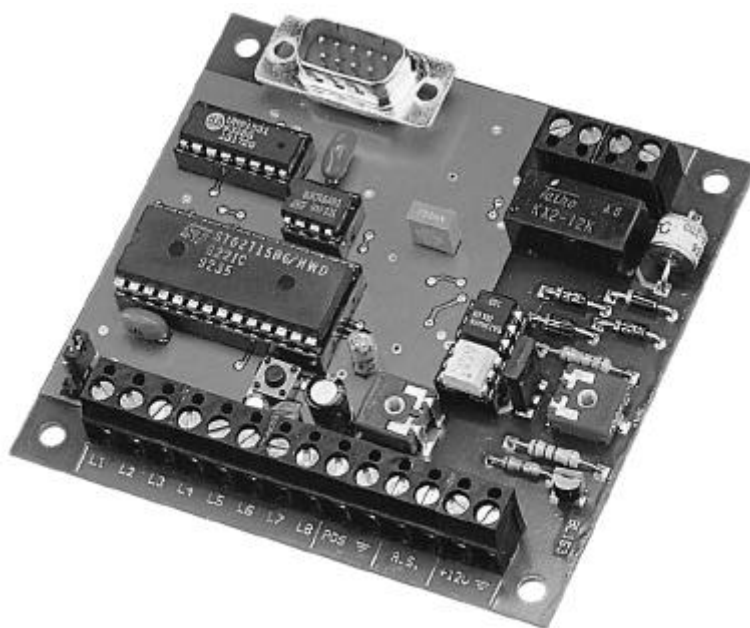


**MULTI-PROTOCOL DIGITAL COMMUNICATOR**

# MD-COM

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***Installation manual***

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*Contents in this manual may be subject to change without notice and does not represent any obligation of BENTEL srl.*

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*Installation manual:*

**MULTI-PROTOCOL DIGITAL COMMUNICATOR MD-COM**

**CV4.2 BUSMDCOM.PUB 0.3 290895**

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## General features

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- 8 independent channels.
- 4 programmable telephone numbers for each channel.
- Support of the most diffused communication protocols.
- 2 different signals for anomalous power tension.
- Management of self-check call.
- First call delay.
- Programming of all functions with Personal Computer by means of interface serial RS232.
- Electronic interface for telephone line.

## Technical characteristics

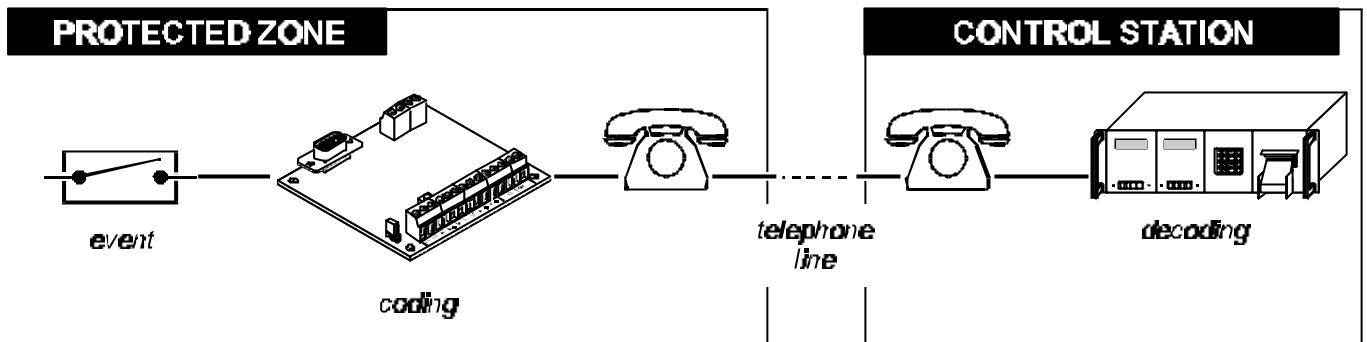
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Power supply	13.8 V $\overline{=}$
Stand-by current	12 mA
Maximum current	55 mA
Temperature range	5 ÷ 40 °C

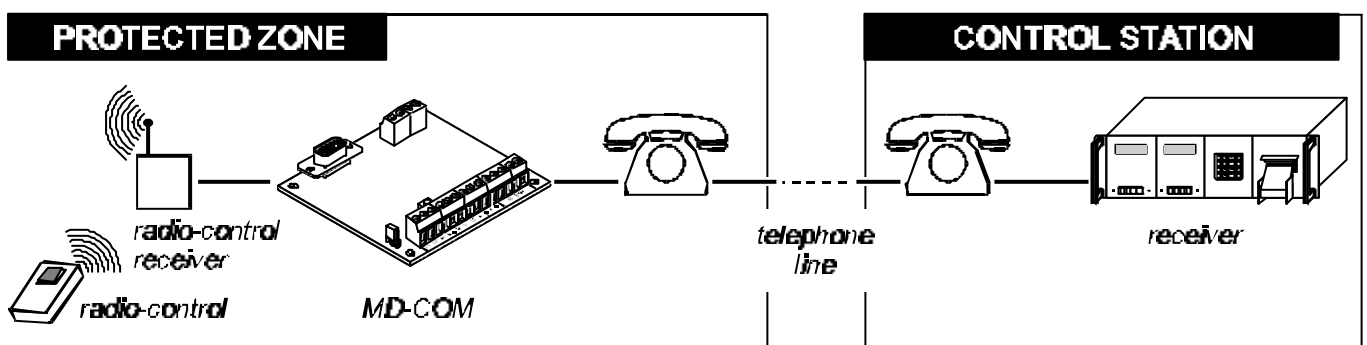
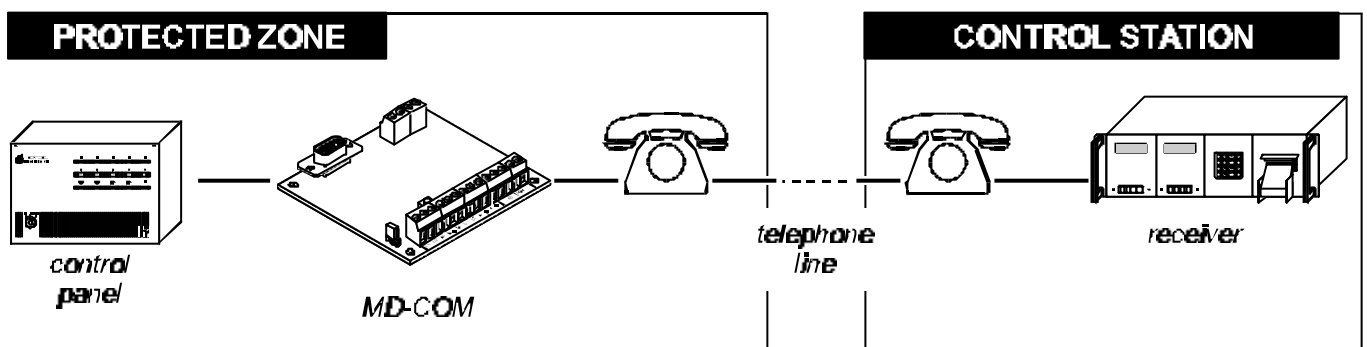


## General description

The MD-COM is a device that allows the coding of up to 8 distinct events and the forwarding of these codes via telephone to another device which is able to decipher them.



The device is specially useful for the remote monitoring of burglar and fire alarm systems, or for the implementation of a telecontrol network and other similar installations where there is need for the remote control of events.



The MD-COM is equipped with 8 independent external alarm lines for the monitoring of the same number of different events and with 3 internal alarm lines for circuit monitoring.

During programming, for each line is possible to set the following:



- ❑ the **sequence** of the telephone numbers to be called, that is of the 4 that the MD-COM is able to store;
- ❑ the **alarm code** that is to be transmitted (only for the first 5 protocols);
- ❑ the **signal edge** on which the activation is to be achieved; rising edge or falling edge (for external alarm lines and TAMP line only);
- ❑ if the alarm cycle is to be **interrupted** as soon as the alarm cycle is concluded by a positive outcome (for external alarm lines only).

Moreover, for all alarm lines in the programming phase it is possible to set:

- ❑ the **telephone numbers** that are to be dialled in case of alarm;
- ❑ the **user codes** that are to be associated with each telephone number;
- ❑ the **communication protocol**;
- ❑ the **type of dialling** (tone or impulse);
- ❑ the **number of call cycles**.

The programming of the MD-COM is achieved by the suitable software that runs on all PC AT compatibles.

The use of programming software with graphic interface in the place of the traditional dip-switches and jumpers, makes the programming of the MD-COM easy to achieve and much quicker.

Moreover, the use of a PC allows the programming set for each installation to be stored on a file, by so doing it possible to view the data at any given time and also allows for the data to be used on other installations.

## Description of function

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### ■ External alarm lines

---

The MD-COM is equipped with 8 external alarm lines (with growing priority from line 8 to line 1) which allow the detection of 8 different events; the external alarm lines are connected to terminals [L1], [L2], ..., [L8].

**Activation** The external alarm lines are activated by applying the power tension (about 12 V) or the earth, to terminals [L1], ..., [L8].

- + The activation occurs on the edge of the signal applied, that is when the tension goes from 0 V to 12 V (rising edge) or from 12 V to 0 V (falling edge).

**Input trigger** The signal edge on which activation of the line is achieved during the programming phase by entering the alarm code in the field named *Al arm code* or in the field named *Restore code*:

- if the alarm code is entered on *Al arm code* field, the activation will occur on the rising edge of the signal applied;



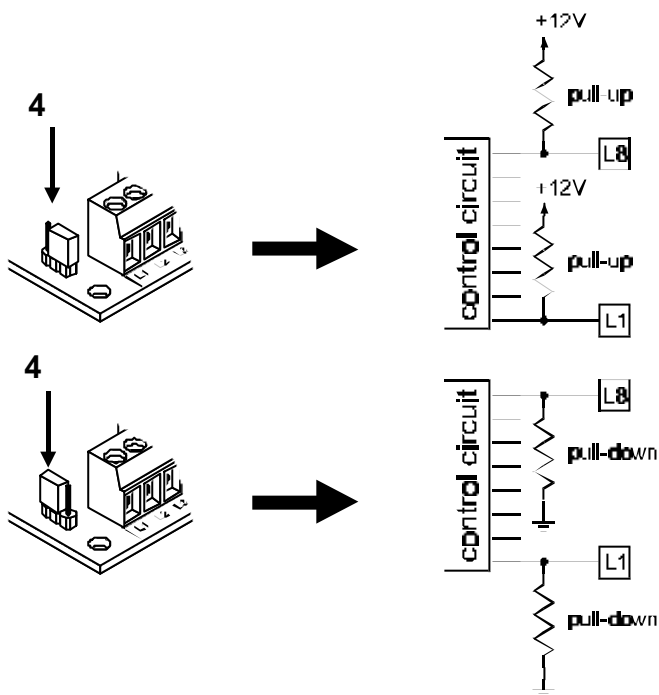
- if the alarm code is entered on Restore code field, the activation will occur on the falling edge of the signal applied.

(See on pag. 23).

**Pull-up or pull-down**

All the external alarm lines (L1...L8) are connected internally by means of a resistor, to the earth (pull-down) or to the power tension (pull-up) according to the position of jumper 4 (see the following figure). Position this jumper according to requirement.

**ATTENTION** Without jumper 4 the MD-COM does not function correctly.



**Figure 1**

**Internal alarm lines**

The internal alarm lines are necessary for checking the correct functioning of the MD-COM.

**Tamp**

The Tamp line (Antitamper) is activated by short-circuiting and/or opening [A.S.] terminals:

- if the alarm code is entered on AI arm code field, the activation will occur on the opening of [A.S.] terminals;
- if the alarm code is entered on Restore code field, the activation will occur by short-circuiting [A.S.] terminals.

Use this line for the detection of tamper attempts made on the unit where the MD-COM is installed.





**Batt** The Batt line is necessary to detect a condition of anomalous power tension:

- if the power tension of the MD-COM (that present between terminals [+12V] and [ $\frac{1}{-}$ ]) drops below the value of 11.3 V the alarm code entered on field <11V is transmitted;
- if the power tension drops below the limit value of 9 V the code entered on field <9V is transmitted;

(See on page 23).

**ATTENTION** When the power tension drops below 9 V, the MD-COM carries out the sequence of calls relative to the Batt line (field <9V) and then self-disables. In order to reactivate the MD-COM, it is necessary to restore the correct power tension (13.8 V  $\approx$  approx.) and press the button **3**.

**Test** The Test line is periodically activated according to the time setting of an Auto Test Cycle [1. . 240] field (see on page 23).

### **Call cycle**

When a line is in alarm state the MD-COM carries out the alarm call cycle shown in figure 2. The MD-COM calls the telephone numbers in the sequence indicated in the Call Sequence field for the number of times entered on Call Attempt field, unless the letter **Y** has been entered in the Line Reset field. In this case the MD-COM interrupts the call cycle as soon as one of the numbers gives a positive outcome.

**Alarm cycle description** Following is shown the alarm cycle description in figure 2. (For the description of fields see on page 22).

- A** The MD-COM links with the telephone line to which is connected.
- B** The MD-COM implements a 30 seconds check for the presence of the dialling tone. If during this time it does not detect the dialling tone, it releases the line and makes 2 attempts; then goes on to dial, if existing, the successive number in the Call sequence field.
- C** The MD-COM dials the telephone number indicated in the Call sequence field of the line in alarm state.
- D** The MD-COM waits the answer from the control station; if this is not received the line is released and returns to point **A** occurs. Also in this case the MD-COM makes 2 attempts, then goes on to dial, if existing, the successive number in the Call sequence field.
- E** If the MD-COM receives an answer from the control station, it transmits the user Code associated with the selected number followed by the Alarm code with the line.



- F** Once transmitted the MD-COM waits for confirmation from the control station; if this is not received, the data transmission is repeated. The MD-COM carries out 4 attempts after which goes on to dial, if existing, the successive number in the Cal I sequence fields.
- G** If the letter **N** (No) is entered in the Line Reset field of the line in alarm state, the MD-COM goes on to dial, if existing, the successive number in the Cal I sequence field. In the case that the letter **Y** (Yes) is entered on the Line Reset field, the MD-COM interrupts the call cycle and then returns to its original state.

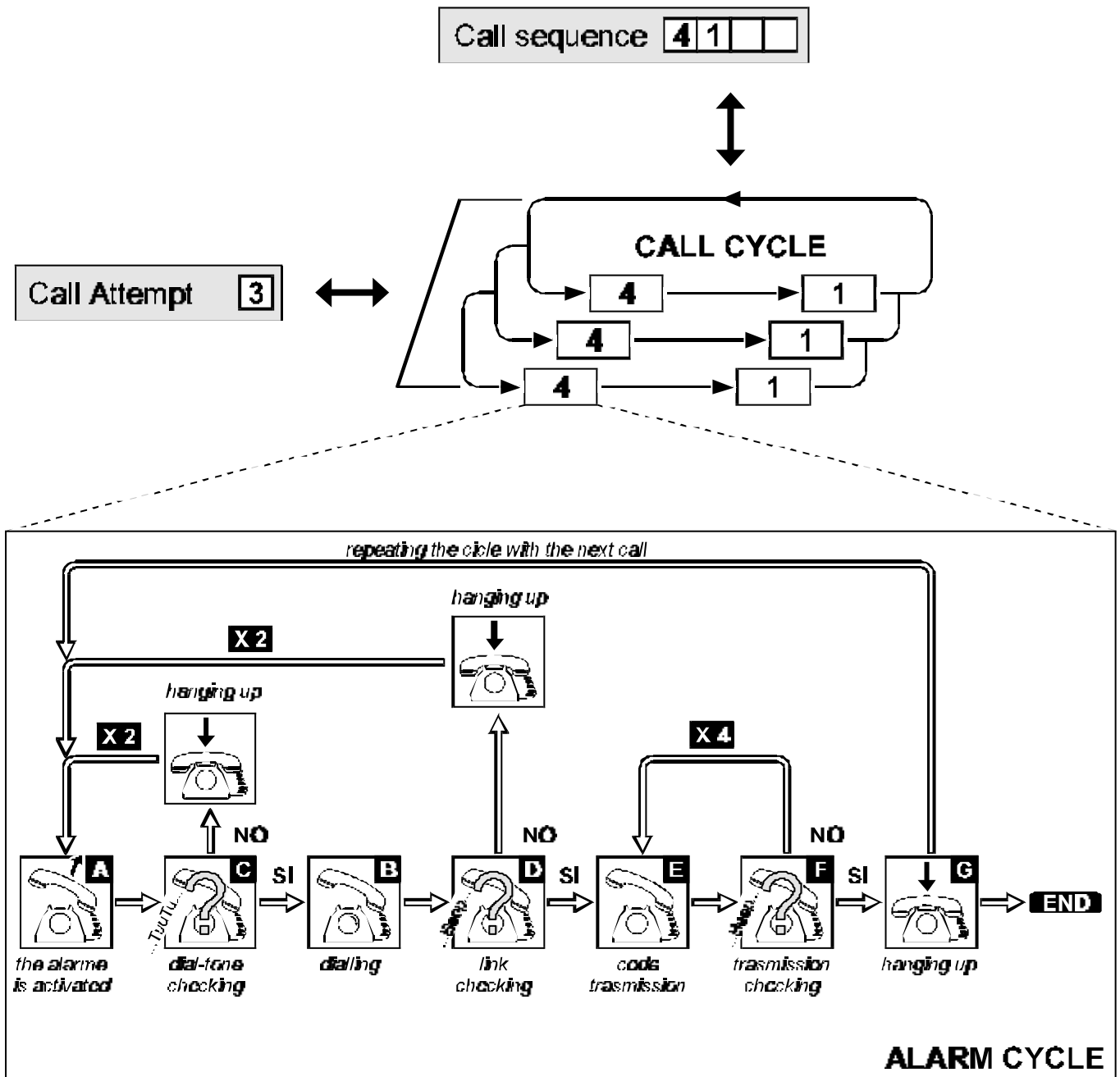


Figure 2



# PARTS IDENTIFICATION

✦ The bold numbers in the manual are referred to the following table and figure.

P.	DESCRIPTION	P.	DESCRIPTION
<b>1</b>	<i>Terminals for telephone line connection</i>	<b>5</b>	<i>DB-9 male connector for serial link to the PC</i>
<b>2</b>	<i>Terminals for connections</i>	<b>6</b>	<i>Green led: wait</i>
<b>3</b>	<i>RESET button</i>	<b>7</b>	<i>Red led: in function</i>
<b>4</b>	<i>Pull-up or pull-down setting on alarm lines</i>		

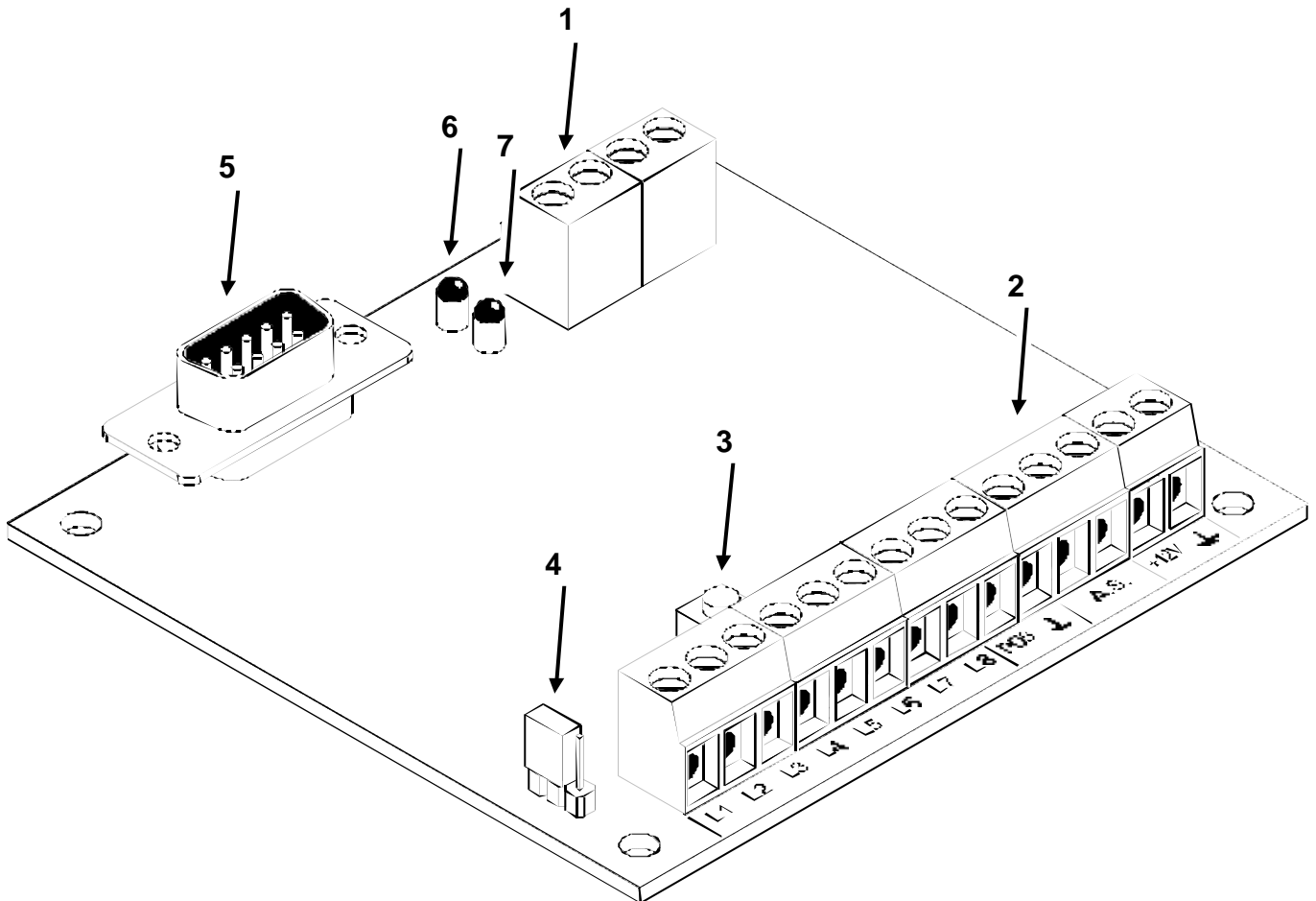


Figure 3





## Mechanical installation

The MD-COM may be installed in its own container unit or, if space allows, inside that of the burglar or fire alarm control panel or inside the container unit of the system of which events are to be monitored. In this case please note the size of the MD-COM shown in the following figure (dashed outline).

In order to fit the MD-COM use the 4 holes indicated in figure 4, of which both the diameter and depth of these are given.

- + Do not fit the MD-COM in direct contact with the back of the container, this is in order to avoid accidental short-circuits, use plastic spacers as shown in figure 4.

Please note that the MD-COM, once installed, must be connected to a computer for programming and therefore should be fitted in a place that allows easy access.

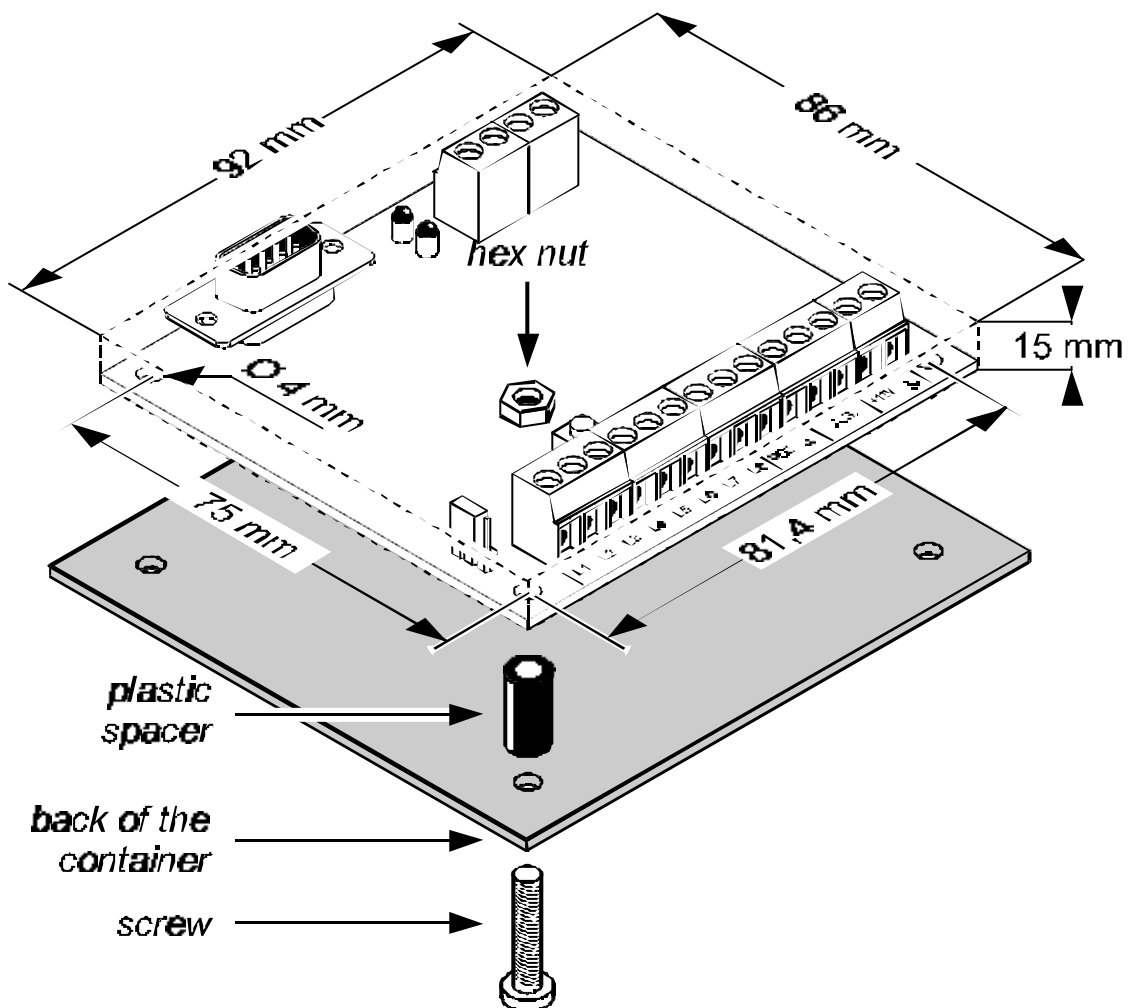


Figure 4



## Description of terminals

---

**L1...L8 External alarm lines.** The activation mode of external alarm lines is determined during the programming phase by entering the alarm codes in field Al arm code (activation on rising edge) and/or on Restore code (activation on falling edge). (See on page 23).

Note that on external alarm lines is present a pull-up or pull-down resistor according to the position of jumper 4 (see on page 8).

**POS e  $\frac{\perp}{\equiv}$  Trigger.** A positive is always present on the [POS] terminal whilst on terminal [ $\frac{\perp}{\equiv}$ ] an earth is always present.

Use these terminals to activate the external alarm lines as shown in figure 5 on page 16.

**A.S. Antitamper.** These terminals are for the activation of the internal Tamp line.

The activation of this line is determined on programming phase by entering the alarm code in Al arm code field (activation by opening of [A.S.] terminals) and/or in Restore code field (activation by closing of [A.S.] terminals). (See on page 23).

Use these terminals for the detection of possible tamper attempts against MD-COM container.

**+12V e  $\frac{\perp}{\equiv}$  Power.** The MD-COM must be powered by a 13.8 V $\equiv$ , 55 mA Max. tension.

When the power tension drops below 11.3 V and 9 V the internal Batt alarm line is activated (See "Batt" on page 9).

**ATTENTION** When the power tension drops below 9 V the MD-COM carries out the alarm call cycle relative to Batt line and then self-disables. In order to reactivate the MD-COM the correct power tension (13.8 V $\equiv$ ) must be restored and the button 3 must be pressed.

**LE External telephone line.** Connect the external telephone line to these terminals.

The MD-COM must be connected ahead of any other telephone devices that may be present on the same line.

**LI Internal telephone line.** Use these terminals for the connection of other telephone devices to the same line as that of the MD-COM.



## Connection

---

In this paragraph the necessary connections for the correct functioning of the MD-COM are described.

- + For connections to the external alarm line terminals use shielded cable with one end connected to earth and the other left free.

### ■ Connection of external alarm lines

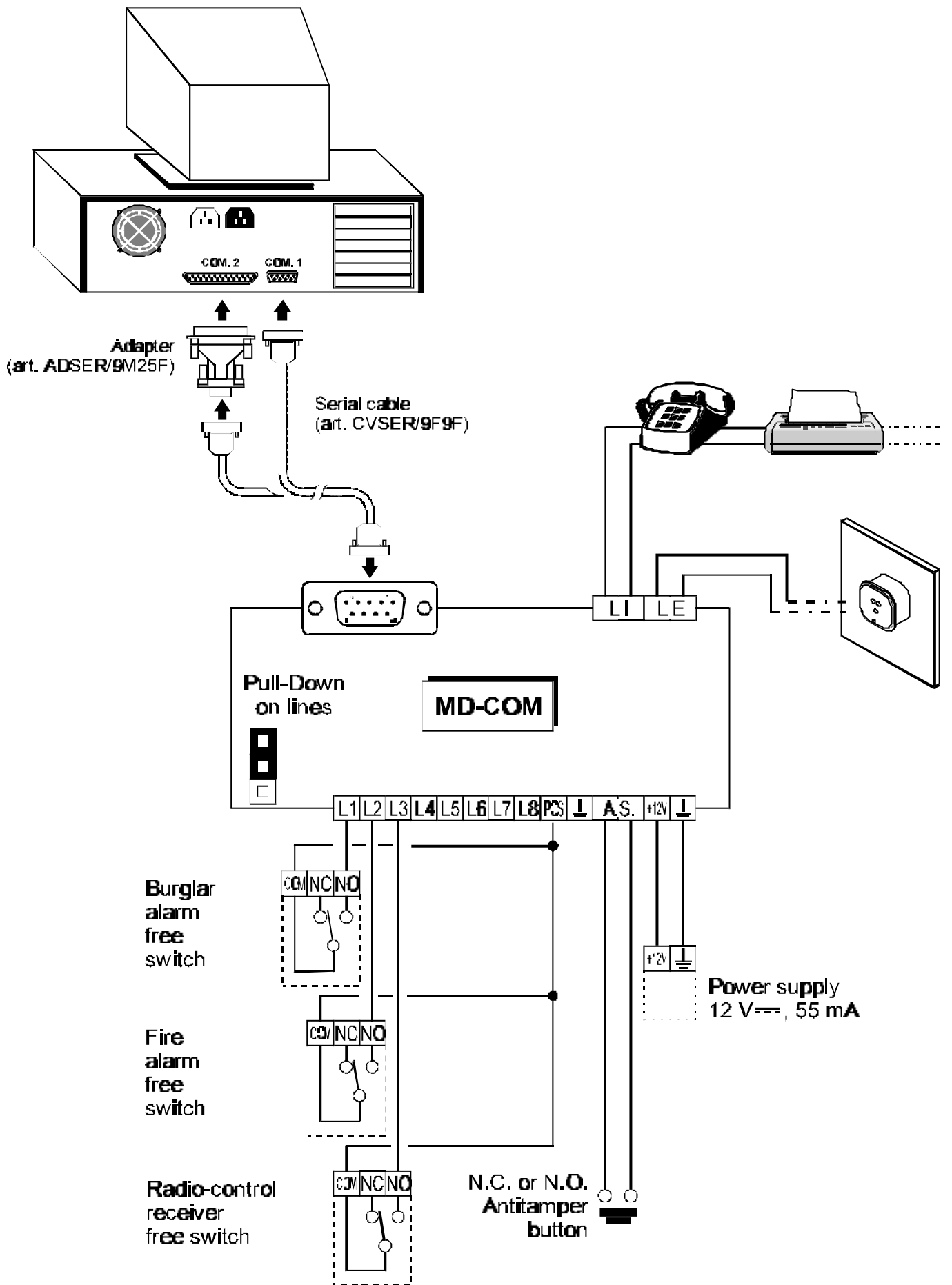
The external alarm lines may be connected to the free-switching of the alarm relays of burglar and fire alarm control panels, and radio receivers, as shown on figure on following page, or to specific terminals.

- + In the latter case the connection between the earth and the cards is of fundamental importance for circuit functioning.

### ■ Connection of tamper line

Connect the [A.S.] terminals to a button, it is of no importance if this is normally closed or normally open; therefore, in programming phase, enter the alarm code in the corresponding field (see "A.S." on page 14).





**Figure 5**





The programming of the MD-COM is carried out by means of a PC equipped with the suitable programme (MDCOM.EXE) provided.

The programming of the MD-COM may be divided into 2 main phases.

**Phase 1.** In this phase modifications are carried out on the fields present on the main screen of the programming software.

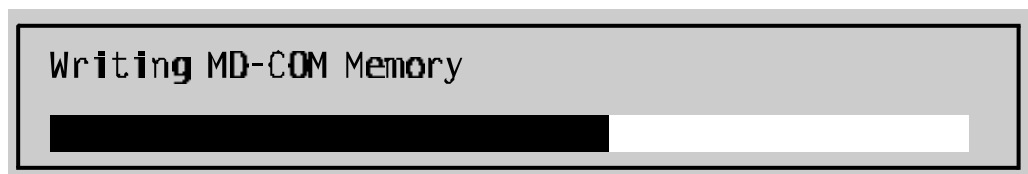
It is also possible to use setting files previously used in other installations recalled by means of a specific command (Load).

**Phase 2.** In this phase the data displayed on the main screen are copied (DownLoad) onto the MD-COM memory.

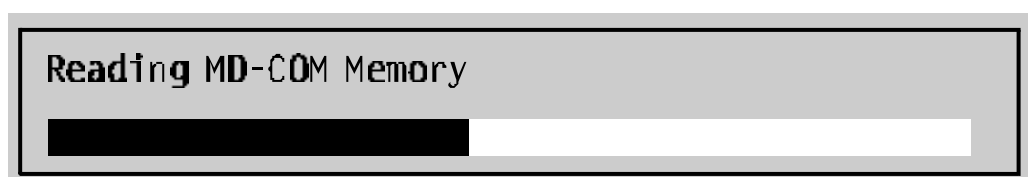
## Programming procedure

In order to program the MD-COM proceed as follows.

- A** Connect the MD-COM to the PC (see on page 18).
- B** Start the MDCOM .EXE program (see on page 18).
- C** Enter the necessary installation values on the fields on the main screen (see on page 22) or recall the data previously stored on a file. (See "File" on page 20).
- D** Set the serial port used for the connection by selecting the command Set Port on the MD-COM menu.
- E** Select the command DownLoad on the MD-COM menu, the monitor then shows the message for few seconds



In order to verify the contents of MD-COM memory, select the UpLoad command on the MD-COM menu, the monitor for an instant shows the message



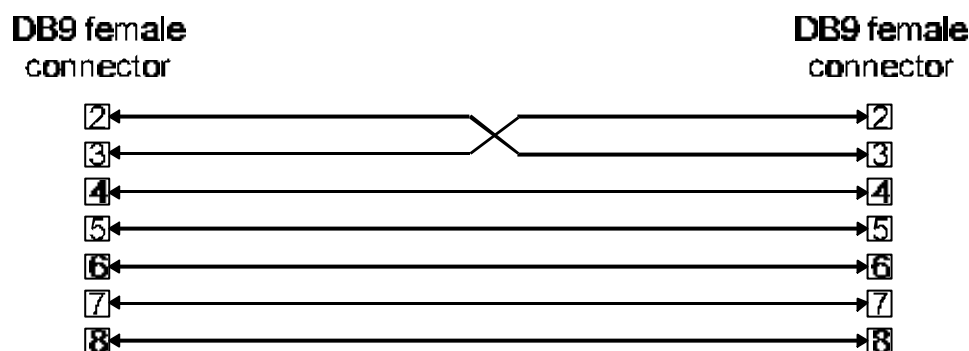
If at the end of "DownLoad" operation the connection PC/MD-COM does not occur or it is interrupted, the monitor shows the message



## Connecting MD-COM to PC

To link the MD-COM to the PC use the serial cable supplied on request: art. CVSER/9F9F.

It is also possible to self-made this cable following the figure below.



Plug one end in the connector **5** of the MD-COM and the other end in one serial connector of the PC, (see PC information to identify the serial connectors).



If the PC is equipped only with 25 poles connectors it is possible ask for the adapter: art. ADSER/9M25F.

For the connection use the COM1 serial port (connector) only or the COM2 serial port. Do not use other serial ports present (COM3 or COM4).

The serial port used then shall have to be communicated to the programme (see "MD-COM" on page 21).

## MDCOM.EXE program start

In order to start the MD-COM programme proceed as follows.

- Insert the diskette provided with the MD-COM into the floppy drive for 3" 1/2 (A or B).
- On command prompt digit the unit letter in which the disk is inserted followed by ":" (two points) and then press .
- Digit "MDCOM" and then press .

The computer then loads the programme and after several seconds the **main screen** of the programming software is displayed (see figure on front page).



# Description of the main screen

Refer to the figure 6 for description of main screen.

- 5** System data.
- 6** Work file to be modified. If the file to be modified is new the writing NONAME is shown.
- 7** Menu bar.
- 8** Menu. For access to the menus use keys and in order to point out the menu required, then press , or press on the keypad the highlighted letter (in white). For exit from a menu select another menu by means of keys and .
- 9** Command. To select a command use keys and or press the highlighted letter (in white). The commands in grey are not enabled.
- 10** Selected communication port. This shows the serial port already selected for the connection with the MD-COM .
- 11** Field name.
- 12** Field.
- 13** Cursor.

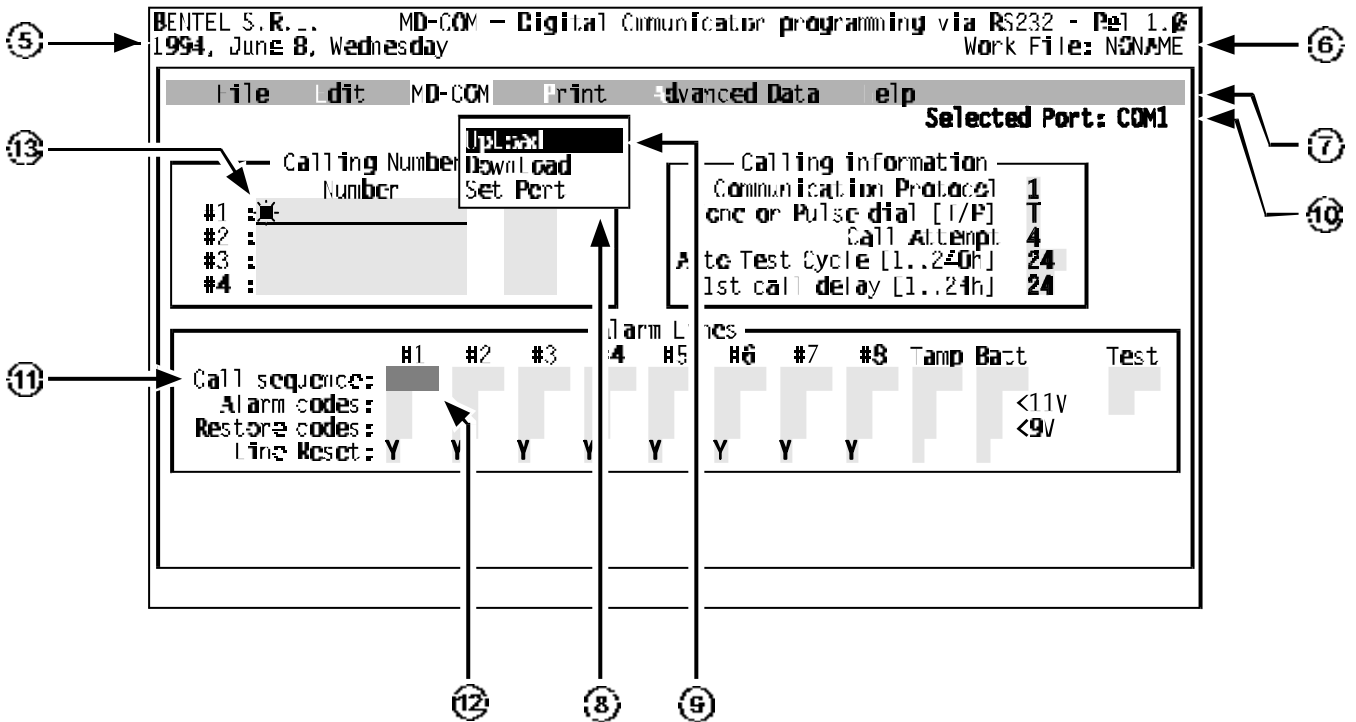


Figure 6



## Basic keys

---



**Cursor keys.** For movement between the menus, commands, fields and inside the same.



**DEL key.** Cancels the character to the left of the cursor and automatically moves all the characters to the right of the cursor one position to the left.



**CANC key.** Cancels the character to the right of the cursor and automatically moves all the characters to the right of the cursor one position to the left.



**ENTER key.** Allows the selection of menus and evidenced commands and movement between fields.



**ESC key.** Allows exit from the submenu, programme editor and the programme.



**Function key F1.** Allows recall of the contextual guide.

### ■ Guide on line

---

The MD-COM management programme has a contextual guide on line activated by pressing the key.

By pressing whilst on a field, information relative to the field evidenced is obtained.

Moreover, the programme has a Help command on the menu bar that when selected shows a synthetic description of the commands present on the menus.

## Description of menus

---

### ■ File

---



**Load.** This command allows the loading to the PC memory of the settings previously stored by the Save command or the Write to command.

By selecting this command files the with DCM extension present in the running directory are shown.

The stored data in the selected file are shown in the main screen of working area.

**New.** This command restores the settings on activation of the programme. All the effected modifications, if not previously saved, are loosen; therefore the programme requests confirmation before proceeding.

**Save.** This command allows the memorization in a file on disk of the settings visualized on the screen at the moment.

If the visualized data are not yet saved, the entering of a name (up to 8 characters) will be requested.



Files are saved in the running directory with DCM extension and can be recalled by the Load command.

**Write to.** This command allows the assignment of a different name to the file data that is modifying. In this way it is possible to create new files by modifying others previously stored.


Files are saved in the running directory with DCM extension and can be recalled by the Load command.

**Quit.** This command allows the exit from the programme: the changes done, if not previously saved, are loosen, therefore the programme requests confirmation before to quit.

## Modifica

Edit

This is not really a menu but a command that allows the access to the changing of data visualized in the working area.

Once the settings are ended, it is possible to return to the menu bar by pressing the button .

## MD-COM

MD-COM

UpLoad

DownLoad

SetPort

**UpLoad.** This command allows the loading onto the PC memory of the data contained in the memory of the connected MD-COM.

**DownLoad.** By selecting this command settings visualized on working area are copied on the memory of the connected MD-COM.

**SetPort.** This command allows the settings of the PC serial port used for MD-COM link.

## Print

Print

This is not really a menu but a command that allows the printing of the settings visualized on working area at the moment.

The printing is forwarded to the LPT1 parallel port (for its identification see PC information); if the printer is not connected to this port or is not in line, the following message is shown:

```
Error
Print Error : Press ESC
```

## Advanced data

Advanced Data

This menu is reserved to the programme developers.

## Help

Help

This is not really a menu but a command that visualizes a window in which is indicated the *programme review* and a brief description of the commands.



## Description of fields

---

### ■ Calling Numbers

---

The telephone numbers (Numbers) that the MD-COM must call in the case of an alarm and the user codes (Codes) associated with each number are in this sector of the programming window.

**Number** The telephone numbers that the MD-COM must call in case of alarm are to be entered in this field.

Up to 4 telephone numbers of 15 figures each may be entered.

**2 second pause** It is possible to enter a 2 seconds pause (between the prefix and the number, i.e.) by entering one comma (,) at the required point.

**Codes** The user code (one per telephone number) is entered on this field.

Usually these codes are assigned by the control station that is called in the case of an alarm; they serve to identify in a univocal manner the user of a service.

The user code is to be made up of 4 characters; numbers from 0 to 9 and letters from B to F are to be used.

### ■ Calling information

---

All the information relative to communication with the control station is together in this sector of the programming screen.

**Communication Protocol** The protocol to be utilized for the data exchange between the MD-COM and the control station is established in this field.

The MD-COM is able to use the following communication protocols:

ID NUMBER	PROTOCOL
1	ADEMCO/SILENT KNIGHT Slow 10 Baud
2	ADEMCO/SILENT KNIGHT Fast 20 Baud
3	FRANKLIN/SESCO/DCI/VERTEX Fast 20 Baud
4	RADIONICS 40 Bauds
5	SCANTRONIC 10 Baud
6	ADEMCO SUPERFAST (DTMF)
7	SCANTRONICS SUPERFAST (DTMF)

Enter in Communication Protocol field the ID NUMBER of the selected protocol.

The communication protocol is usually assigned by the control station.

**Tone or Pulse dial [T/P]** The type of dialling is set in this field:  
to select **tone** enter **T**;  
to select **pulse** enter **P**.

The selection is dictated by the type of dialling on the telephone line to which the MD-COM is connected.



**Call Attempt** The number of call cycles which the MD-COM must carry out in the case of alarm is set in this field.

It is possible to set from 1 to 9 call cycles.

If **Y** has been set on the **Line Reset** field of the line in alarm state, the MD-COM interrupts the call cycle as soon as a positive outcome to a call is achieved whatever the number on the **Call Attempt** field.

**Auto Test Cycle [1...240h]** The time pause that must expire between the two successive activation of the Test line is set on this field.

It is possible to set a pause of between 1 and 240 hours.

**1st call delay [1..24h]** The time pause in hours that must expire between the MD-COM powering and the first test call is set in this field.

It is possible to set a pause of between 0 and 24 hours.

It is possible to set the exact time to forward the test call by means of the **Auto Test Cycle** and the **1st call delay**.

For example, if you want the test call to be forwarded every week at 03.30 A.M. by powering the MD-COM at 17.30 P.M., it is only necessary to enter 168 in the **Auto Test Cycle** field (24 hours X 7 days = 168) and 10 (hours) in the **1st call delay** field.

## ■ Alarm Lines

---

The sequence of numbers to be called, alarm code, activation mode and cycle interruption in the case of a positive outcome to a call for each alarm line are set in this sector of the main screen.

**Call sequence** Set the telephone numbers to be called for each alarm line from those in the **Numbers** field and also the call sequence.

For example, if in the event of an alarm on line L1 the number #4 must be called first followed by number #1, enter 41 in the **Call sequence** field of line L1 (indicated by #1 on the program).

**Alarm codes** The alarm code to be forwarded when the corresponding line goes on from 0 to 12 V (rising edge) is dictated in this field.

**Restore codes** The alarm code to be forwarded when the corresponding line goes on from 12 to 0 V (falling edge) is dictated in this field.

The alarm and restore codes are to be made up of 1 or 2 characters; numbers from 0 to 9 and letters are to be used.

The alarm and restore codes to be assigned to a line depend on the event controlled by that particular line (the burglar alarm, fire alarm, etc.) and are usually assigned by the control station to which connected.

⊕ The alarm and restore codes are relatives only to the external alarm lines and to the **Tamp** line.

<11V The code to be forwarded when the MD-COM power tension drops below 11.3 V is set in this field.



**<9V** The code to be forwarded when the MD-COM power tension drops below 9 V is set in this field.

**ATTENTION** When the power tension drops below 9 V the MD-COM carries out the alarm cycle relative to the Batt line (field <9V) and then self-disables. In order to reactivate the MD-COM it is necessary to restore the correct power tension (about 13.8 V $\overline{---$ ) and press the button **3**.

**+** If the protocols 6 or 7 are selected, it is not necessary to set the alarm codes (alarm, restore, <11V and <9V) because these are already set.

**Line Reset** Whether the call cycle is to be interrupted or not in the case of the positive outcome to a call is set on this field, this is **for external lines only**:

➤ Enter **Y** if interruption of the call cycle is required;

➤ enter **N** if interruption of the call cycle is not required.

**+** In case of internal alarm lines (Tamp, Batt and Test) the cycle is to be interrupted in the case of a positive outcome of a call.