PICOVEND EZ SELF SINGLE OUT (controller for self services vending systems) v2024-05-27

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I. Introduction

This device is intended to be used as a traditional token dispenser replacement or as a timer solution in self service systems (car washing, laundry, kiddie rides, etc.). Working with MDB cash and cashless payment systems and with ccTalk (non-encrypted) hoppers.

This device is intended to be used for cash/cashless self service service manufacturing. 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;
- Supermarket carts rentals;
- Other applications that needs to be operated by tokens and requires a token dispenser/change machine and/or RFID token dispenser and RFID charging point;
- 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 metal 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 secondary hopper, in order to dispense prepaid RFID tokens, that can be used a pulse token reader device as a subscription card.
This controller is offering the following main functions:
- 1 or 2 ccTalk hoppers for traditional tokens (for higher capacity or malfunction overriding, you can connect 2 ccTalk hoppers);
- 1 secondary ccTalk hopper for RFID tokens;
- 1 on-board relay, in order to build a timer that can accept cash and cashless to power any system.
- 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.

II. Hardware

A. Motherboard overview

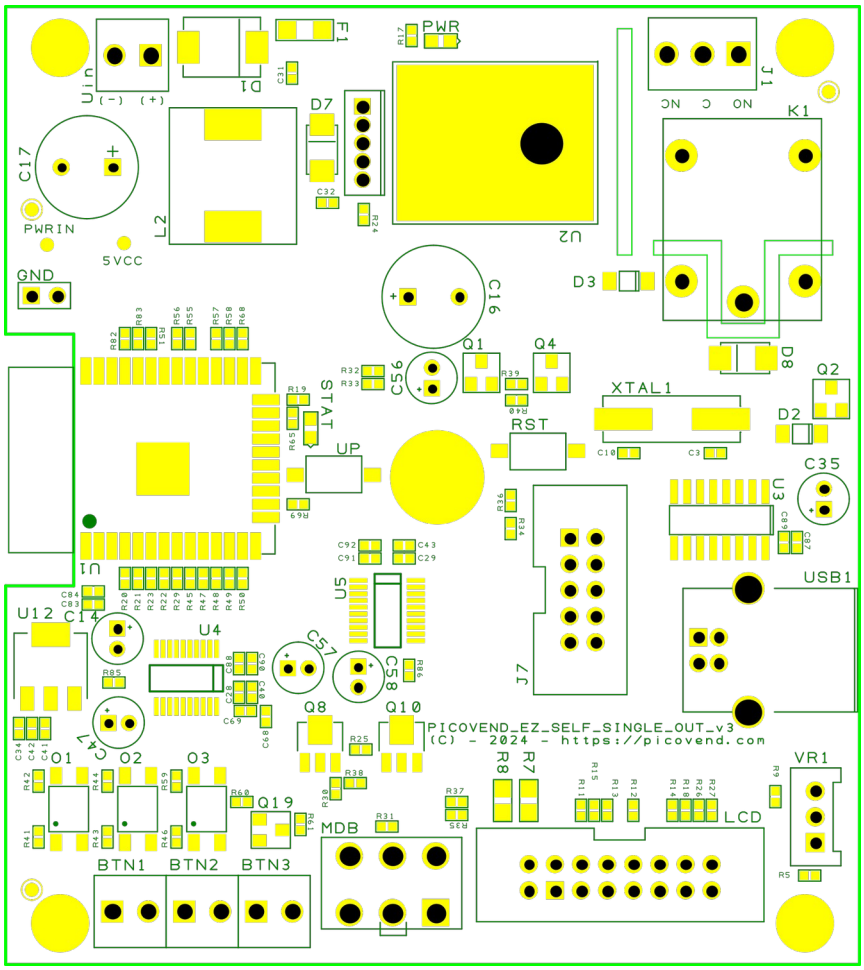

Figure 1: Motherboard overview

B. Motherboard 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. J1 – relay contacts (C/NO/NC)
3. BTN1, BTN2 and BTN3 – this is the connector to attach 1 to 3 buttons, depending on controller's configured functions. Each button can be configured with any of the functions (tokens, relay, RFID tokens, etc.)
4. MDB – is the connector for MDB payment systems
5. LCD – is the LCD connector. The controller can work without LCD if the application does not require user interaction functions.
6. USB1 – USB connector for firmware upload and configuring using the proprietary computer configuration tool.

Motherboard can be used alone for applications where one relay needs to be controlled, in order to turn ON/OFF external devices for a configured amount of time. It is working as a timer (with 1 second resolution, maximum value 65000 seconds), collecting credit from MDB cash and cashless payment systems and sending command to the relay for a configured time, according to the collected amount of money.
It has an alphanumerical LCD (2 rows, 16 characters each) to display the remaining time and other information regarding it's status.

C. Optional ccTalk and RFID reader module

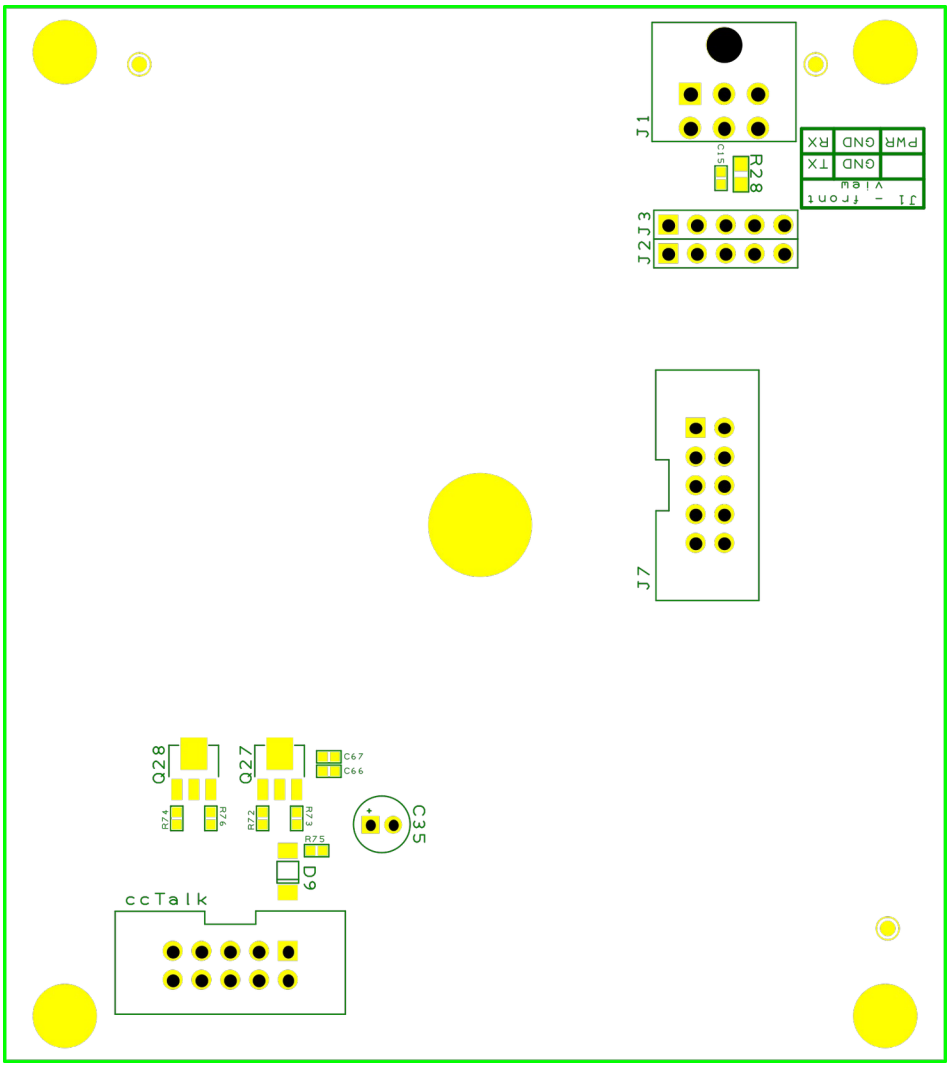

Figure 2: ccTalk and reader module

This module can be connected to the motherboard in order to add ccTalk hoppers and a proprietary card reader/writer for RFID tokens recharging and verification.

D. ccTalk and RFID reader connectors description

1. J1 – reader connectors
2. ccTalk – ccTalk connector
- PIN #1 (squared shape pin) – ccTalk data (RX/TX)
- PIN #2, #3, #5, #6 and #9 – not connected
- PIN #4 & #8 – GND
- PIN #7 and #10 – Power output.

3. J7 – connector to the motherboard.

III. Configuring software

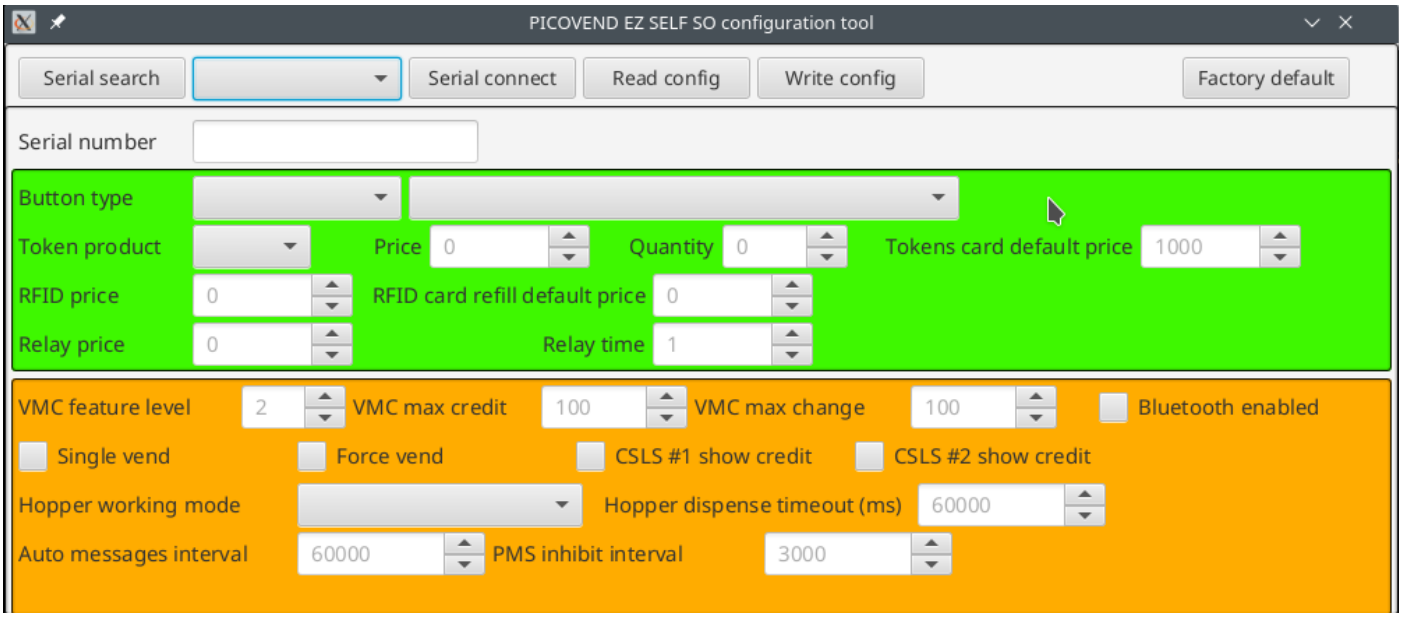

Figure 3: Configuration tool

We are providing a free configuring tool, that can be used to set controller's parameters.
Connect the controller and it's peripherals, then apply the power on Uin connector. **Do not connect or disconnect peripherals while power is ON!**
After powering the controller, click on "Serial search" button. The application will search for available serial ports and will populate the nearby combo. Select the correct port from the combo list. And click "Serial connect" button. Click "Read config" to read current controller settings. Wait until the buttons and the rest of the controlls are populated with corresponding values and activated.
All prices and money related values are in cents (100 = 1.00EUR, 350 = 3.50EUR, etc.)

A. Button type

The controller can be equipped with a maximum of 3 buttons. Each button can have any of the available functions. Select the button you want to configure. The application will display the current function. Available functions are:
- 0 → inactive;
- 1 → regular tokens dispensing (from hoppers with address 3 and, optionally, 4). The controller is dispensing primarily from the hopper with address #3. If the hopper with address #4 is connected and the hopper with address #3 is empty or jammed, the controller will continue to dispense tokens from hopper with address #4;
- 2 → RFID tokens. By selecting this type, the controller will dispense RFID tokens from the hopper with address #5;
- 3 → relay control. By selecting this product type, the controller will energize the on-board relay for the configured amount of time (seconds);
- 4 → Subscription RFID tokens recharging by an MDB cashless transaction. RFID tokens recharging by cash is an automatic process (by simply inserting money, then presenting the token to the reader).

B. Regular tokens parameters

You can set up to 16 prices and quantities for regular tokens dispensing. Select "Token product" from 1 to 16. Prices must be in an increasing order (for example, 1 = 1EUR, 2 = 2EUR, 3 = 6EUR, etc.)

“Tokens default card price” is the price for the cashless token dispensing transactions. All cashless token dispensing transactions have the same price and must be set to one of the products prices (1 → 16).

C. RFID tokens settings

You can set “RFID price” and the default RFID recharge value using cashless transactions. All cashless based recharge transactions have the same price.

D. Relay settings

You can set the relay price and time.

E. General settings

- VMC feature level – can be set to 2 or 3, is the vending machine feature level that wil be reported to the cashless device;
- VMC max credit is the maximum cash credit to be accumulated. After this value is reached, the cash payment systems will be inhibite.
- VMC max change is the maximum change allowed to be returned to the customer after a transaction (coins);
- Bluetooth enabled – not used in this version – leave it unchecked;
- Single vend – if checked, the controller will automatically return change (if needed) after each cash transaction;
- Force vend – if checked, the controller will not return change if there is no valid (or failed) cash transaction (to void using the machine as bill to coin changer);
- CSLS1 show credit – if checked – the controller will display the available amount for cashless #1 session based transactions. If unchecked, the controller will only display the invitation to select the product;
- CSLS2 show credit – if checked – the controller will display the available amount for cashless #2 session based transactions. If unchecked, the controller will only display the invitation to select the product;
- Hopper working mode – the controller can be used with non-encrypted ccTalk hoppers with both available modes (cypher mode or serial number mode). Please consult your hopper manual to select the proper working mode. Usually, “Auto” mode is automatically selecting the correct working mode, but, if your hopper is not dispensing tokens, try to set the controller manually on one of the available modes;
- Hopper dispense timeout (milliseconds) is the time controller is waiting for a response from the hopper after issuing the dispense command. If no success or fail message will be received during the configured time, the controller will abort the dispensing and will consider that the tokens delivery failed;
- Auto messages interval – reserved fo future use – do not change the default value (30000);
- PMS inhibit interval (milliseconds) – the interval the controller will check for tokens availability and, if there is no hopper that can be used for dispensing, it will inhibit the MDB payment systems. Do not change the default value (5000), unless it is necessary.

After adjusting the parameters according to your needs, click “Write config” button and wait for the buttons and other controls to reactivate (they will be inactive during write process).

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