# CMP Control pcb for Money-change Machines 

Operator’s Manual

Rev. 1.04 EN

## CHANGEONE CMP



## Operator's Manual

Progettazione e produzione di sistemi di pagamento, accessori per videogames e macchine vending

## NOTICE

This manual has been prepared with the utmost care. Nevertheless, it is not possible to assure at any time the exact correspondence of the descriptions to the product features. Alberici SpA shall not be held liable by the User for any damage, losses, or third party claims arising from any uses of the manual or of the product.

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Dear Customer,
we would like to thank you and congratulate for your choice. We trust that you will appreciate the quality and performance of the CMP pcb for Money-Changer machines.
This system operates by cctalk protocol, the well-established serial communication mode that provides security and precision.

Please read carefully this handbook, to obtain the most from your device.

## 1 Introduction

The ChangeOne CMP card can be configured by the Operator to manage various peripheral units, so as to create simple change machines or multifunctional change systems.
It manages the following peripheral units (see chapter 5.0 for the possible settings):

- ccTalk AL66S coin acceptors.
- Up to 2 x ccTalk HopperOneS11 or HopperCD o Hopper Discriminator Alberici.
- ccTalk BillyOne o OryOne note validator.

Available functions:

- Change of notes / coins into 1 coin/token denomination (S11), or 3 coin denominations (AH4)
- Purchase of tokens, with or without Bonus
- Credit load on RFID User Cards and keys (only if equipped with optional ACS reader)
- Control of accounts via display (by board keys)
- Programmable via menu (by on-board board keys)


## 2 Mounting and size

The board and the backlit LCD display are pre-assembled on a mechanical support in transparent polycarbonate, whose overall dimensions are $80 \times 36 \times 32 \mathrm{~mm}$.
Read the positions of the 2 holes for the fixing studs on the polycarbonate screen. Studs, nuts and related small parts are not supplied with the board.

SIZE OF THE PCB WITH DISPLAY


## 3. Power supply and connections

### 3.0 Generals

Power the board by 24 Vdc and 12 Vdc on the 3 -terminal connector ( J 4 in the figure). Use a power supply suitable for the maximum expected consumption, increased by $10 \%$ to compensate for the starting current of the hopper motors. For example, for a system comprising 2 Hoppers, 1 electronic coin acceptor, and 1 banknote reader, it is recommended to use at least 100 VA (140 W) Power Switching supply. In our machines, we use a 340W power box.

| Data: |  |
| :--- | :--- |
| NOMINAL VOLTAGE: | $12 \mathrm{Vcc}(+/-5 \%), 4 \mathrm{~A} \mathrm{max}$ |
|  | $24 \mathrm{Vcc}(+/-5 \%), 3 \mathrm{~A} \mathrm{max}$ |
| DISPLAY: | $5 \mathrm{Vcc}, 200 \mathrm{~mA}$ |
| BANKNOTE VALIDATOR: | $12 \mathrm{Vcc}, 4 \mathrm{~A}$ |
| COIN ACCEPTOR: | $12 \mathrm{Vcc}, 500 \mathrm{~mA}$ |
| HOPPER (max.): | $24 \mathrm{Vcc}, 2 \mathrm{~A}$ |
| PUSHBUTTON ILLUMINATION (max. draw / each): | 100 mA |

### 3.1 Connections and Pin-outs



## SOCKETS on the CMP PCB:

J1 (1 x 4pin): ccTalk 4pin (AL66: cct address 2) or ACS RFID Card/Key reader
J2 (1 x 4pin): ccTalk 4pin (BillyOne or OryOne: cct address 40)
J3 (2 x 3pin): reserved to the manufacturer
J4 (1 x 3pin): power in ( $1=+24 \mathrm{~V}, 2=+12 \mathrm{~V}, 3=$ Gnd)
J5 ( $2 \times 5$ pin): ccTalk 2x5pin (up to 2 hoppers: cct addresses 3 e 4)
J6 (1 x 16pin): display (already connected)
J7 (2 x 3pin): CONFIRM Pushbutton
J8 ( $2 \times 3$ pin): SELECT Pushbutton
J9 (1 x 4pin): only if desired - a pushbutton or an electric lock, connected between pins 1 and 2 of connector J9, allow to manage the manual refill procedure, or to reset the message of remaining credit. The set up menu incorporates the possibility to carry out the manual refill (see section 5.2.11) and to activate the reset of residual credit automatically when the system is restarted (see section 5.2.12), without any need to use the mentioned electrical connections.


## MENU KEYS:

Get access to the menu by holding the three buttons pressed at the same time for 5 seconds.
SW1: UP (+) = navigate menu UP; modify figures and letters
SW2: DOWN (-) = navigate menu DOWN; modify figures and letters


SW3:
OK = confirm selection

## 4 Operation

Connect the pcb to the peripheral units and power it, according to the indications given in " 3.0 Connections and Pin-outs". Fill the hoppers with coins or tokens.
When switched on, the self-configuration and component control start automatically:


The pcb shall configure itself according to the peripheral units that it finds connected. For example, if single-currency hoppers are conencted, it will set up to manage one payable denomination; if discriminating hoppers are connected, it will set up to manage 3 denominations.
If all the peripherals are working properly, the waiting screen shall show the welcome message:


Such message takes shifts with:

CHANGES TO
$2,00 €$

As soon as the control board enables the note acceptor, the latter's front slot flashes once in blue colour for each enabled note, or once in red for each disabled note. For instance, if the 5, 10, 20 Euro notes are enabled, and the 50 and 100 Euro notes are disabled, the front slot will flash 3 times in blue colour and 2 (twice) in red.
The system is now ready to operate.
The CMP pcb behaves differently depending on whether the operation mode is set to AUTOMATIC MODE or to MANUAL MODE.

### 4.1 MANUAL MODE

When money is inserted - or when its amount reaches the value of the token(s) - the button(s) will lit up green. Add up as much money as you want to change ij coins or tokens, then press the CONFIRM button to get your change (or tokens).
If the system includes 2 hoppers, and dispensing mode is set to "Tokens+Change", it will be possible to choose the desired number of tokens and get back the relevant return money.
If the system includes 2 hoppers, and dispensing mode is set to "Coins" or "Tokens", the User will be able to choose which type of coins / tokens will be dispensed against the money dropped in.
If the system is set to "Tokens" or to "Tokens+Change", and the Bonus has been set, drop money in until the searched amount is reached, then press the OK button.

### 4.2 AUTOMATIC MODE

When a banknote or coin is inserted, the credited amount is displayed, and the hopper(s) start(s) pay-out straight away. The system combines the coins contained in the hoppers in equal quantities, as much as it is possible.
If the system is set to "Tokens+Change", all the tokens that can be bought by the inserted money will be dispensed, and the User will get the return change in addition, if any. At the end of the payout cycle, the display will show both the inserted amount and the amount paid out.

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### 4.3 RECHARGE THE ACS RFID CARD / KEY

When equipped with the ACS Card/Key reader, the Money Changer can operate as recharger of credit for User Card/Keys. These can then be used to purchase services or goods from nearby selfservice dispensers or distributor kiosks, provided that the ACS readers in such kiosks have been initialized with the same PIN as the one in the Change System. When the User Card/Key is in the system ACS reader, and money is introduced, the display will prompt for pressing any green-lit button to load the credit onto the Card/Key.

### 4.4 OPERATIONS WITH ACS RFID CARD/KEYS

If the system is equipped with the ACS Reader for the RFID Card/Keys, it is possible to use such Card/Keys to obtain or perform useful functions, according to which type of Card/Key is inserted.

### 4.4.1 Operation with User Card/Key

When inserting a compatible RFID User Card/Key (must be initialized with the same password as the RFID reader - see section 5.3.5D SET UP CASHLESS), the available credit gets shown, and a pushbutton will lit up and flash green.
If more credit must be loaded, insert coins and/or notes until the desired value is attained, then wait until the storing message ("Data are being stored") disappears, then remove the Card/Key now loaded with new credit. The Card/Key can now be used to buy services/products from systems

Available Credit: equipped with ACS reader provided that such ACS readers too have been initialized with the same password as the RFID reader of the system.

### 4.4.2 Operation with Service or Master Card/Key (see also section 5.3.5D)

Insert the Service Card/Key (white) or the Master Card/Key (black) in the ACS reader to get access to the Service Menu (no need to open the system). The Service menu allows to: 1) initialize the User Card/Keys, as well as to 2) check the Accounts Data. By the Service Card/Key, operators can reset the Partial Accounts. By the Master Card/Key, the Operator can reset all Accounts data.

## 5. System configuration

### 5.1 Default Configuration

The CMP pcb is preset by default as follows:
Control Board Parameters

Hopper S11 Parameters
Hopper AH4 discriminator [ccTalk]
BillyOne/OryOne Validator [ccTalk] Parameters $€ 5.00-\ldots$. - $€ 100.00=$ ENABLED
AL66 S [ccTalk]coin acceptor Parameters $€ 0.05-€ 0.10-€ 0.20=$ DISABLED
(*) Set the Dip-switches in HP1 to address 3 (all DS to OFF) Set Dip-switches in HP2 to 4 (no. $1=O$, nos. 2= 3=OFF).
$€ 0.50-€ 1.00-€ 2.00=$ ENABLED
Hopper 1 Hopper 2
Pay-out mode $=$ AUTOMATIC Bonus = DISABLED Level sensors = DISABLED Hoppers no. $1 / 2\left(^{*}\right)=€ 2.00=$ ENABLED Preset as no. 2 by default to $0,50-1,00-2,00 €$


### 5.2 Restore default configuration

If any variation is made, it will be possible to restore the default configuration as follows: enter the initial menu, scroll by UP and DOWN keys and choose RESTORE DEFAULT CONFIGURATION then press OK; the message DEFAULT CONFIG. RESTORED will be displayed.
NOTICE: the RESTORE DEFAULT CONFIGURATION command resets the default PIN code (0000) .

### 5.3 Menu Main Structure



### 5.3.1 Show Peripheral Units

This menu allows to check the state of the PERIPHERAL UNITS, for instance:


### 5.3.2 Show accounts

This menu allows to check the total and the partial values of cashed and paid amounts.

(*) Reset of the remaining credit: see section 5.3.11

- Press OK: the display will show the total amounts introduced (Total In). Press UP, and OK if you want to exit the Accounts menu.
- Or else, press DOWN to check the total amounts dispensed (Total OUt).
- Press DOWN to go on browsing the submenu.

Notice: whenever the Partial Amounts records get cancelled (see section 7.3.5), the previous value recorded in "Last Partials cancelled" gets replaced by the amount that has just been reset.
LAST AMOUNT DISPENSED: when the board is in stand-by condition, it is possible to check the last amount dispensed, by holding the SELECT pushbutton for full 4".

### 5.3.2 Show ACCOUNTS

To show this sub-menu it is necessary to digit the PIN code. This function allows to cancel the account records (both paid out and cashed in) of the machine.


### 5.3.3 SET UP PERIPHERAL UNITS

This menu allows to set up the denominations accepted by the note validator and by the coin acceptor, as well as the value of the coins/tokens dispensed. It also permits to set the change mode as either automatic or manual, and to enable/disable the full/void sensors of the hoppers. See Details in sections 5.3.3x below the general chart.


Detail of the set up of each peripheral unit and operation mode below

### 5.3.3A Note VaLIDator Setup

All the programmed note values get automatically enabled at the initial check. To modify this default condition, press OK to get to the first option (ex. $5 €$ ) and highlight it, then press UP or
DOWN to reverse its state. Press OK to shift to the next option (ex. $10 €$ ).


### 5.3.3B Coin Selector Setup

The board automatically detects the presence of the coin selector during initial check.
Among the accepted coins ( 0.05 -to-2 $€$ ), the following ones get enabled by default: $0.50 €$ - $1.00 €-2.00 €$.

To modify this condition, press OK to get to the first option (ex. $2 €$ ) and highlight it, then press UP or DOWN to reverse its state. Press OK to shift to the next option (ex. $1 €$ ).


### 5.3.3C Dispensing Mode Setup

Allows to choose whether to dispense COINS or TOKENS or TOKENS+CHANGE, and whether the DISPENSING MODE will be AUTOMATIC or MANUAL. The value is set by this sub-menu.
It also permits to monitor the level of the coins in the hopper(s) by the electronic sensors


### 5.3.3D SET UP CAShLESS (only without coin acceptor or note validator in the system)

If the unit is equipped with the ACS reader, it is possible to get access to useful functions:

| Operation | Master Card/Key <br> (black) for the <br> owner | Service Card/Key <br> (white) for the <br> manager | Operator <br> Card/Key <br> (yellow) |  |
| :---: | :--- | :---: | :---: | :---: |
| 1. $\quad$ Initialize Service and Operator Card/Keys | YES | YES (only Operator's) | NO |  |
| 2. | Check Accounts (totals and partials) | YES | YES (partials only) | NO |
| 3. | Reset Accounts Data | YES | YES (partials only) | NO |
| 4. | Reset of paid residual credit | YES | YES | NO |
| 5. | Access to (optional) manual Refill | YES | YES | NO |

The Master Card/Key allows to initialize all Cards/Keys from the ACS reader.

Whenever the Master Card/Key or the Service Card/Key gets access to the Accounts menu, the shown data get automatically downloaded in the Card/Key. Each Card/Key can contain up to 10 downloaded sets. These data sets can be read and stored in the PC via the ACR Programming Station (K-P4N-000007) and software.

When entering this menu, the display will request to initialize the Card/Key reader (antenna). Work out one 6 digits PIN code, write it down and keep it in a Insert the Master Card/Key and press the OK button: you will be prompted to enter the PIN code. Insert the 6 digits PIN. To enter each of the 6 digits, make use of the UP and DOWN buttons. When the desired
 character is displayed, confirm it by the OK button.
After entering the 6th character, the display will prompt for confirming the PIN code. Enter it again: initialization of the Card/Key reader and of the Master Card/Key will start. When finished, the confirmation message appears:


Insert the Service Card/Key: the machine 4-digit pin code (see section 5.3.13 Change PIN) will be requested; enter it to get the Service Card/Ke initialized. Once the process is complete, the confirmation appears:
To initialize Operator or User Card/Keys, exit the menu, put the Master Card/Key or the Service Card/Key in the reader, and navigate the menu by "+" until finding Restricted MEnu: press OK, and navigate to Initialize Card/KeYs, then press OK. Insert the Operator Card/Key and follow the on-screen instructions:

| Init. Operator Key | Insert Operator Card/Key (yellow) | Do not remove the key | wait... | Remove the initialized Card/Key |
| :---: | :---: | :---: | :---: | :---: |

### 5.3.4 Empty out the Hoppers

Use this function to make the selected hopper pay out all the contained coins / tokens. Once emptied the first hopper, total dispensed amount shall be displayed. Press OK to go on with second hopper.


### 5.3.5 Restore default configuration

To use this sub-menu it is necessary to digit the PIN code.


WARNING: in case of reset, the system sets back to default configuration. The PIN code will be reset to the default 0000 setting. Account records shall not be cancelled.

### 5.3.6 Bonus Set Up

This function will operate only if at least the hopper no. 1 is preset for paying tokens. Take care to set up all hoppers parameters. Bonus function is disabled by default.


### 5.3.7 Language setup



### 5.3.8 Promo

It is possible to preset an advertisement on the display. Press OK:


Press again OK, the pointer will highlight the first digit: by UP or DOWN, choose the character that you want to insert, then confirm by OK. The pointer will highlight the following digit.

Once digit no. 16 has been confirmed, the message gets stored.

### 5.3.9 Modify PIN

The PIN code allows to get access to the discretional menus of the system.
The PIN code is made up by 4 figures (each of them from 0 to $9: 10,000$ combinations available). If the entered PIN is not correct, the User is given another 4 tries before the board gets blocked-up by its security interlock. The system can be started again by switching it off and on again.

## PLEASE PAY ATTENTION: the default PIN code is 0000

The settings in the following menus can be modified by using the PIN code:

To modify the existing PIN, press OK, and digit the old PIN code: to digit each code figure, first use keys UP and DOWN to set each figure, then confirm it by OK. Once the $4^{\text {th }}$ figure has been confirmed, confirm by OK the whole old PIN:


To enter the new PIN code, use first the UP and DOWN keys to set each figure, then confirm it by OK. Once the $4^{\text {th }}$ figure has been confirmed, confirm by OK the whole new PIN.
As every single figure gets confirmed, an asterisk takes its place, so preserving secrecy. NOTICE: when DEFAULT CONFIGURATION is restored, the PIN code gets reset to 0000.

### 5.3.10 MANUAL Refill Set Up

This function allows to enter in the Accounts memory the coin amount or the tokens quantity poured into the hoppers. The manual refill can take place with the machine empty, or not empty.


### 5.3.11 Enable / Disable remaining Credit

Amount of remaining (i.e. unpaid) credit can be reset when machine is switched off. Such amount gets automatically recorded in the Accounts see (section 5.3.2).

(*) When enabling this option, the remaining credit shall be cancelled within 15 seconds from end of transaction.

### 5.3.12 Exit Menu

Press OK
EXIT MENU

## 6. Illuminated Pushbuttons

If the pushbuttons are equipped with RGB leds: they light up blue when in stand by;
they light up red when the system is out of service, i.e. when all input devices (coin acceptor, note validator) are faulty, or when all the output devices (hoppers) are faulty or empty; they light up green when the coin value is reached.

IMPORTANT NOTE: the maximum current draw allowed for each pushbutton is 100 mA . It is recommended to use pushbuttons with LEDs in series with 470 ohm - $1 / 4 \mathrm{~W}$ resistor.

## 7. Messages

The following error messages can possibly appear:
(PERIPH. UNIT)
CONNECTED
(PERIPH. UNIT) DISCONNECTED
(PERIPH. UNIT) IN ERROR

HOPPER n ${ }^{\circ} 2$ EMPTY

Remaining Credit $1 €$
the mentioned peripheral unit (coin acceptor, or note validator, or Hopper) is connected and functioning
the mentioned peripheral unit has been disconnected
the mentioned peripheral unit is connected but faulty the
the Hopper $\mathrm{n}^{\circ} 2$ is empty
coins have run out during the payout. Switch power off, fill it up,
and switch power on again: the hopper(s) will complete the payout.

The following warning:
is always followed by the system check. For instance, the following sliding warnings:

stand for:
the coin acceptor is not connected; there is a fault in the note validator; hopper 1 is working; hopper 2 is empty.

## 8. Disposal of the product



## WARNING! DISPOSE OF ACCORDING TO THE GOVERNING LAW IN YOUR COUNTRY!

This equipment may not be treated as household waste. Instead, it must be handed over to the applicable collection point for the recycling of electric and electronic equipment. By ensuring that this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product.

For more detailed information about recycling of this product, please contact the Dealer where you purchased this product.

## 9. Terms of Guarantee

The manufacturer will fix malfunctions arising from production faults in this machine or parts of it within 12 months from the date of sale.

All communications referring to guarantee repairs or replacements must be accompanied by the product serial number and the copy of the sale invoice.
To obtain your guarantee repair, please send the part to the Dealer where you purchased the machine, together with the following documents:

- copy of the sale invoice
- delivery note stating "returned for guarantee repair"
- detailed report of the problem found and the circumstances in which it occurs.

Before sending the product, please get in touch with your Dealer or with Alberici S.p.a. (+39 051
944300); very malfunctions can be fixed via a simple phone call, saving you costs and time.

Alberici S.p.a. will verify that warranty is applicable, i.e. that problem is not caused by:

- transport damages
- damages from incorrect installation or wrong configuration
- installation in premises or areas not complying with the prescribed safety requirements
- intentional or unwilled tampering
- wrong or careless use or maintenance
- non-compliance with precautions prescribed (see Chapter 4. Caution)
- natural disasters, vandalisms, intentional or unintentional damage

Guarantee is considered automatically expired if outer and inner labels are
missing. Transport costs of repaired products are at the Customer's charge.

## 10. Customer Service

Alberici S.p.a. will be pleased to offer all the necessary information on use, ordinary maintenance and technical service. Please call $(+39) 051944300$ and specify if your request concerns information on use or technical support.

La Alberici S.p.A. ri riserva il diritto di apportare modifiche alle specifiche tecniche dell'apparecchiatura descritta in qualunque momento e senza preavviso, nell'ambito del perseguimento del miglioramento continuo del proprio prodotto.

Progettazione e produzione di sistemi di pagamento, accessori per videogames e macchine vending Design and manufacture of payment systems, accessories for videogames and vending machines

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[^0]:    WARNING: If there are not enough coins/tokens in the hopper to fulfil the whole payout request, the remaining credit shall be displayed and retained in memory. Switch off the system, fill the hoppers, and switch on again: the remaining credit shall be paid out.

