. The rows are: Price (0.00), Pulse number (0), Pulse length (ms) (0), Pulse pause (ms) (0), Cashless auto req. (checkboxes), and MDB level (dropdown). At the bottom are buttons for 'Read settings', 'Write settings', and 'Device reset'.

	BTN1	BTN2	BTN3	BTN4	BTN5	BTN6	BTN7	BTN8
Price	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulse number	0	0	0	0	0	0	0	0
Pulse length (ms)	0	0	0	0	0	0	0	0
Pulse pause (ms)	0	0	0	0	0	0	0	0
Cashless auto req.	☐	☐	☐	☐	☐	☐	☐	☐
MDB level								

Buttons: Read settings, Write settings, Device reset

2. Press the “Connect” button. Once this button is pressed, the application will try to connect the selected serial port. If the serial port is successfully opened, a message will be displayed in the log window (see the image below).

The screenshot shows the 'MDB PULSE Configurator' application window. At the top, there's a 'Device connection' section with a 'Serial port search' button, a dropdown menu showing '/dev/ttyUSB0', and a 'Disconnect' button. Below this is a table for configuring pulse parameters. The table has columns for 'Price', 'Pulse number', 'Pulse length (ms)', 'Pulse pause (ms)', 'Cashless auto req.', and 'MDB level'. The first four columns have input fields, and the last two have checkboxes. The 'Price' row shows values from 0.00 to 0.00. The 'Pulse number' row shows values from 0 to 0. The 'Pulse length (ms)' row shows values from 0 to 0. The 'Pulse pause (ms)' row shows values from 0 to 0. The 'Cashless auto req.' row shows checkboxes for each button. The 'MDB level' row has a dropdown menu. Below the table are three buttons: 'Read settings', 'Write settings', and 'Device reset'. At the bottom, there's a log window with a red border around the message '15:02:44.484 Serial port connected'.

	BTN1	BTN2	BTN3	BTN4	BTN5	BTN6	BTN7	BTN8
Price	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pulse number	0	0	0	0	0	0	0	0
Pulse length (ms)	0	0	0	0	0	0	0	0
Pulse pause (ms)	0	0	0	0	0	0	0	0
Cashless auto req.	☐	☐	☐	☐	☐	☐	☐	☐
MDB level	Read settings Write settings Device reset							

15:02:44.484 Serial port connected

3. Press the “Read settings” button.

The application reads interface current configuration and populates all fields. Usually, a complete configuration reading takes 2-3 seconds. If the application is not showing the messages in area no.2 (see image below), then, you may need to retry reading the configuration, but not before checking the following:

- the interface is connected to the computer with an USB-B cable;
- the interface is correctly connected to a 24VDC power supply, and the power supply is working;
- you have selected the correct serial interface for communication.

Device connection

Serial port search /dev/ttyUSB0 Disconnect

	BTN1	BTN2	BTN3	BTN4	BTN5	BTN6	BTN7	BTN8
Price	1.00	2.00	3.00	4.00	5.00	6.00	7.00	0.00
Pulse number	1	2	3	4	5	6	7	0
Pulse length (ms)	200	200	200	200	200	200	200	200
Pulse pause (ms)	250	250	250	250	250	250	250	250
Cashless auto req.	☒	☐	☐	☐	☐	☐	☐	☐
MDB level	3							

Read settings Write settings Device reset

15:02:44.484 Serial port connected
15:03:05.117 Reading prices...
15:03:05.314 Prices OK || Reading quantities...
15:03:05.515 Quantities OK || Reading pulses lengths...
15:03:05.815 Pulses lengths OK || Reading pulses distances...
15:03:06.116 Pulses pauses OK || Reading general settings...
15:03:06.318 General settings OK
15:03:06.319 Read settings complete
15:03:06.321 Automatic cashless price for Level 2 on button #0 price

C. Cash sales

For cash payments, they are automatically performed, according to the configuration, right after the accumulated credit reaches one of the prices. You can set up to 8 prices.

If there is not exact matching price for the received cash amount, the interface will do it's best to use the entire amount, if there are some products that, cumulated, can reach the inserted amount value. For example, if there is no price set for a 10.00EUR bill, but there are other products that can match 10.00EUR together, they will be executed in a decreasing order. Obviously, if there is no cumulative matching combination, it will use maximum amount it can, the remaining amount is kept for the next transaction. This interface is not refunding the remaining amount as change.

The screenshot shows the 'MDB PULSE Configurator' window. At the top, there's a 'Device connection' section with a 'Serial port search' button, a dropdown menu showing '/dev/ttyUSB0', and a 'Disconnect' button. Below this is a table with 8 columns (BTN1 to BTN8) and 4 rows (Price, Pulse number, Pulse length (ms), Pulse pause (ms)). The 'Price' row has values: 1.00, 2.00, 3.00, 4.00, 5.00, 6.00, 7.00, 0.00. The 'Pulse number' row has values: 1, 2, 3, 4, 5, 6, 7, 0. The 'Pulse length (ms)' row has values: 200, 200, 200, 200, 200, 200, 200, 200. The 'Pulse pause (ms)' row has values: 250, 250, 250, 250, 250, 250, 250, 250. Below the table are checkboxes for 'Cashless auto req.' and a dropdown for 'MDB level' set to '3'. At the bottom are buttons for 'Read settings', 'Write settings', and 'Device reset'. A log window at the bottom shows a series of timestamps and messages: '15:02:44.484 Serial port connected', '15:03:05.117 Reading prices...', '15:03:05.314 Prices OK || Reading quantities...', '15:03:05.515 Quantities OK || Reading pulses lengths...', '15:03:05.815 Pulses lengths OK || Reading pulses distances...', '15:03:06.116 Pulses pauses OK || Reading general settings...', '15:03:06.318 General settings OK', '15:03:06.319 Read settings complete', '15:03:06.321 Automatic cashless price for Level 2 on button #0 price', and '15:03:49.535 Disable automatic cashless price for Level 2'. Red circles with numbers 1 and 2 highlight the 'Disconnect' button and the 'BTN3' column respectively.

	BTN1	BTN2	BTN3	BTN4	BTN5	BTN6	BTN7	BTN8
Price	1.00	2.00	3.00	4.00	5.00	6.00	7.00	0.00
Pulse number	1	2	3	4	5	6	7	0
Pulse length (ms)	200	200	200	200	200	200	200	200
Pulse pause (ms)	250	250	250	250	250	250	250	250
Cashless auto req.	☒	☐	☐	☐	☐	☐	☐	☐
MDB level	3							

Read settings Write settings Device reset

15:02:44.484 Serial port connected
15:03:05.117 Reading prices...
15:03:05.314 Prices OK || Reading quantities...
15:03:05.515 Quantities OK || Reading pulses lengths...
15:03:05.815 Pulses lengths OK || Reading pulses distances...
15:03:06.116 Pulses pauses OK || Reading general settings...
15:03:06.318 General settings OK
15:03:06.319 Read settings complete
15:03:06.321 Automatic cashless price for Level 2 on button #0 price
15:03:49.535 Disable automatic cashless price for Level 2

In the above example, for a 10.00EUR bill, the product marked as (1) = 7.00EUR will be first executed, followed by the product marked as (2) = 3.00EUR. This way, the entire amount (10.00EUR) is used.

D. Cashless (card) payments

Card payments can be performed automatically or manually, using external buttons.

1. Automatic cashless sale

In order to perform automatic cashless sales, the following configuration conditions must be met:

- Interface (or at least the cashless device) should be set to Level 2. For Cashless device you need to disable the Always Idle mechanism if this one is not disabled by switching the device to Level 2 mode. Exception, when the cashless device is able to work in both Level 2 and Level 3 + Always Idle modes, situation where you must set the interface to Level 2, in order to activate the automatic cashless sale mode.
- One of the products (prices) must be checked for “Cashless auto req.”

If one of the above conditions are not met, then the interface will accept the transaction start (BEGIN) event from the cashless device, but will wait for the customer to select the product (using interface's buttons). For the automatic cashless sale mode, the customer should start a cashless device by tapping the card or pressing a “Start” button on the cashless device. Sale will not be performed by pressing a button on the interface (products buttons), unless a cashless session was previously started by pressing “Start” button or tapping a card on the POS (cashless device). In the picture below, the automatic sale will be performed at 2.00EUR.

The screenshot shows the 'MDB PULSE Configurator' window. At the top, there's a 'Device connection' section with a 'Serial port search' button, a dropdown menu showing '/dev/ttyUSB0', and a 'Disconnect' button. Below this is a table for configuring buttons (BTN1 to BTN8) with settings for Price, Pulse number, Pulse length (ms), and Pulse pause (ms). The 'Cashless auto req.' checkbox is checked for BTN2. The 'MDB level' is set to 3. At the bottom, there's a log of transactions showing the sequence of events from serial port connection to automatic cashless sale.

	BTN1	BTN2	BTN3	BTN4	BTN5	BTN6	BTN7	BTN8
Price	1.00	2.00	3.00	4.00	5.00	6.00	7.00	0.00
Pulse number	1	2	3	4	5	6	7	0
Pulse length (ms)	200	200	200	200	200	200	200	200
Pulse pause (ms)	250	250	250	250	250	250	250	250
Cashless auto req.	☐	☒	☐	☐	☐	☐	☐	☐
MDB level	3							

Buttons: Read settings, Write settings, Device reset

Log:

```
15:02:44.484 Serial port connected
15:03:05.117 Reading prices...
15:03:05.314 Prices OK || Reading quantities...
15:03:05.515 Quantities OK || Reading pulses lengths...
15:03:05.815 Pulses lengths OK || Reading pulses distances...
15:03:06.116 Pulses pauses OK || Reading general settings...
15:03:06.318 General settings OK
15:03:06.319 Read settings complete
15:03:06.321 Automatic cashless price for Level 2 on button #0 price
15:03:49.535 Disable automatic cashless price for Level 2
15:04:26.394 Automatic cashless price for Level 2 on button #0 price
15:04:27.916 Automatic cashless price for Level 2 on button #1 price
```

2. Manual product selection cashless sale

If you want the customer can manually select the price for the cashless transactions, using the interface buttons (1...8), then you need to deselect all products on automatic cashless sales (see the picture below).

The screenshot shows the 'MDB PULSE Configurator' window. The 'Device connection' section at the top has a 'Serial port search' button, a dropdown menu showing '/dev/ttyUSB0', and a 'Disconnect' button. Below this is a table with 8 columns labeled BTN1 through BTN8. The rows are: Price, Pulse number, Pulse length (ms), Pulse pause (ms), Cashless auto req., and MDB level. The 'Cashless auto req.' row is highlighted with a red box, and all checkboxes in this row are deselected. The 'MDB level' dropdown is set to 3. At the bottom are buttons for 'Read settings', 'Write settings', and 'Device reset'. A log window at the bottom shows the following messages:

```
15:02:44.484 Serial port connected
15:03:05.117 Reading prices...
15:03:05.314 Prices OK || Reading quantities...
15:03:05.515 Quantities OK || Reading pulses lengths...
15:03:05.815 Pulses lengths OK || Reading pulses distances...
15:03:06.116 Pulses pauses OK || Reading general settings...
15:03:06.318 General settings OK
15:03:06.319 Read settings complete
15:03:06.321 Automatic cashless price for Level 2 on button #0 price
15:03:49.535 Disable automatic cashless price for Level 2
```

If all the check-boxes are deselected, then the interface will require a product selection (by pressing one interface button), for any of the working modes:

- Level 2 without Always Idle, after a session was started by the customer, pressing “Start” button or tapping a card, depending on the card reader configuration).
- Level 3 with Always Idle, anytime.

E. Other configuration information

1. Disabling one or more products (buttons)

To disable a product, you need to set both price and pulse number to 0 (see the picture below, where product no.8 is disabled).

The screenshot shows the 'MDB PULSE Configurator' window. At the top, there's a 'Device connection' section with a 'Serial port search' button, a dropdown menu showing '/dev/ttyUSB0', and a 'Disconnect' button. Below this is a table for configuring 8 buttons (BTN1 to BTN8). The table has rows for 'Price', 'Pulse number', 'Pulse length (ms)', 'Pulse pause (ms)', and 'Cashless auto req.'. The 'Price' and 'Pulse number' rows for BTN8 are highlighted with a red box, showing values of 0.00 and 0 respectively. At the bottom of the table are buttons for 'Read settings', 'Write settings', and 'Device reset'. Below the table is a log area showing the following messages:

```
15:02:44.484 Serial port connected
15:03:05.117 Reading prices...
15:03:05.314 Prices OK || Reading quantities...
15:03:05.515 Quantities OK || Reading pulses lengths...
15:03:05.815 Pulses lengths OK || Reading pulses distances...
15:03:06.116 Pulses pauses OK || Reading general settings...
15:03:06.318 General settings OK
15:03:06.319 Read settings complete
15:03:06.321 Automatic cashless price for Level 2 on button #0 price
15:03:49.535 Disable automatic cashless price for Level 2
```

2. Setting the interface to MDB Level 2

To set the interface working as an MDB Level 2 VMC, you need to select “2” in MDB Level combo list (see picture below).

The screenshot shows the 'MDB PULSE Configurator' window. The 'Device connection' section at the top has a 'Serial port search' button, a dropdown menu showing '/dev/ttyUSB0', and a 'Disconnect' button. Below this is a table of settings for eight buttons (BTN1 to BTN8). The 'MDB level' dropdown is highlighted with a red box and set to '2'.

	BTN1	BTN2	BTN3	BTN4	BTN5	BTN6	BTN7	BTN8
Price	1.00	2.00	3.00	4.00	5.00	6.00	7.00	0.00
Pulse number	1	2	3	4	5	6	7	0
Pulse length (ms)	200	200	200	200	200	200	200	200
Pulse pause (ms)	250	250	250	250	250	250	250	250
Cashless auto req.	☐	☒	☐	☐	☐	☐	☐	☐
MDB level	2							

Buttons: Read settings, Write settings, Device reset

Log output:

```
15:02:44.484 Serial port connected
15:03:05.117 Reading prices...
15:03:05.314 Prices OK || Reading quantities...
15:03:05.515 Quantities OK || Reading pulses lengths...
15:03:05.815 Pulses lengths OK || Reading pulses distances...
15:03:06.116 Pulses pauses OK || Reading general settings...
15:03:06.318 General settings OK
15:03:06.319 Read settings complete
15:03:06.321 Automatic cashless price for Level 2 on button #0 price
15:03:49.535 Disable automatic cashless price for Level 2
15:04:26.394 Automatic cashless price for Level 2 on button #0 price
15:04:27.916 Automatic cashless price for Level 2 on button #1 price
```

3. Setting the interface to MDB Level 3

To set the interface working as an MDB Level 3 VMC, you need to select “3” in MDB Level combo list (see picture below).

The screenshot shows the 'MDB PULSE Configurator' window. The 'Device connection' section at the top has a 'Serial port search' button, a dropdown menu showing '/dev/ttyUSB0', and a 'Disconnect' button. Below this is a table of settings for eight buttons (BTN1 to BTN8). The 'MDB level' dropdown is highlighted with a red box and shows the value '3'. The 'Cashless auto req.' row has checkboxes, with the second one checked. The bottom section displays a log of system messages.

	BTN1	BTN2	BTN3	BTN4	BTN5	BTN6	BTN7	BTN8
Price	1.00	2.00	3.00	4.00	5.00	6.00	7.00	0.00
Pulse number	1	2	3	4	5	6	7	0
Pulse length (ms)	200	200	200	200	200	200	200	200
Pulse pause (ms)	250	250	250	250	250	250	250	250
Cashless auto req.	☐	☒	☐	☐	☐	☐	☐	☐
MDB level	3							

Buttons: Read settings, Write settings, Device reset

Log messages:

- 15:02:44.484 Serial port connected
- 15:03:05.117 Reading prices...
- 15:03:05.314 Prices OK || Reading quantities...
- 15:03:05.515 Quantities OK || Reading pulses lengths...
- 15:03:05.815 Pulses lengths OK || Reading pulses distances...
- 15:03:06.116 Pulses pauses OK || Reading general settings...
- 15:03:06.318 General settings OK
- 15:03:06.319 Read settings complete
- 15:03:06.321 Automatic cashless price for Level 2 on button #0 price
- 15:03:49.535 Disable automatic cashless price for Level 2
- 15:04:26.394 Automatic cashless price for Level 2 on button #0 price
- 15:04:27.916 Automatic cashless price for Level 2 on button #1 price

4. Saving interface working parameters

After modifying any working parameter, you need to save them to the interface. Configuration saving is performed by simply pressing “Write settings” - see picture below, action (1).

The screenshot shows the 'MDB PULSE Configurator' window. At the top, there's a 'Device connection' section with a 'Serial port search' button, a dropdown menu showing '/dev/ttyUSB0', and a 'Disconnect' button. Below this is a table for configuring 8 buttons (BTN1 to BTN8). The table has four rows: 'Price', 'Pulse number', 'Pulse length (ms)', and 'Pulse pause (ms)'. Below the table are checkboxes for 'Cashless auto req.' (with the second checkbox checked), a 'MDB level' dropdown set to '3', and three buttons: 'Read settings', 'Write settings' (highlighted with a red circle and the number 1), and 'Device reset'. At the bottom is a log window showing a series of messages. A red box with the number 2 highlights the messages from 15:06:10.088 to 15:06:11.713, which include 'Writing prices...', 'Price sent OK', 'Writing quantities (pulse number)...', 'Quantities sent OK', 'Writing pulses length...', 'Pulses length sent OK', 'Writing pulses pause...', 'Pulses pause sent OK', 'Writing VMC settings...', 'VMC settings sent OK', 'Writing to device NV memory...', 'Settings successfully saved', and 'GOOD TO GO! :-)'.

	BTN1	BTN2	BTN3	BTN4	BTN5	BTN6	BTN7	BTN8
Price	1.00	2.00	3.00	4.00	5.00	6.00	7.00	0.00
Pulse number	1	2	3	4	5	6	7	0
Pulse length (ms)	200	200	200	200	200	200	200	200
Pulse pause (ms)	250	250	250	250	250	250	250	250

Cashless auto req. ☐ ☒ ☐ ☐ ☐ ☐ ☐ ☐

MDB level: 3

Buttons: Read settings, Write settings, Device reset

Log messages (highlighted area 2):

- 15:06:10.088 Writing prices...
- 15:06:10.309 Price sent OK
- 15:06:10.310 Writing quantities (pulse number)...
- 15:06:10.610 Quantities sent OK
- 15:06:10.611 Writing pulses length...
- 15:06:10.810 Pulses length sent OK
- 15:06:10.811 Writing pulses pause...
- 15:06:11.111 Pulses pause sent OK
- 15:06:11.112 Writing VMC settings...
- 15:06:11.411 VMC settings sent OK
- 15:06:11.412 Writing to device NV memory...
- 15:06:11.712 Settings successfully saved
- 15:06:11.713 GOOD TO GO! :-)

After pressing “Write settings” button, in the messages log you will be able to see the information about configuration saving stage - see picture above, area (2). When everything is fine and configuration saved, you will see “GOOD to GO!” message. The usual parameters saving operation is taking a maximum 4-5 seconds. If the saving procedure takes more than 10 seconds and you will not receive the “GOOD TO GO!” message, you may need to retry parameters saving procedure.

Important note!!!

The settings are not becoming effective on the interface if you are not saving them with “Write settings”. Device reset is also recommended after saving the settings.

5. Resetting the interface (reboot)

After any configuration modification saved, it is recommended to reboot the interface. In order to reboot it without disconnecting it's power cable, you can use the "Device reset" button - see picture below, button marked as (1).

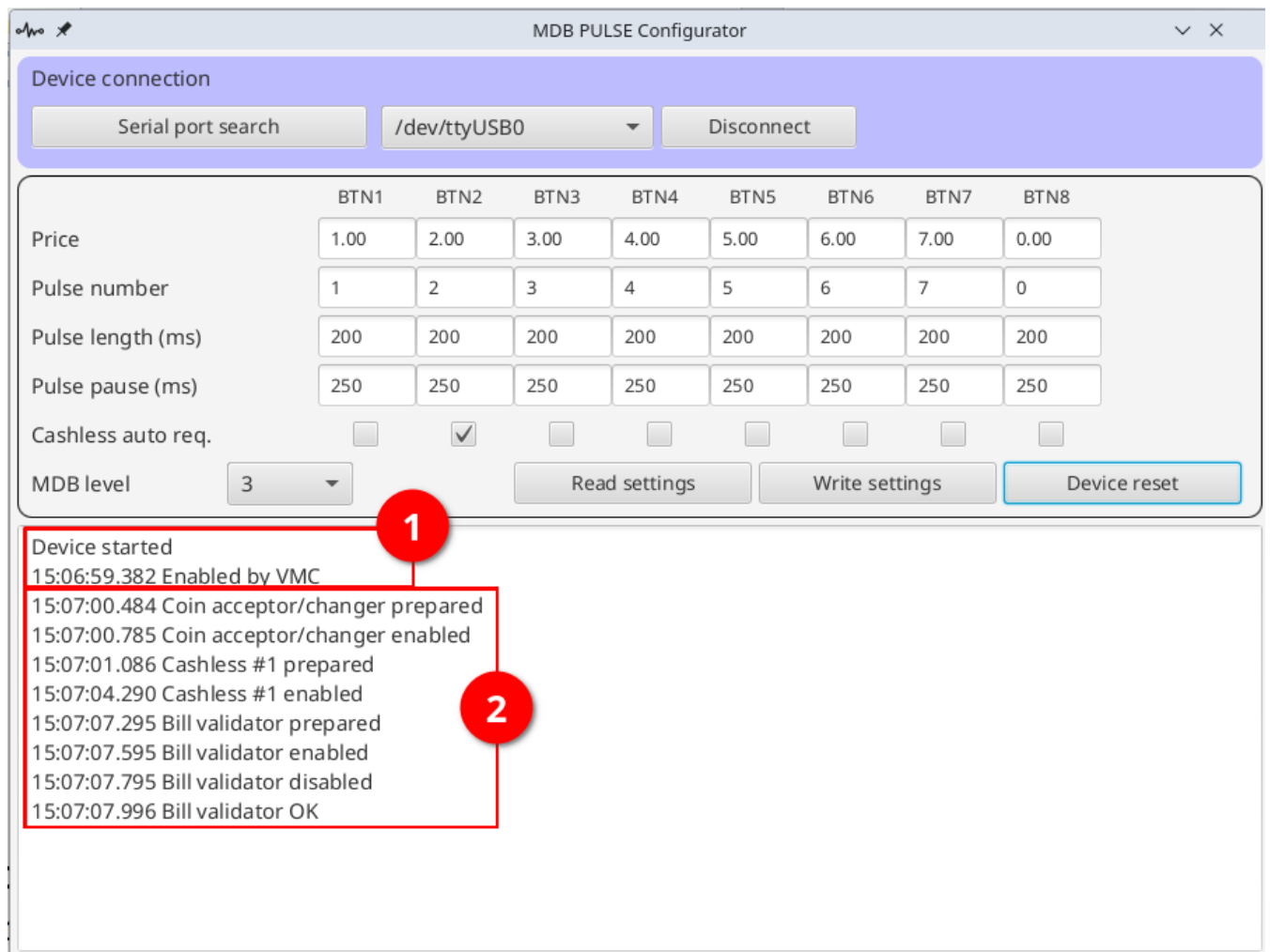
The screenshot shows the 'MDB PULSE Configurator' window. At the top, there's a 'Device connection' section with a 'Serial port search' button, a dropdown menu showing '/dev/ttyUSB0', and a 'Disconnect' button. Below this is a table of button settings (BTN1 to BTN8) for Price, Pulse number, Pulse length (ms), and Pulse pause (ms). There are also checkboxes for 'Cashless auto req.' and a dropdown for 'MDB level' set to 3. At the bottom of the configuration section are 'Read settings', 'Write settings', and 'Device reset' buttons. The 'Device reset' button is highlighted with a red box and a red circle with the number 1. Below the configuration section is a log area showing the following messages:

- Device started
- 15:19:44.368 Enabled by VMC
- 15:19:45.370 Coin acceptor/changer prepared
- 15:19:45.672 Coin acceptor/changer enabled
- 15:19:45.972 Cashless #1 prepared
- 15:19:49.278 Cashless #1 enabled
- 15:19:52.282 Bill validator prepared
- 15:19:52.482 Bill validator enabled
- 15:19:52.682 Bill validator disabled
- 15:19:52.882 Bill validator OK
- 15:19:58.361 Resetting device...
- 15:19:58.691 Device is restarting now

The last two log messages are highlighted with a red box and a red circle with the number 2.

After pressing the button, if everything is fine, you will get the messages marked with (2) in the picture above.

When the interface reboots and starts again, the log area will be automatically cleared and you will get the messages marked in the picture below – area (1). Depending on connected machine’s stage, you may receive “Disabled by VMC” instead of “Enabled by VMC”. If the VMC is not connected, you will always receive “Enabled by VMC”.



Depending on the connected MDB peripherals, after reset, you can also receive one or more of the messages in area (2), picture above.

F. Testing configuration and/or MDB payment systems (MDB peripherals).

You may also use this application to test the saved configuration and the connected MDB peripherals (MDB payment systems).

1. Cash sale test

You can test cash sales by simply inserting coins and/or bills until the accumulated cash credit amount matches with one of the configured prices.

In the picture below, you can see the result of a cash sale (product automatically sold #1 – button 1).

The screenshot shows the 'MDB PULSE Configurator' application window. The 'Device connection' section at the top has a 'Serial port search' button, a dropdown menu showing '/dev/ttyUSB0', and a 'Disconnect' button. Below this is a table for configuring 8 buttons (BTN1 to BTN8). The table has four rows: Price, Pulse number, Pulse length (ms), and Pulse pause (ms). Below the table are checkboxes for 'Cashless auto req.' (BTN2 is checked), an 'MDB level' dropdown (set to 3), and three buttons: 'Read settings', 'Write settings', and 'Device reset'. At the bottom is a log window titled 'Device started' showing a sequence of events. The last three lines of the log are highlighted with a red box: '15:09:27.005 Total available credit: 1.00', '15:09:27.107 Sale button #1 price: 1.00', and '15:09:27.306 Sold with cash'.

	BTN1	BTN2	BTN3	BTN4	BTN5	BTN6	BTN7	BTN8
Price	1.00	2.00	3.00	4.00	5.00	6.00	7.00	0.00
Pulse number	1	2	3	4	5	6	7	0
Pulse length (ms)	200	200	200	200	200	200	200	200
Pulse pause (ms)	250	250	250	250	250	250	250	250
Cashless auto req.	☐	☒	☐	☐	☐	☐	☐	☐
MDB level	3							

Log window content:

```
Device started
15:06:59.382 Enabled by VMC
15:07:00.484 Coin acceptor/changer prepared
15:07:00.785 Coin acceptor/changer enabled
15:07:01.086 Cashless #1 prepared
15:07:04.290 Cashless #1 enabled
15:07:07.295 Bill validator prepared
15:07:07.595 Bill validator enabled
15:07:07.795 Bill validator disabled
15:07:07.996 Bill validator OK
15:09:27.005 Total available credit: 1.00
15:09:27.107 Sale button #1 price: 1.00
15:09:27.306 Sold with cash
15:09:27.406 Total available credit: 0.00
```

The last information is about the sale type: "Sold with cash"

2. Card (cashless) sale test – automatic selection cashless sale

If you need to check the correct configuration, press “Start” or tap card to start a session (depending on your cashless device configuration). In the picture below, you can see a “Cashless begin” message with the available amount, after pressing “Start” or tapping a card on the cashless (POS) device. This only works if the cashless device can work in MDB Level 2 mode, without Always Idle mechanism. Some devices may support both Level 2 and Level 3 with Always Idle mechanism so, if you want to force this working mode, you will need to set the interface to Level 2 (“MDB Level” combo list set to 2).

The screenshot shows the 'MDB PULSE Configurator' window. At the top, there's a 'Device connection' section with a 'Serial port search' button, a dropdown menu set to '/dev/ttyUSB0', and a 'Disconnect' button. Below this is a table for configuring 8 buttons (BTN1 to BTN8). The 'Price' row shows values from 1.00 to 0.00. The 'Pulse number' row shows values from 1 to 0. The 'Pulse length (ms)' row shows 200 for all buttons. The 'Pulse pause (ms)' row shows 250 for all buttons. Below the table, there are checkboxes for 'Cashless auto req.' (unchecked) and 'Cashless auto req.' (checked, highlighted with a red box and a red circle with the number 2). The 'MDB level' dropdown is set to 3. At the bottom, there are buttons for 'Read settings', 'Write settings', and 'Device reset'. Below the configuration section is a log area showing a series of timestamps and messages. A red box highlights a specific log entry: '15:09:50.048 Cashless begin, available credit: 10.00'. A red circle with the number 1 is placed next to this entry.

	BTN1	BTN2	BTN3	BTN4	BTN5	BTN6	BTN7	BTN8
Price	1.00	2.00	3.00	4.00	5.00	6.00	7.00	0.00
Pulse number	1	2	3	4	5	6	7	0
Pulse length (ms)	200	200	200	200	200	200	200	200
Pulse pause (ms)	250	250	250	250	250	250	250	250
Cashless auto req.	☐	☒	☐	☐	☐	☐	☐	☐
MDB level	3							

Log entries:

- 15:07:07.295 Bill validator prepared
- 15:07:07.595 Bill validator enabled
- 15:07:07.795 Bill validator disabled
- 15:07:07.996 Bill validator OK
- 15:09:27.005 Total available credit: 1.00
- 15:09:27.107 Sale button #1 price: 1.00
- 15:09:27.306 Sold with cash
- 15:09:27.406 Total available credit: 0.00
- 15:09:50.048 Cashless begin, available credit: 10.00
- 15:10:02.767 Cashless vend approved
- 15:10:02.867 Sale button #2 price: 2.00
- 15:10:02.868 Total available credit: 2.00
- 15:10:03.167 Sold with card
- 15:10:03.869 Total available credit: 0.00

If there is any cashless request option checked (no. (2) in picture above), after BEGIN, the interface will automatically request the corresponding amount (2.00EUR) for authorization to the cashless device. If the authorization message is a VEND APPROVED, then, you will see message “Cashless vend approved” in the log area. Otherwise, you will see “Cashless vend denied” message. If the transaction is approved, you will also see a message about the product automatically selected (in our example, product #2 – “Sale button #2 price: 2.00”).

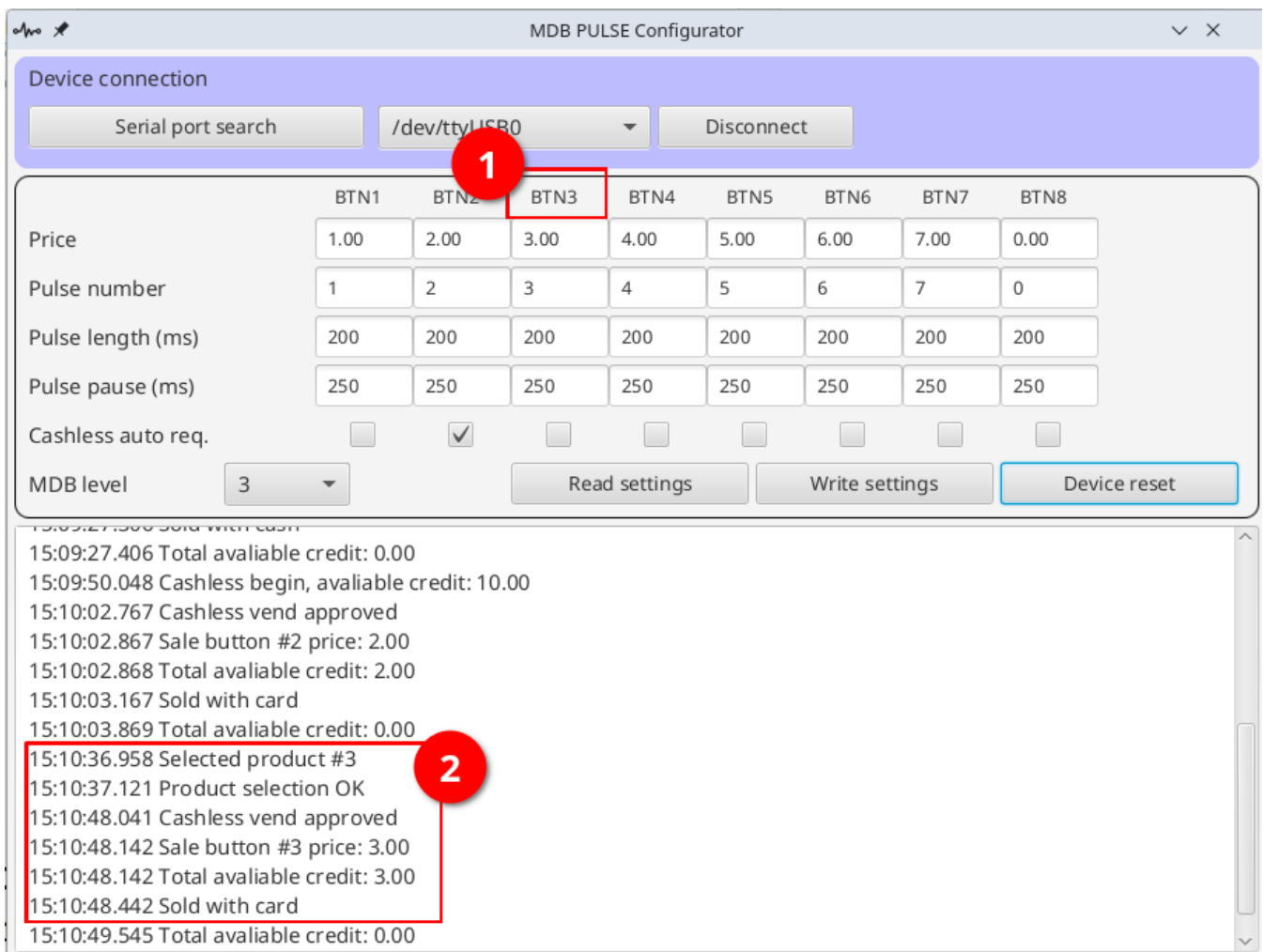
The last information is about the sale type: “Sold with card”.

2. Card (cashless) sale test – manual selection cashless sale

Manual selection cashless sale can be performed in both Level 2 and Level 3 (anytime if Level 3 and after a card session has been started if Level 2).

A card session in Level 2 is starting by pressing “Start” button or tapping a card on the cashless device (POS). Session cannot be started by pressing product selection buttons on the interface. Direct product selection on the interface is only available in Level 3 mode (both the interface and the cashless device - POS), with Always Idle mechanism enabled on the cashless device.

In order to initiate a manual product selection, you need to press a button on the interface or the corresponding product label in the configuring software (see picture below – area (1)).



In the picture above, area (2), you can see a message after product selection (“Selected product #3”), another message (“Product selection OK”) that is confirming the selection was a valid one. And the payment confirmation and execution, ended by the “Sold with card” message. If the selected product is disabled (both “Price” and “Pulse number” are set to 0), you will receive the message “Product selection failed” after pressing the physical button or selecting the product in labels (1) area.

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NOTES: