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RM5

OPERATING MANUAL



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GENERAL INFORMATION

The RM5 detector is the result of the investment made by Comestero to offer the market a reliable and extremely versatile product. The project started two years before the introduction of our new currency, the EURO. We made considerable investments, as well as trips to the various European money mints in order to launch a state-of-the-art product on the market. Thanks to this commitment we noticed several differences in the various coins produced in the mints and even in the coins of the same mint. These differences mainly depended on the alloy, i.e. the metal used. To face this problem, to make the token dispenser accept the highest number of Euro possible, although structurally different, the new RM5 coin detector was made in order to have 60 channels, thus increasing the calibration possibility up to 60 different coins.

RM5's modern electronic system combines the extraordinary selectivity of the seven measurement sensors, with the extreme versatility of the CLONING system that allows for the duplication of the token dispenser directly on site in just a few seconds.

The RM5 series of electronic token dispensers was created to meet the wide range of requirements of the sectors that use this product. Especially:

- automatic distribution
- re-recreational
- gas stations
- parking areas
- photocopiers
- etc.

The RM5 series includes 10 versions with different performances to better adapt to the various applications. They all have the following basic features:

- acceptance of 60 coins and/or different tokens
 - maximum acceptance speed : 3 coins/second
 - power supply + 12 Vdc / + 24 Vdc
 - output signals: NPN OPEN COLLECTOR (ULN 2003 A) OUTPUT LEVEL "O" LOGIC ≤ 1.0 V
 - Re-programming feature via Personal Computer.
 - Cloning and reprogramming via portable programmer
 - Total disabling (high potential on pin 6)
 - Partial disabling via DIP-SWITCH (only first 6 channels)
 - Sizes 3.5 inches width XXX mm, height XXX mm
- See attached drawings page...

Each version has its specific features that can be enabled or disabled by the customer via the RM5 PROGRAMMER (portable programmer) or the Personal Computer.

WARRANTY

Our products are guaranteed for a period of 12 months. The serial number on the label marks the beginning of the warranty period

The warranty cannot be applied in the following cases:

- Tampering with the label containing the serial number of the device.
- Breakage or malfunctioning caused by transportation.
- Breakage or malfunctioning due to vandalism, natural events or fraudulent acts.
- Incorrect installation of the product.
- Inadequate or incorrect electric systems.
- Neglect or inability to use the product.
- Non-compliance with the operating instructions.
- Intervention for alleged defects or convenient and unnecessary controls.

Repair interventions are carried out in our laboratory, where the parts arrive free-of-charge.

Any piece that is returned to be repaired shall have to enclose a clear description of the defect found.

The piece will be delivered carriage forward or free port with charge.

At the end of the warranty period the service center will remain at your disposal. Furthermore, the head of the Call Center service is at your complete disposal for any problems or clarifications.

TOKEN DISPENSER CONNECTION

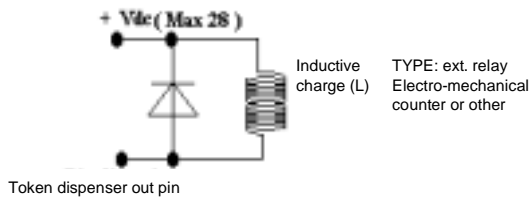
To assure the highest adaptability with the current systems, the RM5 coin detector besides being fitted with a standard 12Volt connector and a standard 24Volt connector, can also exploit the same programming connector to have a serial output that answers by sending the computer the value of the coin inserted.

Fig. 1



In case of inductive charge you need to protect the outputs externally with clamp diodes. See diagram.

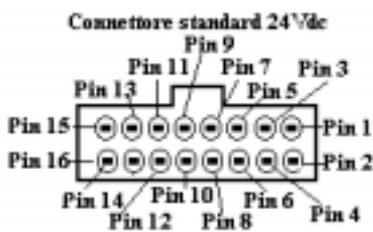
Fig. 2



STANDARD 24 Vdc CONNECTOR PIN-OUT

The 24 Vdc standard connector is used in all those applications where you need an interface with a machine that uses or needs a 24 Vdc parallel payment system.

Fig. 3

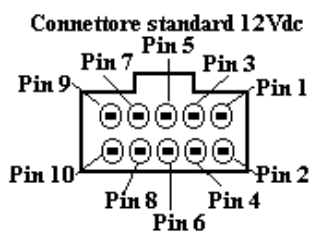


N° Pin	Meaning	N° Pin	Meaning
1	N.U.	9	CH 4
2	N.U.	10	CH 5
3	N.U.	11	CH 6
4	N.U.	12	CH 2
5	N.U.	13	CH 1
6	Inhibit	14	N.U.
7	CH 3	15	N.U.
8	Gnd	16	+ 24 Vdc

STANDARD 12 Vdc CONNECTOR PIN-OUT

Since the meaning of the pins varies according to the configuration of the token dispenser please see relevant paragraph.

Fig. 4

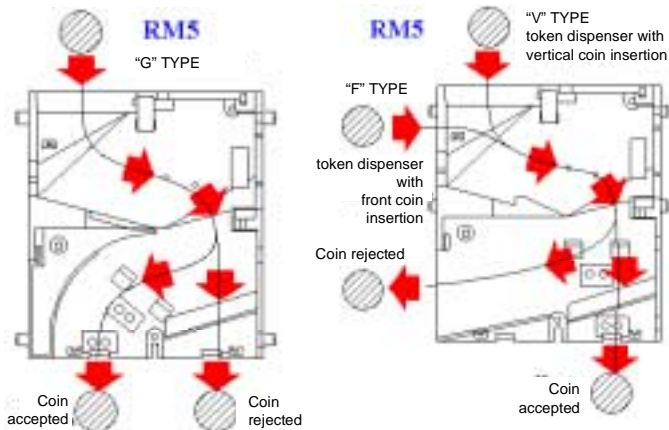


MODEL

In order to meet the requirements of various markets, Vending, Games, Car wash, etc. the mechanical features of token dispenser comes in three different models:

- MODEL V (Vending)
- MODEL F (Reduced front panel)
- MODEL G (Games)

Fig. 7



Models "V" and "F", are substantially the same, as regards the output of accepted and rejected coins, but they are different as regards the application. Model "V" can be used both for front application with F6 front panel (Cod. RM F6), illustrated on page 19, and for application on the typical Vending token dispensers size 5" fitted with the relevant mechanical adapter (Cod. RM ADAPTER / 5).

Whereas model "F" can be used only for front application both with F6 front panel and reduced F1 panel (Cod. RM F1) illustrated on page 20.

Model "G" can be applied on the relevant vertical insertion supports, such as standard video doors or front panels series RM37/IL or doors with LED, with coin separator.

PROGRAMMING SYSTEMS

Thanks to the state-of-the-art electronic system of these products, the token dispenser can be programmed in three different modalities:

- SELF-PROG FUNCTION
- PORTABLE CALIBRATOR
- PC KIT

SELF-PROG FUNCTION

The SELF-PROG function is very useful when you need to program a currency or a coin directly on the machines on which they are installed, because the first six channels of the RM5 token dispenser can be reprogrammed without using external devices. Besides programming the coin/token on the specific channel you may need to change other parameters of the token machine, such as the assignment of values, in this case you need to use the Portable Calibrator or the PC kit.

Programming the token or the coin on channel 6

- Put the 6 DIP-SWITCHES on "ON" when the machine is switched off.
- Switch the machine on and introduce 15 coins / tokens.
- Wait for the end-of-programming double "clack"
- Put the DIP switches on "OFF"
- Turn the token dispenser off and then back on

Programming the token or the coin on channels from 1 to 5

- Put the 6 DIP-SWITCHES on "ON" when the machine is switched off
- Switch the machine on and introduce 1 or 2 coins
- Leave the SWITCH of the channel to program on "ON"
- Introduce coins until you hear the end-of-programming double "clack"
- Put the DIP switches on "OFF"
- Turn the token dispenser off and then back on

NOTE: After this procedure the first two coins may be rejected.
With this operation the new calibration (coin/token) will maintain the previously set value. In the configuration X 21, the credit will be the previously set game cost.

PORTABLE CALIBRATOR

The greatest innovation which is the strong point of the token dispenser, especially in this period of great changes, is the Portable Calibrator, the RM5 PROGRAMMER which besides changing all the functions of the dispenser on site also includes the "CLONING" function.

This function allows you to retrieve data from a token dispenser, or from a PC and transfer them into another one, making it identical to the first: calibration, configuration and options.

There is also an "EASY" version, more economic, which is not provided with all the functions, such as configuration and duplication.

For these functions and for the performances offered by the two models we suggest referring to the portable calibrator manual.

PC KIT

The computer kit is certainly the most complete system to calibrate and check every single option of the token dispenser. It includes a token dispenser support, a CD-ROM which contains the software, the interface cable fitted with an SMD card for RS232connection, a feeder and a test box useful to feed and check the correct operating of the token dispenser. We suggest referring to the manual of the "PRORM5" PC Kit

CONFIGURATION

Every token dispenser is identified by a code made of 6 characters which determines the configuration, i.e. the operating modalities.

Let's consider the code below which is on the label of the token dispenser.

RM5 X nn

RM5	X	nn
It identifies the type of token dispenser	It identifies the type of mechanical set-up V, F,G	the type of configuration

The types currently available are:

RM5 X 00:	Electronic validator
RM5 X B0:	Binary validator
RM5 X BC:	Confida binary validator
RM5 X 10:	Dual-price totalizer
RM5 X 20 – RM5 X 21:	Totalizer with credit pulse emission (RM5 X 20); with command possibilities with a built-in coin separator (RM5 X 21).
RM5 X 30:	Progressive Timer
RM5 X 3R:	Progressive Timer with display of timed credit on request
RM5 X 40:	Totalizer with credit pulse on request

RM5 X 60: Totalizer with timed credit pulse emission on request
 RM5 X 70: Single price totalizer with multiple sales for photocopiers

NOTE: Versions X 01 and X 21 are identical to X 00 and X 20, except that they have the external separator command activated. See relevant paragraph.

VALIDATOR CONFIGURATION (RM5 X 00)

In standard validator configuration, RM5 can manage up to 6 different coin values, that is up to 6 different outputs. Validator standard means a token dispenser that after the introduction of a coin, gives a pulse on the matching output as validation signal. The length of the pulse is standard :100 mse, however you can program it between 10 and 630 msec. To inhibit one or more coins programmed on the first 6 channels just put the DIP-SWITCH of the relevant channel you wish to inhibit on "ON". To inhibit the coins programmed on the channels following 6 use the PC or RM5 PROGRAMMER kit.

The token dispenser has a general inhibitor pin, PIN 6 (see connector), which if set HIGH (+5Vdc, +12Vdc.) completely inhibits the token dispenser, hence each coin inserted would always be rejected. Usually this pin is controlled by the machine if the machine itself is out-of-order.

You can also inhibit the token dispenser after a pre-set number of inserted coins, by setting, always using the relevant programming kits (PC Kit or RM5 PROGRAMMER.), the function "coin insert limit".

When the token dispenser reaches the programmed threshold it is disabled, to re-able it you need to use the relevant programming kits.

This application is used especially on the "BINGO" machines and small coffee machines and in all the machines in which you wish to limit coin insertion.

If you want to separate the coins or tokens you can fit the machine with a coin separator. In this case the token dispenser must be programmed via PRORM5, to control the separator (RM5 X 01). When the separator function is engaged, the token dispenser can manage the first 4 channels, because the outputs related to channels 5 and 6 (Pin 3 and 4) are used to control the separation reels.

NOTE: the RM5 X 00 validator is totally interchangeable with G13 validator of NRI, with validator C 120 of the COIN CONTROLS, with the AZKOYEN , MS 130 MARS, G18 NRI validator and the FAGE validator. By using the relevant mechanical adapter it can be changed from 3.5" to standard 5" thus becoming also mechanically interchangeable with the following token dispensers at 24 VDC when they are assembled on an RM1000 support or on Juke Boxes with 5" token dispenser. There is also an interface that makes the validator electronically interchangeable with the MRS 111 token dispensers PNP output (int. MR5 111), as well as mechanically, by using the front panel Cod. RM F3. on page 21.

PIN SET-UP OF THE 12 VOLT CONNECTOR OF THE RM5 X 00 TOKEN DISPENSER

N° Pin	Meaning	N° Pin	Meaning
1	Gnd	6	Inhibition
2	+12Vdc	7	CH 1
3	CH 5	8	CH 2
4	CH 6	9	CH 3
5	N.U.	10	CH 4

DUAL PRICE TOTALIZER CONFIGURATION (RM5 X 10)

The token dispenser can recognize 60 coins that can have up to 60 different values, it does the sum and directly controls a Display to show the inserted amount. When it acquired a credit equal to the sales price, it engages the relevant line which remains engaged until it receives the reset signal.

By using the portable RM5-PROGRAMMER you can engage and/or change various options, including:

- Sales counter, the token dispenser has two internal counters, one for each price line.
- Machine stop: you can activate one or two sales thresholds, one for each price line and stop the machine when it reaches a pre-set sales number
- You can engage an indicator (display flashing) when the machine, reaches the sale stop value
- The token dispenser does not give change but can credit the extra coins introduced for the new operation
- You can program the type of reset

INTERNAL times (RM5 V 14)
 EXTERNAL passive

Normally the token dispenser is supplied with passive reset, i.e. a low signal is given on Pin 6 (0Vdc) for at least 100msec. For particular applications, i.e. machines that do not manage a reset signal, you can program an External reset and set the duration time. When this time is reached the token dispenser automatically runs a reset.

- The display can show the coins introduced in increasing number from zero up to the sales price: or in decreasing numbers from the sales price to zero.
- Change sales price
- Change sales price

PIN SET-UP OF 12 VOLT CONNECTOR OF TOKEN DISPENSER RM5 X 10

N° Pin	Meaning	N° Pin	Meaning
1	Gnd	6	Reset Inhibit.
2	+12Vdc	7	Display Clock
3	Display Data	8	Price 1
4	Display Enable	9	Price 2
5	N.U.	10	N.U.

NOTE: to use the token dispenser on machines fitted with "ESTRO" connector, you need to use the RM929 connection interface which makes it completely interchangeable with RM4 V1E token dispenser and with the DUAL-PRICE G13 of the NRI.

CONFIGURATION OF CREDIT PULSE EMISSION TOTALIZER (RM5 X 20) (RM5 X 21)

The token dispenser can recognize 60 coins that can have up to 60 different values, it does the sum and directly controls a Display to show the inserted amount. It was designed to directly pilot videogame cards. It allows you to define a game cost (credit cost) and up to two bonus levels, if for example you set a credit of 0.25 €, by introducing 1€ you have 5 credits (1 bonus), by introducing 2€ you can set 11 credits (2° bonus).

When it acquired a value equal to the credit cost, it produces a pulse and when it reaches the bonus thresholds it issues the number of credits matched with the pulses. The length of the standard pulse is 100 msec, you can however vary it between 10 and 630 msec.

The bonuses are assigned if the coins are introduced in sequence with a maximum time of 10 sec. between one coin and the other.

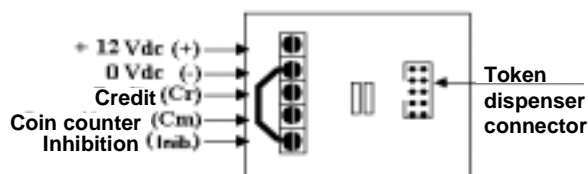
Furthermore, an output to directly control an external counter to count the accepted coins is foreseen.

By using the portable RM5-PROGRAMMER you can engage and/or change various options, including:

- Enabling and inserted coins internal counter reading
- Setting the length of pulses from 10 to 630 msec (standard signals 100 msec)
- Disabling each coin introduction channel
- Setting credit cost and bonus levels

To make installation operations easier, an RM927 interface card is foreseen. On one side it is fitted with a standard container connector for the token dispenser, and on the other a 5 pole terminal. See attached diagram.

Fig. 8



To inhibit the electronic S.E.C.I. token dispenser that uses the RM 927/N interface card, just connect the inhibition wire of the game card to the below mentioned connector.

The game card is fitted with an internal pull-up, hence if you don't want to connect the inhibition pin you need to make the above-mentioned change.

IMPORTANT NOTE: IF THE INHIBIT PIN IS NOT USED, IT MUST BE CONNECTED TO THE GND.

If you want to separate the coins or tokens you can fit the machine with a coin separator. In this case the token dispenser must be programmed via PRORM5, to control the separator (**RM5 X 21**). When the separator function is engaged, the outputs related to channels 5 and 6 (Pin 3 and 4) are used to control the separation reels.

PIN SET-UP OF 12 VOLT CONNECTOR OF TOKEN DISPENSER RM5 X 20

N° Pin	Meaning	N° Pin	Meaning
1	Gnd	6	Inhibition
2	+12Vdc	7	Display Clock
3	Display Data	8	Coin counter
4	Display Enable	9	Credit
5	N.U.	10	N.U.

PIN SET-UP OF 12 VOLT CONNECTOR OF TOKEN DISPENSER RM5 X X 21

N° Pin	Meaning	N° Pin	Meaning
1	Gnd	6	Inhibition
2	+12Vdc	7	Display Clock
3	Reel separator B	8	Coin counter
4	Reel separator A	9	Credit
5	N.U.	10	N.U.

SEPARATORS OUTPUT DIAGRAM

The connection between the coin output channel and the 4 outputs is the following:

Fig. 9

RM5 G 21 (Cod. RM IL 3721)

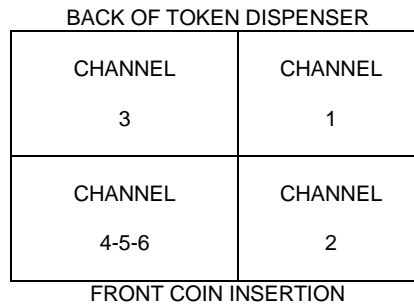
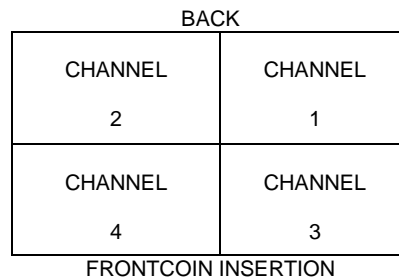


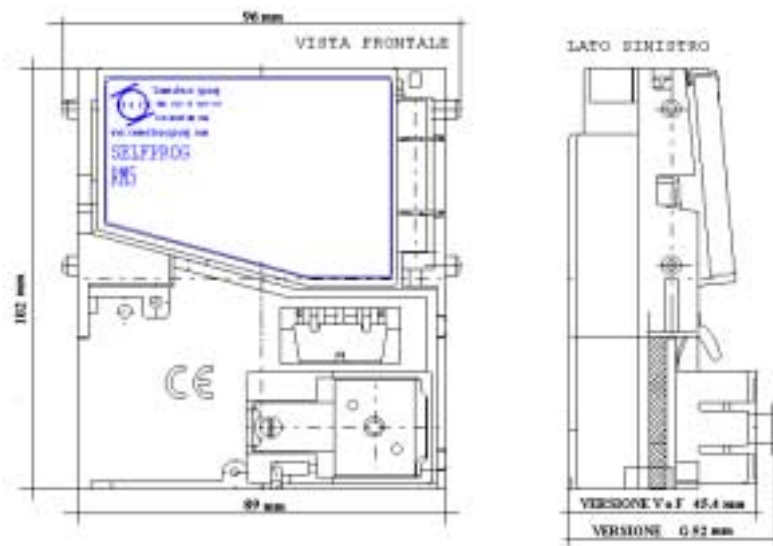
Fig. 10

RM 5 G01(Cod. RM IL 3701)



SIZES OF TOKEN DISPENSER

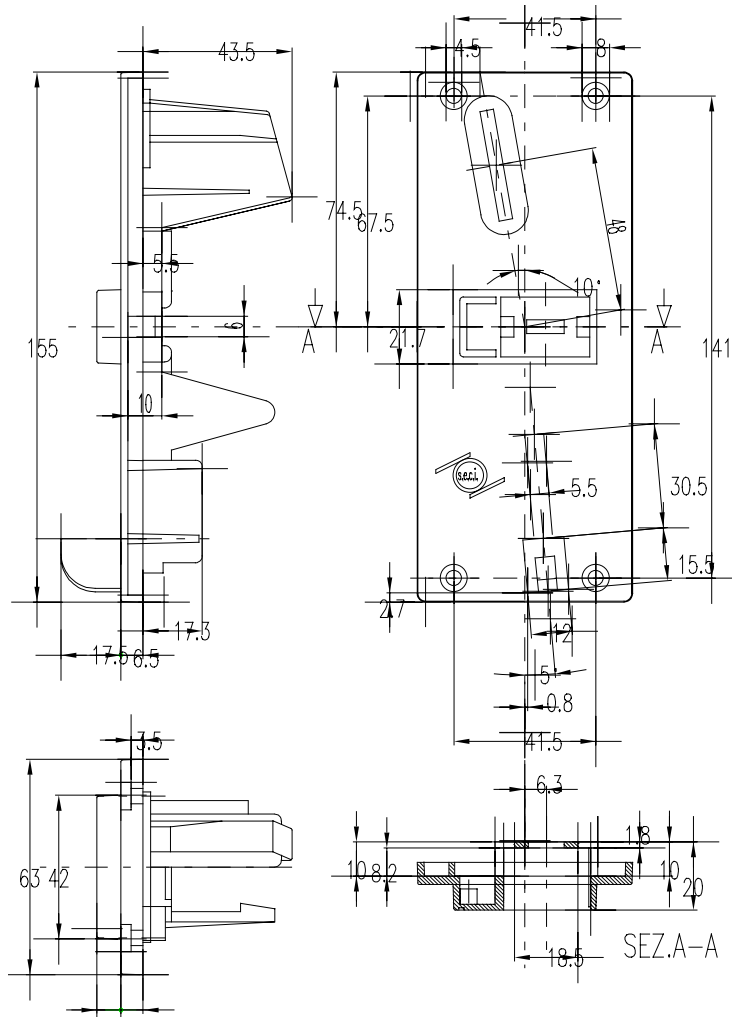
Fig.1



SIZES OF FRONT PANELS

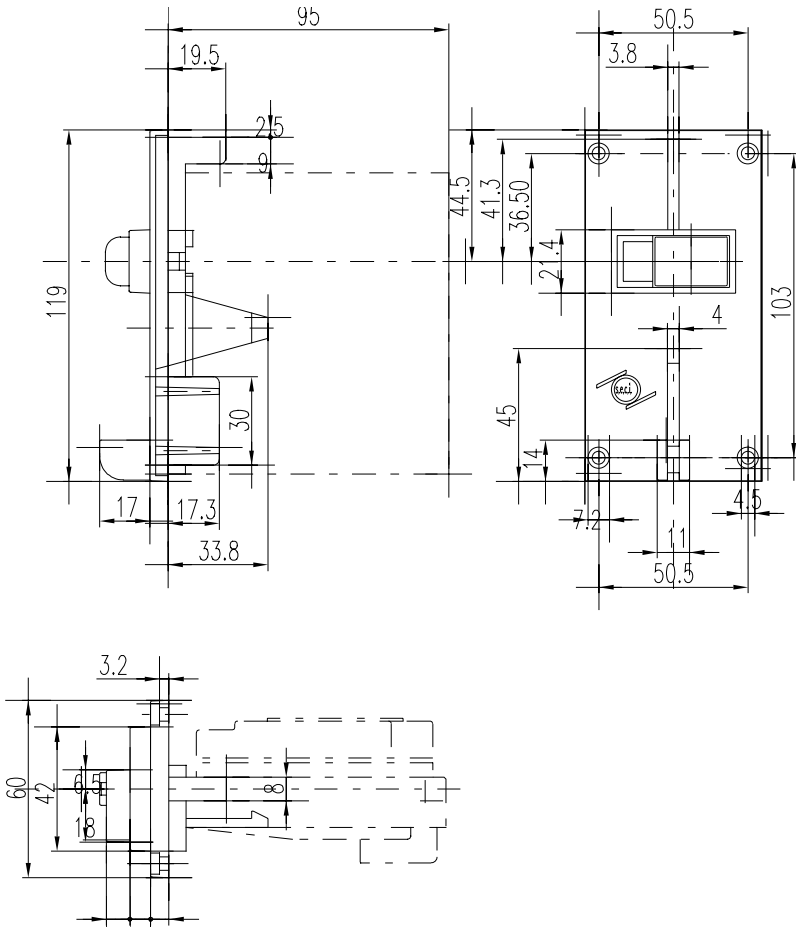
FRONT PANEL F6

Fig. 12



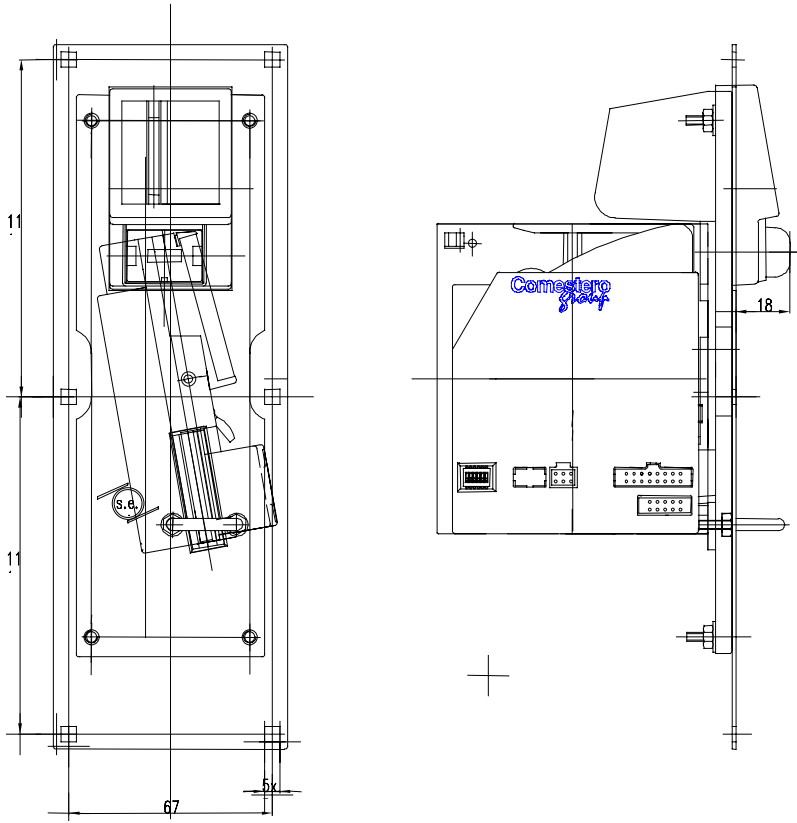
FRONT PANEL F1

Fig. 13



FRONT PANEL F3

Fig. 14



CONNECTION FOR TWO-WAY SEPARATOR FOR RM5 V21 OR F21 TOKEN DISPENSERS

The separator shown below can be used to separate the coins in two different places. This feature is extremely useful when you want to send the coins in a deposit box and a token in a hopper. Just see the photo below for the electric wiring and the outputs

Fig.15

