



 **NOTIFIER**[®]
by Honeywell



AM SERIES Installation Manual

Analog fire panel

AM-2000-N for firmware V.013c or higher
AM-4000 for firmware V.1.66c or higher
AM-6000-N for firmware v.019c or higher

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NOTE: Do not try to install the control unit and devices connected without reading this manual.

DETECTION SYSTEM LIMITS

An alarm or fire detection system can be very useful for the prompt warning of any dangerous event, such as fire, a robbery or a simple burglary, in some cases it can automatically manage events (transmission of messages for room evacuation, automatic fire-extinguishing, TVCC system interface, access route or door blockage, automatic warning to authorities, etc.), but in any case, it does not ensure protection against damages to propriety or damages caused by fires or robberies).

Moreover, each system may not properly operate if it is not installed and maintained according to the manufacturer's instructions.

PRECAUTIONS



- These instructions contain procedures to be followed in order to avoid damages to equipment. It is assumed that the user of this manual has performed a training course and that he knows the applicable rules in force.
- The system and all its components must be installed in an environment having the following features:
 - Temperature: $-5\text{ }^{\circ}\text{C}$, $+40\text{ }^{\circ}\text{C}$.
 - Humidity: 10 % - 93 % (without condensation).
- Peripheral devices (sensors, etc.) which are not perfectly compatible with the control unit may cause damages to the same control unit, and a bad operation of the system in any moment. Therefore, it is essential to only use material which is guaranteed by NOTIFIER and is compatible with its own control units.
Please consult NOTIFIER Technical Service for any doubt.



- This system, like all solid state components, may be damaged by induced electrostatic voltages: handles the boards keeping them among the edges and avoid to touch the electronic components.
- An appropriate earthing connection ensures, in any case, a sensitivity reduction to disturbances.
- Please consult NOTIFIER Technical Service if you cannot solve installation problems.
- Any electronic system does not operate if it is not powered.
If power supply from the mains fails, the system ensures its operation through battery, but only for a limited period of time.
- During the system planning phase, take into account the autonomy required to appropriately dimension the power supply and batteries.
- Skilled personnel shall periodically check the state of batteries.
- Disconnect the MAINS and the batteries BEFORE removing or inserting any board.
- Disconnect ALL power supply sources from the control unit, BEFORE performing any servicing.
- The control unit and the connected devices (sensors, modules, annunciators, etc.) may be damaged, if a new board is inserted or removed, or if the powered cables are connected.
- The most common cause for malfunctioning is inappropriate maintenance.
- Take special care of these aspects since you start the system planning phase; this will facilitate future servicing and will reduce cost.



This device is marked CE to certify it is in conformity with the requirements of the European community Directives:

- Electromagnetic Compatibility Directive 89/336/EEC (and the directive 92/23/EEC)
- Low Voltage Directive 73/23/EEC

NATIONAL RULES



This device must be installed and must operate in accordance with these instructions and to the rules in force in the installation place.

EN 54 : Information



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Maximum 512 sensors/ manual button for microprocessor

- The AM-4000 control unit has a maximum capacity of 396 sensors and 396 addressed modules. If this function is not appropriately used, it can contravene the EN54 requirements. This limit includes the possible conventional sensors and buttons connected to the system with zone modules. Therefore, check the number of installed devices and ensure their types are in conformity with the rule



- This fire detection control unit is in accordance with the requirements of rule EN54-2/4 . In addition to the basic EN 54 requirements, the control unit is in conformity with the following optional operation requirements.

| Optional Functions | EN54-2 Reference |
|--|-------------------------|
| Indications: Point breakdown | 8.3 |
| Controls: Coincidence Detection | 7.12 |
| Output Delays | 7.11 |
| Disabling of addressable points | 9.5 |
| Test Conditions | 10 |
| Outputs: Outputs toward fire alarm devices | 7.8 |



- The power supply section of the AM-4000 control unit is in conformity with the following EN54-4 requirements.

| Function | EN54-4 Reference |
|---|-------------------------|
| Power supply from main source | 5.1 |
| Power supply from battery source in standby | 5.2 |
| Re-charging and check of the battery source | 5.3 |
| Power supply breakdown detection and signalling | 5.4 |

1 – **GENERAL DESCRIPTION**

The **AM2000 40000 6000** controls unit are a fire detection control unit manufactured in conformity with the EN.54.2 and EN.54.4 rules.

TECHNICAL FEATURES

- Multi-microprocessor system
- LCD Display having 8 lines and 40 columns for (240 x 64 points) **AM2000** and **AM4000**.
- LCD Display having 16 lines and 40 columns for (240 x 64 points) **AM6000**.
- Keyboard having keys dedicated to specific functions : Evacuation, Re-set delays, Buzzer Silencing, Silencing / Siren Re-set, Re-set.
- **LINES**
- **AM2000**: 2 analogue lines fitted with connection to closed or open loop for the connection of the field elements
Each line can drive 99 sensors + 99 input and output modules.
- **AM4000**: 4 analogue lines fitted with connection to closed or open loop for the connection of the field elements
Each line can drive 99 sensors + 99 input and output modules.
- **AM6000**: the base configuration consist of 4 analogue lines and is expansible to up to 16 lines analogue lines by means of 3 optional LIB-600 boards. Each LIB-600 provides 4 additional analog lines.

SERIAL INTERFACES:

- 1 RS.232 interface to use the Software of UP/DOWNLOAD PK.
- 1 RS.485 interface to connect remote repetition panels

POWER SUPPLY

- AM2000**: Standard Power supply 27,6 Vcc – 2,1 A total (with temperature compensation)
Battery charging with 27,6 Vcc – 1 A output
27,6 Vcc - 1 A User output : to power external loads such as sirens, bells, etc.
- AM4000**: Standard Power supply 27,6 Vcc – 2,7 A total (with temperature compensation)
Battery charging with 27,6 Vcc – 1 A output
27,6 Vcc - 1 A User output : to power external loads such as sirens, bells, etc.
- AM6000**: Standard Power supply 27,6 Vcc – 4 A total (with temperature compensation)
Battery charging with 27,6 Vcc – 1,5 A output
27,6 Vcc - 1 A User output : to power external loads such as sirens, bells, etc.

OUTPUTS:

- 1 Supervised Siren Output
- 1 General Alarm Output with contacts free from voltage
- 1 General Breakdown Output with contacts free from voltage

MECHANICS

AM2000/AM4000

The control unit mechanics is suitable for wall installations
Sizes 483mm (L) x 266mm (H) x 111mm (P)
Protection grade : IP 30
Operation temperature : -5 °C a +40 °C

AM6000

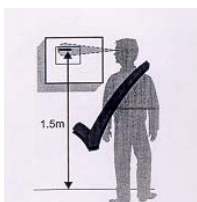
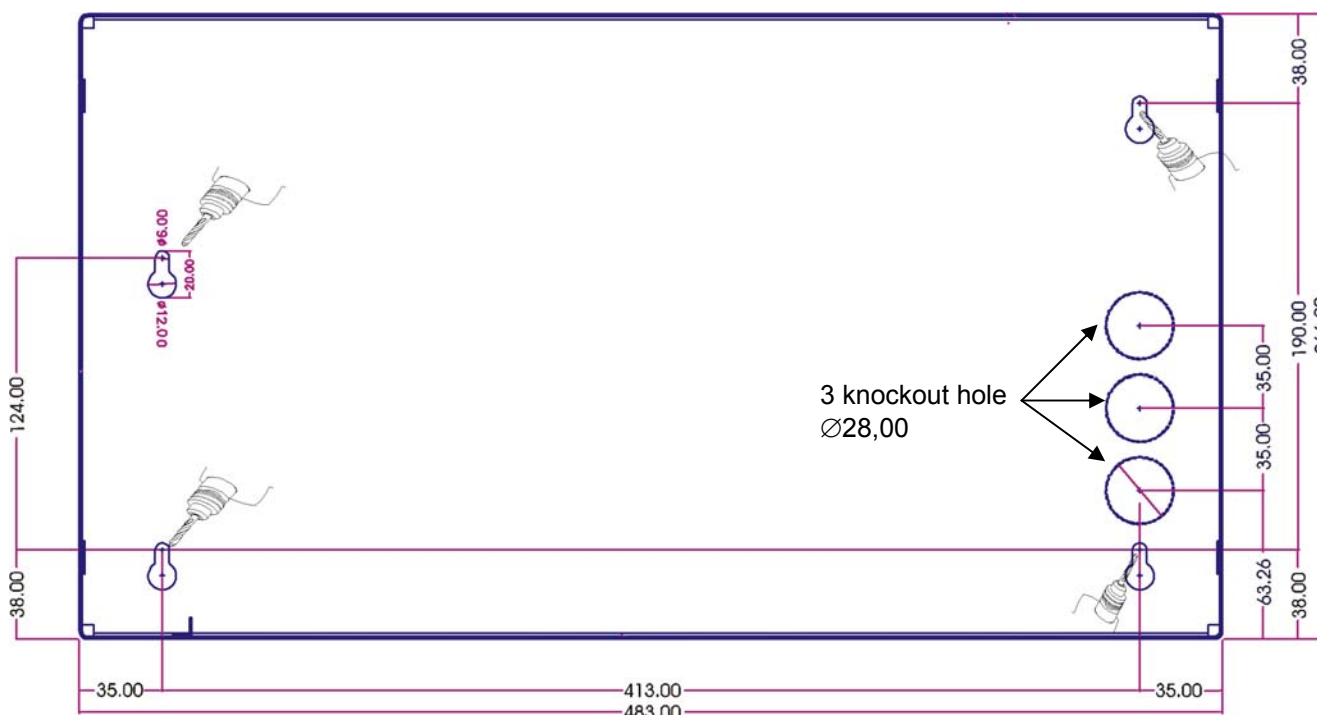
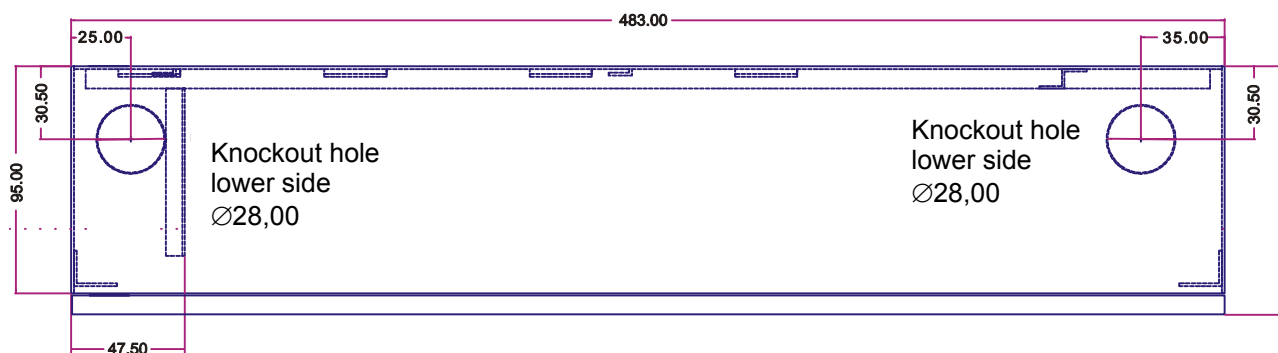
The control unit mechanics is suitable for wall installations
Sizes 535mm (L) x 435mm (H) x 200mm (P)
Protection grade : IP 30
Operation temperature : -5 °C a +40 °C

MAIN FUNCTIONS

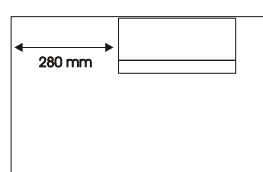
- 3 password levels (Operator - Maintenance – Configuration)
- 4 total access levels in conformity with the EN.54 rules
- Programmable readings : point description through 16 characters; zone description through 32 characters
- 150 physical zones and 400 logical groups
- CBE Control Equations (Control-by event) for activation with logical operators (And,Or, Xor , etc.).
- Event historical file with the last 999 events in non-volatile memory
- Real time clock
- Line self-programming with automatic recognition of the type of the connected devices.
- Automatic recognition of points having the same address.
- Decision algorithms for the alarm and breakdown criteria.
- Automatic sensitivity change Daytime /Night.
- Signalling of need for sensor cleaning
- Signalling of poor sensor sensitivity
- Programmable alarm threshold for sensors
- Pre-defined software function programming for the various devices used
- Walk-Test function for zones.

2 - **INSTALLATION**

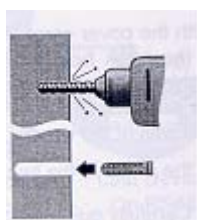
2.1 - **AM2000 AND AM4000 WALL ASSEMBLY**



The control unit must be installed to the wall so as to allow a clear view of the display and easy access by the operator. For example, it allows an optimal view of the display at 1.5 m height



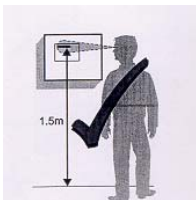
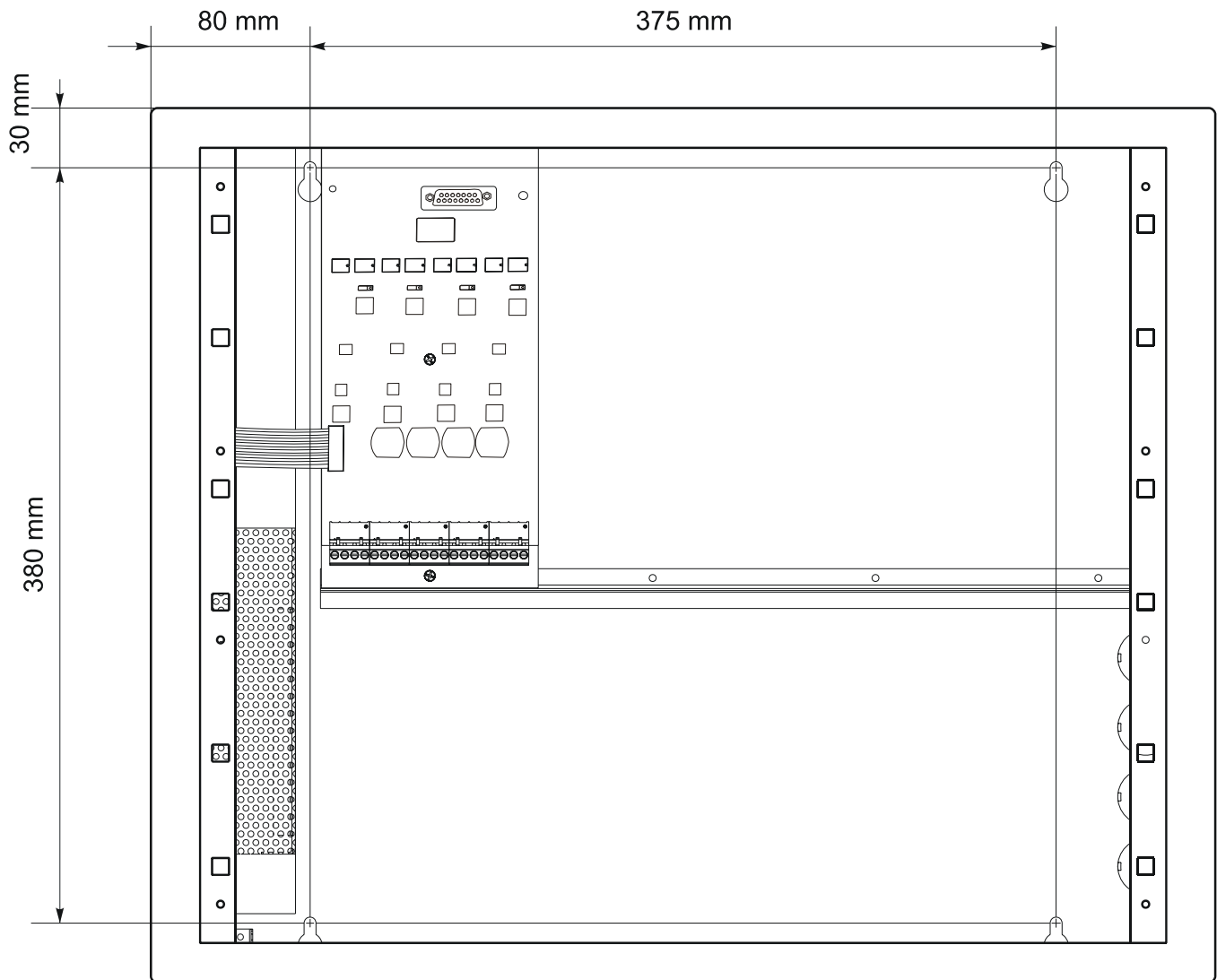
Moreover, if the control unit must be installed to the wall beside a corner wall, the minimum distance from the latter must be at least 280 mm, so as to avoid the opening of the front panel.



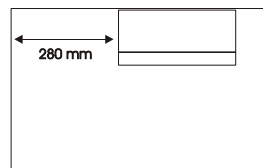
The control unit is designed to be installed to the wall through self-blocking cleats (masonry walls) or self-tapping screws (prefabricated panels). It is recommended not to install the panel near heat sources (radiators, etc.)

It is recommended not to install the control unit near heat sources (radiators, etc.). The control unit can be opened by unscrewing the two cover fixing screws.

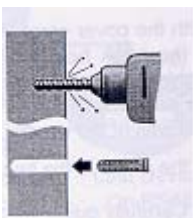
2.2 - AM6000 WALL ASSEMBLY



The control unit must be installed to the wall so as to allow a clear view of the display and easy access by the operator. For example, it allows an optimal view of the display at 1.5 m height



Moreover, if the control unit must be installed to the wall beside a corner wall, the minimum distance from the latter must be at least 280 mm, so as to avoid the opening of the front panel.

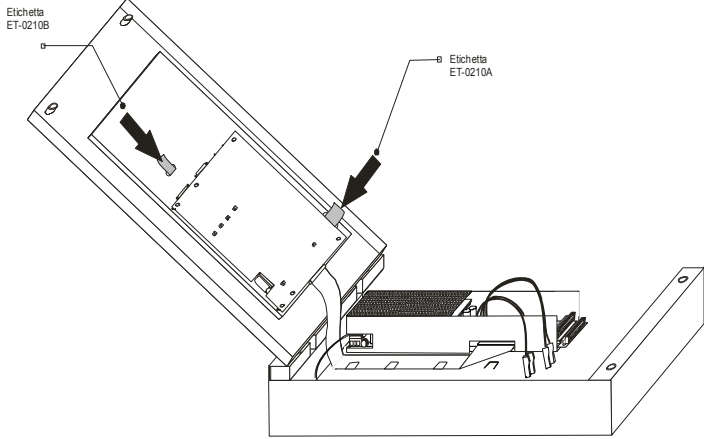


The control unit is designed to be installed to the wall through self-blocking cleats (masonry walls) or self-tapping screws (prefabricated panels).

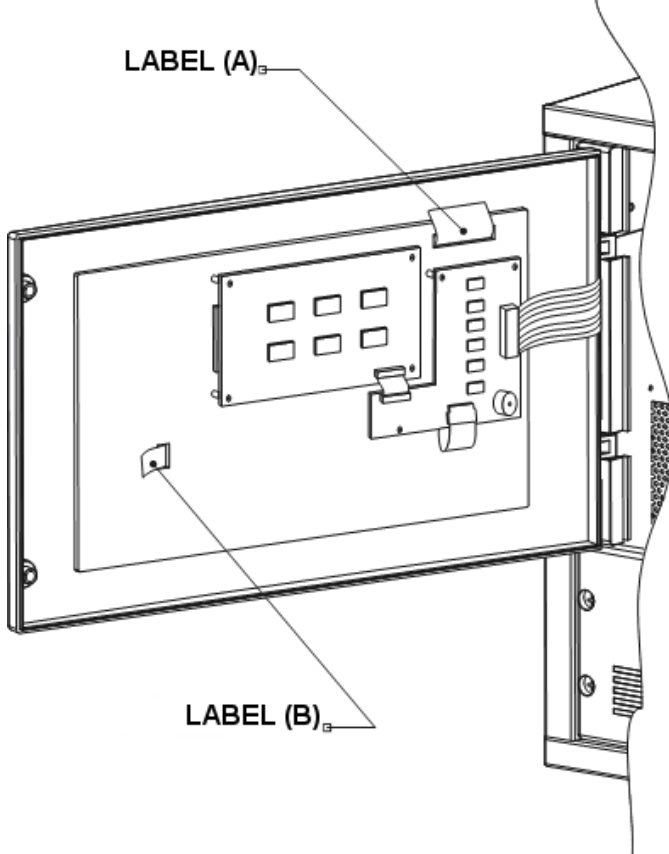
It is recommended not to install the panel near heat sources (radiators, etc.)

It is recommended not to install the control unit near heat sources (radiators, etc.). The control unit can be opened by unscrewing the two cover fixing screws.

2.3 - **EXTRACTABLE LABELS ON THE AM2000 AND AM4000**

| | | |
|---|--|--|
| <p>ET-02102</p> | <p>The PANELS control unit are provided with extractable labels to indicate the State LED functions and some function buttons. The standard labels provided with the control unit are in Italian. Alternative labels in the required language can be printed on high quality paper by using the enclosed model</p> | <p>00-0210-0 161002</p> |
| <p>ALARM</p> <p>REMOTE ALARM</p> <p>DELAY IN PROGRESS</p> <p>ZONE/POINT MASK</p> <p>FAULT</p> <p>W. TEST IN PROGRESS</p> <p>POWER OK</p> |  | <p>RESET</p> <p>MUTE BUZZER</p> <p>RESOUND</p> <p>SILENCE</p> <p>END DELAY</p> <p>EVACUATION</p> |
| <p>FAULTS</p> <p>SYSTEM</p> <p>MAINS</p> <p>EARTH</p> | | |
| <p>MASK/FAULTS</p> <p>SOUNDER</p> <p>FAULTS TX</p> <p>ALARMS TX</p> <p>EXTINGUISHING</p> <p>MUTE SOUNDER</p> | | |

2.4 - **EXTRACTABLE LABELS ON THE AM6000**

| LABEL (A) | | LABEL (B) |
|--|--|---|
| <p>ALARM</p> <p>REMOTE ALARM</p> <p>DELAY IN PROGRESS</p> <p>ZONE/POINT MASK</p> <p>FAULT</p> <p>W. TEST IN PROGRESS</p> <p>POWER OK</p> | <p>The acontrol unit are provided with extractable labels to indicate the State LED functions and some function buttons. The standard labels provided with the control unit are in Italian Alternative labels in the required language can be printed on high quality paper by using the enclosed model</p> | <p>00-0210-0 161002</p> <p>RESET</p> <p>MUTE BUZZER</p> |
| <p>FAULTS</p> <p>SYSTEM</p> <p>MAINS</p> <p>EARTH</p> <p>MASK/FAULTS</p> <p>SOUNDER</p> <p>FAULTS TX</p> <p>ALARMS TX</p> <p>EXTINGUISHING</p> <p>MUTE SOUNDER</p> |  <p>The diagram shows a perspective view of the control unit's front panel. Two labels are indicated with leader lines: 'LABEL (A)' points to a small rectangular label on the top edge of the panel, and 'LABEL (B)' points to a similar label on the bottom edge. The panel features several indicator lights and buttons, with a ribbon cable connected to the right side.</p> | <p>RESOUND</p> <p>SILENCE</p> |
| | | <p>END DELAY</p> <p>EVACUATION</p> |

3 – **ELECTRICAL FEATURES**

- Operation temperature: - 5° C ÷ + 40° C.
- Relative humidity: 10 % ÷ 93 % (without condensation).
- Storage temperature: - 10°C÷ + 50°C.
- AM-2000 and AM-4000 Weight: 6,150 Kg
- AM-6000 Weight: 10,150 Kg

3.1 – **EARTHING**

The earthing system must be performed in conformity with CEI and ISPELS rules and, in any case, must have a resistance lower than 10 Ohm (measured at the well with disconnected users). The earthing connection to the control unit is compulsory and it must be performed on the CNAL terminal block. (refer to basic board topography)

3.2 – **MAIN POWER SUPPLY**

Le centrali vengono alimentate dalla tensione di rete e, in caso di mancanza di questa, consente di continuare il suo funzionamento normale grazie alla batteria ricaricabile contenuta nella centrale stessa.

Le caratteristiche richieste per la tensione di alimentazione di rete sono:

- Voltage: 230 Vac single-phase -15% ÷ +10%.
- Frequency: 50 / 60 Hz.
- AM2000 Absorption: 0.5Aca.
- AM4000 Absorption: 0.6Aca.
- AM6000 Absorption: 0.75Aca.
- **NOTE: particular care must be taken when the installation is performed near powerful electromagnetic sources (ex. repeaters, radio relays, motors, etc.).**

3.3 – **POWER SUPPLY**

The power supply has the following outputs:

- **AM2000:** 27.6Vcc -10 % ÷ +2 % 2,1A ripple max. 100mVpp (Power supply adjusted for control unit, user output, external load power supply).
- **AM4000:** 27.6Vcc -10 % ÷ +2 % 2,7A ripple max. 100mVpp (Power supply adjusted for control unit, user output, external load power supply).
- **AM6000:** 27.6Vcc -10 % ÷ +2 % 4A ripple max. 100mVpp (Power supply adjusted for control unit, user output, external load power supply).

3.4 – **BATTERY CHARGER SECTION**

- Output voltage: 27.6Vcc.
- **AM2000** and **AM4000** output current: 1A ~ 100mVpp max (temperature compensation).
- **AM6000** output current: 1,5A ~ 100mVpp max (temperature compensation).
- Number of batteries that can be connected: 2x12V-18Ah max. for **AM2000** and **AM4000**; 2X24 Ah for **AM6000**.
- The battery charger section has the following signaling thresholds:
 - Exhausted battery threshold = 21.5 Vdc.
 - Re-charge breakdown threshold = 3.4 Vdc (voltage difference between the two batteries).
 - Battery release threshold = 20 Vdc.

- Absorption from batteries in idle condition and mains fault (with display off) without absorption of devices used:

| |
|----------------|
| AM2000: 140mA; |
| AM4000: 160mA; |
| AM6000: 270mA. |

- Absorption from batteries in idle condition and mains fault (with display off) without absorption of devices used:

| |
|----------------|
| AM2000: 160mA; |
| AM4000: 190mA; |
| AM6000: 350mA. |

- Absorption in alarm condition:

| |
|----------------|
| AM2000: 210mA; |
| AM4000: 240mA; |
| AM6000: 400mA. |

3.4.1 – **BATTERIES**

Average duration declared by the manufacturer - 3-5 years at an ambient temperature of 20 C°

N.B. Life decreases in accordance with a higher operating temperature and possible discharging-recharging cycles

Recommended Batteries for AM2000 – AM4000:

- **Sonnenschein** A512/16G5 (UL – VdS – DIN/Ghost/TÜV)) nut battery - 12 V 16 Ah–Sizes: 181(b) x 76(p) x 167(h).
- **Yuasa** NP18-12B or NP7-12FR (UL94) nut battery - Capacity (20hr): 12 V 17.2 Ah–Sizes: 181(b) x 77 (p) x 167 (h).
- **Fiamm** FG21803 or FGV21803 (UL94) nut battery- Capacity (20hr): 12 V 18 Ah–Sizes: 181(b) x 77 (p) x 167 (h).

Recommended Batteries for AM6000:

- **Sonnenschein** A212/24G5 (UL) nut battery - 12 V 24 Ah–Sizes: 160(b) x 170(p) x 120(h).

3.5 – **POWER SUPPLY AND BATTERY OPERATION**

The main microprocessor of the control unit periodically checks the state of the main AC power supply source, batteries and the recharging circuit. The control unit will automatically switch on the standby-by battery source when AC mains fails. When the control unit operates through AC mains, the main microprocessor controls the battery charger output and the presence of them. To perform this test, the output battery charger is temporarily switched off and the battery voltage is read (signalling of missing batteries <15.0V).

When the control unit operates as a battery (in the absence of the AC mains) “Low Battery” breakdown will be indicated when their voltage is <21.5V and, to prevent irreversible damages the voltage will be automatically switched off, by disconnecting the batteries, when the voltage is <20.0V.



All wirings MUST be checked BEFORE they are connected to the control unit.

It is recommended to perform at least the following checks:

- Check the continuity of all cables used (including the screens)
- Ensure that, in alarm conditions, any possible voltage drops do not compromise the operations of the various devices.
- Ensure that the electrical characteristics of all cables used come within the manufacturer's specifications (refer to the various sections of this manual)
- Check the insulation between all cables and between cables and screens and the earthing. A minimum of 2MΩ insulation is required.
- Check that the screen of all signal cables is not earthed in positions other than the prescribed ones.
- Check that the signal cables do not travel together with the power lines.

3.6 – **MAINS CONNECTION**

The 230 Vac mains power supply cable must preferably pass near the relevant terminal block.

The connection to the 230 Vac power supply mains must be performed through three-conductor cable (phase-neuter- earth). The identification of the earth conductor coming from the mains must be performed on the CNAL terminal block (refer to basic board topography) and must be fixed at the cabinet by means of cable –tightening strip so that it cannot be accidentally stripped off from the terminal block.

The 230 Vac power supply cable must be fixed inside the control unit by means of an appropriate cable fixing device.

NOTE: The cable fixing collars must be HB flammability class.

The mains supply conductors shall not be consolidated by means of a soft welding.

A sectioning device external to the control unit must be provided for the 230 Vac power cable (contact separation: 3 mm min.) The sectioning device must be omnipolar or must disconnect the phase.

The power supply connection must be performed by respecting the following procedure:
(refer to the basic board topography)

- 1 – Turn off the main power switch of the 230 Vac mains.
- 2 – Disconnect the CNAL terminal block from the control unit.
- 3 – Connect the mains cable.
- 4 – Re-connect the CNAL terminal block
- 5 – Turn on the mains switch
- 6 – Install and connect the batteries as indicated in this manual.

NOTE: Once the control unit has been powered, it will automatically start operating.

However, in accordance with the battery storage period, it is necessary to wait some hours before the batteries are completely re-charged.

- 7 – Check the operation of the LED indicators on the panel, according to the paragraph “**TEST AND STARTING OPERATION**”.
- 8 – Close the control unit.

3.7 – USER POWER SUPPLY OUTPUT

The AM2000/AM4000/AM6000 control units had:

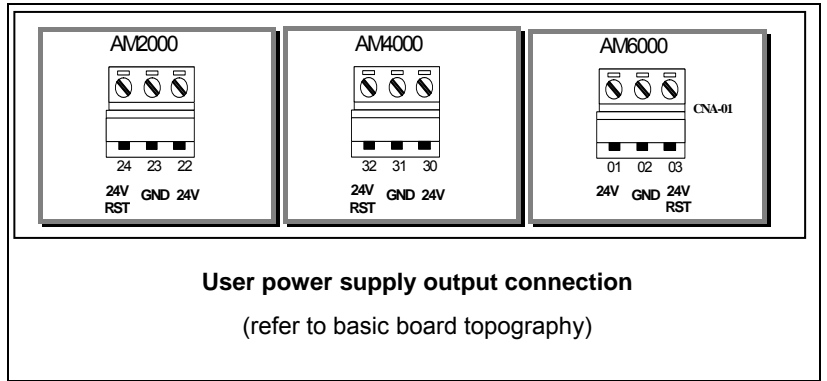
- A 24 Vdc fixed output
- A 24 Vdc resettable output

The output is protected by 1 A FAST fuse

Use the fixed voltage output to power external loads such as, for example, LCD repetition displays.

Use resettable voltage output to power external loads such as conventional sensor zones.

The 24 Vcc resettable voltage output is switched off (no voltage) for 5 seconds, when the operator performs a system Reset.



3.8 – FUSE LIST

- On 230 V mains voltage =2 A FAST
- On the siren output =0.75 A RESETTABLE
- On the battery input =3.15 A RESETTABLE
- On the user power supply output =1 A FAST

3.9 – RELAY OUTPUTS

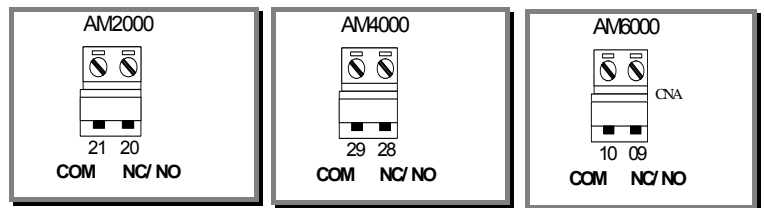
Output relays characteristics

| <u>FUNCTION</u> | <u>FEATURES</u> |
|-----------------------------|---|
| SIREN MAIN ALARM | 1 contact controlled by 24 Vdc / 1 A resistive Max 1 A resistive 30 Vdc, NA-NC selectable through JALL Jumper (refer to basic board topography) |
| MAIN BREAKDOWN | Max 1 A resistive 30 Vdc, NA-NCC selectable trough JGST Jumper (refer to basic board topography) |

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Breakdown output

- The main breakdown relay is usually in energized state. It is de-energized in breakdown condition.
- **NOTE:** do not connect to this output any alarm remote control, such as a telephone dial (EN 54.2. 7.7) because the output line is not controlled.

Contact range: max 30 VAC/DC, 1A,
Non-inductive loads
Selection of type of contact (Usually open or Usually closed) through JGST Jumper on board
(refer to basic board topography)



Main breakdown output connections

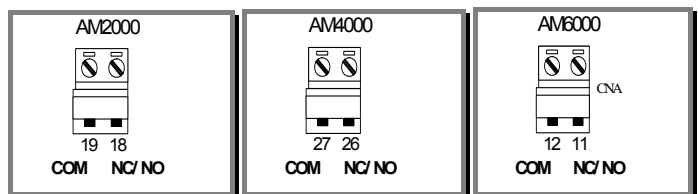
(refer to basic board topography)

29

EN54-2 7.7
Output alarm

- The main Alarm relay is available in free voltage contacts
- **NOTE:** do not connect to this output any alarm remote control, such as a telephone dial (EN 54. 2. 7.7) because the output line is not controlled

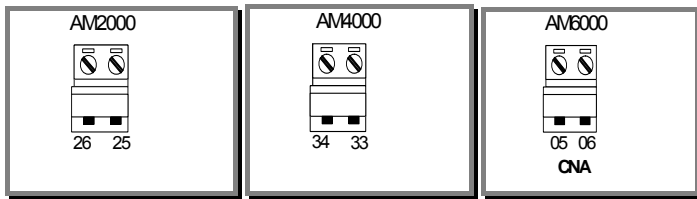
Contact range: max 30V AC/DC, 1 A,
Non-inductive loads
Selection of type of contact (Usually open or Usually closed) through JALL Jumper on board
(refer to basic board topography)



Main Alarm output connections

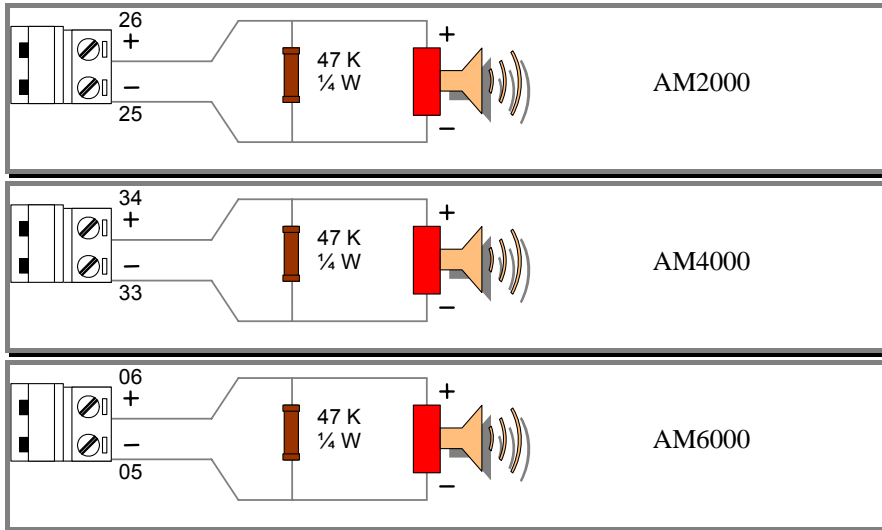
(refer to basic board topography)

3.10 – SIREN CONTROLLED OUTPUT CONNECTION

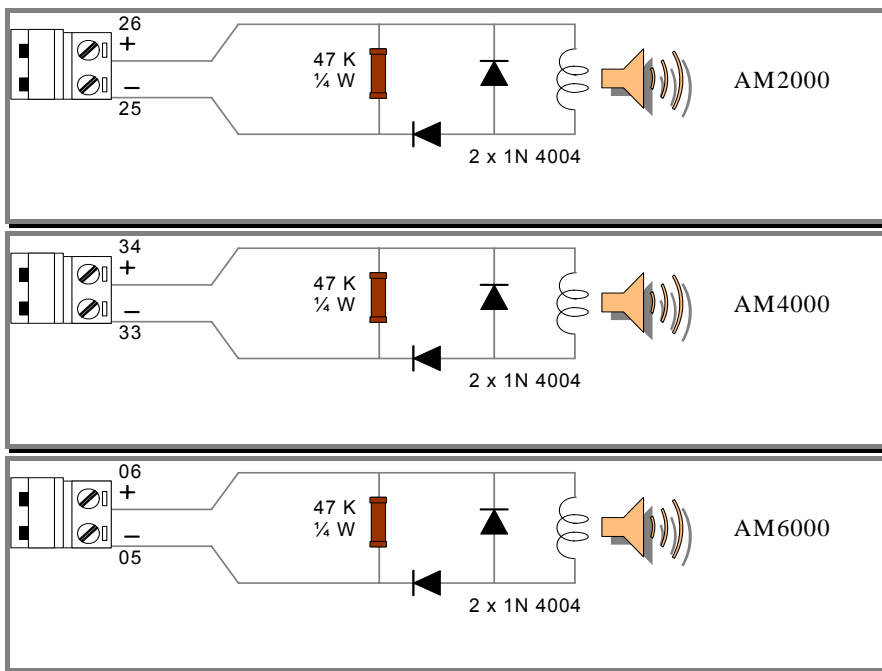


Siren output connections
(refer to basic board topography)

3.10.1 – POLARIZED DEVICES (ELECTRONIC SIREN, ECC..)



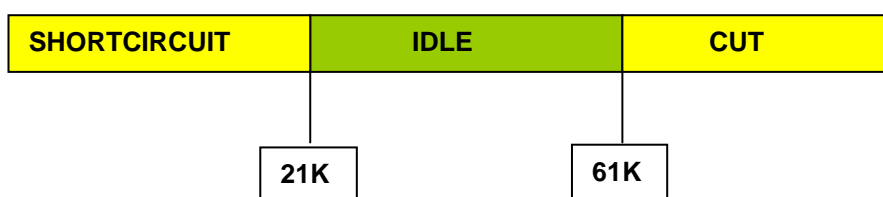
3.10.2 – NON POLARIZED DEVICES (BELLS, RELAY, ECC..)



NOTE:
Connect the 47 K – 1/4 W end line resistance only on the last line siren.

ATTENTION:
The mentioned polarities are in alarm conditions; at idle condition, they are inverted.

3.10.3 – SIREN OUTPUT OPERATION WINDOW



3.11 - **RS.485 SERIAL LINE**



EN54-2 12.5

Connection integrity

The RS.485 network does not provide the redundancy function in case of interruption as required by the EN. 54 rule.

- The AM2000/AM4000/AM6000 control units can be connected to a peripheral family through the RS.485 serial line.
- The RS. 485 line must be installed in "MULTI-POINT" configuration (daisy chain).
- Each peripheral must be programmed with an address comprised between 1 and 16. Refer to the installation manuals of each peripheral.

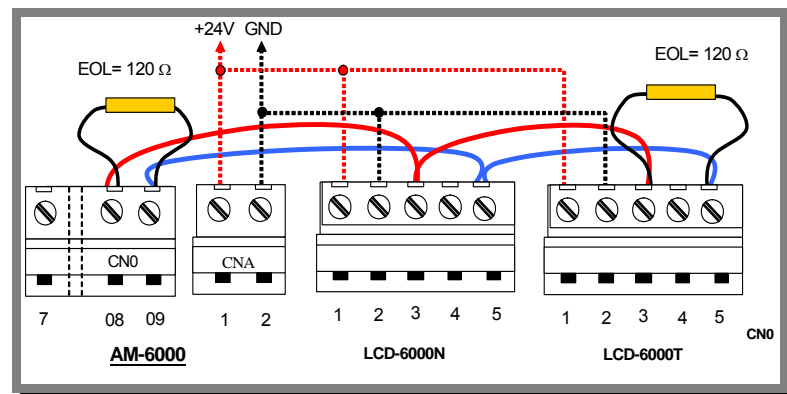
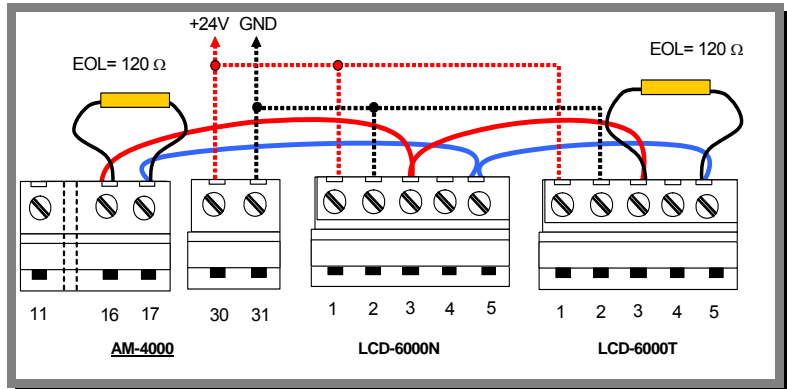
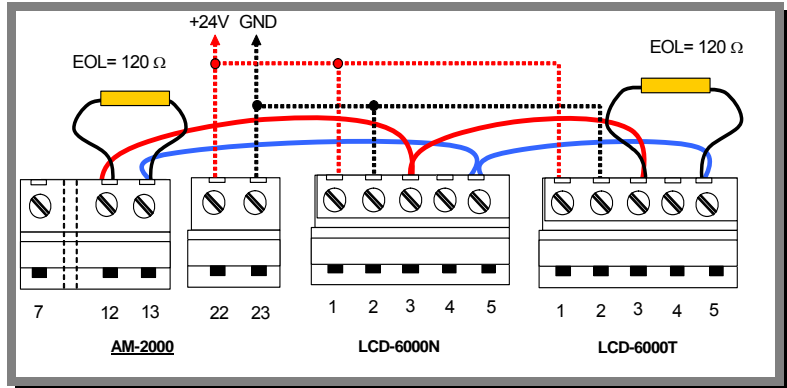
3.11.1 - **"MULTI-POINT" CONFIGURATION INSTALLATION (DAISY CHAIN)**

Connect two wires from the control unit RS.485 terminals (LIN + and LIN- terminals) to the correspondent terminals of the first device on the line. Continue the wiring from the first device to the following device, and so on.

Install the line end resistance (120-150 Ω, 0.5 W) on both the control unit terminals and the terminals of the last line device.

The maximum length admitted from the control unit to the last line device is 1.5 km.

Use screened section cable having an appropriate 9574 or 9575 Belden type section



Typical Multi-point RS.485 connection (Daisy Chain)

(voltage unit panel 24V)

NOTE: The terminals 6 and 7 are not used on the LCD-6000T panel.

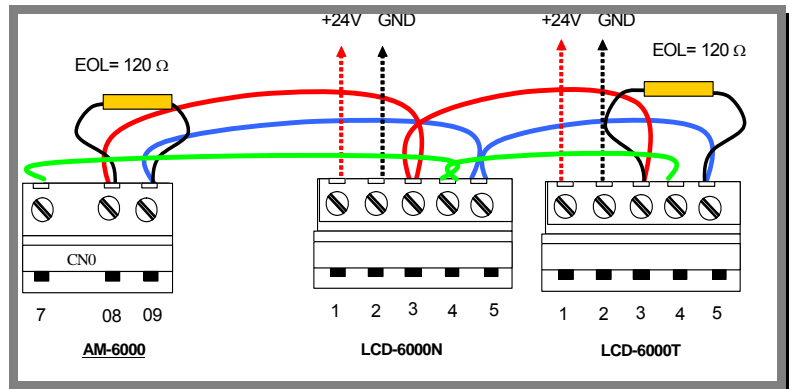
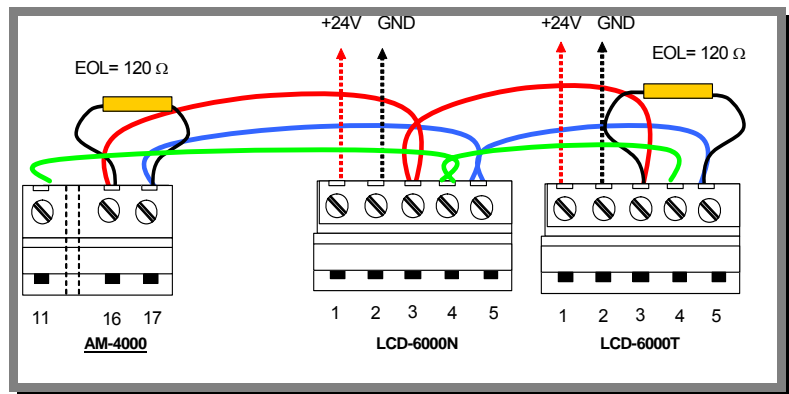
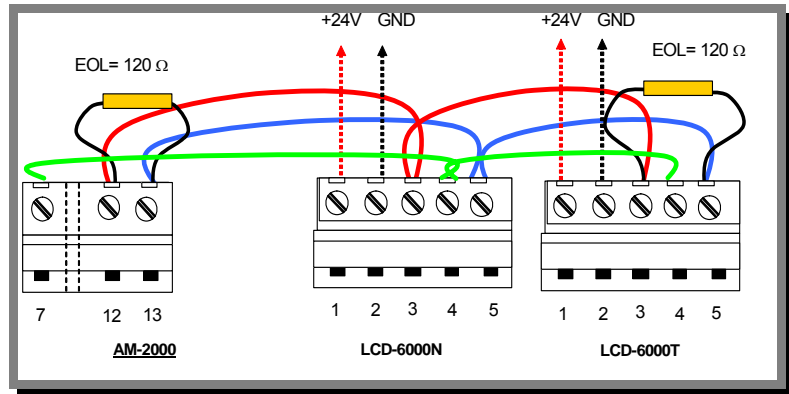
3.11.2 – **INSTALLATION WITH SEPARATED POWER SUPPLY**

Connect two wires from the control unit RS.485 terminals (LIN + and LIN- terminals) to the correspondent terminals of the first device on the line. Continue the wiring from the first device to the following device, and so on.

Install the line end resistance (120-150 Ω, 0.5 W) on both the control unit terminals and the terminals of the last line device.

The maximum length admitted from the control unit to the last line device is 1.5 km.

Use screened section cable having an appropriate 9574 or 9575 Belden type section.



Typical Multi-point RS.485 connection whit independent alimntation 24Vcc (The LCD panels are feed to external power supply).

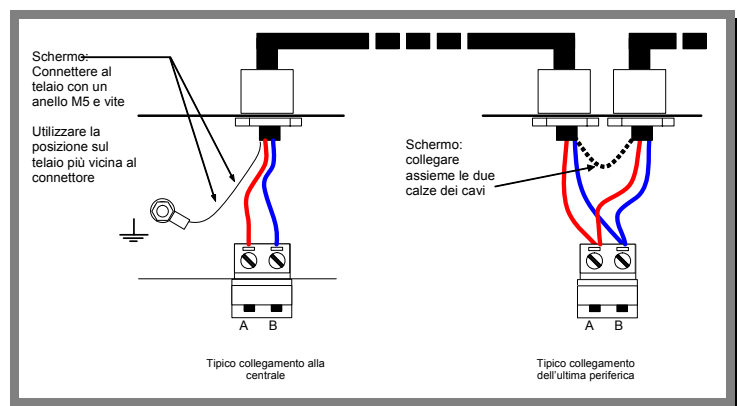
NOTE: The terminals 6 and 7 are not used on the LCD-6000T panel.

3.11.3 – **SCREENED CABLE AND EARTHING**

During the installation, take account of the consequences of remote earthing reference connection

When the connections between RS.485 circuits are performed, if an earthing wire is available (drain), both ends of this **MUST NOT** be connected to the earthing chassis.

The earthing conductor must be **ONLY** connected to the end on the control unit. Do not connect the other end and insulate it.



RS.485 Cable screening and earthing

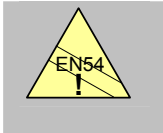
4 – **SYSTEM COMPONENTS**

4.1 – **COMMUNICATION LINES FITTED WITH SENSORS/MODULE**

The AM2000, AM4000 and AM6000 control units communicates with intelligent detection and control devices which are addressable through a 2 wire line.

The line can be connected to respect the specifications relevant to the signalling circuit lines of the STYLE 4 (open line) and STYLE 6 (closed line).

The peripheral devices are powered by using the same line which is used to communicate with them.



If more than 32 devices (ref. EN54.2) are installed on a line, this must be configured as closed Loop (loop closed line).

If a connection is performed with a T-branch in a closed loop, not more than 32 devices must be installed on this branch and these devices must be separated by line insulators.



The detection circuit must be separated by other cables to minimize the risk of interferences

Use twisted cable according to the specifications.

The detection Loop circuit is supervised and current-limited

The connection cables fitted with detectors, the auxiliary devices and the power mains, can be introduced into the control unit by making some appropriate holes, by running cables along the side walls of the box, and appropriately providing for those which are located near the CAN terminal block.

4.2 – **TECHNICAL SPECIFICATIONS OF ANALOGUE LINE CONNECTION CABLES**

Type of cable: 2 conductors (for their section refer to the table below)

Twisted narrow pitch (5 /10 cm.)

Screened

Max. admitted capacity : 0,5 uF

4.3 – **CABLE SECTION**

The sections are referred to the total length of the line (in case of “STYLE 6” loop and therefore when the loop is closed, it is considered the loop length) which, however, must not be longer than 3000 meters and the total resistance of the line must be lower than 40 Ohm.

Table of the minimum required sections in accordance with the line length.

| | | | |
|-----------------|-------------------------------|--------|------------------|
| Up to 1.000 mt. | cable 2 x 1 mm ² | 17 AWG | 9575 Belden Type |
| Up to 1.500 mt. | Cable 2 x 1.5 mm ² | 16 AWG | 9575 Belden Type |
| Up to 2.000 mt. | cable 2 x 2 mm ² | 14 AWG | 9581 Belden Type |
| Up to 3.000 mt. | cable 2 x 2.5 mm ² | 13AWG | 9583 Belden Type |

4.4 – **NUMBER OF INSTALLED DEVICES FOR LINE**

The maximum number of devices that can be installed for each of the four detection lines is the following:

- 99 sensors
- 99 input and output modules

4.4.1 – **INSULATOR MODULES**

The insulator modules allow to electrically insulate on the loop a series of devices from the remaining ones, allowing loop critical components to continue operating even in case of the communication line short circuit.

4.4.2 – **INPUT MODULES**

The addressable modules allow the panel control units to control N.A. contacts, manual alarm buttons, 4 conventional wire smoke sensors, thermal sensors, humidity sensors and supervision devices.

4.4.3 – **OUTPUT MODULES**

Through output modules, the panel control units, by means of the programmable CBE equations, can activate the indication circuits or output relays through voltage free contacts.

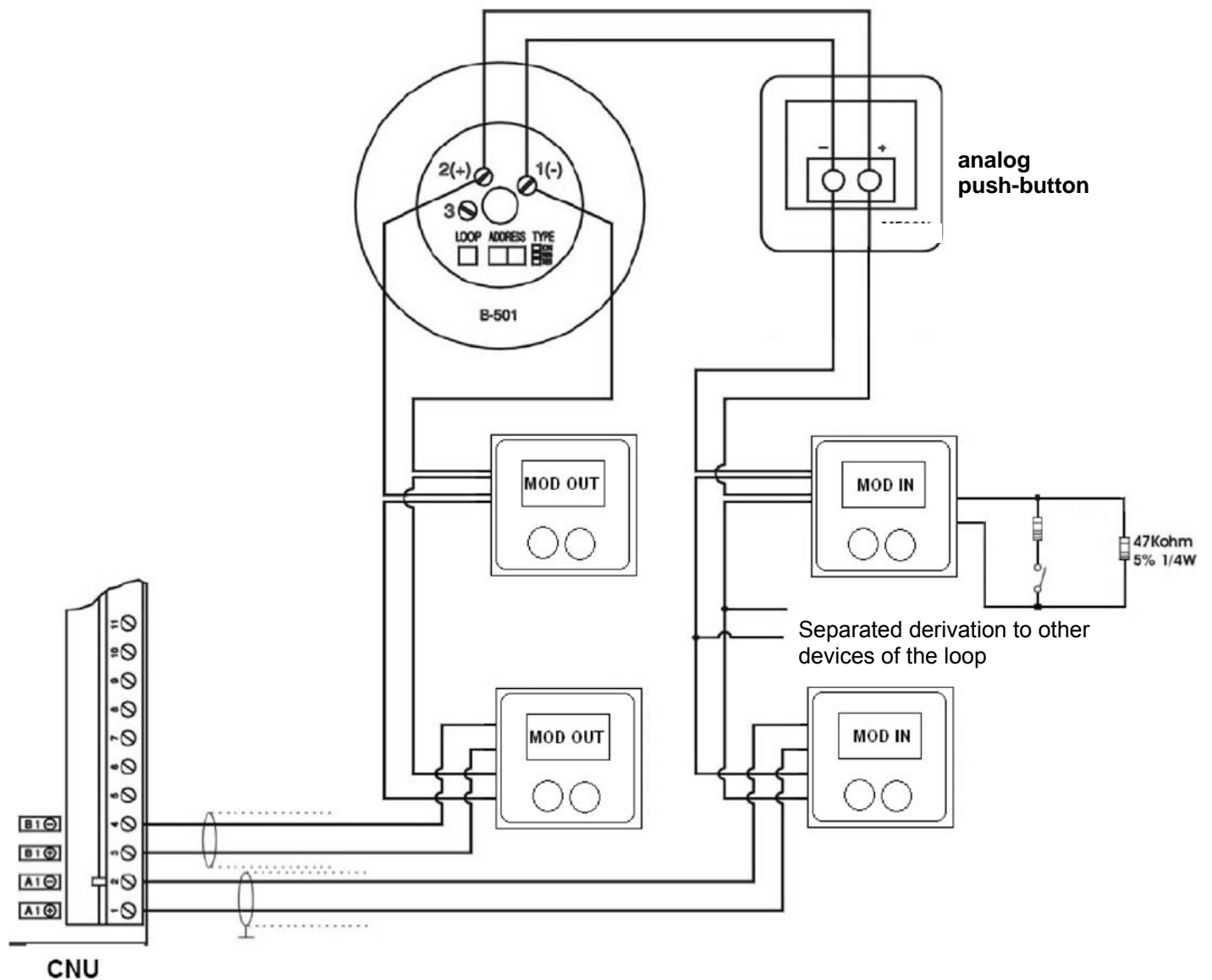
4.4.4 – **INTELLIGENT DETECTORS**

The panel control units can communicate with analogue ionisation, photoelectrical, thermal and thermo-speed detectors, or other declared ones considered as compatible by NOTIFIER ITALIA.

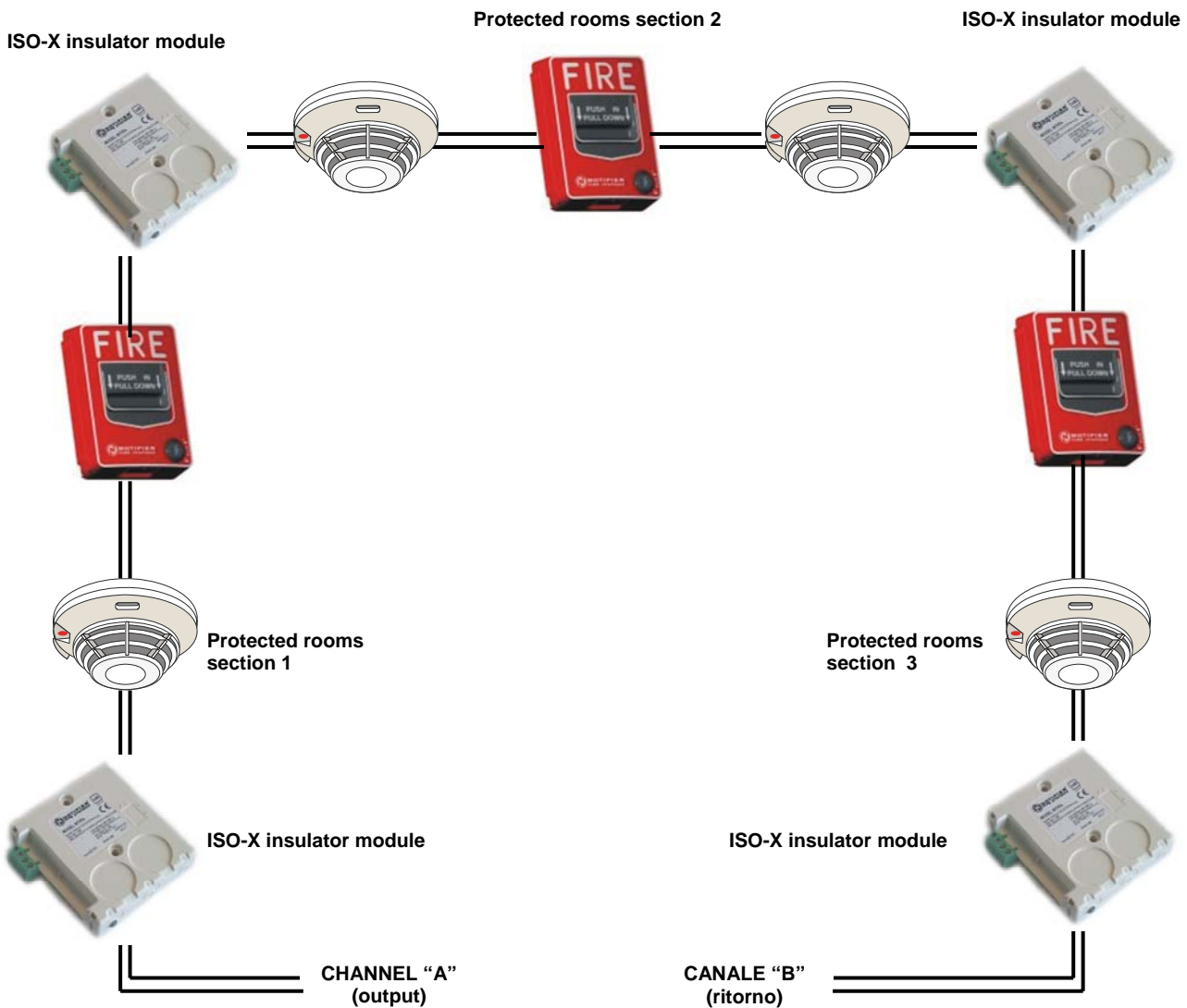
5 - MODULE AND SENSOR CONNECTION

5.1 - EXAMPLE OF CLOSED LINE (STYLE 6)

For the connections, refer to the "Analogue system device installation manual" document : M-199.1-SCH-ITA by Notifier Italia.



FUNCTIONS IN ACCORDANCE WITH THE SPECIFICATIONS RELEVANT TO THE NFPA STILE 6 SIGNALLING CIRCUITS



N.B.: The maximum number of devices between two ISO-X is 25.

OPERATION

By separating each line device group through a couple of ISO-X breakdown insulator modules, each device is protected against the openings and against the short circuits of all other sections.

For example, a breakdown in the section 2 will not affect the sections 1 and 3.

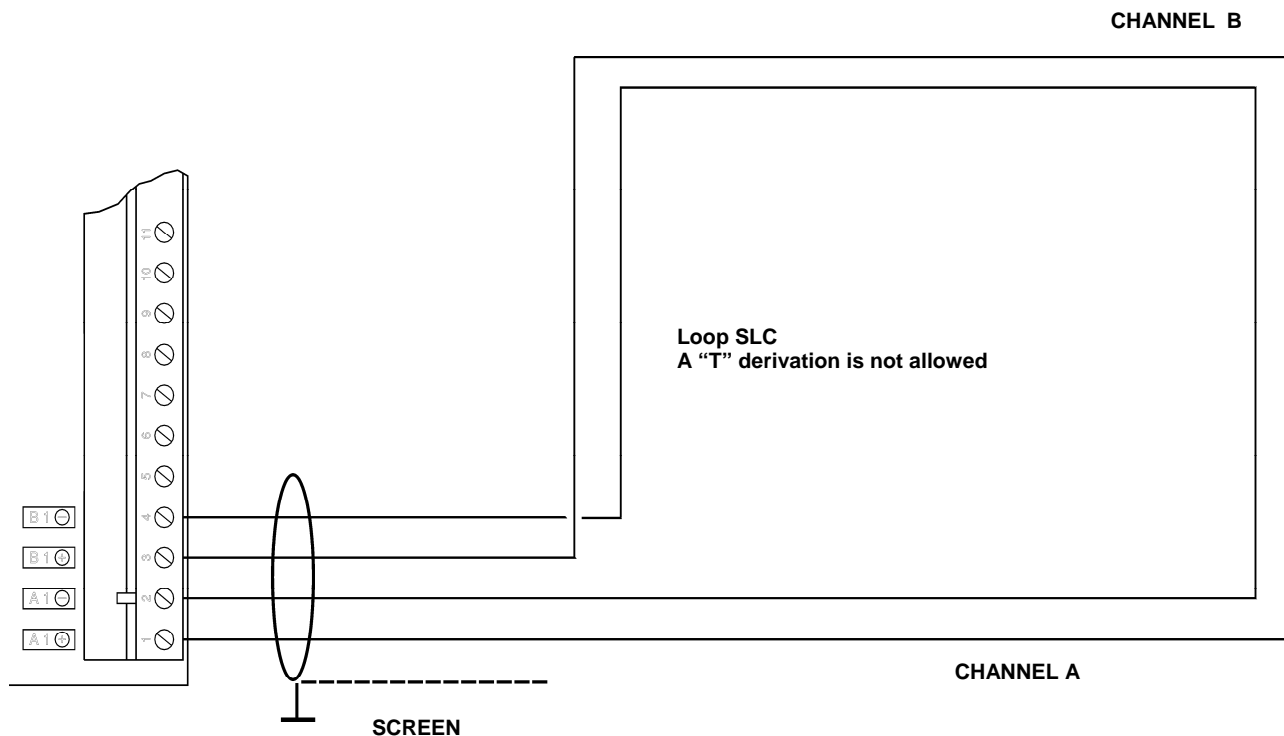
The insulation modules on both ends of section 2 will cause the opening of the SLC line. Section 1 will continue operating through the power supply coming from the channel "A", while the section 3 will continue operating through the channel B.

i Since the control unit will not be able to communicate with the SLC line devices of section 2, a breakdown signalling will be generated (INVALID RESPONSE from the Ponts of the Section 2).

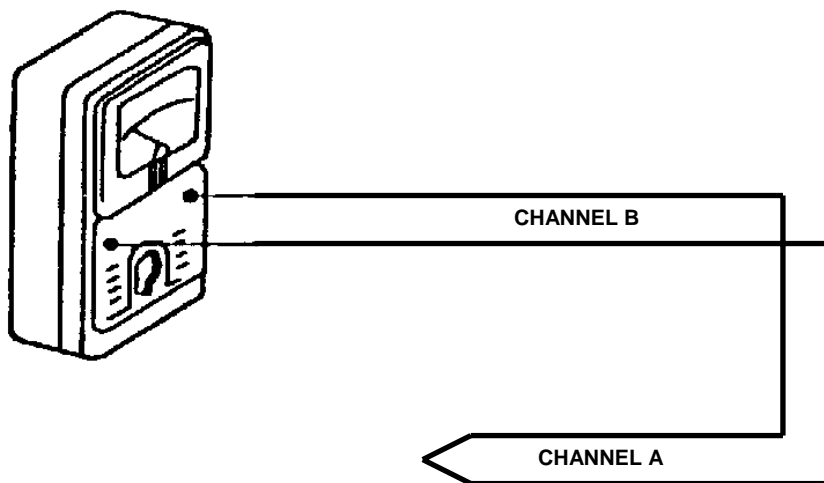
The circuit is a variation of the STYLE 6 NFPA signalling line circuit, therefore neither "T" derivation nor circuit branching is allowed.

The features are the same as those of the STYLE 6 CIRCUIT.

5.2 – **NOTES ON THE CONNECTIONG LINES USED**



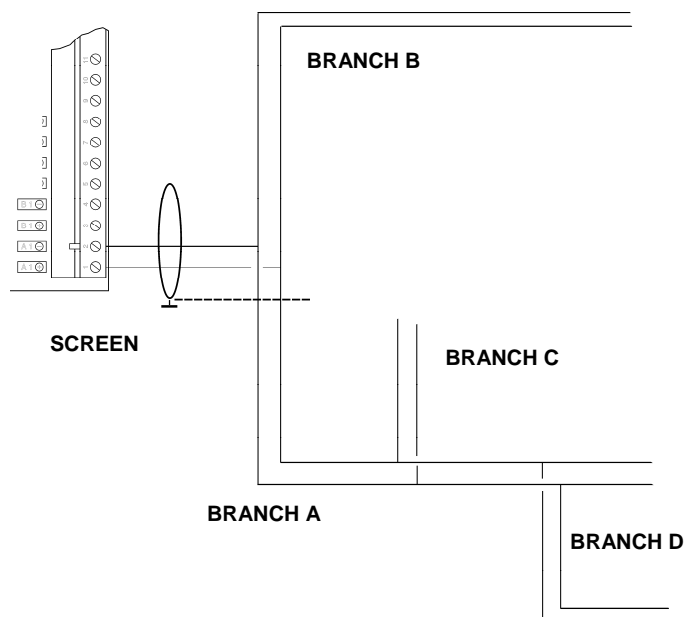
The total length of the loop couple (from the control unit output and input) SHALL NOT exceed 3.000 mt



The direct current resistance of the loop couple SHALL NOT exceed 40 Ohm.

The measurement must be performed by disconnecting the channels "A" and "B" from the control unit and shortcircuiting between them the ends of the channel "A", and measuring the channel "B".

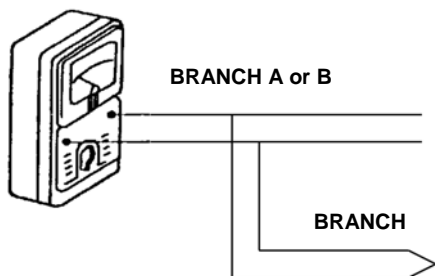
5.2.1 **CONNECTION FEATURES (CLASS "B")**



Shortcircuit one terminal point of a branch at a time and measure the DC resistance, from the beginning of the channel to the end of that particular branch.

The total DC resistance from the panel to the branch end MUST NOT exceed 40 Ohm.

Repeat the procedures for all remaining branches

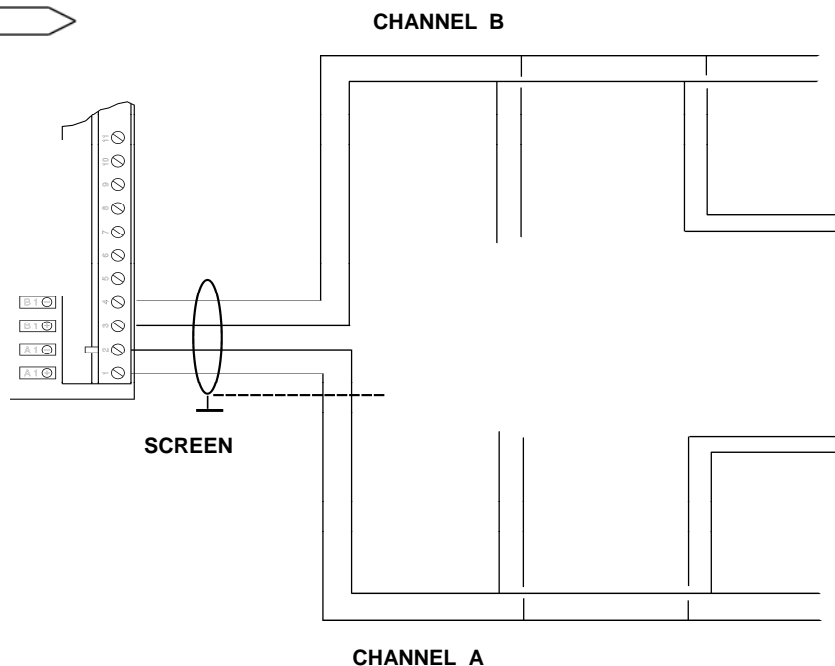


For each channel:

add up the lengths of all the branches

The total SHALL NOT exceed 3.000 m.

$(\text{Branch A}) + (\text{Branch B}) + (\text{Branch C}) + (\text{Branch D}) + (\text{Branch E}) \leq 3.000 \text{ m.}$



The total length of all the branches on the channel A and on channel B must not exceed 3.000 m.

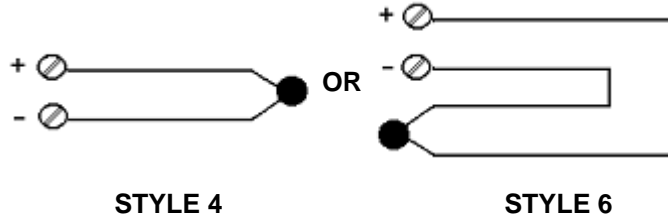
5.3 – **TEST PROCEDURE FOR ANALOGUE SYSTEM LINES**

Before powering the control unit lines, check the following values:

NOTE: A DIGITAL TESTER IS REQUIRED

5.3.1 – **LINE RESISTANCE**

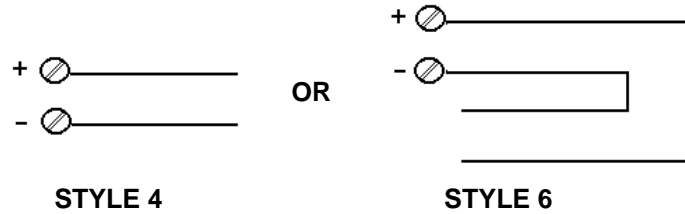
Short-circuit positive and negative of an end of the system and place between (+) and (-) of line through a tester.



The resistance must be lower than 40 Ohm.

5.3.2 – **LINE INSULATION**

Eliminate the previous shortcircuit. Place between (+) and (-) of line through a tester, with sensors or modules installed and check the following:



B1)

Connect :
Tester (+) / Line (+) and Tester (-) / Line (-)

Check :
Resistance: 1 - 1.3 MOhm

b2)

Connect
Tester (+) / Line (-) and Tester (-) / Line(+)

Check :
Resistance: 0.7 - 0.9 MOhm

5.3.3 – **SCREEN BRAID INSULATION OF THE CABLE/LINE**

Place a test prod of the tester on the line cable screen and the other test prod on the positive cable (+) of the same line. The resistance measured must be higher than 15-20 MOhm, better if “infinite”. Perform the same operation between the line screen and negative cable (-). Check that also in this case the resistance is higher than 15-20 MOhm.

5.3.4 – **EARTHING /LINES INSULATION**

Place a test prod of the tester on the system earthing and the other test prod on the positive cable (+) of the line; the resistance measured must be higher than 15-20 MOhm, better if “infinite”. Perform the same operation between the earthing and negative cable (-) of the line. Check that also in this case the resistance is higher than 15-20 MOhm.

5.3.5 – **EARTHING /CABLE SCREEN INSULATION**

Place a test prod of the tester on the system earthing and the other test prod on the cable braid; the resistance measured must be higher than 15-20 MOhm, better if it is “infinite”.

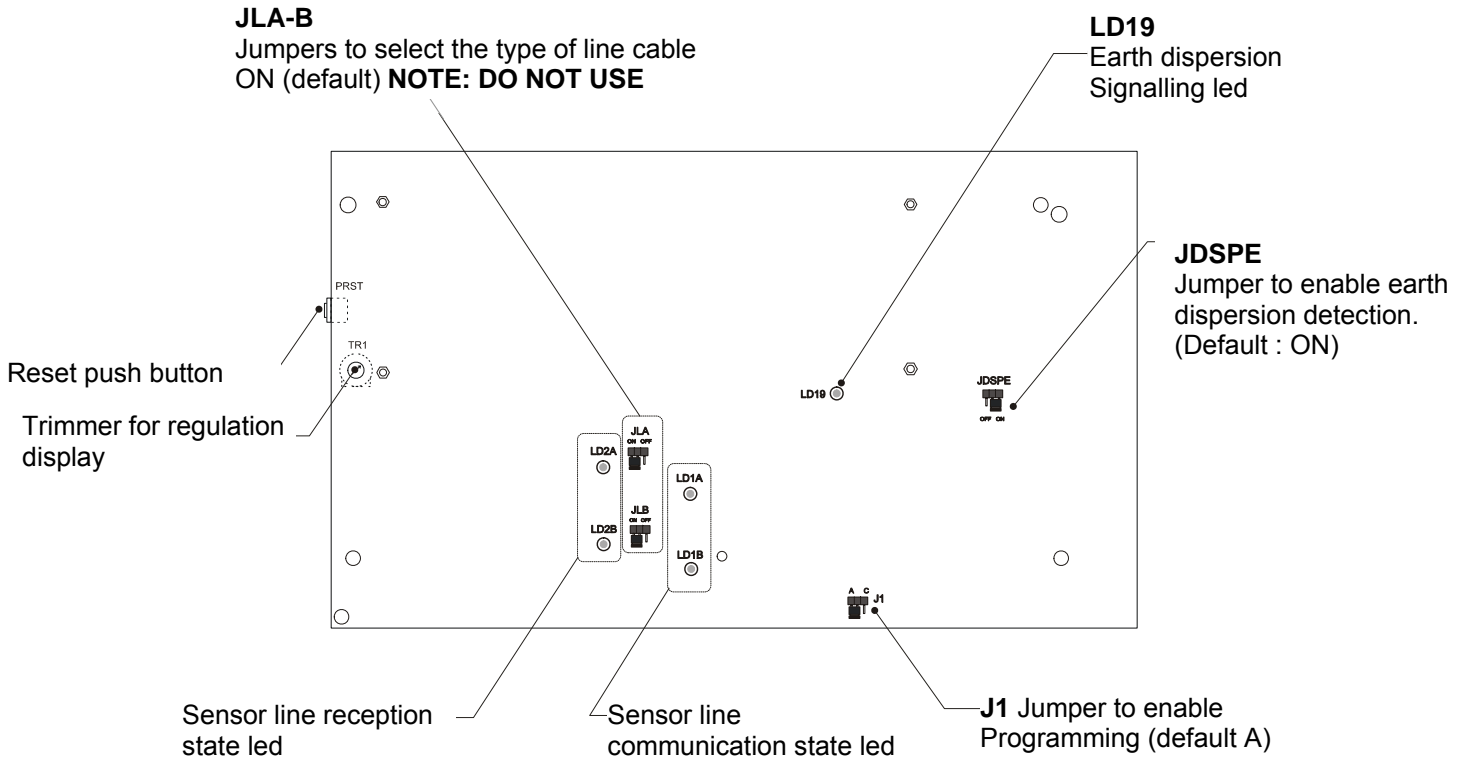
5.3.6 – **LINE VOLTAGE**

With the sensors/modules line connected, the line output voltage must be 24 Vcc without the device query (no programmed Point)

A voltage much lower than 14 Vcc indicates a connection inversion of sensors or modules.

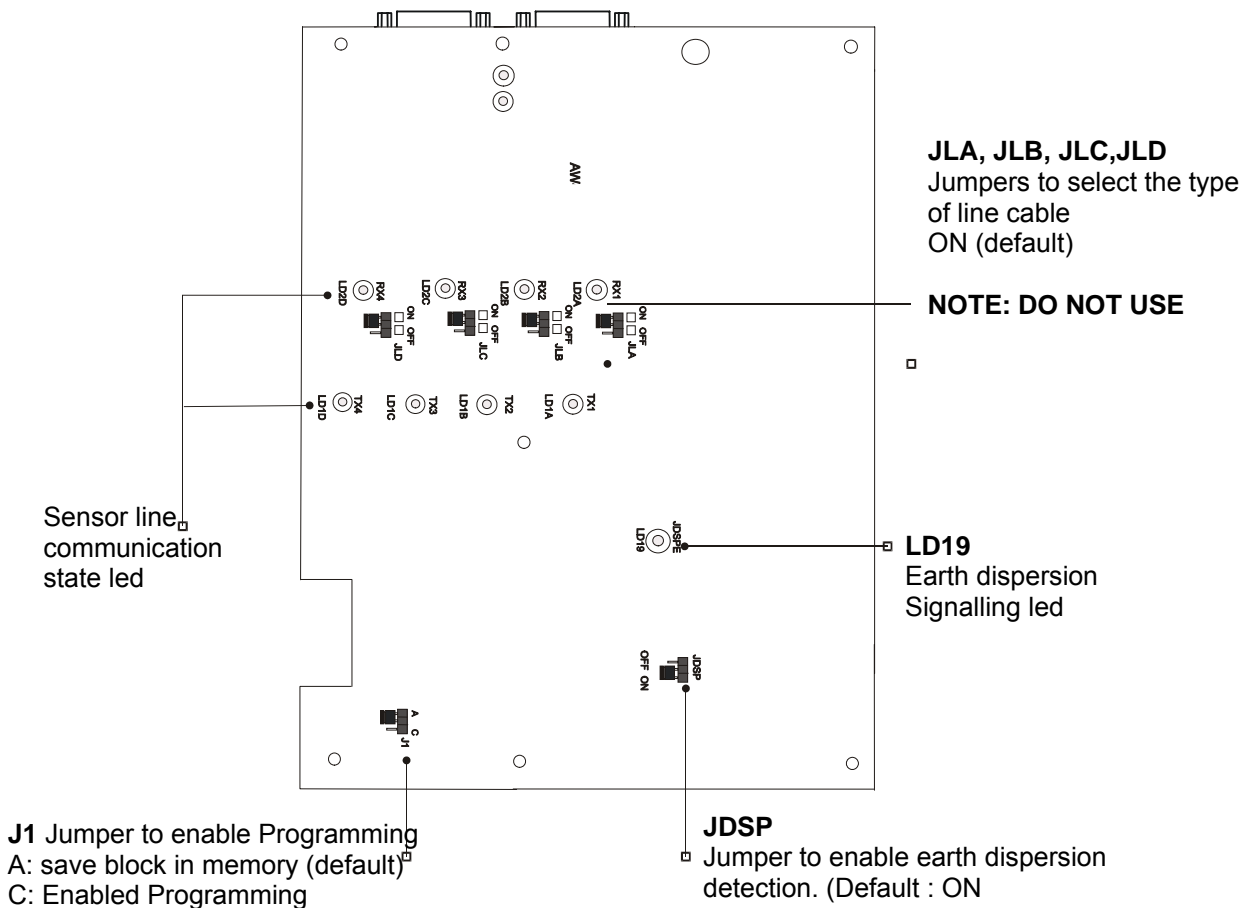
6 - **BOARDS AND TERMINALS**

6.1 - **"AM2000" FRONT BOARD TOPOGRAPHY**

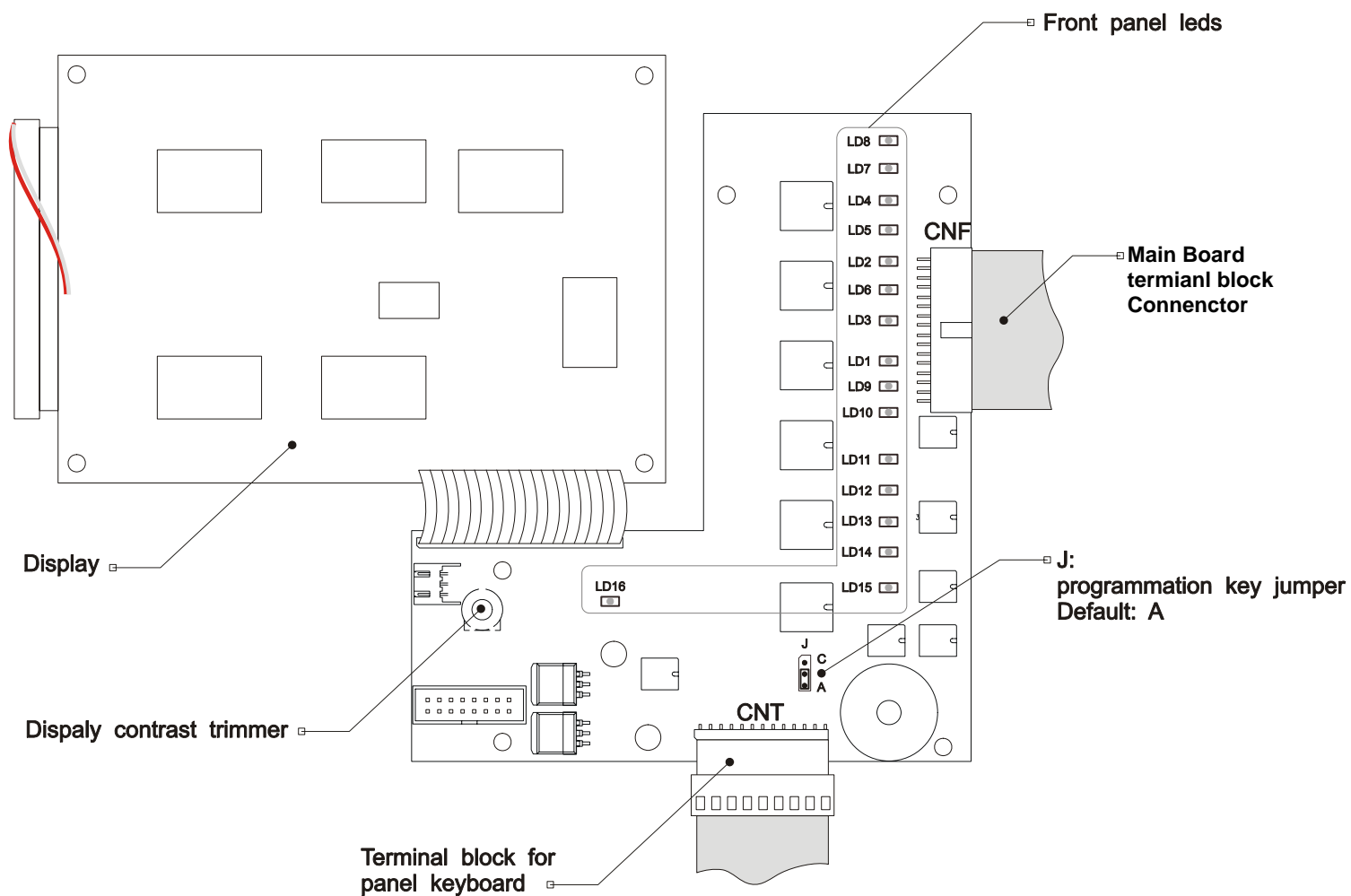


6.2 - **"AM4000" FRONT BOARD TOPOGRAPHY**

Connectors reserved for the firmware updating
N.B. DO NOT USE



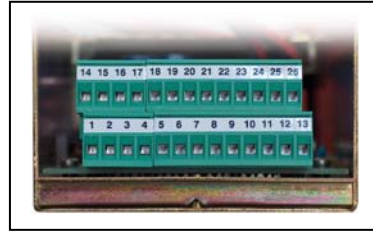
6.3 - **AM6000 FRONT BOARD TOPOGRAPHY**



6.4 – “AM2000” and “AM4000” BASIC BOARD TOPOGRAPHY



AM4000 CNU Terminal board

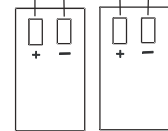


AM2000 CNU Terminal board

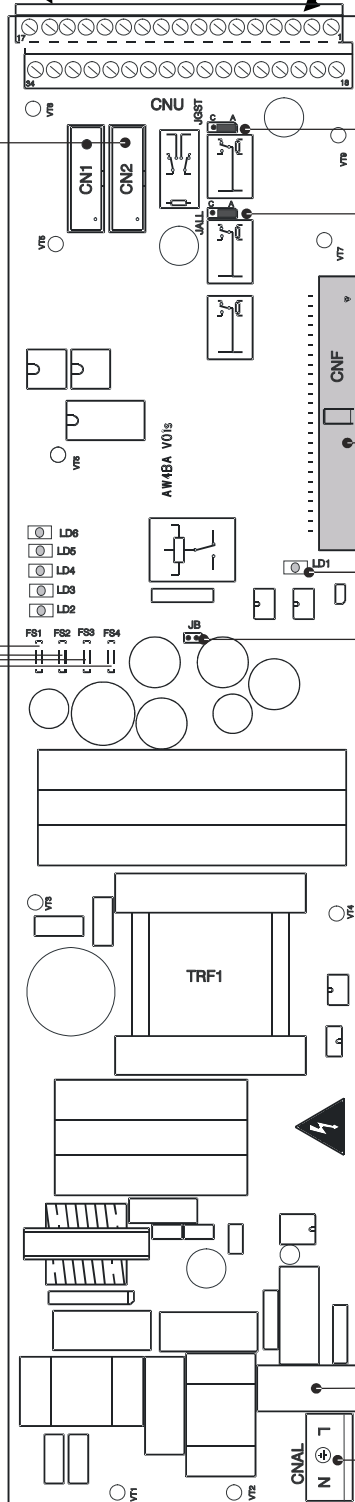
TERMINAL BLOCK FOR EXPANSION BOARD.

STATUS LED FOR SERIAL OUTPUT:

- LD6: DIR
- LD5: RX
- LD4: RX PRN
- LD3: TX
- LD2: TX PRN



BATTERIES 2x12Vdc.



JUMPER SELECTION FOR FAULT RELAY CONTACTS NO-N.C. DEFAULT N.O..

JUMPER SELECTION FOR ALARM RELAY CONTACTS N.O.-N.C. DEFAULT N.O..

JUMPER SELECTION FOR ALARM RELAY CONTACTS N.O.-N.C. DEFAULT N.O..

BLOCK CONNECTOR FOR AW1FR FROANT BOARD CABLE: CVCV0266.

POWER LED INDICATION.

FUSE F2AL / 230Vac.

230 Vac INPUT.

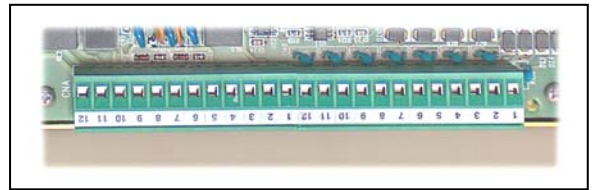
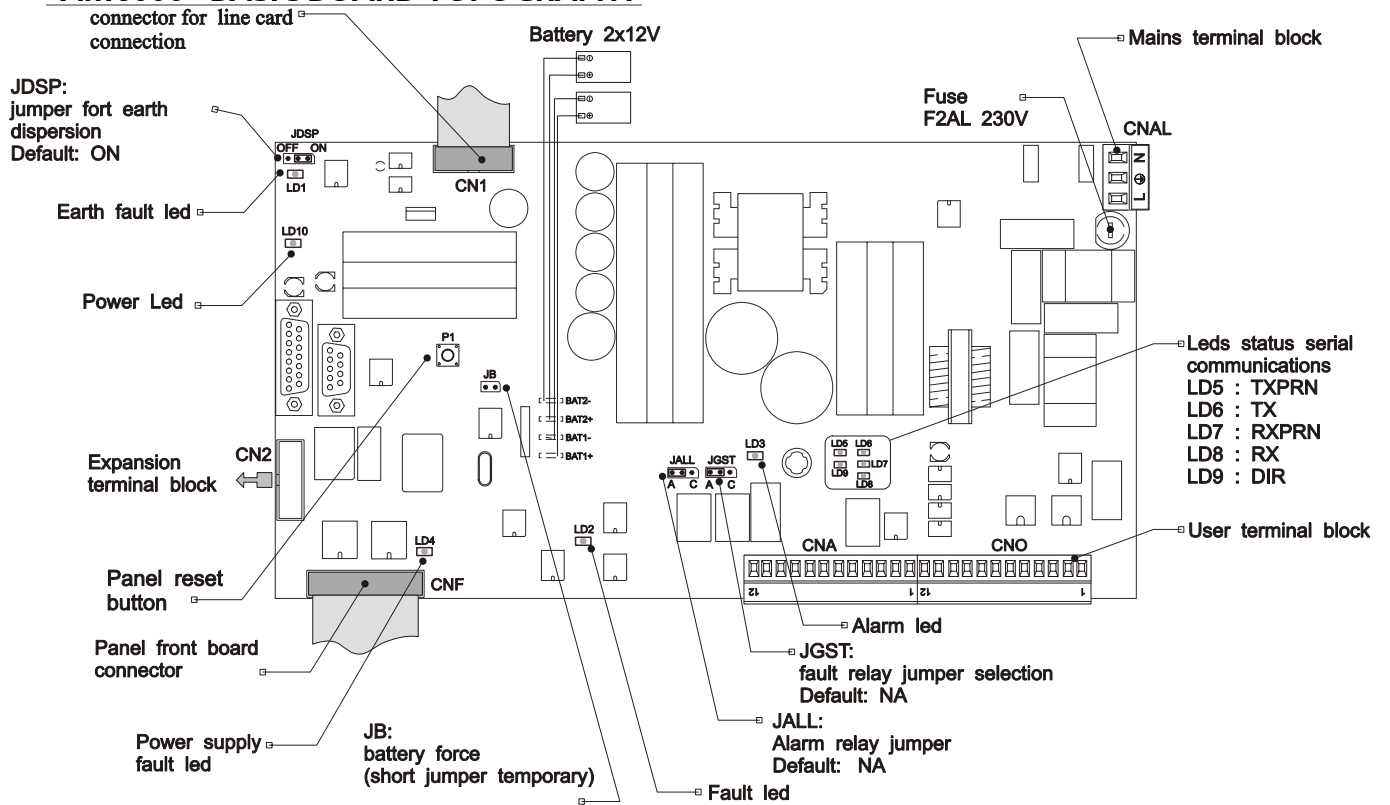
6.4.1 – **AM2000 CNU TERMINAL BLOCK**

| N° | Descrizione | Caratteristiche | | Note |
|----|------------------------------|--|--|--|
| 26 | Siren Output (Idle negative) | Output protected by self-reset 0,75A fuse (polarity inversion output). | | Available total current : 1 A (= sum of the three outputs) |
| 25 | Siren Output (Idle positive) | | | |
| 24 | +24Vcc Resettable | Outputs protected by self-reset 1 A fuse | | |
| 23 | GND | | | |
| 22 | +24Vcc User | | | |
| 21 | Breakdown relay C | 30Vcc 1A resistive contact | | NA -NC selectable through JGST |
| 20 | Breakdown relay NA-NC | 30Vcc 1A resistive contact | | NA -NC selectable through JALL |
| 19 | Alarm relay C | LINE 2 | | |
| 18 | Alarm relay NA-NC | | | |
| 17 | Line 2 B- | | | |
| 16 | Line 2 B+ | | | |
| 15 | Line 2 A- | | | |
| 14 | Line 2 A+ | RS.485 optoinsulated serial output | | Interfaccia per LCD-6000N/T . |
| 13 | RX- o LIN - | | | |
| 12 | RX+ o LiN + | RS.422 serial output | | Do not use |
| 11 | TX- | | | |
| 10 | TX+ | Not used | | Do not use |
| 9 | RX | RS.232 optoinsulated serial output | | |
| 8 | TX | Serial output reference negative | | Interfaccia per PC (PK-2000) |
| 7 | GND | RS.232 optoinsulated serial output | | |
| 6 | RX | RS.232 optoinsulated serial output | | |
| 5 | TX | LINE 1 | | |
| 4 | Line 1 B- | | | |
| 3 | Line 1 B+ | | | |
| 2 | Line 1 A- | | | |
| 1 | Line 1 A+ | | | |

6.4.2 – **AM4000 CNU TERMINAL BLOCK**

| N° | Description | Features | | Notes |
|----|------------------------------|--|--|--|
| 34 | Siren Output (Idle negative) | Output protected by self-reset 0,75A fuse (polarity inversion output). | | Available total current : 1 A (= sum of the three outputs) |
| 33 | Siren Output (Idle positive) | | | |
| 32 | +24Vcc Resettable | Outputs protected by self-reset 1 A fuse | | |
| 31 | GND | | | |
| 30 | +24Vcc User | | | |
| 29 | Breakdown relay C | 30Vcc 1A resistive contact | | NA -NC selectable through JGST |
| 28 | Breakdown relay NA-NC | 30Vcc 1A resistive contact | | NA -NC selectable through JALL |
| 27 | Alarm relay C | LINE 4 | | |
| 26 | Alarm relay NA-NC | | | |
| 25 | Line 4 B- | | | |
| 24 | Line 4 B+ | | | |
| 23 | Line 4 A- | | | |
| 22 | Line 4 A+ | LINE 3 | | |
| 21 | Line 3 B- | | | |
| 20 | Line 3 B+ | | | |
| 19 | Line 3 A- | | | |
| 18 | Line 3 A+ | RS.485 optoinsulated serial output | | Interfaccia per LCD-6000N/T . |
| 17 | RX- or LIN - | | | |
| 16 | RX+ or LiN + | RS.422 serial output | | Do not use |
| 15 | TX- | | | |
| 14 | TX+ | Not used | | Do not use |
| 13 | RX | RS.232 optoinsulated serial output | | |
| 12 | TX | Serial output reference negative | | Interface for PC (PK-4000) |
| 11 | GND | RS.232 optoinsulated serial output | | |
| 10 | RX | RS.232 optoinsulated serial output | | |
| 9 | TX | LINE 2 | | |
| 8 | Line 2 B- | | | |
| 7 | Line 2 B+ | | | |
| 6 | Line 2 A- | | | |
| 5 | Line 2 A+ | | | |
| 4 | Line 1 B- | LINE 1 | | |
| 3 | Line 1 B+ | | | |
| 2 | Line 1 A- | | | |
| 1 | Line 1 A+ | | | |

6.5 – **“AM6000” BASIC BOARD TOPOGRAPHY**



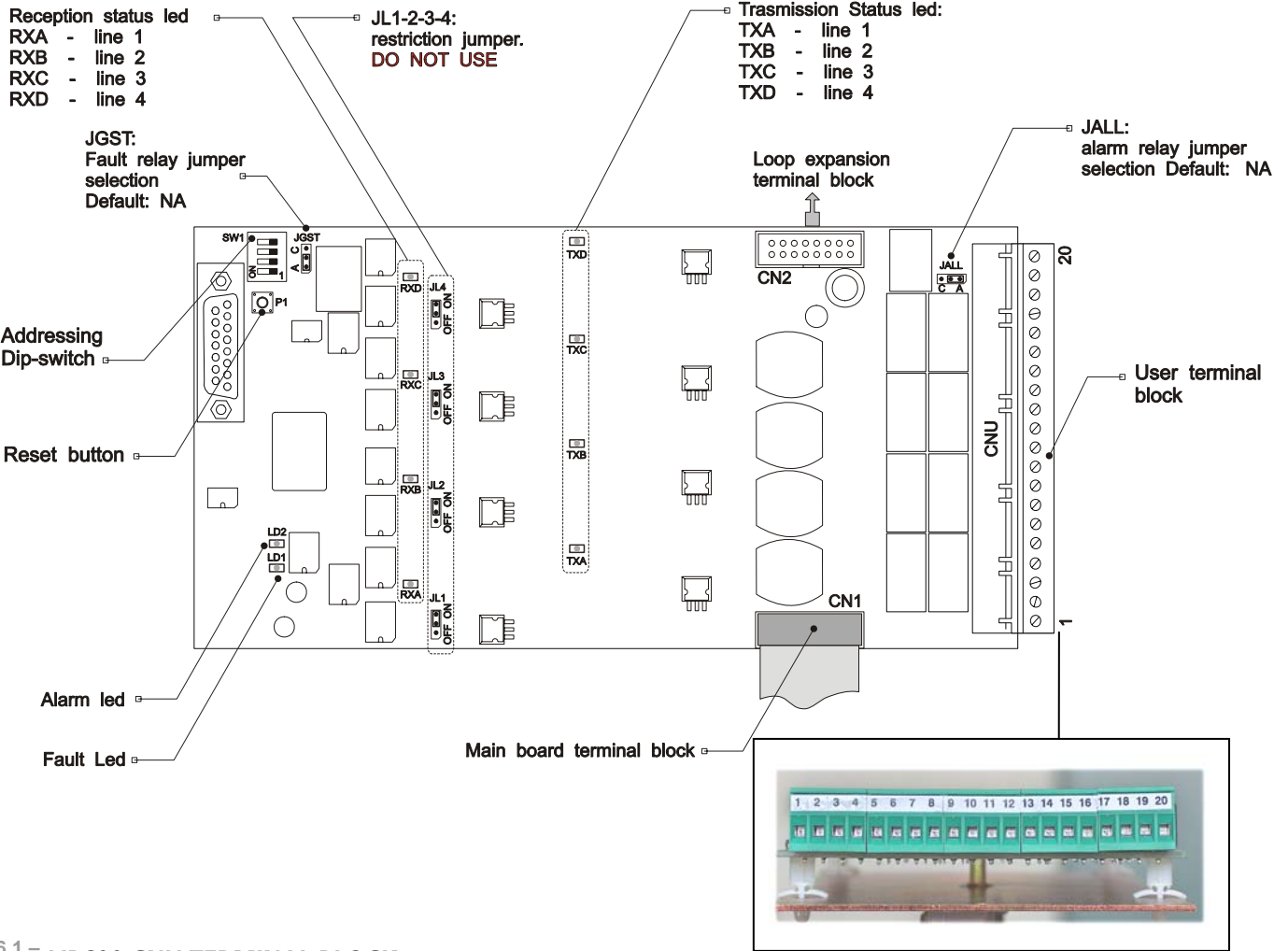
6.5.1 – **AM6000 CNA TERMINAL BLOCK**

| N° | Descrizione | Caratteristiche | Note |
|----|------------------------------|--|--|
| 12 | Alarm relay C | 30Vcc 1A resistive contact | NA -NC selectable through JALL |
| 11 | Alarm relay NA-NC | | |
| 10 | Breakdown relay C | 30Vcc 1A resistive contact | NA -NC selectable through JGST |
| 9 | Breakdown relay NA-NC | | |
| 8 | Remote command of Res. | Remote command of Reset | |
| 7 | Remote command of Tac. | Remote command of Tacitazione | |
| 6 | Siren Output (Idle negative) | Output protected by self-reset 0,75A fuse (polarity inversion output). | Available total current : 1 A |
| 5 | Siren Output (Idle positive) | | |
| 4 | Gnd User | Outputs protected by self-reset 1 A fuse | Available total current : 1 A (= sum of the three outputs) |
| 3 | + 24 Vcc 1A User Res. | | |
| 2 | Gnd User | | |
| 1 | + 24 Vcc 1A User | | |

6.5.2 – **AM6000 CNO TERMINAL BLOCK**

| N° | Description | features | Notes |
|----|-------------|------------------------------------|---------------------------|
| 12 | TX- | Not used | Don not use |
| 11 | TX+ | | |
| 10 | GND | | |
| 9 | RX- o LIN - | RS.485 optoinsulated serial output | interface for LCD-6000N/T |
| 8 | RX+ o LiN + | | |
| 7 | GNDIS | | |
| 6 | RX | RS.232 optoinsulated serial output | Do not use |
| 5 | TX | | |
| 4 | GND | RS.232 optoinsulated serial output | interface for PC (PK6000) |
| 3 | RX | | |
| 2 | TX | | |
| 1 | Not used | | |

6.6 - LIB600 BOARD TOPOGRAPHY (ONLY FOR AM6000)



6.6.1 - LIB600 CNU TERMINAL BLOCK

| N° | Description | Features | Notes |
|----|----------------------------|----------------------|--|
| 20 | Breakdown relay C. | | N.A./N.C. selectable through JGST |
| 19 | Breakdown relay N.C./ N.A. | | |
| 18 | Alarm relay C. | | N.A./N.C. selectable through JGST |
| 17 | Alarm relay N.C./N.A. | | |
| 16 | Line 4 B- | LINE 4 / 8 / 12 / 16 | |
| 15 | Line 4 B+ | | |
| 14 | Line 4 A- | | |
| 13 | Line 4 A+ | | |
| 12 | Line 3 B- | LINE 3 / 7 / 11 / 15 | |
| 11 | Line 3 B+ | | |
| 10 | Line 3 A- | | |
| 9 | Line 3 A+ | | |
| 8 | Line 2 B- | LINE 2 / 6 / 10 / 14 | |
| 7 | Line 2 B+ | | |
| 6 | Line 2 A- | | |
| 5 | Line 2 A+ | | |
| 4 | Line 1 B- | LINE 1 / 5 / 9 / 13 | |
| 3 | Line 1 B+ | | |
| 2 | Line 1 A- | | |
| 1 | Line 1 A+ | | |

7 - TEST AND STARTING OPERATION

The Control unit installation must be performed after having carefully read the instructions contained in the installation manual and the programming manual.

Once mechanical installation of the control unit has been completed, perform the following operations:

- Check the correct detection line wiring through a multimeter (refer to chapter Test Procedure for the analogue system lines in this manual).
- Connect the detection lines to the control unit.
- Connect the main alarm siren (fitted with 47 KW ¼ W balance resistance) on the CNU-33 and 34 terminals (refer to basic board topography)
- To correctly dimension the batteries to be used, check the autonomy that the system must guarantee in case of 230 Vac. mains breakdown.
- Connect the control unit to the 230 Vca mains by means of a three-pole cables: phase, earth, neuter (the earth cable must be longer than the phase and neuter ones) on the CNAL terminal block (the earthing connection is compulsory) and must be fixed to the cabinet by means of a cable fixing device so that it cannot be accidentally stripped off.

The power supply connection must be performed through the following phases
(refer to basic board topography):

- Turn off the main switch of the 230 Vca mains which powers the control unit;
- Disconnect the CNAL terminal block from the control unit
- Connect the 230 Vca mains to the CNAL terminal block;
- Connect the CNAL terminal block to the control unit ;
- Turn on the main switch of the 230 Vac mains
- Install and connect the batteries as indicated in this manual

When the control unit is powered check the following conditions on the front panel:

- Green led "VOLTAGE" = on
- Yellow led "BREAKDOWN" = flashing;
- Yellow led "SYSTEM" = on
- Buzzer = continuous sound

By pressing the Buzzer Silencing key, the buzzer is switched off and the "CONTROL UNIT ACTIVATION" breakdown indication is displayed

By Pressing the "RESET" key the request to enter the level 2 password is displayed (default = 22222) .

Enter the password and check the following conditions:

- green led "VOLTAGE" = on
- yellow led "BREAKDOWN" = off
- yellow led "SYSTEM" = off
- no breakdown signalling on the display

To program the control unit consult the chapter "RECOMMENDED SEQUENCE TO PERFORM THE CONTROL UNIT PROGRAMMING" in the Operator and Programming manual.

8 – **CONTROL UNIT PERIODICAL MAINTENANCE**

Check that the green led "VOLTAGE" is on

Check that all other control unit leds are off

Press the function F4 key and enter the level 2 password to access the "TEST" menu.

Use the arrow keys \blacktriangle \blacktriangledown to select the item "Led" (lamp test function), press the enter key

 to perform the test, check that all light indications are on for some seconds.

1. Disconnect the 230 Vca mains supply from the AM4000 control unit and check the following conditions:

- The indication of "NO MAINS" on the display
- Yellow led "BREAKDOWN" flashing.
- Yellow led "POWER SUPPLY" on
- Main breakdown relay active
- After at least 15 minutes, check the battery voltage.
If the sum of the two battery voltages is lower than 20.5 V replace them.

2. Connect the 230 Vca mains power supply to the control unit, press the "BUZZER SILENCING" key and check the following conditions:

- There is no indication of "NO MAINS" on the display
- Yellow led "BREAKDOWN" off
- Yellow led "POWER SUPPLY" on.
- Main breakdown relay deactivated

3. Disconnect both batteries; wait (not more than 2-3 minutes) for the control unit to signal:

- The indication of "NO BATTERIES" on the display
- Yellow led "BREAKDOWN" flashing.
- Yellow led "POWER SUPPLY" on.
- Main breakdown relay active

Re-connect the batteries and press the "BUZZER SILENCING" key and check:

- No breakdown signalling on the display
- Yellow led "BREAKDOWN" off
- Yellow led "POWER SUPPLY" off
- Main breakdown relay deactivated

4. Alarm a line 1 device and check the following conditions:

- Red led "ALARM" flashing.
- Siren output active.
- Alarm display

Press the "BUZZER SILENCING" key and subsequently the "SIREN SILENCING" key; the request to enter the level 2 password is displayed (default = 22222).

Enter this password and check the following conditions:

- yellow led SILENCED SIREN off
- red led "ALARM" on.
- Siren output deactivated

By pressing the "SYSTEM RESET" key, the request to enter the level 2 password is displayed (default = 22222).

Enter the password and check the following conditions:

- yellow led SILENCED SIREN off
- red led "ALARM" off
- Siren output deactivated
- No alarm signalling on the display

At the end of the maintenance leave the control unit in the idle condition (without alarm and breakdown signalling) and check that the led "VOLTAGE" is on.

9 - POWER SUPPLY – CURRENT CALCULATION

The power supply must be able to continuously power all the internal system devices (and all external devices) during the stand-by period, that is in NON-alarm conditions.

- Use the table A to calculate the load in stand-by conditions.
- Use the table B to calculate the additional current which is necessary in Alarm conditions

A 24 Vcc internal power supply for a total of 2,7 Ampere is available on the power supply for the system operation

| | | NON ALARM condition | | ALARM condition | |
|--|---|-----------------------------|-----------------------------|-------------------------|-----------------------------|
| | | A | | B | |
| Item | Q | Consumption for each | Total Current (each x Q) | Consumption for each | Total current (each x Q) |
| CONTROL UNIT | | | | | |
| AM2000/AM4000 | 1 | 0.200 | 0.200 | 0.250 | 0.250 |
| SIB-N | 1 | | | | |
| Devices connected to the Siren output ¹ | | 0 | 0 | | |
| Current from loops ² | | | | | |
| Refer to table 2 | | | | | |
| Loop 1 | | | | | |
| Loop 2 | | | | | |
| Loop 3 | | | | | |
| Loop 4 | | | | | |
| Current from User output ³ | | | | | |
| | | (Max 1 A) | | (Max 1 A) | |
| LCD-6000 | | | | | |
| Bells | | 0 | 0 | | |
| Sirens | | 0 | 0 | | |
| Flashing lights | | 0 | 0 | | |
| Other loads | | | | | |
| | | Total ⁴ = | | Total = | |
| | | | x 72 h = | | x 0.5 h = |
| | | Stand-by (A) | Ah | Alarm(B) | Ah |
| Ah Battery = (A + B) x 1.25 ⁵ = | | | | | Ah |

| | | NON ALARM condition | | ALARM condition | |
|--|----------|-----------------------------|--------------------------|----------------------|--------------------------|
| | | A | | B | |
| Item | Q | Consumption for each | Total Current (each x Q) | Consumption for each | Total current (each x Q) |
| CONTROL UNIT | | | | | |
| AM6000 | 1 | 0.200 | 0.200 | 0.250 | 0.250 |
| SIB-N | 1 | | | | |
| Devices connected to the Siren output ⁶ | | 0 | 0 | _____ | _____ |
| Current from loops ⁷ | | | | | |
| Refer to table 2 | | | | | |
| Loop 1 | | | _____ | | _____ |
| Loop 2 | | | _____ | | _____ |
| Loop 3 | | | _____ | | _____ |
| Loop 4 | | | _____ | | _____ |
| Loop 5 | | | _____ | | _____ |
| Loop 6 | | | | | |
| Loop 7 | | | | | |
| Loop 8 | | | | | |
| Loop 9 | | | | | |
| Loop 10 | | | | | |
| Loop 11 | | | | | |
| Loop 12 | | | | | |
| Loop 13 | | | | | |
| Loop 14 | | | | | |
| Loop 15 | | | | | |
| Loop 16 | | | | | |
| Current from User output ⁸ | | | | | |
| | | (Max 1 A) | | (Max 1 A) | |
| LCD-6000 | | | | | |
| Bells | | 0 | 0 | _____ | _____ |
| Sirens | | 0 | 0 | _____ | _____ |
| Flashing lights | | 0 | 0 | _____ | _____ |
| Other loads | | _____ | _____ | _____ | _____ |
| | | Total ⁹ = | | Total = | |
| | | | x 72 h = | | x 0.5 h = |
| | | Stand-by (A) | Ah | Alarm(B) | Ah |
| Ah Battery = (A + B) x 1.25 ¹⁰ = | | | | | Ah |

¹ - Check the load for each output is within admitted limits

² - **Current from loops:** Refer to the device manufacturer data sheet for the current necessary in normal mode.

Calculate the total current required for each loop by using the **table 2 (refer to the following)**.

Alarm current: Refer to the devices manufacturer' data sheet for the current necessary in alarm mode.

Calculate the total current required for each loop by using the **table 2 (refer to the following)** taking into account that the control unit controls the activation **only of the first 6 sensor and input module LED in alarm** Check that the **total current for each loop is lower than 300mA**.

³ - Refer to the device manufacturer data sheet for the current necessary in normal and alarm mode. Check that **the total current is lower than 1 Ampere**.

⁴ - The current request for the stand-by or alarm conditions cannot, in any case, exceed the power supply capacity. If the calculated current exceeds the value of 2,7 Ampere, available at the power supply, the exceeding current, necessary during the Alarm condition, is drawn from the batteries.

⁵ - The sum of currents obtained must be multiplied by a 1,25 factor to take account of the battery manufacturing tolerances.

Table 2

| PERIPHERALS POWERED BY LOOPS | | | |
|---|-----------------|---|--|
| <i>Device type</i> | <i>Quantity</i> | <i>Total current Normal condition</i> | <i>Total current Alarm condition</i> |
| Series 500 detectors | | | |
| Series 700 detectors | | | |
| M500K / KA buttons | | | |
| UL / FM single modules | | | |
| Series 700 single modules | | | |
| Series 700 double modules | | | |
| Series MA modules | | | |
| MMX-10 N | | | |
| CMX-10 R | | | |
| Insulator modules | | | |
| EMA 24 ALR sirens (powered by loop) | | | |
| Other devices: | | | |
| N.B. The total must be less than 0,300 A | | Total (loop 1) : | Total (loop 1) : |
| Series 500 detectors | | | |
| Series 700 detectors | | | |
| M500K / KA buttons | | | |
| UL / FM single modules | | | |
| Series 700 single modules | | | |
| Series 700 double modules | | | |
| Series MA modules | | | |
| MMX-10 N | | | |
| CMX-10 R | | | |
| Insulator modules | | | |
| EMA 24 ALR sirens (powered by loop) | | | |
| Other devices | | | |
| N.B. The total must be less than 0,300 A | | Total (loop 2) : | Total (loop 2) : |
| Series 500 detectors | | | |
| Series 700 detectors | | | |
| M500K / KA buttons | | | |
| UL / FM single modules | | | |
| Series 700 single modules | | | |
| Series 700 double modules | | | |
| Series MA modules | | | |
| MMX-10 N | | | |
| CMX-10 R | | | |
| Insulator modules | | | |
| EMA 24 ALR sirens (powered by loop) | | | |
| Other devices: | | | |
| N.B. The total must be less than 0,300 A | | Total (loop 3) : | Total (loop 3) : |
| Series 500 detectors | | | |
| Series 700 detectors | | | |
| M500K / KA buttons | | | |
| UL / FM single modules | | | |
| Series 700 single modules | | | |
| Series 700 double modules | | | |
| Series MA modules | | | |
| MMX-10 N | | | |
| CMX-10 R | | | |
| Insulator modules | | | |
| EMA 24 ALR sirens (powered by loop) | | | |
| Other devices: | | | |
| N.B. The total must be less than 0,300 A | | Total (loop 4) : | Total (loop 4) : |

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