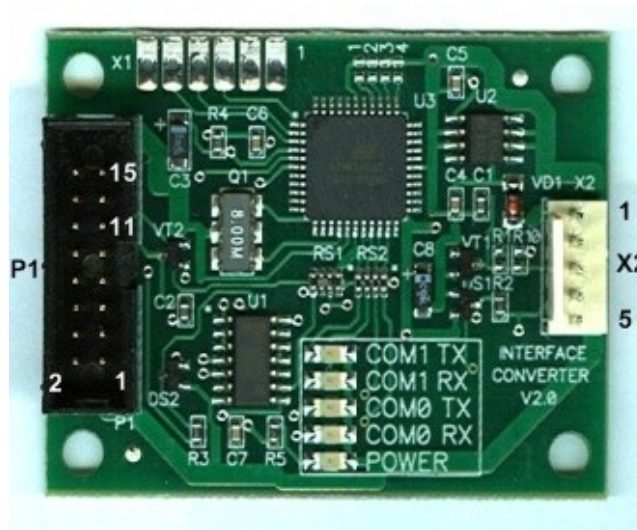


# ID-003 to Pulse converter

## General description

This converter board is intended to connect the ID-003 compatible bill acceptor (like JCM or CashCode) to the host board with coin-in type pulse input line. Board's firmware operates the bill acceptor via ID-003 protocol, providing all required commands. Upon acceptance of the bill converter board issue the series of pulses, corresponding to the bill value. Pulse output line is an open collector type.

## Connection



Board has two connectors. Connector P1 is used for connection of the bill acceptor. Connector X2 is used for the host board connection.

### Connector P1 pins:

- 1 – +12V
- 2 – GND
- 11 – ID003 TX (output to the bill acceptor)
- 15 – ID003 RX (input from the bill acceptor)

### Connector X2 pins:

- 1 – +12V
- 2 – GND
- 3 – PULSE OUT (output to the host board)
- 4 – INHIBIT (input from the host board)
- 5 – GND

## Operation

Here is how the converter firmware operates:

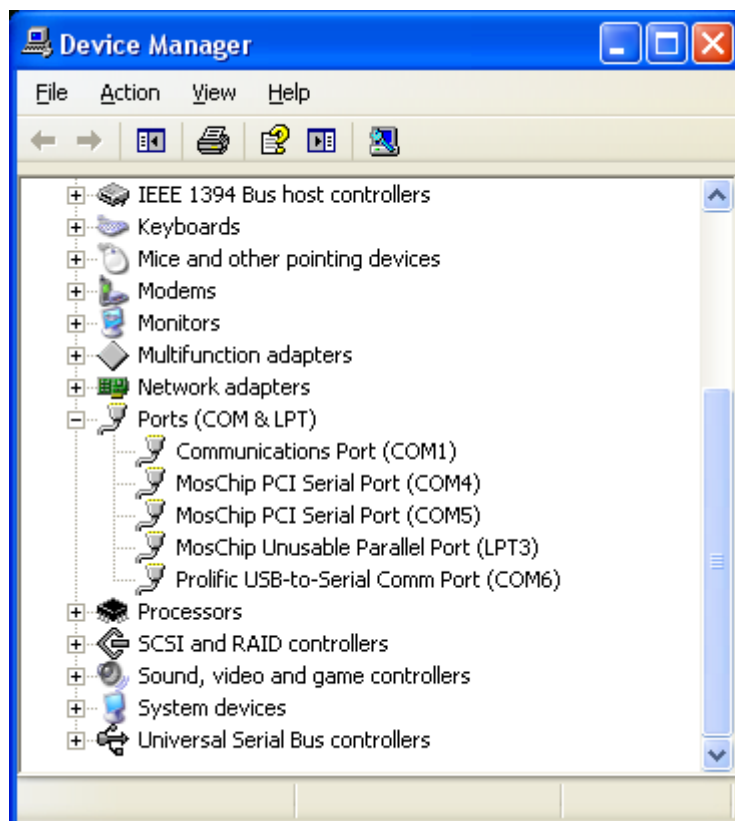
- on startup it reads from bill acceptor ID003 bill table and store it in the RAM
- settings are loaded from MCU's EEPROM
- upon accepting the bill (escrow state) it do the following (using bill code - 0x61, 0x62, ... in terms of ID003 protocol):

- 1) check the [**Channel enable**] mask against bill code - if channel is disabled bill is returned
- 2) check [**Bill table override**] setting - if override is enabled then pulse count fetched from the override table, not from bill table
- 3) if no override enabled then it look up bill code in the bill table and find a bill value, pulse count will be value \* [**Multiplier**] / [**Divider**]
- 4) if pulse count = 0 then return bill
- 5) if inhibit is enabled and active the bill is returned
- 6) bill stack command is issued
- 7) upon vendor valid state pulses are sent to the host

numbers\_of\_pulses = bill\_value \* bill\_value\_multiplier / bill\_value\_divider

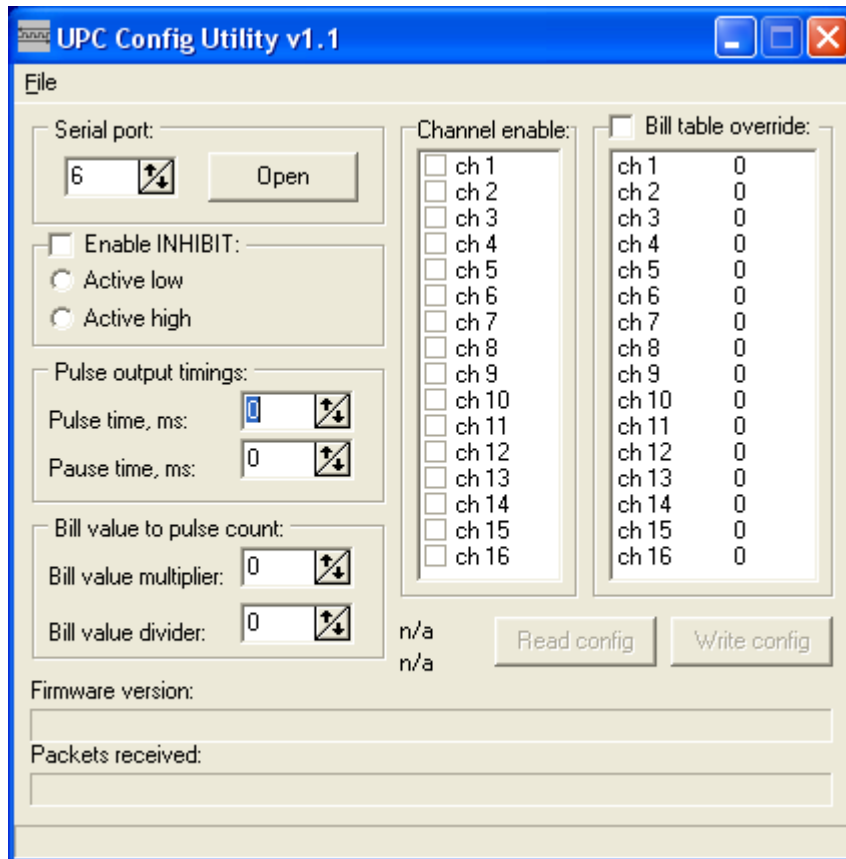
## Configuration

The converter board can be connected to the PC with special USB-to-serial type cable for configuring various parameters. The interface cable use the P1 connector for the connection. Before connecting interface cable to the PC cable driver must be installed. Drive may be found at cable's chip manufacturer site (e.g. you can search for Prolific PL-2303 USB-to-serial driver). After installing driver and connecting the interface cable to PC you will need to find out what serial port was assigned by system to the cable. You can check this in the Device Manager (Start → Settings → Control Panel → System → Device Manager). In the screen shot below out port is COM6.



Please note, if you insert the cable into another USB connector of your PC the system might assign other port number than previous (so you will need check the Device Manager again).

Now we can start the configuration utility. Select proper serial port number and press Open button. Upon detecting communication packets from converter board application will enable **Read config** and **Write config** buttons.



**Serial port** – virtual serial port number, used for the communication with the board

**Enable INHIBIT** – check this option if you want to enable inhibit bill acceptor signal from host board. When enabled, you can select the active level (low or high). If inhibit is not enabled the bill acceptor will be in enabled state always.

**Pulse output timings** – controls a pulse time (in 10 ms increments) and a pause between pulses.

**Bill value to pulse count** – let you set the multiplier and the divider for pulse count calculation ( $\text{numbers\_of\_pulses} = \text{bill\_value} * \text{bill\_value\_multiplier} / \text{bill\_value\_divider}$ ).

**Channel enable** – control over individual channel enable.

**Bill table override** – when checked, the bill table read from a bill acceptor will be ignored. Override table will be used instead.