NOTIFIER®
by Honeywell

AM-1000

Analog fire panel

Installation manual

INDEX

LIMITS OF THE DETECTION SYSTEMS

An alarm or fire detection system can be very useful for the timely warning of every dangerous events like fire, robbery or a simple infringement; sometime it can automatically manages the events (diffusion of messages for the evacuation, automatic extinguishing of fire, to interface with TVCC systems, block of the doors or ways leading up, automatic alert to the authorities, etc.). In any case it can not assure a protection against damages of the property or caused during a fire or theft.
Each system can not correctly functioning if it is not installed and maintained in accordance with the instructions of the producer.

PRECAUTIONS

The system and all the components have to installed in environment with the following features:

- Temperature: -5 °C - +40 °C.
- Humidity: 10% - 93% (without condensate).

This system, like all the solid components, can be spoiled from induced electrostatic voltage: handle the boards keeping them on the rim and avoid to touch the electrical components.
An exact earth connection ensure, in any case, a reduction of the sensitivity to the noises.
If You are not able to solve some problems regarding the installation, please contact the NOTIFIER Technical Service.

A fire alarm system will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time.
During the planning stage it is necessary to value the requested autonomy to measure the power supply and batteries.

The batteries have to be verified with periodicity from specialized staff.
Before the removal or the insertion of each board it is necessary to disconnect AC power and batteries.
Remove all electronic assemblies prior to any service operations.

The control panel and all the connected devices (detectors, modules, etc) can be damaged if, with connected AC power, a board is inserted/removed or the cables are connected.

Peripheral devices (detectors, etc.) that are not perfectly compatible with the control panel can cause damages both to the control panel and to the functioning of the system; maybe in a not so opportune moment.
It is essential to use only material that NOTIFIER assure to be compatible with the control panel.
In case of doubt please contact the NOTIFIER Technical Service . The primary cause of the malfunctioning is an insufficient/inadequate maintenance.

It is important to take care of these aspects from the planning of the installation, this will facilitate and reduce the future costs for the interventions.

RE-MIND: Do not try to install the control panel and the devices before the reading of this manual.

GENERAL DESCRIPTION

The AM-1000 is a fire detection control panel with the following main features:

- Microprocessor System
- 1 analog line
- 99 detectors + 99 input/output modules
- LCD graphic display with 8 lines for 20 columns (128 x 64 points)
- Keyboard with dedicated key for particular functions:
  Evacuation , Delays reset, Buzzer silence, Siren silence/restore, Reset.
- 1 RS – 232 interface for the connection of a remote serial printer (80 characters per line).
- UP/DOWNLOAD software: option to the printer on RS-232 line.
- Optional Tel. Dialer Board to be installed outside the panel cabinet.
- Power supply : 24Vdc – 1,4 A
- Battery charger : 0,45 A
- User power connection to supply external devices (for example : sirens, bells, etc.)
- One supervised control for sirens
- Wall mounting type for panel cabinet
- 3 password levels: (User - Maintenance – Configuration).
- Programmable text labels: 16 characters point description; 16 characters zone description.
- 50 devices zones
- CBE (Control-by event) equation for activations with logical operators (AND, OR, etc.).
- 100 logical Groups
- Historical archive in non-volatile memory
- Real time clock
- Detector Line Auto-programming with the automatic identification of the connected devices type
- Automatic identification of double address devices
- Software algorithm for alarm and trouble criteria.
- Automatic switch for day/night detectors sensitivity.
- Warning indication of the detectors cleaning need
- Warning indication of low sensitivity of the detectors
- Programmable alarm threshold for the detectors
- Software function programming defined for the various devices
- Walk-Test functions selectable by zone

ELETTRICAL FEATURES

- Functioning temperature: - 5° C - + 40° C.
- Relative humidity: 10 % - 93 % (without condensate).
- Storage temperature: - 10° C - + 50° C.
- Weight : 2 Kg

❑ Earth connecting

The earth connecting has to be realized in accordance with the CEI and ISPELS rules with a resistance lower than 10 Ohm. It is mandatory to connect the earth cable to the control panel on the CNAL terminal.

❑ Primary supply

In normal condition the control panel is powered from the mains voltage line.
In case of mains loss, stand-by power is provided from the rechargeable batteries.
The requested characteristics for the mains supply voltage are:

- Voltage: 230 V ac single-phase + 10%, - 15%.
- Frequency: 50 / 60 Hz.
- Electrical input: 0.45 A.

☞ NOTE: It is necessary to take care when the installation is near powerful electromagnetic sources (radio equipments, electric motors, etc.).

❑ Power supply

The power supply provide the following outputs:

- 27.6 Vdc + 2 % - 10 % 1 A ripple max. 300 mV (Supply set for the control panel, user output, external load factors and extinguishing board).
- 27.6 Vdc / 0.45 A: Battery-charge for batteries.

❑ Battery-charge section

- Output voltage = 27.6 Vdc.
- Electrical output = 0.45 A ~ 100 mVpp max (temperature compensation).
- Number of batteries that can be connected= 2 * 12 V, 7 Ah.
  Battery Yuasa NP7-12 type or NP7-12FR (UL94) Faston - Capacity (20hr) = 12 V 7 Ah – Dimensions = 151(b) x 65 (p) x 98 (h).
  Battery Fiamm FG20721 type or FGV20721 (UL94) Faston - Capacity (20hr) = 12 V 7.2 Ah – Dimensions = 151(b) x 65 (p) x 98 (h).
- The battery-charge section has the following signalization threshold:
  Exhausted battery = 21.5 Vdc.
  In balance of the re-charge= 3.4 Vdc (voltage difference between 2 batteries)
  Battery release = 20 Vdc.
- Standby absorption without 230 Vac Network voltage: 90 mA without optional board.

❑ List of the fuses

- On the 230 V Network voltage = 2 A FAST.
- On the siren output= 0.75 A to be restored.
- On the battery input= 2.5 to be restored.
- On the user output= 1 A FAST.

Number of devices to be installed on the line

The maximum number of devices that can be connected on the detection line is the following:

- 99 detectors
- 99 input/output modules

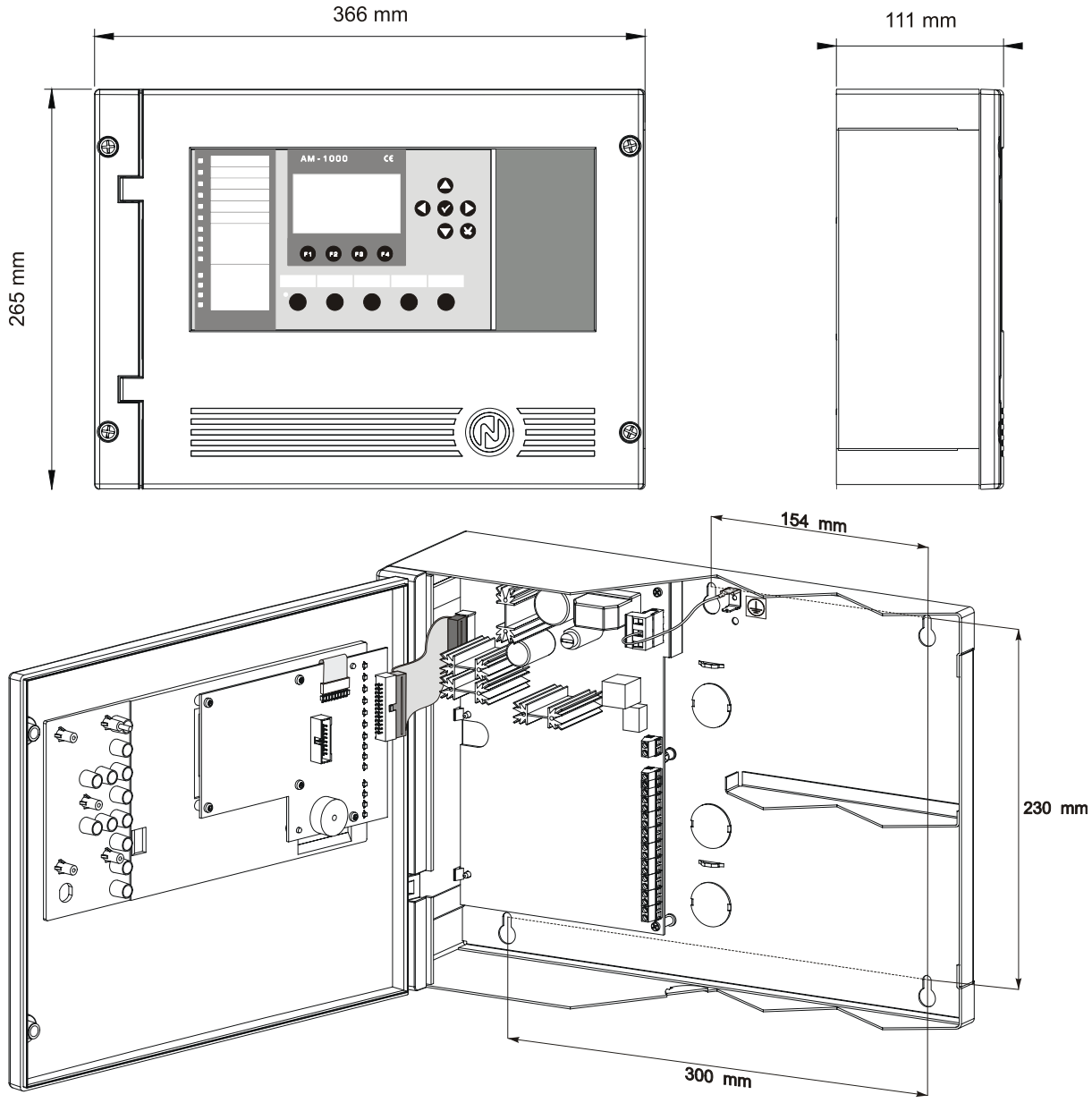
Features of the output relays

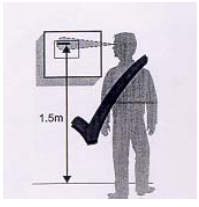
FUNCTION	FEATURES
Siren General alarm General trouble	1 24 Vdc / 1 A supervised contact. Max 1 A 30Vdc , NA-NC selectable by JALL jumper Max 1 A 30Vdc , NA-NC selectable by JGST jumper

CN0 terminal board

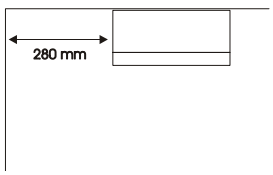
N°	Description	Features	Notes
21	RL NA-NC Alarm	1A 30Vdc contact	NA-NC selectable by JALL jumper
20	RL Common Alarm		
19	RS232 GND	Non opto-isolated serial output (if the connected devices have the negatives earthing will appear the signal " Earth Trouble").	
18	RS232 RI		
17	RS232 RX		
16	RS232 RTS		
15	RS232 RTX		
14	GND User	Protected by 1A Fast fuse	Current at disposal of the user (sum of the two outputs).
13	+24Vdc User		
12	RL Negative Siren	Protected by 0,75A fuse (polarity inversion output).	
11	RL Positive Siren		
10	RL Common trouble	1A 30Vdc contact	NA-NC to be select through JGST jumper.
9	RL NA-NC trouble		
8	GNDI	Opto-isolated serial output	Available function with the insertion of the optional AM1SE board.
7	RS485 LIN-		
6	GNDI		
5	RS485 LIN+		
4	Line 1 B-	**LINE 1**	
3	Line 1 B+		
2	Line 1 A-		
1	Line 1 A+		

INSTALLATION

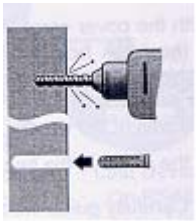




The contol panel has to be wall mounted in order to allow a clear visibility of the disply and an easy access for the user.
For example 1.5 m height allow an optimal display vision.



For installation in a corner it is necessary to have a distance of 280mm to let the frontal panel open.



With 5 automatic blocks (brickwoork wall) or selfscrew (prefabbricated panel) it is possible tha wall mounting.
Diameter max of the selfcrew: 5mm

We advice do not install the control panel near heating sources (heat radiators, thermosiphon).

It is possible to open the control panel unscrewing the two securing screws of the lid.
The connection cables to the detectors, auxiliary devices and supply network, can be inserted in the control panel making proper holes. The cables have to slide along the lateral wall of the box keeping some pieces of the cables that are connected to the CNA terminal.
For the 230 Vac supply cable it is necessary to have a section switch outside the control panel (division of the contacts: 3 mm min.). The switch has to disconnect the phase.

☞ **Note** For the wiring of the external cables it is necessary to avoid that the conductives, with maximum voltage of security, get in touch with dangerous voltage points. Besides the end of the cables has not to be fixed with a soft welding in the points where the threads are subjected to contact pressure.

❑ Network connection

The 230 Vac network supply cable has to pass near to the relevant terminal.
The connection to the 230 Vac supply network has to be done with 3 conductive cable (phase – neutral – earth). The beginning of the Earth cable coming from the network has to be done on the CNAL terminal and to be fixed to the box to avoid accidental tears from the terminal.
The connection to the supply has to be done respecting the following phases:

1 – Turn on the general switch of the 230 Vac network installation supply.
2 – Disconnect from the Control panel the CNAL terminal.
3 – Connect the network supply cable.
4 – Connect the CNAL terminal.
5 – Turn off the network switch.
6 – Install and connect the batteries as indicated in this manual.

☞ **Note: The control panel is functioning from the moment it is supplied. All the same, with regards to the stocked time of the batteries, it is necessary to wait some hours to have a complete recharge.**

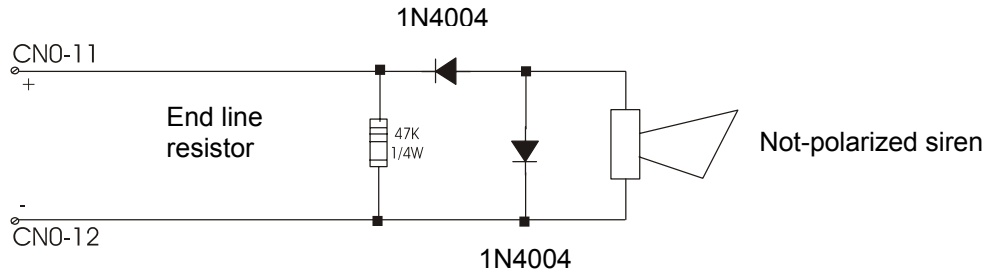
7 – Verify the functioning of the LED indicators placed on the panel, like the description done in the "Testing and Start up" paragraph.
8 – Close the control panel.

❑ Internal connection and batteries

The control panel is provided with an internal recharge power-supply; it is connected to the batteries through the CNSL irreversible connector.
The power-supply furnishes a 27,6 Vdc tension and a max. 0.45 A. current.
The 2 batteries for the supply in case of absence of network must have the following characteristics:

- Nominal tension = 12 V;
- Nominal capacity= 7 Ah max.

❑ Connection of the Siren



Sounder output window

SHORT CIRCUIT	STAND BY	CUT
21K	61K	

COMPONENTS OF THE SYSTEM

❑ Lines for the communication to detectors/modules

The AM1000 control panel interacts with the detection devices and intelligent/addressable devices through a 2 cable line.
The line can be connected in the way to respect the specifications related to the STYLE 4 (open line) and STYLE 6 (closed line) signalization circuits lines.
The peripheral devices are supplied through the same line used to communicate with them.
If a line is connected to more than 32 devices (ref. EN54.2) it has to be STYLE 6 configured (closed line).

❑ Isolator modules

The isolator modules (ISO-X) allow the electrical isolation of some devices from others on the same loop, this permit to critical components on the loop to function even in case of short-circuit on the communication line.

❑ Input modules

The addressable modules (MMX) permit to the AM1000 control panel the control of the N.A. contacts, manual alarm buttons, fire detectors with 4 conventional wires, thermal detectors, humidity detectors and devices for the supervision.

❑ Output modules

Thanks to the output modules (CMX) the AM1000 control panel, through programmable CBE equations, can activate indication circuits or output relays with contact free from potential.

❑ Intelligent detectors

The AM1000 control panel can communicate with ionic analog, photoelectric, thermal and rate of rise detectors.

❑ Technical information regarding the connection of cables for analog line

Type of cable: twisted (5cm.) and screened with 2 conductors.
Sections referring to the total length of the line (in case of "STYLE 6" loop so closed loop, we consider the length of the ring) however it has not to exceed a total of 3000 meters and the total resistance of the line has to be lower than 40 Ohm.

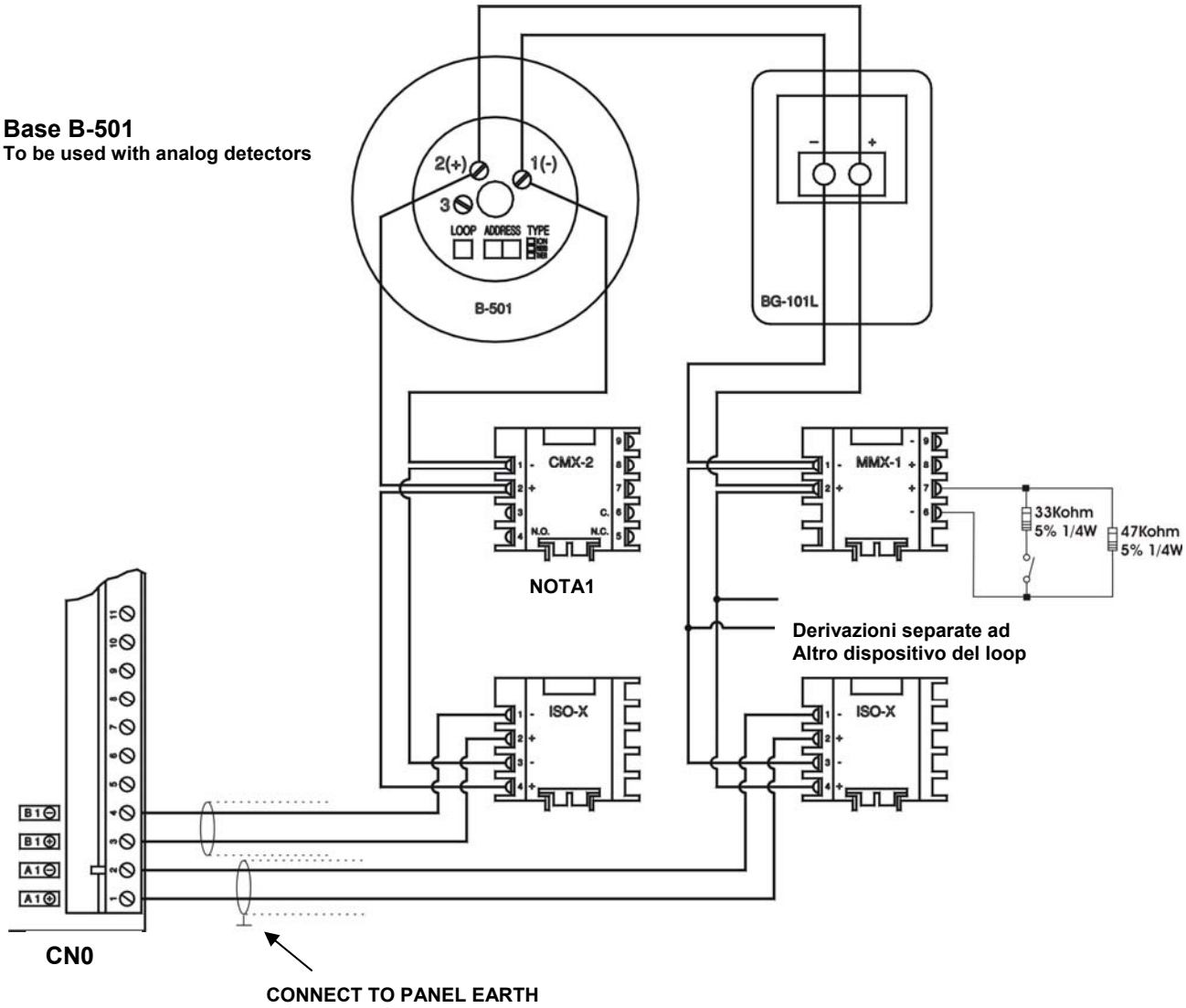
Schedule of the minimum necessary sections compared with the length the line

Up to 1.000 meters	cable 2 x 1 mm²	16 AWG	Belden 9575
Up to 1.500 meters	cable 2 x 1.5 mm²	16 AWG	Belden 9575
Up to 2.000 meters	cable 2 x 2 mm²	14 AWG	Belden 9581
Up to 3.000 meters	cable 2 x 3 mm²	12AWG	Belden 9583

CONNECTION OF DETECTORS AND MODULES

Example of closed line (style 6)

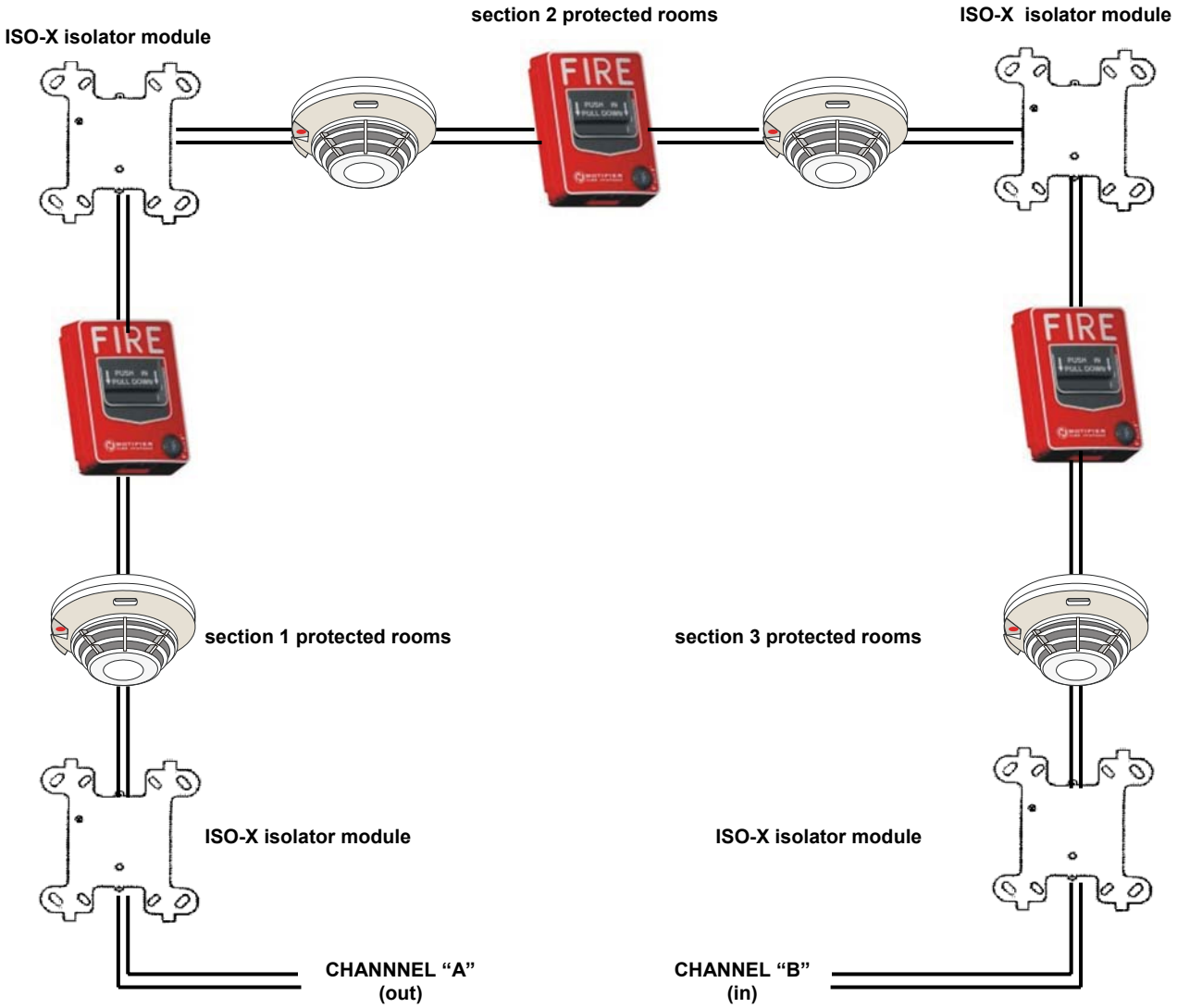
Base B-501
To be used with analog detectors



☞ **NOTE 1: It is not possible to connect devices for the transmission of alarms (telephone dialer, etc.) to this output, see the EN 54.2.**

CIRCUIT WITH LOOP (STYLE 6) CONNECTION

The functions are in accordance with the technical details regarding the signalization circuits NFPA STYLE 6



☞ NOTE: The maximum number of devices between two ISO-X is 25.

WORKING

To protect each device against the opening and the short-circuit (of all the other section) it is necessary to separate each group of devices, connected on the SLC line, with a couple of ISO-X isolator of trouble module.

For example, a trouble on the section 2 will not influence the sections 1 and 3.

The isolator module on both ends of the section 2 will cause the opening of the SLC line.

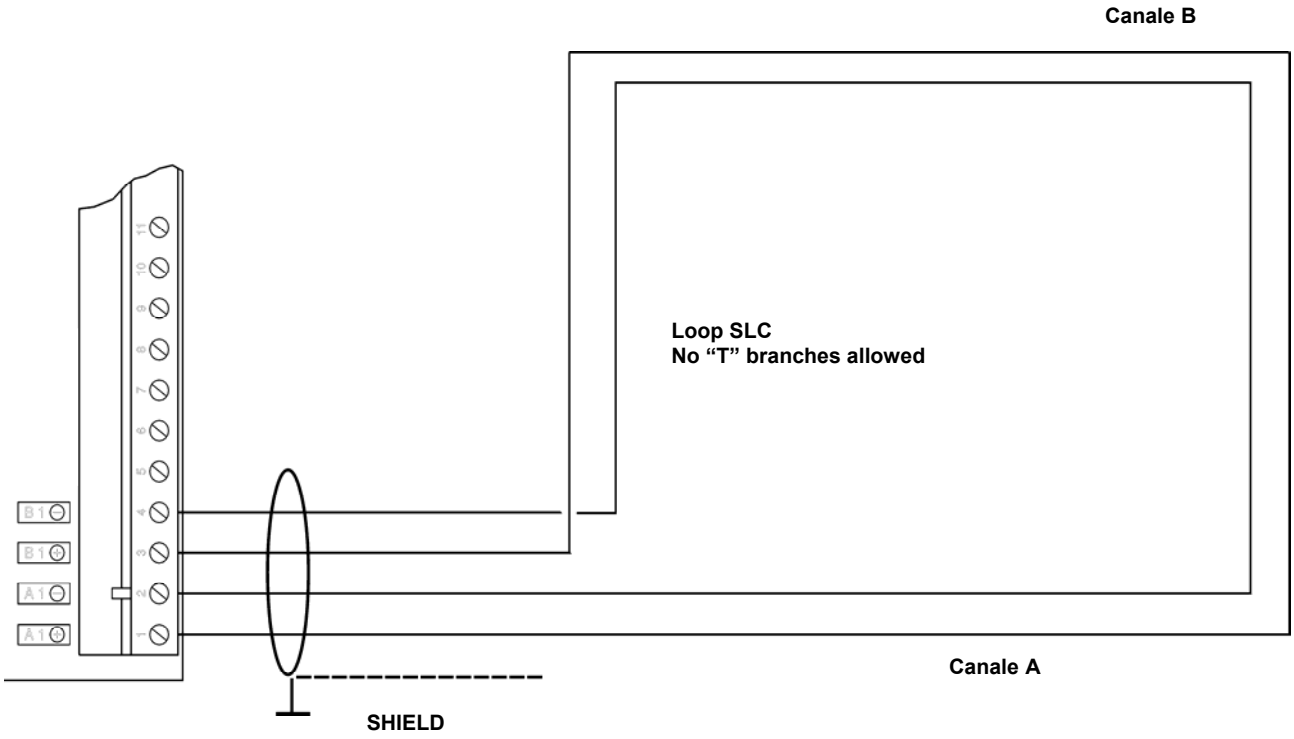
The section 1 will continue to operate by the supply from the canal "A", the section 3 will continue through the canal "B".

Since the control panel will not be able to communicate with the devices of the SLC line of section 2, it will be generate a trouble signalization (ANSWEAR NOT VALID from the Points of the section 2).

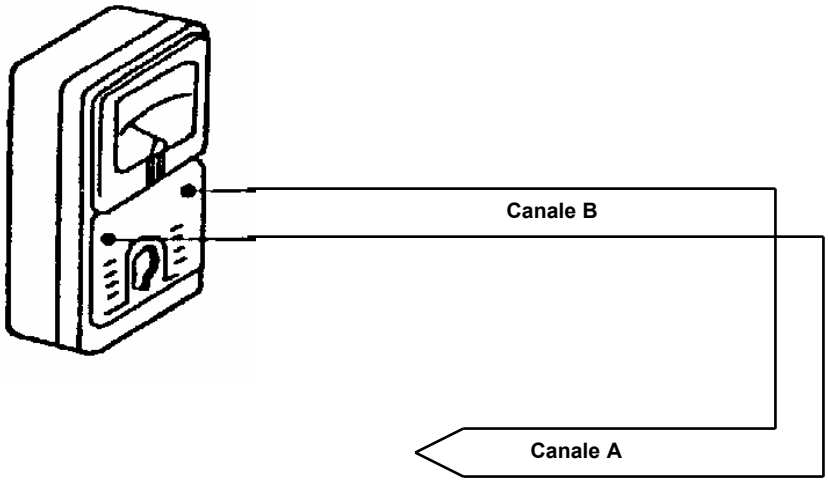
The circuit is a variation of the circuit regarding the STYLE 6 NFPA signalization line, so it is not possible a "T" derivation or branchesfication of the circuit. The features are the same of the STYLE 6 CIRCUIT.

❑ Note regarding the connection lines in field

FEATURES OF THE CONNECTIONS (STYLE “A”)

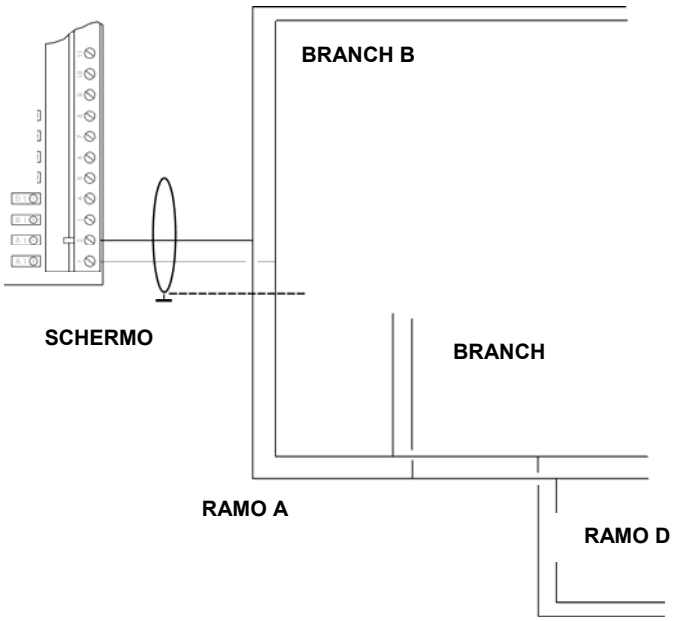


The total length of the SLC wire (from the output of the control panel and return) can not exceed the 3.000 meters.



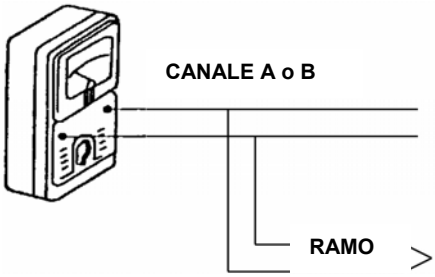
The resistance in continues supply of the SLC loop can not exceed the 40 Ohm.
For the measuring of the canal “B” it is necessary to disconnet the canals “A” and “B” from the control panel and cause, between the two ends of the canal “A”. a short-circuit.

FEATURES OF THE CONNECTIONS (STYLE "B")

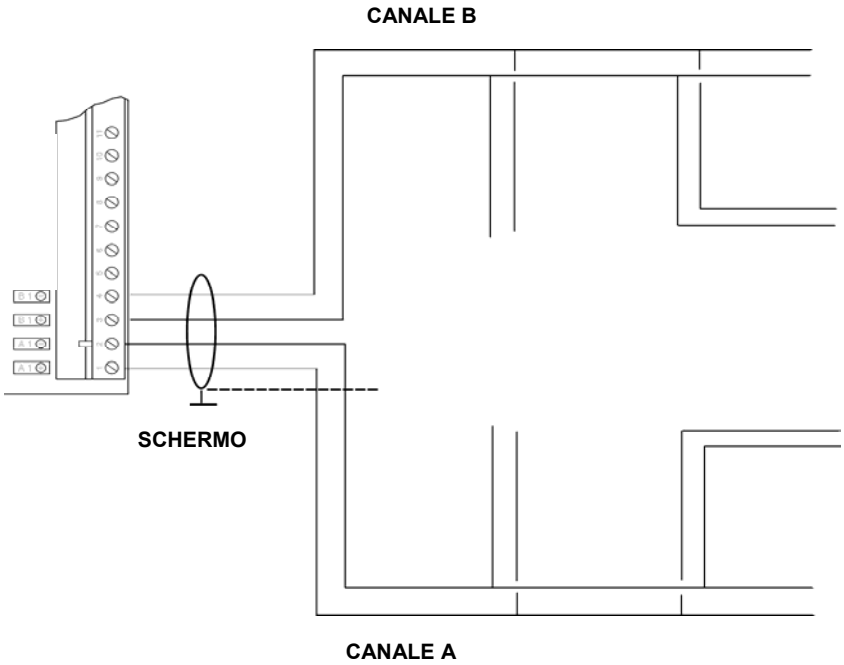


❑ Branch resistance

Cause a short-circuit for the terminal points of each branch and measure the DC resistance, from the beginning of the canal to the end of the branch.
The total DC resistance from the panel to the end of the branch can not exceed 40 Ohm.
Repeat the procedure for all the remaining branches.



For each canal:
Sum the length of the present branches.
The total can not exceed 3.000 meters.
(Branch A)+(Branch B)+(Branch C)+(Branch D)+(Branch E) <= 3.000 meters.



The total length of all the branches on canal A and canal B can not exceed 3.000 meters.

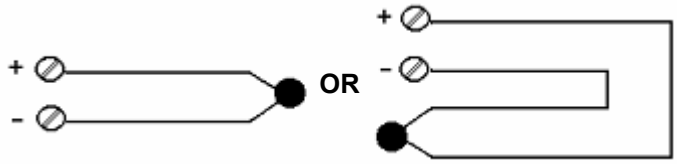
❑ Test procedure for analog system lines

Before to supply the lines of the control panel it is necessary to verify the following values:

NOTE: IT IS NECESSARY A DIGITAL TESTER

a) line resistance

Cause a positive and negative short-circuit at the of the installation and set the tester between (+) and (-) of the line.



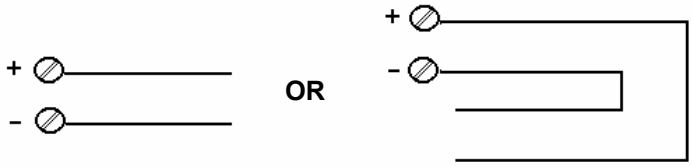
STYLE 4 **STYLE 6**

The resistance has to be lower than 40 Ohm.

b) line isolation

Eliminate the previous short-circuit. Set the tester between (+) and (-) of the line, with installed detectors and modules verify:

b1)



STYLE 4 **STYLE 6**

Connect :
Tester (+) / Line (+) e Tester (-) / Line (-)
Verify :
Resistance: 1 - 1.3 MOhm

b2)

Connect :
Tester (+) / Line (-) e Tester (-) / Line (+)
Verify :
Resistance: 0.7 - 0.9 MOhm

c) Shield isolation of the cable/line

Set a tip of the tester on the monitor of the line cable and the other tip on the positive cable (+) of the same line. The measured resistance has to be grater than 15-20 MOhm, better if “infinite”. Carry out the same procedure between the monitor and the negative cable (-). Verify that, even in this case, the resistance is grater than 15-20 MOhm.

d) Earth isolation installation/lines

Set a tip of the tester on the earth of the installation and the other one on the positive cable (+) of the line; the measured resistance has to be grater than 15-20 MOhm, better if “infinite”. Carry out the same procedure between the monitor and the negative cable (-). Verify that, even in this case, the resistance is grater than 15-20 MOhm.

e) Earth isolation installation/monitor of the cable

Set a tip of the tester on the earth of the installation and the other one on the cable shield the measured resistance has to be grater than 15-20 MOhm, better if “infinite”.

f) Line tension

With the detectors/modules connected the output voltage of the n° 1 line (terminals 1-2) has to be 24 Vdc without test of the devices (no programmed point).
A voltage lower than 14 Vdc is showing a connection inversion of the detectors or modules.

TESTING AND START UP

The installation of the control panel has to be done after the careful reading the instructions carried on the Installation manual and programming Manual.

After the mechanical installation of the control panel carry out the following actions:

- With a multimeter (see the chapter Test procedure for analog system lines in this manual) verify the correct connection of the detection lines.
- Connect the detection lines to the control panel.
- Connect the siren (with the balance resistance from 47 KW ¼ W) of general alarm on the CN0 –11 e 12 terminal
- To measure the correct batteries to be used, verify the autonomy that the installation has to guarantee in absence of 230 Vac supply.
- Connect the control panel to the 230 Vca supply network with a tripolar cable: phase, earth, neutral, (it is necessary that the earth cable is longer than the phase/neutral cable) on the CAN terminal (it is obligatory the earth connection). It has to be fixed to the box to avoid accidental tears.

The connection to the supply has to be done respecting the following phases:

- Switch on the 230 Vca that supply the control panel;
- Disjoint the CAN terminal from the control panel;
- Connect the 230 Vca supply cable to the CAN terminal;
- Connect the CAN terminal to the control panel;
- Switch off the 230 Vac
- Install and connect the batteries as indicated on page 24 of this manual.

When the control panel is connected verify the following indication on the frontal monitor :

- Green led presence of supply lighted:
- Yellow led general trouble flashing;
- Yellow led trouble of the system flashing;
- buzzer continuous sound.

Push the key "BUZZER SILENCE", the buzzer switch off and the following trouble indication "Panel power-on" is dispalyed.

Push the key "RESET" the display visualize the question to insert the password n° 2.

Type the password and verify the following conditions: :

- green led presence of supply lighted;
- yellow led general trouble off;
- yellow led system trouble off;
- on the display no indication of trouble.

To program the control panel consult the chapter SUGGESTED SEQUENCE TO PROGRAM THE CONTROL PANEL - User and Programming Manual

PERIODICAL MAINTENANCE OF THE AM-1000 CONTROL PANEL

Verify that the green led "Power present" is lighted.
Verify that all the other led are off.
Perform the procedure "lamp test" and verify that the display and all the bright indications light up for a few seconds.
Remove the 230 Vca network supply from the AM1000 control panel and verify the following conditions:

- the indication on the display "Mains Trouble".
- Yellow Led "FAULTS" flashing
- Yellow led "POWER" on
- General trouble relay on.
- Verify the battery tension, if the sum of the two tension is lower than 20.5 V it is necessary to substitute them.

Connect the 230 Vca network supply to the control panel, push the "ACK" key and verify the following conditions:

- The indication "Mains Trouble" is not displayed.
- Yellow led "FAULTS" off.
- Yellow led "POWER" off
- General trouble relay off

Alarm a device on the line 1 and verify:

- Red led "ALARM" flashing
- Siren output on
- Alarm visualized on the display

Push the "Silence BUZZER " key and afterwards the "Sounder Silence/Restore" key; on the display is visualized the request to insert the level 2° password.
Type the password and verify:

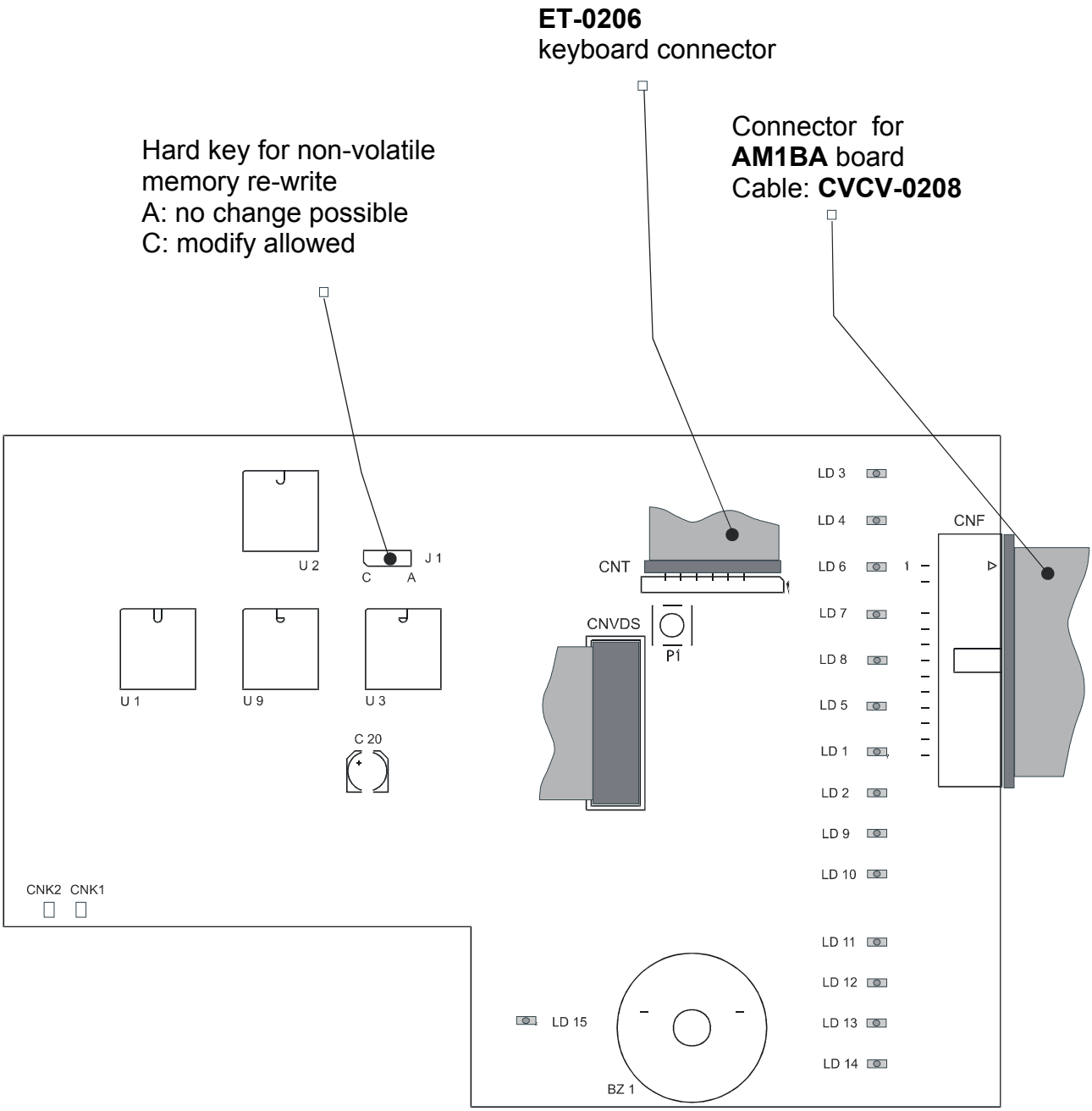
- Visualization on the display, on the op right, of the icon concerning the output silenced siren
- Red led "ALARM" on.
- Siren output off.

Pushing the "RESET " key on the display is visualized the request to insert the level 2° password.
Type the password and verify the following conditions:

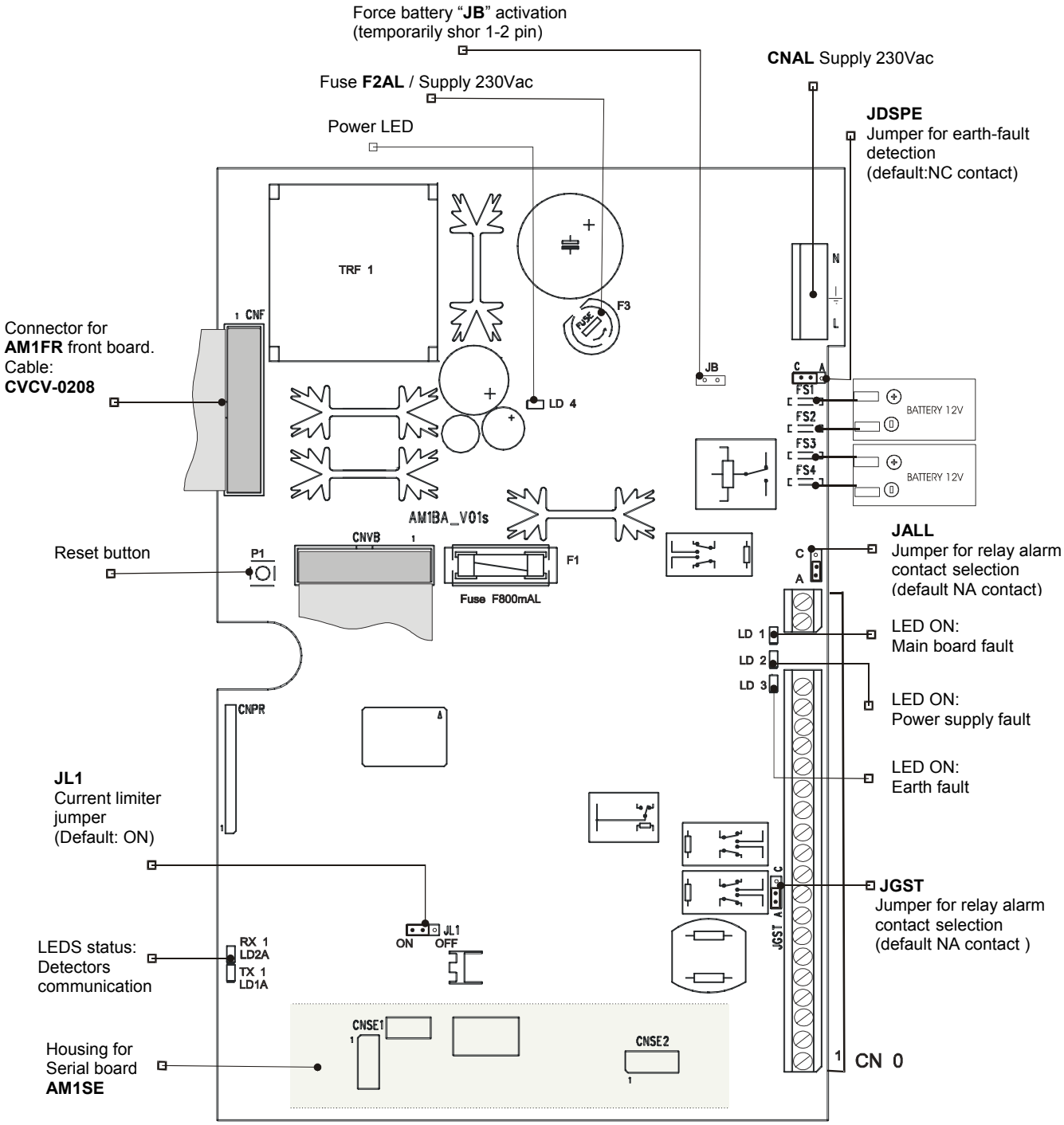
- Red led "ALARM" off
- Siren output off.
- Any alarm signalization present on the display

At the end of the maintenance leave the control panel in stand-by (without alarm or trouble indications) and verify that the led "Power present " is on.

Topographic of the AM-1000 frontal board



Topographic of the AM-1000 main board



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