

CASH-Interface MC8 [VENDING]

User manual

Board version: v4.12

Software Version v1.07

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Content

1. INTRODUCTION.....	2
2. SERVICE MENU.....	2
2.1 Menu items.....	2
3. DEVICES.....	4
3.1 Bill validator.....	4
3.2 Coin validator.....	4
3.3 LCD-Display.....	4
3.4 Relays output.....	4
4. CASH-INTERFACE MC8 BOARD.....	5
4.1 Jumper.....	5
4.2 Micro controller ATmega (8 MHz internal clock) I/O ports:.....	6
5. CONNECTIONS.....	7
5.1 Power supply.....	7
5.2 Relays product 1-3.....	7
5.3 Occupation of the HOPPER plug.....	7
5.4 LCD-Adapter.....	8
5.5 Pin out LCD-Adapter.....	8
5.6 LCD-Adapter position for DISPLAYTECH 162C.....	8
5.7 Shielded LCD-Cable.....	9
5.8 Push button.....	10
5.9 CI MC8 board with OLED Display and external output relays.....	10
6. GETTING STARTED.....	11
7. OTHER.....	11
8. SAFETY INSTRUCTIONS.....	12
9. DISPOSAL INSTRUCTIONS.....	12
10. LIABILITY NOTICE.....	12

1. INTRODUCTION

With the vending control a total of 3 product prices can be set. The display shows "READY" and the customer can select product 1, 2 or 3 via push button. After selection, the price for the selected product is shown in the display.

If no money is inserted within 60 seconds, the product selection is canceled and the display shows "READY" again. Inserting money the amount is shown in the display. On pay out, the selling price is subtracted from the total credits and is shown in the display. Any remaining balance will be retained. Customer can choose the product or insert money first. Reaching the selling price the pay out starts, means relays 1, 2 or 3 (connected to Hopper 1-3 plug via ND-300 adapter), switches to on for the adjusted time.

If the price for a product is set to 0, the product is considered disabled and can not be selected by the customer.

2. SERVICE MENU

The SERVICE menu is activated via the SERVICE button on the board. It is possible to connect an external push button to jumper JP 1.5. Select the menu items by further pressing the SERVICE button. Hold down the SERVICE button to automatically switch through all menu items.

Change settings of the active menu item with the START button. It is possible to connect an external push button to jumper JP 1.4. Hold down the START button for repeat function (very fast count after 100 steps).

2.1 Menu items

- 1: SOFTWARE and VERSION
- 2: CREDIT (current credit)
- 3: TOTAL (cash box total IN)
- 4: PRODUCT1 OUT (Sales counter product 1)
- 5: PRODUCT2 OUT (Sales counter product 2)
- 6: PRODUCT3 OUT (Sales counter product 3)
- 7: PRODUCT1 PAYOUT 1 (Test payout product 1)
- 8: PRODUCT2 PAYOUT 1 (Test payout product 2)
- 9: PRODUCT3 PAYOUT 1 (Test payout product 3)
- 10: EXIT CLOSE SERVICE (exits the SERVICE-MENU and saves all settings)
- 11: COIN #1 (Setting range 0-50000, default setting 50 => 0,50 EUR)
- 12: COIN #2 (Setting range 0-50000, default setting 100 => 1 EUR)
- 13: COIN #3 (Setting range 0-50000, default setting 200 => 2 EUR)
- 14: COIN #4 (Setting range 0-50000, default setting 0)
- 15: COIN #5 (Setting range 0-50000, default setting 0)
- 16: COIN #6 (Setting range 0-50000, default setting 0)
- 17: COIN #7 (Setting range 0-50000, default setting 0)
- 18: BILL #1 (Setting range 0-50000, default setting 500 => 5 EUR)

- 19: BILL #2 (Setting range 0-50000, default setting 1000 => 10 EUR)
- 20: BILL #3 (Setting range 0-50000, default setting 2000 => 20 EUR)
- 21: BILL #4 (Setting range 0-50000, default setting 0)
- 22: BILL #5 (Setting range 0-50000, default setting 0)
- 23: BILL #6 (Setting range 0-50000, default setting 0)
- 24: BILL #7 (Setting range 0-50000, default setting 0)
- 25: COIN PROTOCOL (PARALLEL or BINARY, default setting PARALLEL)
- 26: BILL PROTOCOL (PARALLEL or BINARY, default setting PARALLEL)
- 27: PRODUCT1 PRICE (Setting range 1-50000, default setting 200 => 2,00 EUR)
- 28: PRODUCT2 PRICE (Setting range 1-50000, default setting 500 => 5,00 EUR)
- 29: PRODUCT3 PRICE (Setting range 1-50000, default setting 1000 => 10,00 EUR)
- 30: H-PULSE LENGTH (Setting range 1-1000, default setting 500 => 500ms Relays time)
- 31: LINGO (ENGLISH or DEUTSCH, default setting DEUTSCH)
- 32: SETTINGS BACKUP (Backup all settings)
- 33: SETTINGS RESTORE (Restore all settings)
- 34: EXIT CLOSE SERVICE (exits the SERVICE-MENU and saves all settings)

Acceptance of money is disabled while service.

All data and settings are saved when you EXIT the service menu, means you have to leave the service menu always by EXIT or made changes are lost.

The protocol for coin and bill validator can be separately selected (PAR or. BIN).

Coin validator in PARALLEL protocol: 3 coins possible (#1 - #3)

Coin validator in BINARY protocol: 7 coins possible (#1 - #3 BINARY CODED)

Bill validator in PARALLEL protocol: 4 bills possible (#1 - #4)

Bill validator in BINARY protocol: 15 bills possible (#1 - #4 BINARY CODED)

3. DEVICES

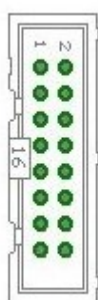
3.1 Bill validator

Of the type NV9, NV10 or pin compatible.

GBA HR1/ST1/ST2 via adapter possible.

Protocol: PARALLEL (default), PULSE or BINARY.

Pin out of the BILL plug:



Pin 1 = +12V DC

Pin 2 = 0V

Pin 3,4,5,6 = MDB (not used)

Pin 7 = Busy (act. low)

Pin 8 = Escrow (not used)

Pin 9,10,11,12 = Inhibit 1-4 (blocking = High, accept = Low)

Pin 13 = Vend 3 (Note channel 3, act. low)

Pin 14 = Vend 4 (Note channel 4, act. low)

Pin 15 = Vend 1 (Note channel 1, act. low)

Pin 16 = Vend 2 (Note channel 2, act. low)

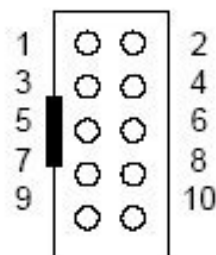
3.2 Coin validator

Of the type NRI-G13, RM5, EMP800 or pin compatible.

Protocol: PARALLEL (default), PULSE or BINARY.

Pin out of the COIN plug:

pin	assignment	potential
1	GND	low
2	UB +12V DC	high
3	output line 5	act. low
4	output line 6	act. low
5	return	act. low
6	total blocking	act. high
7	output line 1	act. low
8	output line 2	act. low
9	output line 3	act. low
10	output line 4	act. low



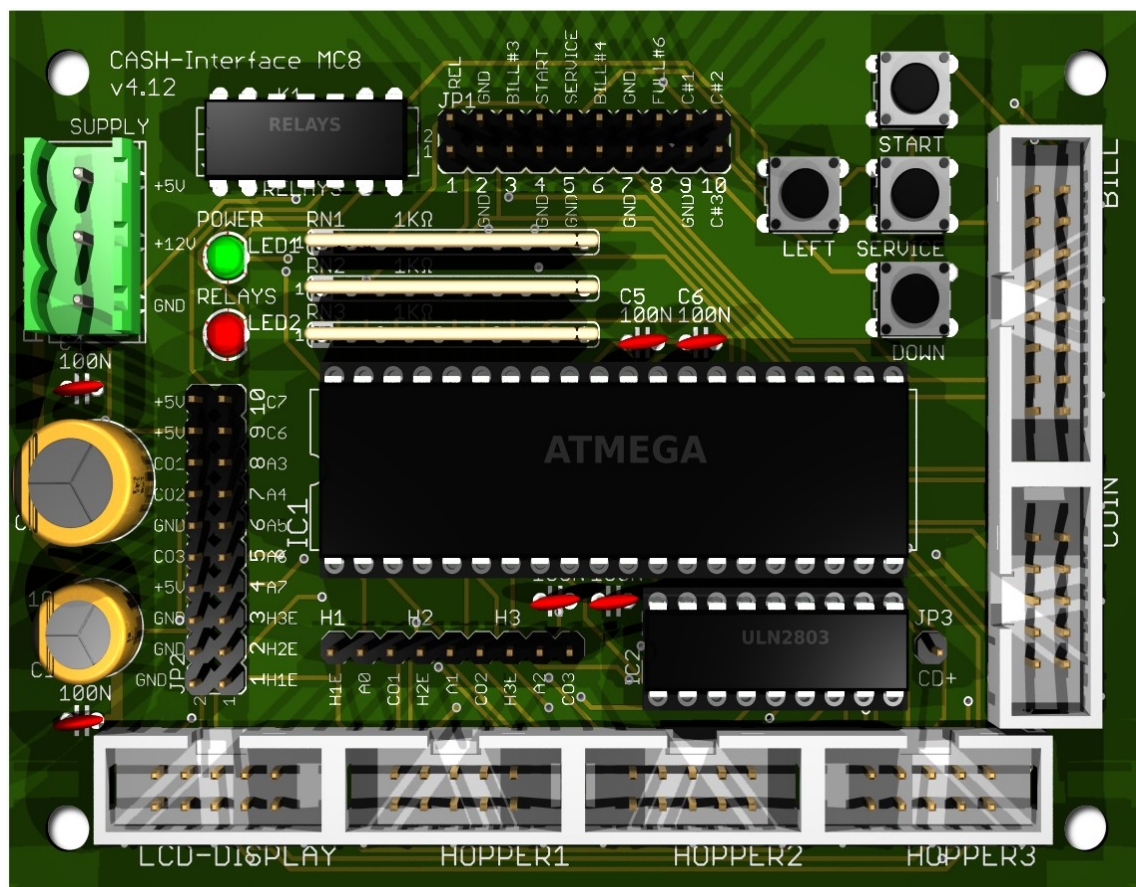
3.3 LCD-Display

Type 162 with 44780 controller via 10 pin flat ribbon cable + LCD Interface or compatible, e.g. OLED with KS0070 or KS0073 controller.

3.4 Relays output

Closer contact, NO 200 VDC, 15W e.g. illumination output shaft.

4. CASH-INTERFACE MC8 BOARD



4.1 Jumper

JP1.1 - RELAYS, 1=K1/14, 2=K1/8
 JP1.2 - GND, 3=GND, 4=GND
 JP1.3 - C.2, 5=bill #3, 6=C.2
 JP1.4 - START, 7=GND, 8=C.4
 JP1.5 - SERVICE, 9=GND, 10=C.5
 JP1.6 - C.3, 11=bill #4, 12=C.3
 JP1.7 - GND, 13=GND, 14=GND
 JP1.8 - Hopper Full, 15=coin #6, 16=H1-H3 FULL

closer contact for external use
 GND
 monitor bill #3
 external START button
 external SERVICE button
 monitor bill #4
 GND

JP2.1 - 1=Hopper1 EMPTY, 2=COIN1 SIGNAL
 JP2.2 - 3=Hopper2 EMPTY, 4=COIN2 SIGNAL
 JP2.3 - 5=Hopper3 EMPTY, 6=COIN3 SIGNAL
 JP2.4 - A7, 7=A7, 8=+5V
 JP2.5 - Menu EXIT, 9=A.6, 10=GND
 JP2.6 - Out of service, 11=A.5, 12=GND
 JP2.7 - Menu value DOWN, 13=A.4, 14=GND
 JP2.8 - Menu LEFT, 15=A.3, 16=GND
 JP2.9 - Printer PULSE, 17=C.6, 18=+5V
 JP2.10 - Printer pulse total, 19=C.7, 20=+5V

Select product 3
 Out of service input
 Select product 2
 Select product 1

4.2 Micro controller ATmega (8 MHz internal clock) I/O ports:

Port A.0 -

Port A.1 -

Port A.2 -

Port A.3 - Select product 1 (pull down to GND, e.g. via push button)

Port A.4 - Select product 2 (pull down to GND, e.g. via push button)

Port A.5 - Out of service (pull down to GND, e.g. via daily timer or switch)

Port A.6 - Select product 3 (pull down to GND, e.g. via push button)

Port A.7 -

Port B.0 - Coin #1, Active LOW

Port B.1 - Coin #2, Active LOW

Port B.2 - Coin #3, Active LOW

Port B.3 – Relays 3 (Hopper3)

Port B.4 - Relays 1 (Hopper1)

Port B.5 - Relays 2 (Hopper2)

Port B.6 - Accept coin and bill validator, Active LOW

Port B.7 - Relays, Active HIGH, JP1.1 is a closer contact NO

Port C.0 - Bill #1, Active LOW

Port C.1 - Bill #2, Active LOW

Port C.2 - Bill #3, Active LOW

Port C.3 - Bill #4, Active LOW

Port C.4 - Push button 1, START, JP1.4, Active LOW

Port C.5 - Push button 2, SERVICE MENÜ, JP1.5, Active LOW,

Port C.6 -

Port C.7 -

Port D.0 - LCD 1, DB4

Port D.1 - LCD 1, DB5

Port D.2 - LCD 1, DB6

Port D.3 - LCD 1, DB7

Port D.4 - LCD 1, Enable

Port D.5 - LCD 1, RS

Port D.6 - LCD 1, RW

Port D.7 - LCD 2, Enable => 2 LCD

5. CONNECTIONS

5.1 Power supply



The power supply is connected to terminal plug X1.

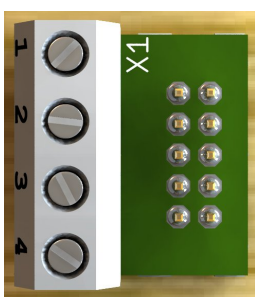
The CASH-Interface MC8 needs a supply voltage of +5V and +12V DC. The ground connections (GND) of both voltage must be connected. The interfacing of +5V, +12V and GND is printed on the board.

We offer suitable power supplies in the web shop, see

<https://www.casino-software.de/shop/>

5.2 Relays product 1-3

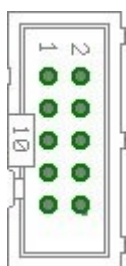
The output relays are connected via ND-300 Adapter on the HOPPER1-3 plug.



Relays product 1-3 connected to HOPPER 1-3.

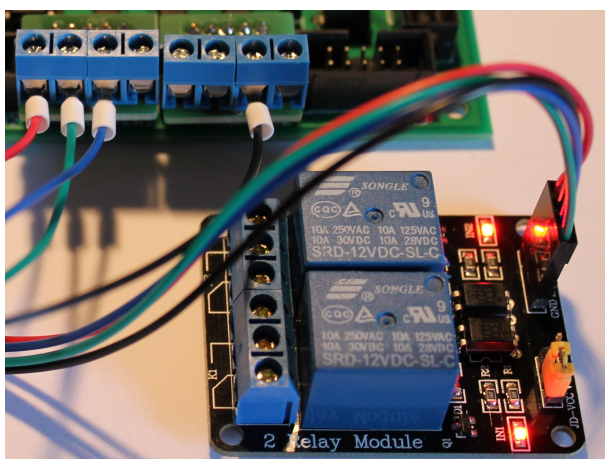
- 1 - +12V DC
- 2 - GND
- 3 - Relays coil
- 4 - not used

5.3 Occupation of the HOPPER plug

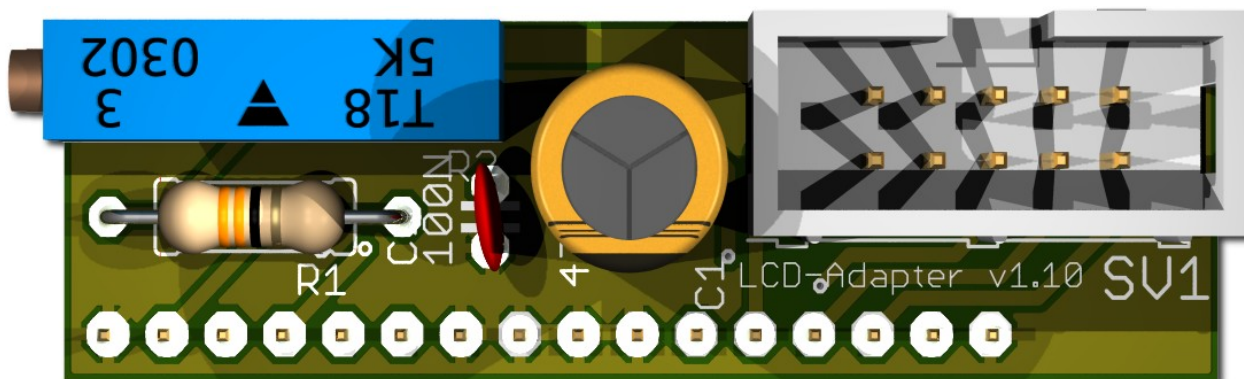


- Pin 1,2,3 = +V (+12V or +24V DC)
- Pin 4,5 = -V (GND)
- Pin 6 = Full sensor
- Pin 7 = Motor run (IN3)
- Pin 8 = Not used (security / error)
- Pin 9 = Coin signal (select by JP2.1 or JP2.3)
- Pin 10 = Empty sensor

3x Relays with changeover (no/nc) contact 250V/10A included



5.4 LCD-Adapter



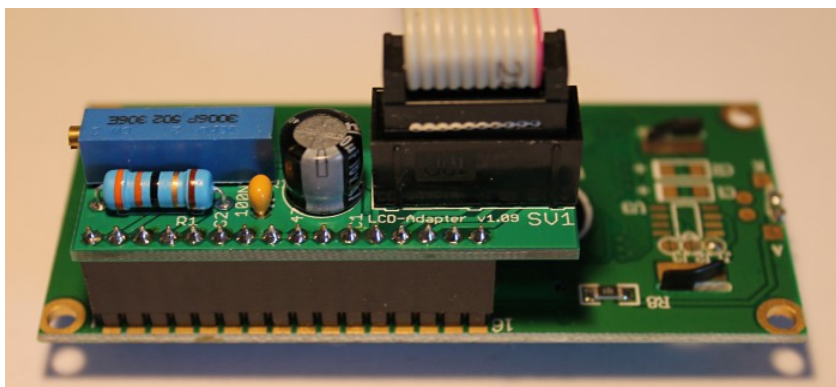
Depends on the used LCD display, the adapter has to be mounted on the left or right side. Some displays have the power pins on the left side others on the right side! Hint: since version 1.10 the LCD-Adapter only

5.5 Pin out LCD-Adapter

Pin1 = LED L–	Pin10 = DB1
Pin2 = LED L+	Pin11 = DB2
Pin3 = VSS (GND)	Pin12 = DB3
Pin4 = VDD (+5V)	Pin13 = DB4
Pin5 = V Contrast	Pin14 = DB5
Pin6 = RS	Pin15 = DB6
Pin7 = R/W	Pin16 = DB7
Pin8 = E	Pin17 = LED L+ (since v1.10 this does not not longer exists)
Pin9 = DB0	Pin18 = LED L- (since v1.10 this does not not longer exists)

With the CASH-Interface MC8 the LCD-Display is controlled in 4Bit mode. The contrast is adjustable via the spindle pots. Newer OLED displays do not need contrast adjustments anymore.

5.6 LCD-Adapter position for DISPLAYTECH 162C



The manufacturer of the LCD display suggests to NOT use flat ribbon cables longer than 10cm to avoid display problems by interfering signals! If you use longer cables and get problems change to a shorter cable length or use an shielded cable.

5.7 Shielded LCD-Cable

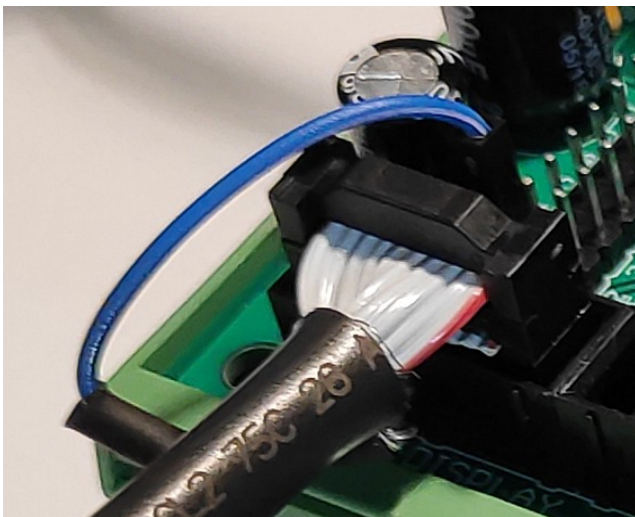
In environments with strong interfering signals, e.g. generated by motors or solenoid valves, faults in the view of the LCD or OLED display may occur!



The display shows then weird characters (hieroglyphics).

This can be remedied by usage of a shielded cable that blocks the interference signals.

We recommend the use of a shielded cable for the LCD or OLED display, to avoid problems with the display.



For the grounding of the cable shielding, the shielding is carried out on one side with a single dupont cable with an female connector, and can therefore simply be plugged onto GROUND (JP2 - GND) on the CI MC8 circuit board.

In addition, we offer Y-cables, this enables the connection of 2 displays to one LCD connector, e.g. one display on the outside visible for the customer, and a second display on the inside of the machine for SERVICE purpose.

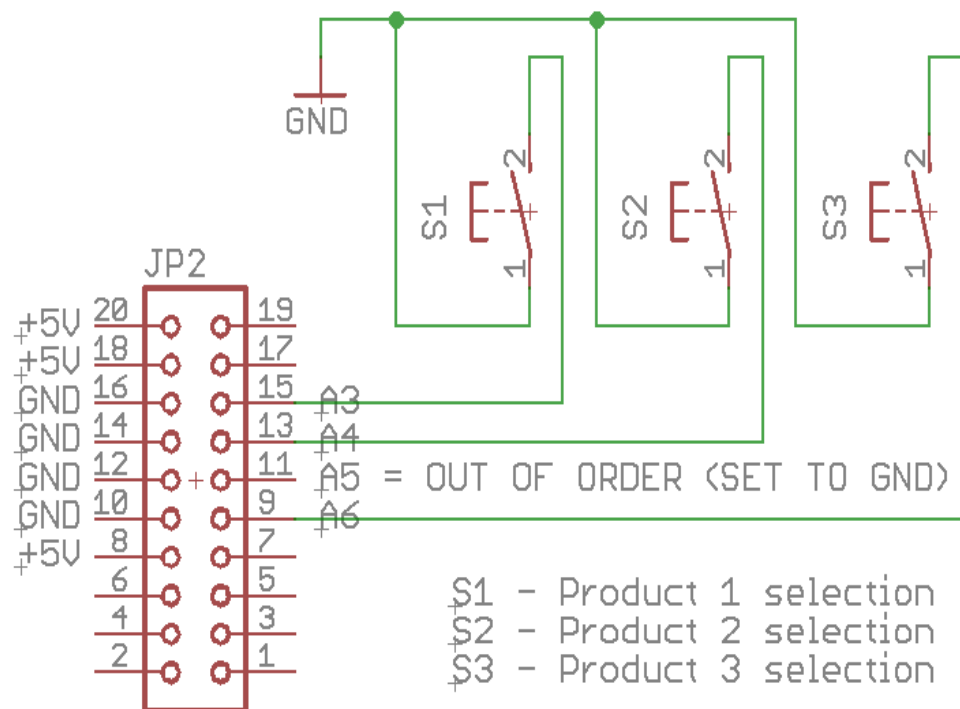
We offer shielded flat ribbon cable, as well as Y-cables as accessories in the web shop at www.casino-software.de/shop

5.8 Push button

S1 = Push button product 1 selection – A3, JP 2.8 (pin 15)

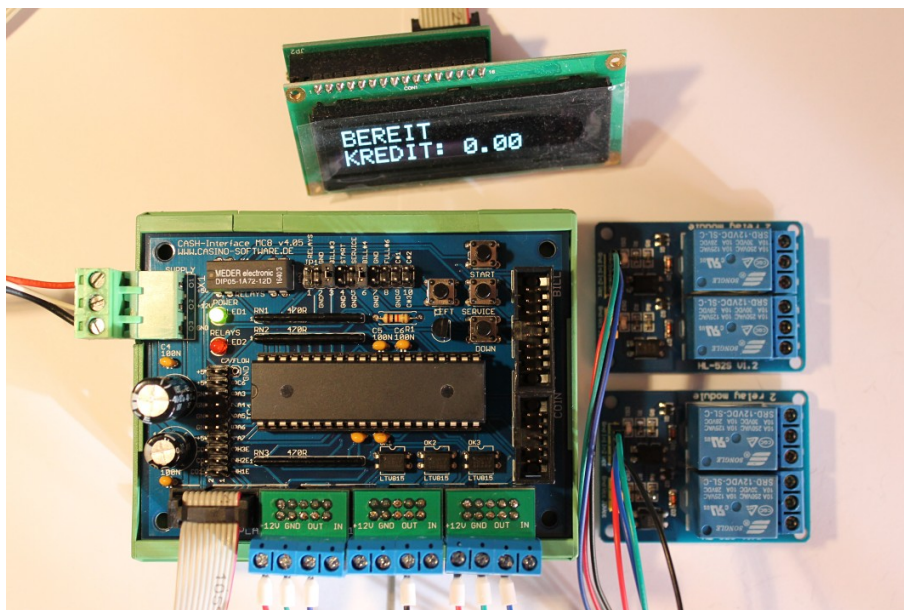
S2 = Push button product 2 selection – A4, JP 2.7 (pin 13)

S3 = Push button product 3 selection – A6, JP 2.5 (pin 9)



With A5 input it is possible to set the machine to “OUT OF SERVICE” state, that means “OUT OF SERVICE” is shown in the display and acceptance of cash is disabled.

5.9 CI MC8 board with OLED Display and external output relays



6. GETTING STARTED

To make the settings, the service menu is called via the SERVICE button. Press the SERVICE button to navigate to the next menu item. First set up the coin and bill acceptor values. For COIN #1 set the value for the first coin, e.g. 50 for 50 Cent. Then for COIN #2 set the value for the second coin, e.g. 100 for 1 Euro, and so on. Same for the banknotes, for BILL #1 set the value for the first banknote, e.g. 500 for 5 Euro. For BILL #2 set the value for the second banknote, e.g. 1000 for 10 Euro, and so on.

Next set the communication protocol for the coin validator (COIN) and bill validator (BILL). Hint: using more than 3 coins or banknotes BINARY protocol must be used. Using BINARY protocol, of course the validator device must be set to BINARY, too!

Then set the price for product 1-3. The product price should be set in Cent, e.g. 500 to have a price of 5 Euro.

With the setting “H-PULSE LENGTH” the duration for the output relay can be set. Default setting is 500ms.

For the very first test run connect coin and bill validator, as well as the output relays via ND-300 adapter, and test several different coins and banknotes.

In the service menu the sum of all pay ins is shown on the TOTAL IN entry. There is also a pay out counter for product 1-3.

7. OTHER

Using the coin validator with PARALLEL protocol only line 1-3 can be evaluated due to insufficient inputs on the micro controller and because the hoppers are connected to the upper coin lines.

With more than 3 coins the coin validator should be used with BINARY protocol. This way with the 3 output lines #1-#3 it is possible to detect 7 different coins.

8. SAFETY INSTRUCTIONS

Read the user manual completely and carefully before use. The user manual is part of the product and contains important information for correct use.

Use the product, product parts and accessories only in perfect condition. Compare the specifications of all used devices to ensure compatibility. In case of questions, defects, mechanical damage, trouble and other problems, non-recoverable by the documentation, contact your dealer or producer.

The CASH-Interface MC8 module is intended to use in a housing.

Only use the CASH-Interface MC8 module in low-voltage circuits (max. 24V). Higher voltage rates are not permissible. There is danger to life through an electric shock and a risk of fire!

Ensure that all the electrical connections and connection cables conform to the regulations.

The entire product may not be modified or reassembled. Operation is only permissible in dry indoor locations. Never operate the device immediately after bringing it from a cold to a warm room. The resulting condensation water may damage the device. Do not expose the 8 channel digital IN/OUT module to high temperatures, strong vibrations, high degrees of humidity or chemically aggressive dusts, gases and vapors.

Electronic components of the 8 channel digital IN/OUT module may heat up during operation. Ensure sufficient air circulation around the device to prevent heat build-up and overheating.

In case of damage incurred by disregarding these operating instructions, the warranty claim is void. Liability for any and all consequential damage is excluded! We do not assume any liability for damage to property or personal injury caused by improper use or the failure to observe the safety instructions!

9. DISPOSAL INSTRUCTIONS

According to the European WEEE directive, electrical and electronic equipment must not be disposed with consumers waste. Its components must be recycled or disposed apart from each other. Otherwise contaminative and hazardous substances can pollute our environment.

10. LIABILITY NOTICE

We reserve the right to printing errors and changes to product, packaging or product documentation. See our term of warranty.