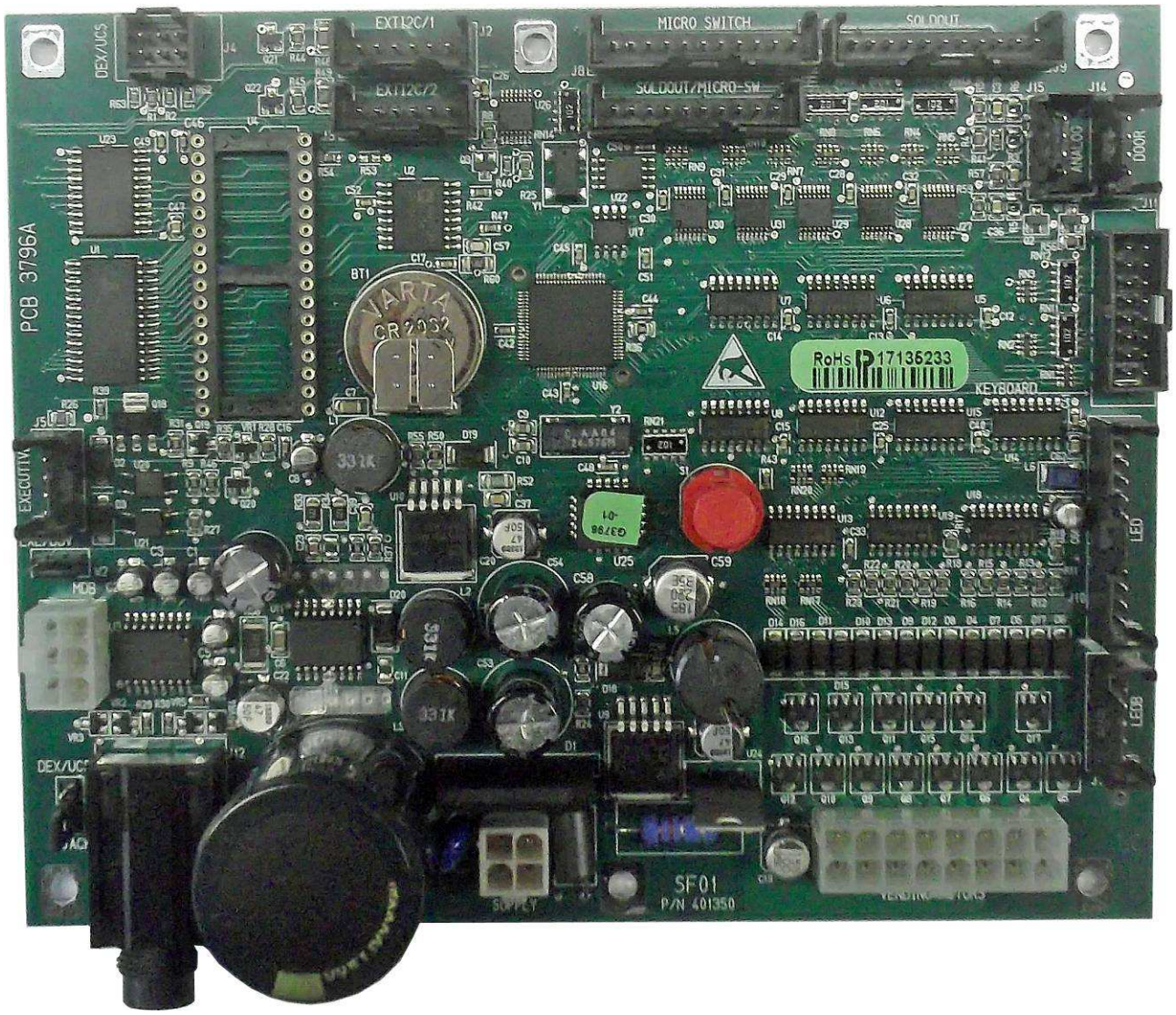
PROGRAMMING MANUAL



BOARD SF01

VENDING MACHINE

ICE CREAM VENDOR (SVE ICV)

CE

Revision: 03
Date: 14/11/2014
Code: 406868

1 GENERAL WARNINGS

1.1 Purpose of this manual

The manual contains the correct procedures for programming of the Vending Machine. This manual is an integral part of the machine and must therefore be kept intact and available to hand for the machine's entire productive life.

KEEP INSIDE THE MACHINE

1.2 To whom this manual is addressed

This manual is addressed to those persons in charge of installing, setting, and extraordinary maintenance of the vendor (Installer/Maintenance technician). It is compulsory that all personnel in charge of these operations are familiar with the instructions and abide by the procedures contained in this manual.

Technicians allowed to operate this vending machine:

- **Installer/ Maintenance / Specialized technician**

  - The intervention of the maintenance technician is required for all those operations where the lower protection carter must be opened: when carter is removed all operations must be done only by SandenVendo personnel or by authorized technicians (trained and informed) and not by general operators because of electrical and mechanical risks.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

1.3 Responsibility

The **manufacturer's** responsibility is confined to the correct use of the machine, in the limits indicated in this manual.
"**SandenVendo Europe Spa**" declines all responsibility for any damages caused to persons and/or property as the result of:

- Incorrect installation
- Use of unauthorized spare parts
- Execution of changes unforeseen/unauthorized by the manufacturer
- Improper use of the machine
- Connection to inadequate supply systems and non in conformity with the regulations in force

1.4 Manufacturer

"SandenVendo Europe Spa." has over 50 years experience in constructing beverage vending machines, and it is precisely the technological know-how it has developed over many years of research working closely with the production and international marketing, which is the best guarantee that **SandenVendo Europe Spa."** can offer.

1.5 Service centers

“**SandenVendo Europe Spa.”** is represented by a valid and prepared sales network in both Italy and Europe (see inner cover page).

1.6 Warranty

The warranty on the Vending Machine components, starting from the date shown on the delivery note, is for 24 months for the cooling system.
The warranty includes exclusively the parts replaced, with labor excluded.
The Warranty does not include, damages to the vending machine caused by:

- Transport and/or handling
- Operator errors
- Lack of maintenance as explained in this manual
- Failures and/or breakages not due to malfunction of the vending machine

1.7 General safety warnings

- Carefully read the manual before starting or loading the vending machine
- Protect the vending machine against weather conditions
- Only maintenance technicians should remove the protective covers
- Always read the programming manual before operating the electronic board settings
- Never position the vending machine in direct sunlight
- Never sell the products with the door open
- Refer to the routine maintenance chapter to clean the vending machine
- Disconnect the power supply cable before investigating or unblocking a blocked product
- Use a special protection system/Residual current device or similar.
- Install the appliance so that the electrical plug can be easily accessed afterwards
- If the power cable is damaged, it must be replaced by the manufacturer or by one of its technical support personnel or by a qualified electrician.
- This machine is not suitable for installation in areas where water jets are used

- This machine is not suitable for outside installation
- To prevent hazards due to machine instability, secure the machine according to the instructions
- In case of a failure and/or poor operation, only seek help of the qualified personnel of our service centers.
- Use only spare parts authorized by the manufacturer
- Should this manual be lost or damaged, you may request a copy from the manufacturer: **please enclose the serial number of your vending machine with your request.**

CAUTION: FAILURE TO FOLLOW THE INSTRUCTIONS CONTAINED IN THIS MANUAL MAY INVOLVE DAMAGES TO THE MACHINE AND/OR PERSONNEL

The pictures and illustrations in this document are only indicative. **SandenVendo Europe S.p.A.** recalls that the technical and performance of products can change without notice.

“SandenVendo Europe S.p.A.” reserves the right of making changes on their vending machines without any advice; moreover they declare that the vendors listed in this manual are in conformity with the following directives: 2006/42/EC (EC markings).

“**SandenVendo Europe S.p.A.**" assumes no liability for the correctness of the contents or damages caused by using this manual.

“**SandenVendo Europe S.p.A.**" reserves the right to make changes to this manual without prior notice.

2 SPECIFICATION FOR ELECTRONIC BOARD SF01

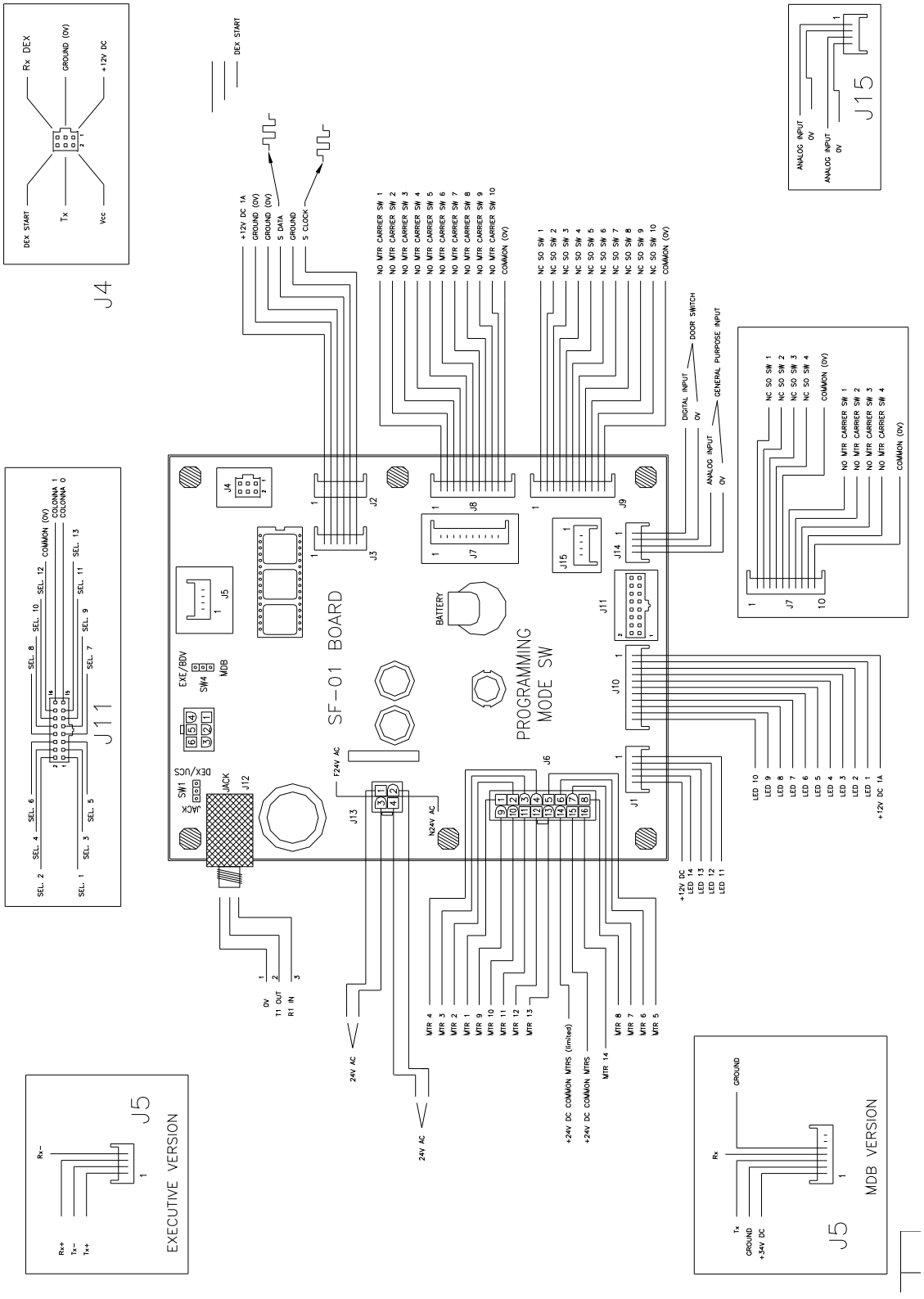
2.1 Hardware feature

The board called SF01 has all the following functions :
Power supply : 24 Volt AC 2 A rms
14 Motor outputs 24 VDC 1 A
14 Motor micro-switches
14 Sold-out micro-switches
14 Sold-out leds
26 Selection switches
1 Door switch
3 Analogical inputs for temperature control
1 Real time clock
1 Jack plug for DEX/UCS audit output
1 TTL signal output.

The board uses a 16 bit micro-controller with up to 4096 Kbit of program eprom and 256 Kbit of eprom memory used to store setting and audit.
Slave fluorescent display 2 lines 20 characters
Communication with coin mechanism in MDB or EXECUTIVE

2.2 Software feature

The SF01 software includes all the below functions
Service Programming routine
Credit accumulation
Coin mechanism interface
Consumer Manipulation and Vend process Interface
Multi pricing
Escrow
Correct change Indicator
Manual payout
Manual tube filling
Audit



3 Function of selection buttons in the service mode

Selection Nr.: 1	Back ⌫	Abort or escape a programming point
Selection Nr.: 2	Up ⇧	Increase or move to next programming point by pushing selection button 2
Selection Nr.: 3	Down ⇩	Decrease or move to previous programming point by pushing selection button 3
Selection Nr.: 4	Enter / Store	Call or store a programming point by pushing selection button 4

Password 4-2-3-1-4

Entry by selection button

4 = key 4
2 = key 2
3 = key 3
1 = key 1

4 PROGRAMMING

In the service mode, information such as sales by selection, total sales, total cash flow through the machine, and diagnostic error codes can be accessed by using the selection buttons and the electronic display. In addition, storage column assignments and vend pricing can be set in this mode using the same techniques. The service mode can only be entered when the vendor door is open and when the service mode switch is activated (placed in the middle of the electronic board).
The selection switches are used to step through the various programming function as described in the previous page.

After entry into the service mode the operator can select one of several routines to read data registers or to program machine configuration information. This level is called the code level. Each of these paths is identified by a service code. The code for the various paths are as follows:

ERROR CHECKING		Error routine
TUBES PAYOUT		Coin payout routine
TUBES FILLING		Tube filling routine
TEST ROUTINE		Test vend routine
PASS PROTECT ROUTINE		Request of password to access to the protected menus
Protected menu	**CASH COUNTERS**	Cash counter routine
	SALE COUNTERS	Sales counter routine
	COIN PRICES SETTING	Price setting routine
	KEY PRICES SETTING	Key price setting routine
	OPTION SETTING	Machine configuration setting routine
	MDB COIN SETTING	Overpay routine
	LANGLANGUAGE SETTING	Language selection
	TIME & CLOCK SETTING	Time and date routine
	LIGHT CONTROL	Light off period
	PAYMENT SETTING	Payment system
	RETURN TO VEND MODE	Return to unprotected menu
RETURN TO VEND MODE		Return to normal mode door open state

The password is the sequence **4-2-3-1**. The purpose of this password is to prevent accidental reprogramming by the operator.

4.1 Error routine

If the ENTER button is activated at the "**ERROR CHECKING**" prompt the VMC will enter in the error routine. If no errors have occurred since the last error reset the display will show a "**NONE**" message. If an error has been detected since the last error reset the display will show the first summary level error code that has occurred, such as "**VEND**", which would indicate a column jam error. Using the UP or DOWN buttons it is possible to cycle through the various summary level error. Activating the HOME button for a few seconds while the error is shown will cause the display to flash, release the fourth selection and the error will be cancelled. Pushing selection 1 will return the VMC to the normal mode door open state..
The most common errors are:

VEND	Vend mechanism
CTRL	Door open
SELS	Selection switch
CHAR	Changer
BVAL	Communication error with Bill Validator
CRDR	Communication error with Card reader

4.1.1 Column Jam error routine

If the ENTER button is activated at the **“VEND”** prompt the VMC will display a **"CJXX"** message where **XX** indicates the columns that have been detected as being jammed. Using the UP and DOWN buttons it is possible to cycle through all jammed columns. If the ENTER button is pressed and held for a few seconds during the display of any error code, that code will be cleared.
CJ05 indicates an opening vend door error
CJ06 indicates a closing vend door error
After clearing, VMC will display the next existing column jam error, or **"NONE"** if there is no other error.
Activation of HOME button will return the VMC to the code level at the **"ERROR CHECKING"** message.

4.1.2 Door Switch error routine

If the ENTER button is activated at the **"CTRL"** prompt the VMC will display a **"DS"** message indicating a door switch error was detected (door open for more than one hour). If the ENTER button is pressed and held for a few seconds during the display of any error code, that code will be cleared.
After clearing VMC will display the next existing error or **"NONE"** if no other error.
Activation of HOME button will return the VMC to the code level at the **" ERROR CHECKING "** message.

4.1.3 Selection Switch error routine

If the ENTER button is activated at the **"SELS"** prompt the VMC will display a **"SLXX"** message where **"XX**" indicates the first selection switch error (switch always close).
Using the UP and DOWN buttons it is possible to cycle through all selection switch error. If the ENTER button is pressed and held for a few seconds during the display of any error code , that code will be cleared.
After clearing VMC will display the next existing error, or **"NONE"** if no other error.
Activation of HOME button will return the VMC to the code level at the **" ERROR CHECKING "** message.

4.1.4 Changer error routine

If the ENTER button is activated at the "**CHAR**" prompt the VMC will display a "**CC**" message indicating a changer communication error a **"TS**" message indicating a tube sensor error, an "**IC**" message indicating an Inlet chute blocked error (no coins sensed in the acceptor for a supplier pre-determined number of hours, a "**TJ"** message indicating a tube jam error, or a "**CRCH"** message indicating a changer ROM checksum error. "**EE**" message indicating excessive escrow attempts (escrow to vends greater than a pre-determined supplier standard), and "**NJ**" message indicating a coin jam (sensed and reported by coin mechanism), "**LA**" message indicating a low acceptance rate , "**DIS**" changer disconnect "**ROUT**" coin rout error.
Using the UP and DOWN buttons will cycle through all changer error. If the ENTER button is pressed and held for two seconds during the display of any error code, that code will be cleared.
After clearing VMC will display the next existing error, or "**NONE**" if no other error.
Activation of BACK button will return the VMC to the code level at the " **ERROR CHECKING** " message.

4.1.5 Bill Validator error routine

If the ENTER button is activated at the **"BVAL"** prompt the VMC will display a **"BC"** message indicating a bill validator communication error, a **"BFUL"** message indicating that the bill stacker is full, a **"BILL"** message indicating a defective motor, a **"BJ"** message indicating that there is a bill jammed in the bill validator, a **"BRCH"** message indicating a checksum error, a **"BOPN"** message indicating an open cash box, or a **"BS"** message indicating a bill sensor error. The first column that has been detected with a home sense error.
Using the UP or DOWN buttons it is possible to cycle through all bill validators errors. If the ENTER button is pressed and held for a few seconds during the display of any error code that code will be cleared.
After clearing VMC will display the next existing error, or **"NONE"** if no other error.
Activation of HOME button will return the VMC to the code level at the **" ERROR CHECKING "** message.

4.2 Coin Payout Routine (work only on MDB)

If the ENTER button is activated at the **"TUBES PAYOUT"** prompt the VMC will enter the coin payout routine. Upon entry into this routine the display will show the lowest coin value dispensable. Pressing the UP button will increase the display to the next highest coin value, the DOWN will decrease to the next lowest coin values.
Pushing button number 5 to a corresponding coin value the display will show the number of coins in the tube reported by the changer.
Pressing the ENTER button will pay out the displayed coin type.
Activation of the HOME button while a coin value is displayed will return the VMC to the **"TUBES PAYOUT"** prompt.
Activation of the HOME button at the **"TUBES PAYOUT"** prompt returns the VMC to the normal mode door open state.

4.3 Tube Fill Routine (work only on MDB)

If the ENTER button is activated at the **"TUBES FILLING"** prompt the VMC will enter the tube fill routine, and will visualize the value of the coins entered.
The purpose of this routine is to allow the operator to fill the tubes by entering them through the acceptor and thus have total coin accountability, if they so choose.
Upon entry into this routine the VMC will enable acceptance of any coin type that will be routed to an inventory tube and disable all others.
The VMC will count and display all inventoried coins and will not permit the acceptor from taking coins when the highest price setting is reached.
Activation of HOME button while a coin inventory is displayed will return the VMC to the **"TUBES FILLING"** prompt.
Activation of the HOME button at the **"TUBES FILLING"** prompt returns the VMC to the normal mode door open state

4.4 Test Routine

If the ENTER button is activated at the "**TEST ROUTINE**" prompt the VMC will enter the test routine.
The description of the test routines available are the following:

"**OUT"** to test the output of the board
"IN" to test the input of the board
"**LIGHT**" to test the lighting
"TEMP" to test the temperature sensor
"POWER" reads the switch on counter, the hour and the temperature of the last 3 switching off.

4.4.1 "OUT"

Entering the "**OUT**" prompt the display will show "**CXX**" (**XX** corresponds to the output of the motor to be tested). Pushing the enter button will activate the test, pushing the up or down buttons will select the other motors. The sales done with this function will not increase the vend counters.
In this routine the motors from 1 to 4 are the vend motors, motor 5 corresponds to the opening of the vend door, motor 6 is the closing of the vend door, motor 7 is the payout.
Pushing the Home button, while a column is displayed will return the VMC to the " **OUT** " prompt.
Using the loading buttons inside the menu test, it is possible to test the vend motors.
Activation of the Home button at the **" OUT** " prompt will return to the "**TEST ROUTINE**" prompt.

4.4.2 "IN"

Entering the "**IN**" routine the display will show the following scheme:

SE 04	DOOR.111
S.O.1111	MTR00000

The upper left side will show the button pressed:
- SE 01-04 pressed selection buttons.
- RET. Coin return button
- LO 01-04 Product loading button (together with the green button)
- SECU Safety pedal

The upper right side will show the status of the micro-switches installed on the door motor:
- The first number indicates the status of the loading-vend switch
- The second number is the status of the micro-switch in door open position
- The third number is the status of the micro-switch in door closed position

The lower left side "S.O." indicates the status of the empty/full sensors of the vend column (from left to right).

The lower right side "MTR" shows the status of the motor micro-switches, the first four are the vend motors, the last is the payout motor.

Press Home button to exit test menu.

4.4.3 "LIGHT"

Pushing the Enter button at the " **LIGHT** " routine will switch (on-off) the solenoid that drive the illumination.

4.4.4 "TEMP"

Pushing the Enter button at the "**TEMP**" routine will start the auto-test of the temperature sensor (duration of the test 30 sec.).
If an error is detected on the sensor the display will show **"SENS"**.
Press escape button to come back to the "**TEST ROUTINE**" menu.

4.4.5 “POWER”

Pushing the Enter button at the ”**POWER** ” routine will show the number of the electronic board ignitions.
Pressing UP and DOWN buttons will cycle through the data of the last 3 switching off of the electronic board (1 is the most recent, 3 is the oldest).
It is possible to see the hour, the date and the temperature of each switching off..
Press the Home button to exit the **“POWER”** prompt.

5 PROTECTED MENUS

5.1 Pass Routine

This routine is used to access the protected menus.
At the “**PASS PROTECT ROUTINE**” prompt press enter button, display will be dark no characters shown, press the follow sequence of selection button **4-2-3-1-4** (password must be entered within 10 seconds) press **ENTER** to confirm (selection **4**) now you can see the first protected menu “**CASH CONUTERS**” (use **UP** and **DOWN** button to cycle through the available menu).

5.2 Cash Counter Routine (protected menu)

If the ENTER button is activated at the "**CASH CONUTERS**" prompt the VMC will enter the cash counter routine. Upon entry into this routine the display will show the total cash counter "**CASH**" / "-**XXXX**" / "**xxxx-**" where "**XXXX**" are the first four digits and “**xxxx-**” are the last four digits.
Using the UP and DOWN button will show the cash for every single selection "**CL N**" / "**-XXXX**" / "**xxxx-**" where **N** is a selection number .
Activation of the HOME button while a selection counter is displayed will return the VMC to the "**CASH CONUTERS**" prompt.
Activation of the HOME button at the "**CASH CONUTERS**" prompt will return the VMC to unprotect area.

5.3 Sales Counter Routine (protected menu)

If the ENTER button is activated at the "**SALE CONUTERS**" prompt the VMC will enter the sales counter routine. Upon entry into this routine the display will show a "**SALE**" "**-XXXX**", "**xxxx-**" message where "-**xxxx"** are the first four digits and "**XXXX-**" are the last four digits.
Using the UP and DOWN button will show the sales for every single selection "**SL N**" / "**-XXXX**" / **"xxxx-**" where **N** is a selection number .
Activation of the HOME button while a selection counter is displayed will return the VMC to the "**SALE CONUTERS**" prompt.
Activation of the HOME button at the "**SALE CONUTERS**" prompt will return the VMC to unprotect area.

5.4 Price Setting Routine (protected menu)

If the ENTER button is activated at the "**COIN PRICES SETTING**" prompt the VMC will enter the price setting routine. The display will show a "**PR 01**" (price for selection 01) if the machine is working in multi-price, or "**SPRI**" if it's working in single price.
In multi-price mode using UP and DOWN buttons it is possible to change the number of selections (**01-04**) or "**ALL**" to change the price for each selection. Activation of the ENTER button will show the actual price using UP and DOWN button will increase or decrease the price by one lowest coin value respectively.
Activation of the ENTER button while the desired price is displayed will save that price.
Activation of the HOME button while a selection price is displayed, without doing an ENTER before, will return the VMC to the selection display without saving the displayed selection price.
In single price the price that you choose on "**SPRI**" submenu, is used for all selection.
Activation of the HOME button while a selection is displayed will return the VMC to the "**COIN PRICES SETTING**" prompt. Activation of the HOME button returns the VMC to unprotected area.
NB. If the machine is set in price holding (with CONFY-C2=2), the price menu is used to match the price holding line to the single selections.

5.5 Key Price Setting Routine (protected menu)

KEY PRICE SETTING 1: Price setting line 1 for Cashless
KEY PRICE SETTING 2: Price setting line 2 for Cashless
KEY PRICE SETTING 3: Price setting line 3 for Cashless

If the ENTER button is activated at the "**KEY PRICES SETTING x**" prompt the VMC will enter the price setting routine. The display will show a "**PR 01**" (price for selection 01) if the machine is working in multi-price, or "**SPRI**" if it's working in single price.
In multi-price mode using UP and DOWN buttons it is possible to change the number of selections (**01-04**) or "**ALL**" to change the price for each selection. Activation of the ENTER button will show the actual price using UP and DOWN button will increase or decrease the price by one lowest coin value respectively.
Activation of the ENTER button while the desired price is displayed will save that price.
Activation of the HOME button while a selection price is displayed, without doing an ENTER before, will return the VMC to the selection display without saving the displayed selection price.
In single price the price that you choose on "**SPRI**" submenu, is used for all selection.
Activation of the HOME button while a selection is displayed will return the VMC to the "**KEY PRICES SETTING x** " prompt. Activation of the HOME button returns the VMC to unprotected area.
NB. If the machine is set in price holding (with CONFY-C2=2), the price menu is used to match the price holding line to the single selections.

5.6 Machine Configuration Setting Routine (protected menu)

If the ENTER button is activated at the "**OPTION SETTING**" prompt the VMC will enter the machine configuration setting routine. The display will show a "**C1**" message where "**1**" indicates configuration setting number 1. Using UP and DOWN button will cycle through the available configuration setting numbers. Activation of the ENTER button while a configuration setting number is displayed will allow access to the current setting number of the displayed configuration setting.
Activation of the ENTER button will save the displayed configuration.
Activation of the HOME button while configuration is displayed, without doing an ENTER before, will return the VMC to the "**OPTION SETTING**" display without saving the displayed configuration. Activation of the HOME button returns to unprotected area.

The following information describes various machine configuration settings

5.6.1 "C1" Single Price/Multi Price

This setting gives the possibility to work with one price for all the selections, or to choose different prices for each selection:
C1 = 0 Single price mode .
C1 = 1 Multi price mode (standard)

5.6.2 "C2" Extended Menu

This parameter enables extended menu in programming mode
C2 = 0 Extended menu off
C2 = 1 Extended menu on(standard)

5.6.3 "C3" Temperature Show

This parameter enables temperature visualization on vending mode:
C3 = 0 Temperature not showed
C3 = 1 Temperature showed (standard)

5.6.4 "C4" Open Door Display Mode

This parameter is used to change the MIS data information that you can read when the door of VMC is open:
C4 = 0 Display operating error (if they exist) otherwise nonE is shown
C4 =1 Display operating error (if they exist) otherwise nonE is shown plus alternatively total cash counter and total sales counter (default).

5.6.5 "C5" Reset Counter Mode

This parameter determines how the VMC has to reset the MIS internal counter:
C5 = 0 All the re-settable counters will be reset only using a reset command on MIS communication mode (dex-ucs command).
(default)
C5 = 1 All the re-settable counters will be reset when you open the door, read one of the re-settable counter and close the door.

5.6.6 "C6" Custom Message

This parameter Is used to enable vending custom message (must be programmed before using WINDEX, otherwise nothing is showed !!!):
C6 = 0 Use standard message on ROM (default)
C6 =1 Use programmed message.

5.6.7 "C7" Save Credit Mode

This parameter determines how the VMC has to manage the remaining credit:
C7 = 0 Clears the credit if no button is pushed during the last five minutes (default).
C7 = 1 Keep the credit indefinitely.

5.6.8 "C8" Force Vend

This parameter is used to prevent the use of the machine like a coin changer. When forced vend is enable you can obtain escrow only in this cases:
if you insert money and make a selection (both in full and empty selection)
if you insert coins that you can obtain like escrow (coins that go in the tube of the coinage) and you don't reach the maximum price.
C8 = 0 Force vend disable (default).
C8 = 1 Force vend enable.

5.6.9 "C9" Multi Vend

This parameter enables or disables automatic escrow process:
C9 = 0 Multi Vend disable (you obtain automatically the escrow after the selection) (default)
C9 = 1 Multi Vend enable (you can use your escrow to make another selection, or if you want escrow, you have to press the escrow button)

5.6.10 "C10" Bill Escrow Mode

This parameter allows the escrow of bill. If enabled and the last bill inserted it takes the credit over the maximum price, the bill will be held in the escrow position, and can be returned as escrow. If the function is disabled, bills go always to the stacker. The valid value are:
C10 = 0 Bill escrow enabled (default)
C10 = 1 Bill escrow disabled.

5.6.11 "C11" & "C12" Reserved for Future Use

5.7 Correct change only control (protected menu)

If the **ENTER** button is activated at the "**MDB COINS SETTING**" prompt the VMC will show the following submenu available:

5.7.1 "CON*X*"

If you press **ENTER** button at the "**CON*X***" the VMC will show the actual overpay status, use **UP** or **DOWN** to change ***X*** value where ***X*** is 0 (overpay not allowed) or 1 (overpay allowed).

IF CON=0 (means the VMC automatically manages the changer settings)
CCU correct change value

If changer is able to give the change back (CCU value + Maximum Price) correct change led is OFF
Otherwise correct change led if ON
If correct change led is ON or OFF the VMC automatically accepts only coins than can be returned or can return the equivalent credit with other coins.

ACC (Unconditional acceptance value) is automatically managed equal to the Maximum price

IF CON=1 (means the VMC manages the changer setting according to CONFY setting)
Correct change led is set regarding the C2 (Low change equation) and C3 (minimum coins Tube level)

If correct change is OFF: VMC accept coins set in CONFY -> C06 and C07 and bill set on CONFY-> C4
If correct change is ON: VMC accepts coins set in CONFY -> C08 and C09 and bill set on CONFY-> C5

ACC (Unconditional acceptance value) is automatically managed equal to the Maximum price

5.7.2 “CCU”

If you press **ENTER** at the **“CCU”** prompt, the display show the actual maximum value used by VMC to work in correct change situation, you can change the value using **UP** or **DOWN** button.

5.7.3 “ACC”

If you press **ENTER** at the **“ACC”** prompt, the display show the actual maximum value accepted, even if the VMC doesn’t know if it has the change, you can change the value using **UP** or **DOWN** button

5.7.4 “MCARD”

If ENTER is pressed at the “**MCARD**” prompt, the display show the actual maximum revalue amount accepted. Parameter MCARD is used to limit the credit accepted with cashless systems.
Maximum credit on cashless systems is managed as follows:

Revalue
If amount of inserted cash + actual cashless credit > MCARD value
Revalue is prohibited.
If amount of inserted cash + actual cashless credit < MCARD value
Revalue is allowed.

Cashless Vend
If cashless credit > MCARD value Vend is prohibited.
If cashless credit < MCARD value Vend is allowed.

If **MCARD** is set to 0 control on revalue or cashless vend is disabled.
If **MCARD is set to 65535 the revalue is inhibited (from version 1.53)**

5.7.5 “CONFY” Configuration menu (C01 ~ C10)

Press **ENTER** at the **“CONFY”** prompt, the display shows “**C01**”, using up or down button you can choose the other submenus (“**C01**”-“**C10**”).

5.7.5.1 "C1" Keypad activation (Coinage)

C01 = 0 Disabled
C01 = 1 Enabled

5.7.5.2 “C2” Low Change Equation

MDB mode
This parameter defines the exact change equation. The combination of the empty states assume the exact change state
A is the lowest coin value reported in the tubes
E is the highest coin value reported in the tubes
If the tubes are empty according to these equations the CORRECT CHANGE LED is ON

0 : TUBE A and TUBE B and TUBE C and TUBE D
1 : TUBE A or TUBE B or TUBE C
2 : TUBE A only
3 : TUBE B only
4 : TUBE C only
5 : TUBE D only
6 : TUBE B or TUBE C or TUBE D
7 : TUBE A and TUBE B or TUBE C
8 : TUBE A and TUBE B or TUBE D
9 : TUBE A and TUBE C or TUBE D
10 : TUBE B and TUBE C or TUBE D
11 : TUBE A and TUBE D or TUBE C
12 : TUBE B and TUBE D or TUBE A
13 : TUBE A or TUBE C
14 : TUBE A or TUBE B and TUBE C
15 : TUBE A or TUBE B
16 : TUBE A and TUBE B and TUBE C and TUBE D and TUBE E
17 : TUBE A or TUBE B or TUBE C or TUBE D or TUBE E

ATTENTION:
When using **Executive** please be aware to set "**CONFY**" parameter C2 to 0 otherwise machine is working in "**Price holding**" mode.

EXECUTIVE mode (price holding)
If you set C02 = 0 The prices are stored in the VMC and they are sent to payment system.
If you set C2 = 1 and payment system is set to Executive, the machine works in price holding mode; it means that the price is stored on payment system. On this mode each time you press a selection the machine sends to the payment system the number of selection pressed in the following format:
Sel 11 pressed – send 1 to payment system
Sel 18 pressed – send 8 to payment system
Sel 21 pressed – send 9 to payment system
…
Sel 46 pressed – send 30 to payment system
…
Sel 88 pressed – send 64 to payment system

If you set C02 = 2 The machine works in price holding and the line of the price must be programmed on the **“COIN PRICES SETTING"** menu. The machine shows the price stored on the payment system if it supports the price show feature.

5.7.5.3 "C3" Low Change Level (MDB)
This number will be deducted from the coins tubes number reported by the changer in order to calculate (according to the low change equation) the CORRECT CHANGE status

5.7.5.4 "C04" Bill accepted
Bills accepted when "**CORRECT CHANGE**" LED is OFF
Refer to "**C6 and C7 Coins accepted by the changer**" for explanation

5.7.5.5 "C05" Bill accepted in low change condition
Bills accepted when "**CORRECT CHANGE**" LED is ON
Refer to "**C8 and C9 Coins accepted by the changer in low change condition**" for explanation

5.7.5.6 "C06" & "C07" Coins Accepted by the Changer

C06 = Coins 1 to 8
C07 = Coins 9 to 16

Coin 1 is assumed to be the smallest, coin 16 the highest in value.

Each coin has a binary value as:

C06:	coin	1	=	1	**C07:**	coin	9	=	1
	coin	2	=	2		coin	10	=	2
	coin	3	=	4		coin	11	=	4
	coin	4	=	8		coin	12	=	8
	coin	5	=	16		coin	13	=	16
	coin	6	=	32		coin	14	=	32
	coin	7	=	64		coin	15	=	64
	coin	8	=	128		coin	16	=	128

EXAMPLE: If coins 1 – 2 – 3 – 4 –13 – 15 have to be accepted, the correspondent values have to be added to find the set value:
C06 = 1 + 2 + 4 + 8 = **15**
C07 = 16 + 64 = **80**

5.7.5.7 "C08" & "C09" Coins accepted by the changer in low change condition
This parameters are used to determine the coins accepted by the changer, when the VMC is in low change condition. The values of this submenu are calculated in the same way as for "**C06**","**C07**" submenu.

5.7.5.8 "C10" Reset to the Factory
Be carefully using this procedure you lose all the configuration parameters on the machine (counter, prices, set-point…)

AVAILABLE RESET OPTION "C10" = 18

Put appropriate reset value according to the list, press button 4 to confirm.
Switch off the machine and then turn it on while pressing the programming button on the board, release the button when the display shows "**RESET**".
Now it is possible to reprogram all parameters.

5.8 Language Configuration (protected menu)

If ENTER button is activated at the "**LANGUAGE SETTING**" prompt the VMC will show the actual language used by VMC. Using up or down to toggle through the available language:

"**ENGL.**" English
"**ITAL.**" Italian
"**FREN.**" French
"**SPAN.**" Spanish
"**GERM.**" German
"**DTCH.**" Dutch
"**CUSTO**" Custom language programmed with computer

Press enter to confirm the new language or escape to come back on the "**LANGUAGE SETTING**" prompt.

5.9 Time Configuration (protected menu)

If ENTER button is activated at the "**TIME & CLOCK SETTING**" prompt the VMC will enter the machine on the time setting routine with the follow submenu:

"**ENB***X*" time status (X=0 time disable, X=1 time enable), press enter to modify X value,
"**YEAR**" pressing enter shows actual year, up or down modifies the value, enter to confirm, home to come back at "**ENBX**" message,
"**NTH**" pressing enter shows actual month, up or down modifies the value, enter to confirm, home to come back at "**ENBX**" message,
"**DATE**" pressing enter shows actual date, up or down modifies the value, enter to confirm, home to come back at "**ENBX**" message,
"**HOUR**" pressing enter shows actual hours-minutes, up or down modifies the hours, pushing enter the minutes flash, up or down to modify minutes, enter to confirm, home to come back at "**ENBX**" message,
" **DST** " daylight saving time, press enter to modify the country, the available values are:

"**AUS**" Australian rules
"**EU**" European rules
"**NA**" North America rules
"**OFF**" no saving time

5.10 Light Control (protected menu)

If ENTER button is activated at the "**LIGHT CONTROL**" prompt the VMC will enter the machine on the light control routine with the follow submenu:

"**ENB *X*** " Used to enable (X=1) or disable (X=0) the light control;
"**STRT**" Set the start time using the follow submenu:
- "**DAY**" Select the days of the week for start function, press ENTER to cycle through the days, press ENTER to change the status of the day (0 =not selected, 1= selected)
- "**HOUR**" Press ENTER to change the start hour and minute for selected day.

"**STOP**" Set the stop time using the follow submenu:
- "**DAY**" Select the days of the week for stop function, press ENTER to cycle through the days, press ENTER to change the status of the day (0 =not selected, 1= selected)
- "**HOUR**" Press ENTER to change the stop hour and minute for selected day.

5.11 Payment system configuration (protected menu)

If the ENTER button is activated at the **"PAYMENT SETTING**" prompt the VMC will enter on the payment system configuration routine, you can choose from:
- "**MDB**": Multi drop bus payment protocol
- "**EXE**": Executive payment protocol

Choose the payment system using up and down, and confirm pressing enter, the machine will restart.
When changing this parameter, move the dip switch placed between the "MDB" and "EXE" connector, follow the serigraphy on the board.

5.12 Return to Open Door Mode

If the ENTER button is activated at the **"RTN**" prompt the VMC will exit to normal open door routine.

6 TEMPERATURE ADJUSTMENT

The cooling unit is managed by an independent control unit, including LED display and buttons.
If a different temperature is required inside the refrigerated cell, it is sufficient to change the set-point on the electronic control unit, always keeping present the small variation of temperature caused by the starting and stop cycles.

Example:
If an average product temperature of 8℃ is needed, program the “set-point” at 7℃

6.1 Electronic Cooling Unit Control CAREL
USED FROM MARCH 2010

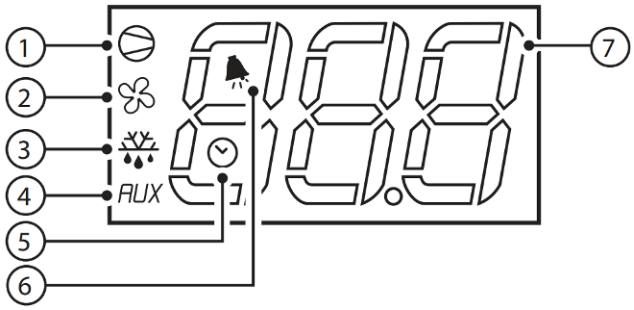
6.1.1 Description and function of control unit CAREL

The electronic control unit EASY CAREL regulates and controls the refrigerant system and all its components: The compressor, the fans, the defrosting, and is independent of the control of the board SF01, which control the electronics of the distributor.

On the front of the control unit are: 3 digits, 6 LED indicators that show the operating conditions and 3 buttons.

6.1.2 Display

1. Compressor led
2. Fan led
3. Defrost led
4. Auxiliary exit
5. Watch
6. Alarm
7. Numbers



The LED light on the display show the operation of the cooling system.

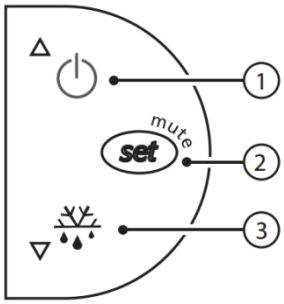
- 1 Compressor LED: indicates the status of the compressor.
  - LED is lit, the compressor is ON
  - LED blinks, the compressor is waiting before starting (check ES)
  - LED OFF, the compressor is OFF.

- 2 Fan LED: indicate the status of the evaporator.
  - LED is lit, the fans are running
  - LED blinks, the fans are waiting before starting
  - LED OFF, The fans are turned off

- 3 Defrost LED: indicate the status of the defrost.
  - LED is lit, The defrost mode is ON
  - LED blinks, is in drip mode after defrost
  - LED OFF, defrost is OFF.

- 4 Auxiliary exit: not used in this vendor.

6.1.3 Key board



Key 1 "**UP**", in normal function if pushed for more than 1 second, it visualizes the temperature of probe 2 (evaporator). If pushed during the visualization of the set point it increases the set value.

Key 2 "**SET**", pushed more that 1 second allows the visualization and setting of the set point

Key 3 "**DOWN**", pushed for more than 3 seconds starts or stops the defrost, and if it is pushed during the visualization of the set point it decreases the set value.

6.1.4 Set the temperature

The setting of the internal temperature is performed via the control unit in the following manner:
Press for more than 1 second the button 2 "**SET**", the display show the set point temperature setting.
To increase or decrease the value press button 1 "**UP**" or 3 "**DOWN**".
Press button 2 "**SET**" to confirm the new value.

6.1.5 Quick defrost

You can start a defrost without changing the interval set on the controller.
If the gasket is damaged or the delivery door remains open too long (for example is blocked by an object) the hot air enters into the cold store thus creating ice above the evaporator which blocks the passage of air.
To solve the problem you need to initiate an additional defrost action that may be performed in a few steps:
To start the defrost press and hold for 3 seconds the button 3 "**DOWN**". To stop the process, press again the button 3 "**DOWN**".

6.1.6 Description of the main signals and alarms

The error codes are displayed on the display alternating with the temperature gauge.

ERROR	DESCRIPTION
ES	The compressor has a timing delay when starting, therefore the LED of the compressor on the display starts to flash.
E0	Still or flashing means an adjusting probe error: • probe not working, the probe signal is interrupted or in short circuit: • probe is not compatible with the instrument; The E0 alarm signal is stable if it is the only alarm present (the temperature value is no longer shown), it flashes if there are other alarms or if the second probe is shown
E1	Flashes evaporator probe error: • probe not working, the probe signal is interrupted or in short circuit; • probe is not compatible with the instrument;
EE	Visualized during functioning or activation Error in reading of the machine parameters. See memorised data errors.
EF	Visualized during functioning or activation Error in reading of the working parameters. See memorised data errors.
ED	The last defrosting finishes when exceeding the maximum time. The indication disappears if the next defrost is finished correctly.
DF	Defrosting in course: • it is not an alarm signal but an indication that the instrument is doing a defrosting.
DISPLAY BLINKS	The control unit display and all the led's are flashing: • indicates that the door is open, or that the door switch is not working correctly • it is activated when the door remains open for more than one hours

6.1.7 Function

When switching on the control unit for the first times there will be a delay of three minutes in the compressor and evaporator fan starting .
During normal working, the compressor will stop only after reaching the set point temperature and the evaporator fans will work always.
When opening the door (if there is a door switch) both the compressor (if working) and fans will stop.
When closing the door, the fans will start immediately, while the compressor will have a delay of three minutes from the last switching off, even if the door is closed before.

The cooling unit is controlled by various parameters inserted in the software of the control unit and unchangeable by the User, this avoids possible and unwanted modifications to the same parameters, that could cause a malfunctioning of the cooling unit. In any case, for any particular needs it is possible to contact the technical assistance service that will assist you in various problems.

6.2 Cooling Unit Control SERETEC DSM 5030
USED UNTIL FEBRUARY 2010

The temperature adjustment can be done in a very simple and direct way through the electronic control unit. Please proceed as follows:

To visualize the set temperature, press and release 

key, the set temperature appears on display with blinking mode for approx. 10 seconds.

If you wish to modify this value, while it is blinking, press 

key to increase, or press 

key to decrease it. Wait till the controller exits from the programming mode and return to the operating mode (showing the internal temperature of the cell), which is registered automatically.

The so-called set-point is the temperature, which makes the compressor stop, because it reaches the ideal temperature to maintain the products loaded in the vending machine.
The compressor will re-start when it exceeds the set-point temperature + parameter TDIF (delta temperature).

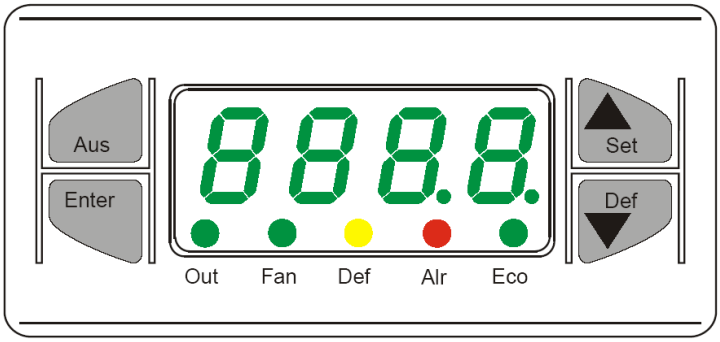


Photo 1

6.2.1 Description and function of the SERETEC.

The electronic control unit operates and commands the cooling system, it checks all the related components, compressor, fans and defrosting system and it is independent from the electronics that commands all the vending machine.
As shown in photo 1, the electronic control unit has a 4 digit 7-segment LED display, 5 colored signal LEDs and 4 command keys.
For this vending machine model, the keys normally used are on the right side, "**set**" arrow up and "**def**" arrow down.
The "**set**" key is used to show the set-point and to increase the set value, the "**def**" key is used to decrease the set-point value (as described in the previous paragraph) and also to do a forced defrosting, sometimes useful when inconveniences arise.
To do a forced defrosting and not a programmed one, push the "**Def**" key for at least 5 seconds, and the defrosting cycle will start immediately.
The 5 colored LEDs, situated under the temperature display, indicate the operating status of the cooling system's components, as follows :

- Green LED light "**out**" indicates the status of compressors,
  - If the light is fixed, the compressor is on.
  - If the light blinks, the compressor is stand-by to start.
  - If the light is off, the compressor is off.

- Green LED light "**fan**" indicates the status of internal fans,
  - If the light is fixed, the fans are on.
  - If the light blinks, the fans are stand-by to start.
  - If the light is off, the fans are off.

- Yellow LED light "**def**" indicates the status of defrosting cycle,
  - If the light is fixed, the defrost cycle is on.
  - If the light blinks, it is stand-by to start defrost cycle.
  - If the light is off, the defrost is not activated.

- Red LED light "**alr**" indicates, that the door of the vending machine is open.
  - In this case, if the compressor and the fans were working when the door is opened, the electronic control unit will be turned off and put them in stand-by. To reactivate them just after the door closure, in order to avoid the cooling system to work in abnormal way, the display alternately shows the temperature and "A-di".
  - In this case, the LEDs "out" and "fan" are blinking.

- Green LED light "**eco**" is not used for this model.

Moreover, the electronic control unit is able to show a malfunction of temperature sensors, by indicating the following messages on the display :

- "**E-P1**" probe for ambient temperature is down or disconnected.
- "**E-P2**" probe for evaporator is down or disconnected.

The cooling system is controlled by various parameters inserted in the software of the electronic control unit and cannot be modified by the users. This is to avoid any possible and unintentional modifications to the parameters, that may cause some malfunctions to the cooling system. In any case, for a special request, it is always possible to contact the technical assistance who may support you for various problems.

7 PROGRAMMING DIAGRAM

MAIN MENU	1°SUB MENU	2°SUB MENU	3°SUB MENU	DESCRIPTION
ERROR CHECKING				Error routine
	NONE			No errors exits
	UEND			Vend mechanism summary error
		CJXX		Column XX (from 01 to 07) jammed
	CTRL			Control board error
		DS		Door switch
	SEL			Selection error
		SLXX		Selection XX (01 - 12) defective
	CHAR			Changer error
		CC		Communication error
		TS		Tube sensor error
		IC		Changer inlet chute blocked
		TJXX		Tube pay out jam in coin type XX
		CRCH		Changer ROM check sum wrong
		EE		Excessive escrow
		NJ		Coin jam
		LA		Low acceptance rate
		DIS		Disconnected acceptor
		ROUT		Coin routing error
	BVAL			Bill validator error
		BC		Communication error
		BFUL		Bill validator stacker full
		BILL		Defective bill validator motor
		BJ		Bill validator jammed
		BRCH		ROM check sum error
		BOPN		Bill validator stacker is open
		BS		Bill validator sensor error
	CRDR			Card reader error
		CRC		Communication error
		CRXY		Card reader non-transient error; code X, sub-code Y
	RFRG			Refrigerating system error
		SENS		Temperature sensor defective or unplugged
TUBES PAYOUT				Change routine (only mdb)
	Valore di moneta tube 1-4			Display coin value (1-4)
	Valore di moneta tube 1-4			Dispense coin while showing value
TUBES FILLING				Changer tube filling (only mdb)
	value on tube			Displays tube count

MAIN MENU	1° SUB MENU	2° SUB MENU	3°SUB MENU	DESCRIPTION
TEST ROUTINE				Test routine
	OUT			Vend motor test
		CO 01 … CO 07		Vending motor test, only configured motor is shown
	IN			Inlet test
		SL X DOOR		
	LIGHT			Push enter to turn ON-OFF the light .
	TEMP			Push Enter for temperature sensor self test
	POWER			Switching off counter
PASS PROTECT ROUTINE				Protected password entry 10 seconds to enter (4-2-3-1-4)
	CASH COUNTERS			Cash counter display
		CASH		Total cash counter
		CA XX		Selection cash counter erasable
	SALE COUNTERS			Sales counter
		SALE		Total sales counter
		CO XX		Selection sales counter erasable
	COIN PRICES SETTING			Price setting routine
		PR 01 … PR 04 ALL		Selection price setting (if multi-price) Selection price setting (if multi-price) From 01 to 04
	KEY PRICES SETTING			Key Price setting routine
		1 2 3		
	OPTION SETTING			Configuration menu
		C 1		0=single price – 1=multi price
		C 2		Optional Feature 0=disable 1=enable
		C 3		Show temperature 0=disable 1=enable
		C 4		Open door message 0=Error 1=counter & errors
		C 5		Counter reset 0=after audit 1= after reading using menu
		C 6		Custom message 0=standard 1=custom
		C 7		0=cancel credit after 5 min. 1=saves credit unconditionally
		C 8		Force vend 0=disable 1=enable
		C 9		Multi vend 0=disable 1=enable
		C 10		Bill Escrow 0= enable 1= disable
		C 11		Not used
		C 12		Non used

MAIN MENU	1°SUB MENU	2° -SUB MENU	3°SUB MENU	DESCRIPTION
	MDB COIN SETTING			Correct change control
		CONX		Change mode
			CONX	X=0 not allowed overprice X=1 allowed
		CCU		Minimum value for visualizing correct change value
		ACC		Unconditional acceptance value
		MCARD		Revalue of cashless payment systems
		CONFY		Personalized coinage configuration
			C01	0=disabled changer keypad 1=enabled
			C02	Low change equation 0 to 14 (price holding in exec)
			C03	Reserved
			C04	Accepted bills in change conditions
			C05	Accepted bills in low change conditions
			C06	Accepted coins 0-255
			C07	Accepted coins 0-255
			C08	Accepted coins in low change 0-255
			C09	Accepted coins in low change 0-255
			C10	Factory reset
	LANGUAGE SETTING			Language selection
		ENG		ENG, ITA, FRE,SPA,GER, DTCH, CUSTOM
		…		
		CUSTO		
	TIME & CLOCK SETTING			Time and date routine
		ENBX		Enabled (x=1) o disabled (x=0) inside clock
		YEAR		Year setting
		NTH		Month setting
		DATE		Day setting
		HOUR		hour setting
		DST		Daylight saving time code
			OFF	No daylight saving
			AUS	Australian rules
			EU	European rules
			NA	North American rules
	LIGHT CONTROL			Lighting control routine
		ENBX		Enable Light time manage, X current setting (0 disable/1 enable)
		STRT		Start light off period
			DAY	Start day setting
			HOUR	Start hour and minute setting
		STOP		Stop light off period
			DAY	Stop day setting
			HOUR	Stop hour and minute setting
	PAYMENT SETTING			Payment system
		MDB		MDB
		EXE		Executive
	RETURN TO VEND MODE			Return to sales mode