PICOVEND EZ SELF MC/HC (controller for self services vending systems) v2022-05-22 (fiscal ready)

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I. Introduction

This device is intended to be used as a traditional token replacement solution in self service systems (car washing, laundry, kiddie rides, etc.)

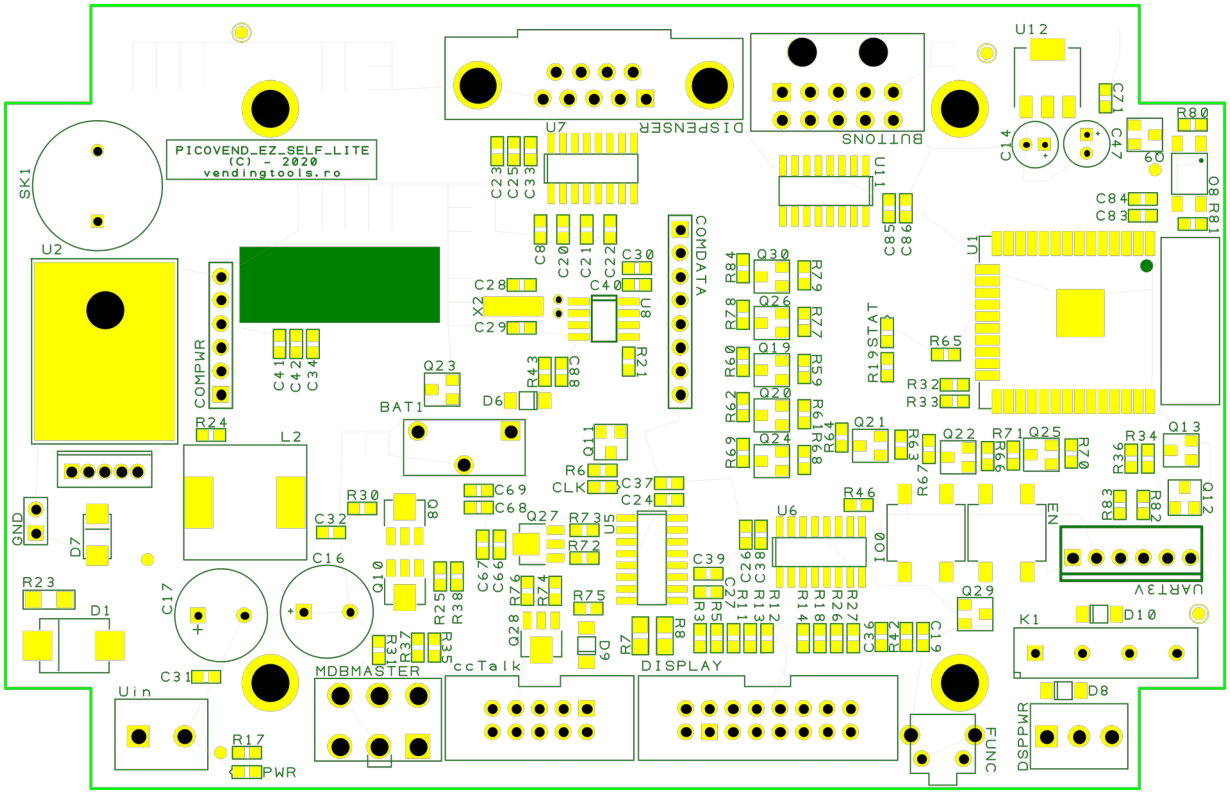
This device is intended to be used for cash/cashless self service service building. It can be used (but not limited to) for the following applications:
- Kiddie rides or amusement parks (playgrounds);
- Laundry systems;
- Self service car washing systems;
- Paid access;
- Supermarkets carts rentals;
- Other applications that needs to be operated by tokens and requires a token dispenser/change machine;
- Other applications that needs to be operated directly by a paid timer.

For Kiddie Rides, laundry systems and car washing systems, it can be used to build your own change machine/token dispenser that is accepting coins, bills and credit cards to dispense tokens or it can be used directly to keep the toy active for a configurable amount of time.
For supermarkets, it can be used to build a change machine, accepting bills or credit cards to dispense coins/tokens for carts unlocking.
For paid access, it can be used to build a system that is accepting a fixed amount and release a turnstile, an electric door or other control access system.
It can be also connected to a card dispenser (provided by our company) in order to dispense prepaid RFID cards, that can be used with an MDB cashless device as a subscription card, with bonuses and other functions.
This controller is offering the following main functions:
- 1 or 2 ccTalk hoppers (for higher capacity, you can connect 2 ccTalk hoppers).
- 1 or 2 cashless devices – you can connect a credit card read and a closed loop card reader for regular customers, to offer them bonus schemes. If the cashless device is supporting revalue (recharge), then, your customer can recharge the account using cash on the machine.
- Optional card dispenser (provided by our company), in order to dispense prepaid cards, compatible with the attached closed loop cashless devices. Once dispensed, the cards can be recharged with cash, if the compatible cashless device is attached. Using cards, the customer can use the bonus schemes to buy tokens or directly to the self service system if this one is equipped with the compatible card reader.
- Cash sales reporting to the cashless devices, in order to obtain detailed sales reports and fiscal information (that depends on your cashless device capabilities).
- Can return change (coins) if an MDB coin changer is attached.

WE ARE ONLY PROVIDING ANDROID APPLICATION FOR CONTROLLERS CONFIGURATION

II. Hardware

A. MC version board overview



Picture 1: PICOVEND EZ SELF MC versions

B. MC version connectors description

1. Uin – connect your external power supply to this connector in order to power the device and, also, the connected peripherals (MDB payment systems, ccTalk payment systems, etc.). You need to make sure your power supply is matching the connected MDB and ccTalk power requirements (voltage and current). The maximum momentary drained current simultaneously drained from MDB and ccTalk should not exceed 4A.
- PIN#1 (the squared shape pin) is for +VDC;
- PIN#2 is for power GND.

2. MDBMASTER – this connector allows the device interfacing with MDB peripherals (bill validator/recycler, coin acceptor/changer and cashless device);

3. ccTalk – this is the connector for standard 10pin ccTalk interfaces. It's pinout is the following:
- PIN #1 – ccTalk data;
- PIN #2 – N/C;
- PIN #3 – N/C;
- PIN #4 – GND;
- PIN #5 – N/C;
- PIN #6 – N/C;
- PIN #7 – VCC POWER;
- PIN #8 – GND;
- PIN #9 – N/C;
- PIN #10 – VCC POWER;

4. DISPLAY – is the connector for external alphanumerical display, provided with the controller.

5. DISPENSER – this is the connector for RS232 interface to the optional card dispenser

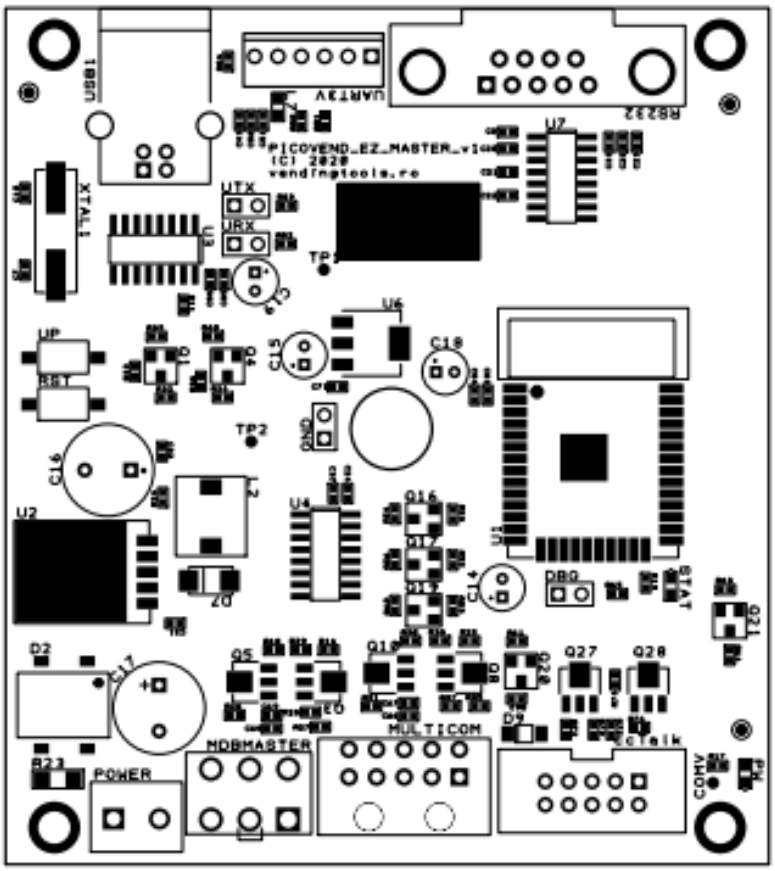
6. UART3V – this is the connector for 3V3 UART interface is the connector for firmware upload.

7. BUTTONS – it is used only in timed output mode, to start the internal timer and energize the relay coil. It always need to connect a normal open push button (not supplied by our company) to pins 1 and 9. In timer working mode, closing a contact between this pins will start the countdown.
- PIN #1 – Button #1 – Product #1;
- PIN #2 – Button #2 – Product #2;
- PIN #3 – Button #3 – Product #3;
- PIN #4 – Button #4 – Product #4;
- PIN #5 – Button #5 – Product #5;
- PIN #6 – Button #6 – Product #6;
- PIN #7 – Button #7 – Product #7;
- PIN #8 – Button #8 – Product #8.
- PIN #9 and #10 GND. You need to use N/O buttons, with one wire connected to it's corresponding pin on BUTTONS connector and the other wire connected to GND. GND is common for all buttons.

8. DSPPWR – it is a NO relay output that is closed in timed mode, during enable time. The relay only supports 100mA at 100VAC or 500mA at 20VDC. If you need to control a peripheral with higher current, you need to use an external relay or contactor and make sure it's coil is rated to the mentioned values.
- PIN #1 (the squared pin) – contact A;
- PIN #2 – contact B;
- PIN #3 – system GND.

9. FUNC button – the button function will be detailed below in the configuring section.D. HC version connectors description

C. HC version board overview



D. HC version connectors description

1. POWER – connect your external power supply to this connector in order to power the device and, also, the connected peripherals (MDB payment systems, ccTalk payment systems, etc.). You need to make sure your power supply is matching the connected MDB and ccTalk power requirements (voltage and current). The maximum momentary drained current simultaneously drained from MDB and ccTalk should not exceed 4A.
2. MDBMASTER – this connector allows the device interfacing with MDB peripherals (bill validator/recycler, coin acceptor/changer and cashless device);
3. MULTICOM – is a multipurpose interface connector, not used with this version. In future software versions it will offer Executive interface and ccTalk for non-standard connector peripherals.
4. ccTalk – this is the connector for standard 10pin ccTalk interfaces**.** It's pinout is the following:
- PIN #1 – ccTalk data;
- PIN #2 – N/C;
- PIN #3 – N/C;
- PIN #4 – GND;
- PIN #5 – N/C;
- PIN #6 – N/C;
- PIN #7 – VCC POWER;
- PIN #8 – GND;
- PIN #9 – N/C;
- PIN #10 – VCC POWER;

5. RS232 – This is the connector for the optional card dispenser
6. UART3V – **Not provided in current version.**
- PIN #1 – N/C;
- PIN #2 – GND;
- PIN #3 – TXD;
- PIN #4 – RXD;

- PIN #5 – 3.3V out (max 100mA);
- PIN #6 – 5V out (max 300mA).

7. USB1 connector to use on USB hosts – requires some drivers to install on host, to emulate a virtual serial interface (default baudrate is 115200).

III. Token dispenser/change machine/card dispenser working mode

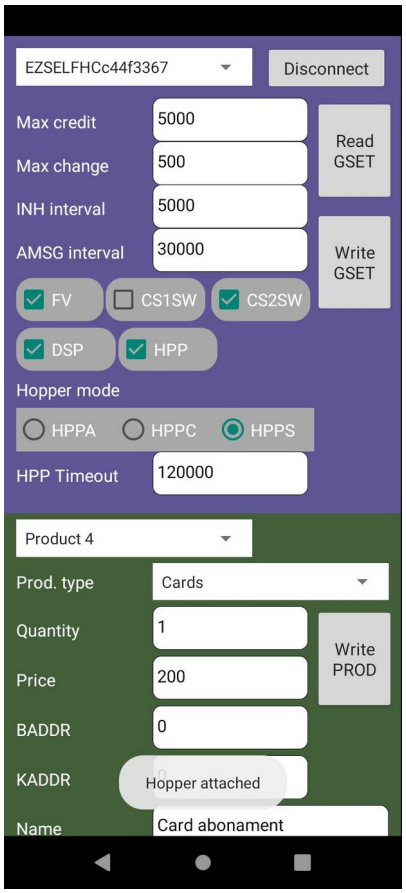
Configuration is available by using an Android application only. There are no hidden menus and buttons on this device and the Android application is the easiest way to configure the device
The Android application is connecting over Bluetooth. The controller Bluetooth needs to be activated for configuring and deactivated after configuration finished.

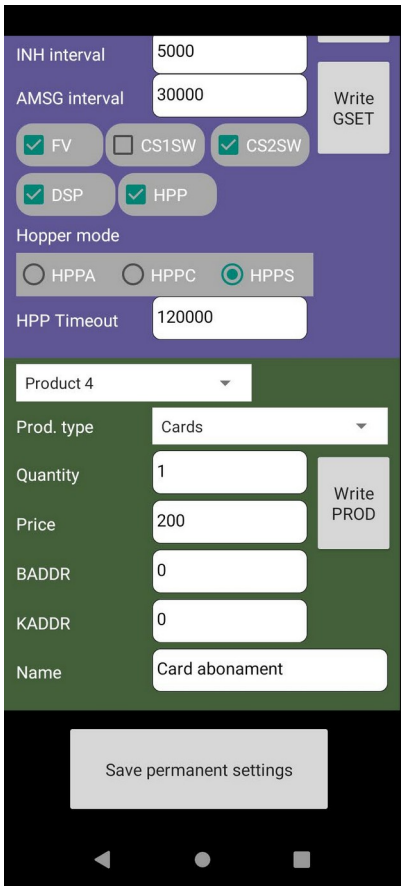
A. Bluetooth activation

To activate the Bluetooth communication on the MC version, apply power to the controller while keeping the “FUNC” button pressed. The buzzer will emit one short beep, followed by another short beeps and the display will show “Bluetooth active” message. To activate Bluetooth on HC version, press “Volume-Down” on the connected tablet or, long click on the main screen using the touchscreen or, if not available, a mouse.
Go to your Android phone Bluetooth menu and pair your phone with EZSELFHCxxxxxxx in range. If you have multiple controllers configuration, please write down the unique name of each controller, in order to easily identify them further, in the application. After configuring, make sure you restart the controller (power off/power on) to disable the Bluetooth and protect it from unauthorized access.

B. Android application flow

1. Start the application and from the top left combo select the name of the controller you want to connect to. Click on the “Connect button” and wait for the connection configuration pop-up. When application connects, it automatically set device’s RTC. Device’s RTC is important if you have MDB cashless devices with built-in bonus schemes. Connect your device to the application at least once a month, in order to keep the RTC up to date.





If you want to read general settings, click “Read GSET” button. Current configuration will be displayed on the gray area.
Parameters explanations
- Max credit – is the maximum cash credit accepted by the controller (cents – 5000 = 50EUR)
- Max change – is the maximum change allowed to be returned to the customer after a transaction (cents – 500 = 5EUR)
- INH interval – is the interval (milliseconds) used by the controller to check the peripherals and inhibit the payment systems if there is no product available. Default value is 5000 (5 seconds). It is not recommended to modify this value, since it is an optimal value.
- AMSG interval – is the interval (milliseconds) between the auto reported information. It is not used for the MC version, only used in HC version.
- FV – when set, the Force Vend function is enabled (no change without sale, to avoid changing bills to coins on the machine).
- CS1SW – if this option is checked, the controller will show the the available cashless credit for the cashless system #1, after a begin session occurs. If unchecked, it will not display the available credit. Unchecked it if you are using a credit card reader without always idle functions, to avoid showing the beginning fake credit to the customer and avoid confusions.
- CS2SW – if this option is checked, the controller will show the the available cashless credit for the cashless system #2, after a begin session occurs. If unchecked, it will not display the available credit. Unchecked it if you are using a credit card reader without always idle functions, to avoid showing the beginning fake credit to the customer and avoid confusions.
- DSP – enable this option if the controller has an attached card dispenser. Do not check this option if your controller has no card dispenser attached. It may lead to unexpected results.
- HPP – enable this option if the controlle has at least one ccTalk hopper attached. The controller is supporting a maximum of 2 ccTalk hoppers, with addresses 3 and 4. If you are using only one hopper, set it’s address to 3. The controller is only working with non-encrypted hoppers.
- HPPA – ccTalk hoppers auto protocol selection. It may work for most of the available hoppers. Check your hopper manual for details. If HPPA is not working, select one of the below working modes
- HPPC – force cipher working mode for ccTalk hoppers.
- HPPS – force serial number working mode for ccTalk hoppers.
When you are using 2 hoppers, please make sure you are using hopper with the same working mode (you can use different models, but the working mode should be the same, they both need to work with cipher key or serial number mode, the controller cannot manage different working modes for 2 attached hoppers).
- HPP timeout – the timeout for non-responding hopper during sale. If the hopper is not responding for this set amount of milliseconds, the transaction will be considered a failed one and the customer’s credit will not be substracted.

When you are satisfied by the settings in the gray area, click “Write GSET” button in order to save the settings to the controller’s RAM. If you are sure, scroll down and click “Save permanent settings” in order to save the settings to the controller’s NV memory. This will make the settings persistent over the power restart.

In the green area, you can set products (8 products corresponding to the 8 available buttons for the MC version and 64 products for the HC version).
First, select the product you want to show/modify, from the combo box.
Once the product is selected, the application will show current product information:
- Product type – available options are: “Disabled” if you want to disable the product, “Tokens” for token dispensing, “Cards” for card dispensing (requires the optional card dispenser attached), “Relay” for the relay boards control (requires at least one optional relay board attached – maximum 8 boards with 8 relays each can be attached).
- Quantity – for tokens, it is the number of tokens to dispense, for cards it is ignored, for relays is the time (seconds) the relay should be energized for the price.
- Price – it is the price required (cents – 200 = 2EUR) to dispense the configured quantity (for the tokens number, for one card or for the time the relay should stay energized).
- BADDR – only applies to the products of relay type and is representing the optional relays board address (1 to 8).

- KADDR – only applies for the products of relay type and is representing the number of the relay to energize on the BADDR board address (1 to 8).
- Name – the product name (not displayed on LC version, only applies to HC version).

When you are satisfied by the settings in the green area, click “Write PROD” button in order to save the product settings to the controller’s RAM. If you are sure, scroll down and click “Save permanent settings” in order to save the settings to the controller’s NV memory. This will make the settings persistent over the power restart. Repeat the above procedure to all the products you want to configure.