



 **NOTIFIER**[®]
by Honeywell



AM-8000

Installation
manual

Intelligent Addressable Fire detection

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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 °C , +40 °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, repeaters, 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.



1293

This panel is market with the CE 1293 label to comply with the following European Directives :
Construction Products Directive 89/106/EEC (Including EMC Directive 2004/108/EC and LVD Directive 2006/95/CE)

Nazionali Rules Compliant



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 : Informations



EN54-2 13.7

**Max 512
Sensors / Manual
Call Points per
microprocessor.**

- The AM-8000 control unit has a maximum capacity of : 636 sensors and 636 addressable 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	EN 54.2 reference
Output to fire alarm devices	7.8
Output to fire protection equipment	7.10
Fault monitoring of fire protection equipment	7.10
Delays to outputs	7.11
Dependencies on more than one alarm signal	7.12 (type A)
Fault signals from point	8.3
Total loss of power supply	8.4
Disabling of addressable points	9.5
Test Condition	10
Indication of the test condition	10.2
Indication of zones in the test state	10.3



- The power supply section of the AM-8000 control unit is in conformity with the following EN54-4 requirements.

Function	EN 54.4 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 fault detection and signalling	5.4



1293

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1293 – CPD - 0316

EN 54-2, EN 54-4

Analog Addressable Fire Detection Panel AM-8000
type: BB-8000 with terminal LCD-8000-F or LCD-8000-L

Option with requirements: **EN-54-2**: 7.8, 7.10, 7.11, 7.12 (type A), 8.3, 8.4, 9.5, 10, 10.2, 10.3

GENERAL DESCRIPTION

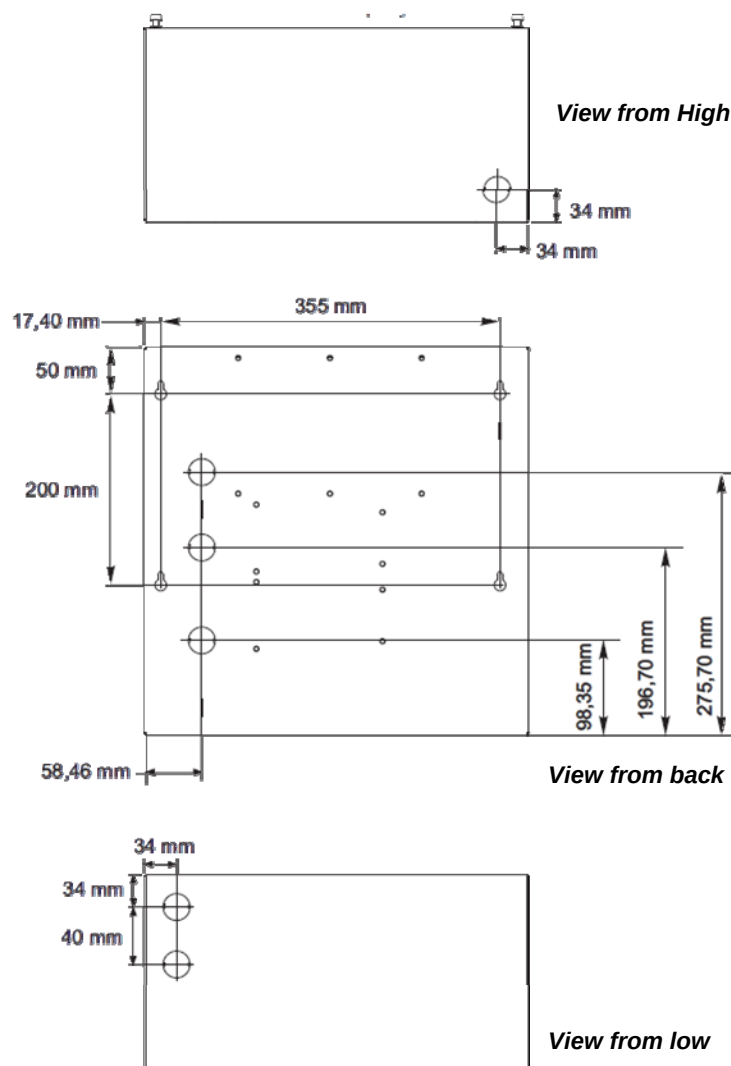
AM-8000 control unit is a fire detection control unit manufactured in conformity with the EN.54.2 and EN.54.4 rules.

Technical features :

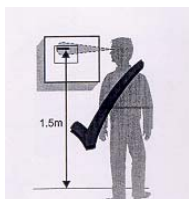
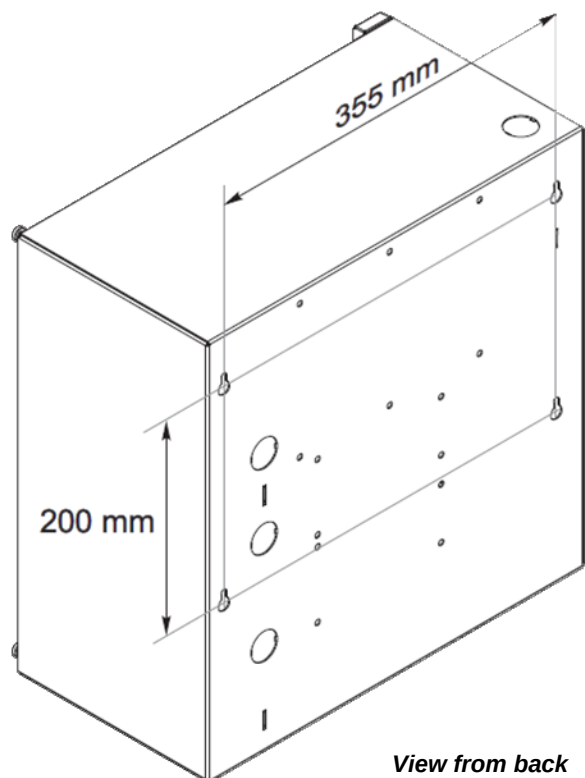
- Multi-microprocessor system
LCD-8000-L / LCD-8000-F with display TFT 7" (800 x 480 with backlit) and 256 colors and touch-screen with keyboard simulation to program and configure the system.
- Keys dedicated to specific functions : Evacuation, Reset delays, Buzzer Silencing, Silencing / Siren Reset, System Reset.
- **LINES:**
2 analogue lines programmable to closed or open loop for the connection of the field elements
Each line can drive 159 sensors + 159 input and output modules
max 4 loop each panel using the optional 2 loop LIB-8000 card.
- **SERIAL INTERFACES:**
 - 1 x RS.485 to drive remote LCD repeaters.
 - 2 x Can-Bus lines to connect to closed loop ring for a network of up to 8 panels and 8 LCD-8000 terminals
- **POWER SUPPLY:**
Standard 27,6Vdc - 4A total.
Battery charger 27,6 Vdc – 1,5A (with temperature compensation).
User output 28Vdc (+3% ÷ -17%) 1.5A, 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 Fault Output with contacts free from voltage
- **Mechanics**
The control unit mechanics is suitable for wall installations
Sizes 403mm (L) x 408mm (H) x 240mm (P)
Protection grade : IP 30
Operation temperature : -5 °C a +40 °C
Stockage temperature: -10 °C a +50 °C
Weight: 7.5 Kg
- **Main Functions**
3 password levels (Operator - Maintenance – Configuration)
4 total access levels in conformity with the EN.54 rules
Programmable text : point description through 32 characters; zone description through 32 characters
500 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 2000 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 fault criteria.
Automatic sensitivity change Daytime /Night.
Signaling of need for sensor cleaning
Signaling of poor sensor sensitivity
Programmable alarm threshold for sensors
Pre-defined software function programming for the various devices used
Walk-Test function for zones.

Installation

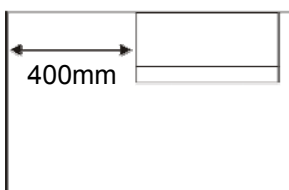
Dimensions for wall assembly



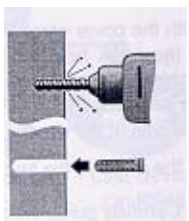
External sizes
403mm (L) x 408mm (H) x 240mm (P)



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 ,



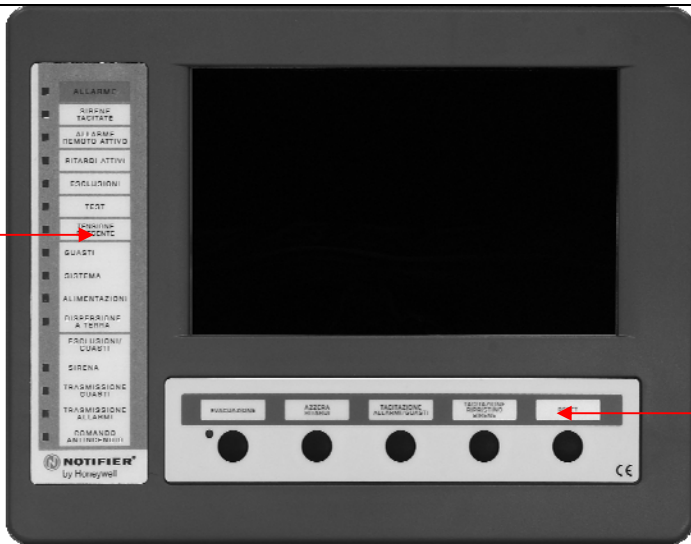
Moreover, if the control unit must be installed to the wall beside a corner wall, the minimum distance from the latter must be at least 280 mm, so as to avoid the opening of the front panel.



The control unit is designed to be installed to the wall through self-blocking cleats (masonry walls) or self-tapping screws (pre-fabricated panels). It is recommended not to install the panel near heat sources (radiators, etc.)
Use screws of max 5 mm.

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.

Extractable labels on the front panel

LCD-8000-F ALARM REMOTE ALARM SILENCE SOUNDER DELAY IN PROGRESS ZONE/POINT MASK TEST POWER OK FAULTS SYSTEM POWER SUPPLIES EARTH DISPERSION MASK FAULTS SOUNDER FAULTS TRANSMISSION ALARM TRANSMISSION EXTINGUISHING ET-0414-E 16112011	AM-8000 control unit is provided with extractable labels to indicate the functions Status via LED and some function buttons. 	ET-0210-B 161002 RESET SILENCE RESOUND SIREN SILENCE ALARM/FAULT END DELAY EVACUATION
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ELECTRICAL FEATURES

- Operation temperature: $-5^{\circ}\text{C} \div +40^{\circ}\text{C}$.
- Relative humidity: $10\% \div 93\%$ (without condensation).
- Storage temperature: $-10^{\circ}\text{C} \div +50^{\circ}\text{C}$.

Earthing

The earthing system must be performed in conformity with CEI and ISPELS rules or rules valid in the country where the panel is installed.

In any case, must have a resistance lower than 10 Ohm (measured at the well with disconnected users). This complies the CEI 68-12 rule for TN installations.

The earth connection to the control unit is compulsory and it must be performed on the CNAL terminal block. (refer to basic board topography).

Main power supply

The control unit is powered by the mains voltage and, in case of mains breakdown it can continue to normally operate due to the re-chargeable battery contained in the same control unit.

The required features for the mains supply are:

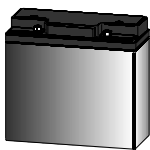
- Voltage: 230 Vac single-phase $-15\% \div +10\%$.
- Frequency: 50/60Hz.
- Current 1.5A.
- **N.B.: particular care must be taken when the installation is performed near powerful electromagnetic sources (ex. repeaters, radio relays, motors, etc.).**

Power supply

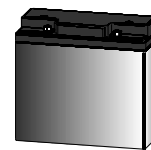
The power supply has the following output: 28,5Vdc – 28,9Vdc, 4 A ripple max. 500mVpp (Power supply for control unit, user output, external load power supply).

Battery charger section

- Output voltage = 27,5 Vdc 500mA Vpp max (temperature compensation).
- Output current = 1.5A ca
- Number of batteries that can be connected = $2 \times 12\text{V} - \text{min.}7\text{Ah max.}27\text{Ah max.}$
- The battery charger section has the following signalling thresholds
 - Exhausted battery threshold = 21.5 Vdc.
 - Re-charge Fault threshold = 3.4 Vdc (voltage difference between the two batteries).
 - Battery release threshold = 19.5 Vdc



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:

Capacity 7 Ah (Min. stand-by capacity)

Yuasa tipo NP7-12B o NP7-12FR (UL94) Faston - Capacity (20hr) = 12V 7Ah – Dimensions: 151 x 65 x 98.
Fiamm tipo FG20721 o FGV20721 (UL94) Faston- Capacity (20hr) = 12V 7Ah – Dimensions: 151 x 65 x 98.

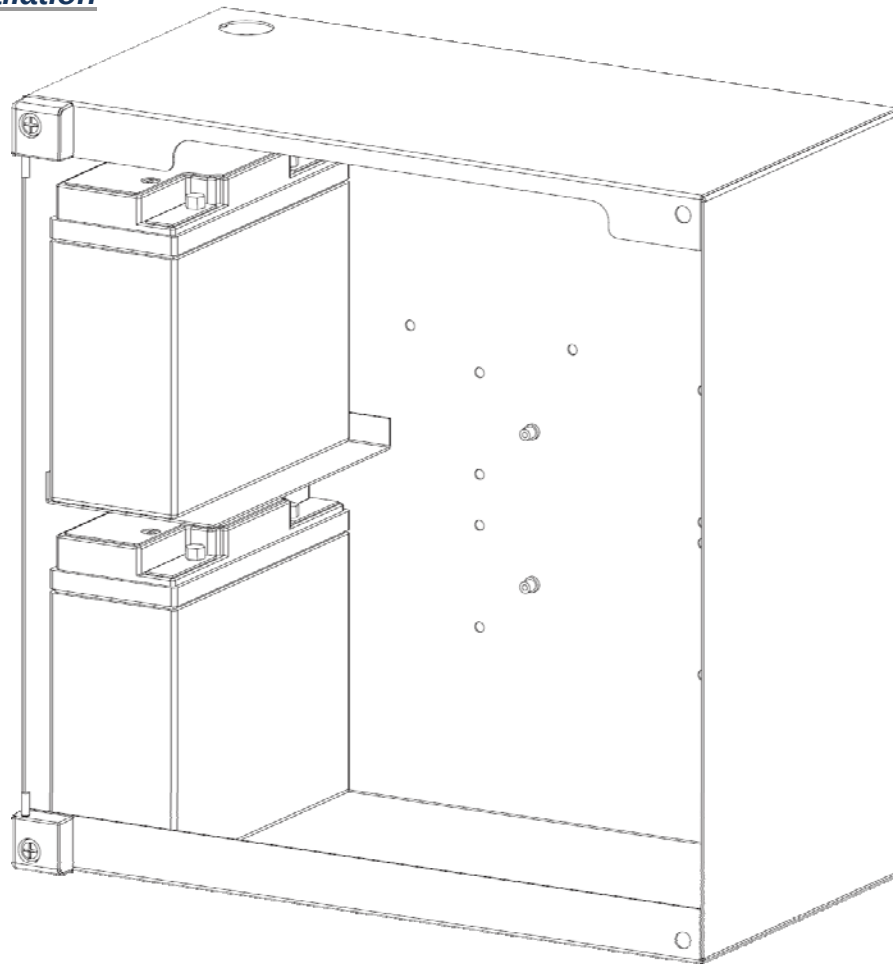
Capacity 17-18 Ah (max. stand-by capacity)

Yuasa tipo NP18-12B o NP7-12FR (UL94) Bullone - Capacity (20hr) = 12V 24Ah – Dimensions: 181 x 77 x 167.
Fiamm tipo FG21803 o FGV21803 (UL94) Bullone- Capacity (20hr) = 12V 27Ah – Dimensions: 181 x 77 x 167.

These are respectively the Min. and the Max battery capacity compatible with the Battery Charger.

Depending from the Stand-by time required in the System and from Loads calculation, the user can select an intermediate value.

BATTERIES Installation



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 stand-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 < 19,5V.

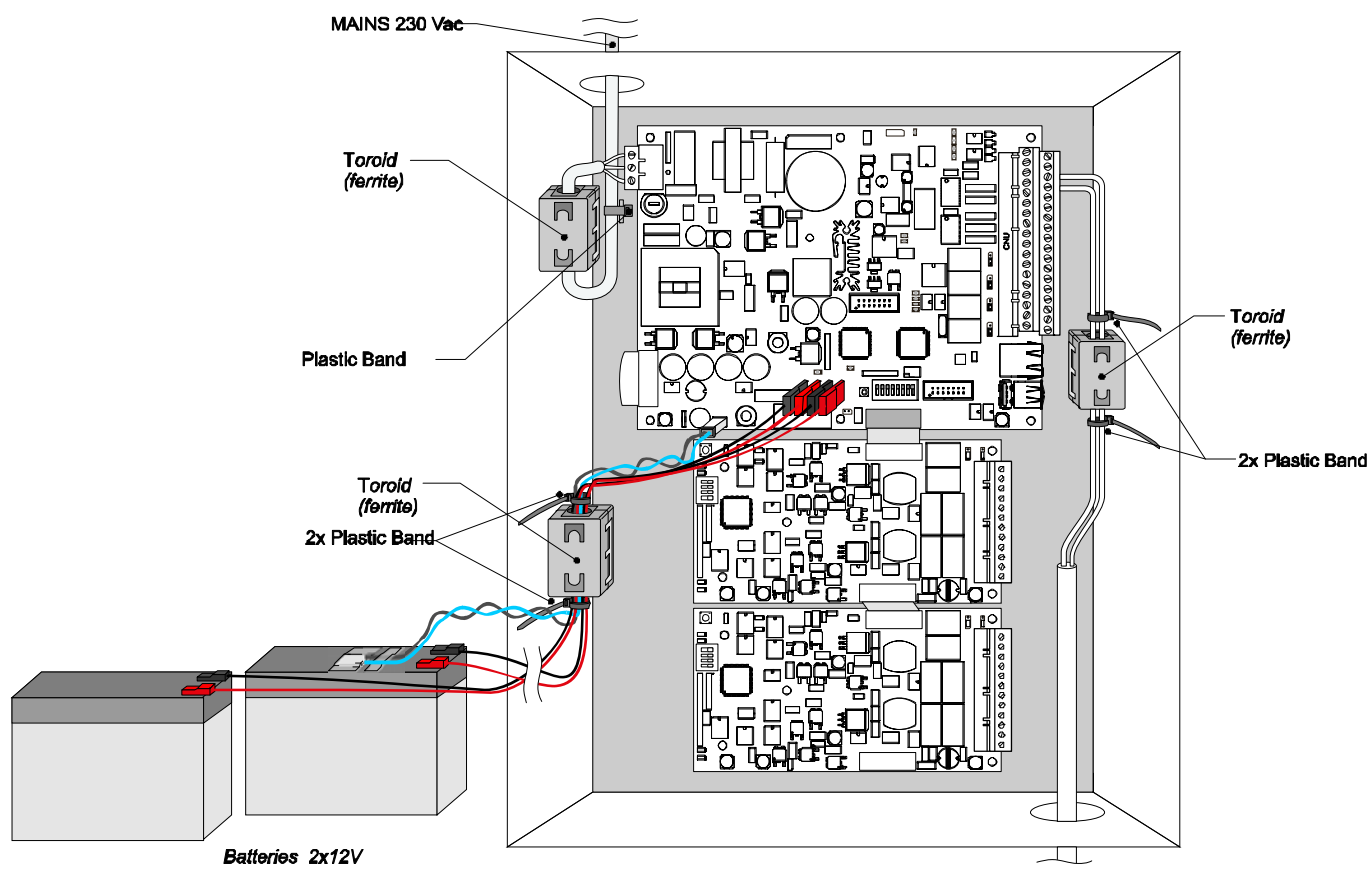


All wirings MUST be checked BEFORE they are connected to the control unit.

It is recommended to perform at least the following checks:

- Check the continuity of all cables used (including the shield)
- 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 shield and the earthing. minimum of 2M Ω 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..

Mains and Batteries 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 omni-polar or must disconnect the line phase
Power Supply connection must be done following this procedure: **(Refer to Base Board)**

- 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.

➤ **N.B.: 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.

Current consumption from battery

- Current from battery in **Normal Condition** in the absence of mains voltage 230Vac:
 - **CPU-8000** Card at nominal voltage (24Vdc): 83mA if the Card is connected to LCD-8000-L (or LCD-8000-F); 91mA if the Card is not connected to LCD.
 - **1x LIB-8000** at nominal voltage (24Vdc): 67mA
 - **LCD-8000-L** at nominal voltage (24Vdc) and backlight low: 111mA if the LCD is connected to the CPU-8000 Card; 148mA if LCD have remote connection (by CAN-LCD-8000 adaptor)
 - **LCD-8000-F** at nominal voltage (24Vdc) and backlight low: 178mA if the LCD is connected to the CPU-8000 Card; 236mA if LCD have remote connection (by CAN-LCD-8000 adaptor)
 - + external loads
- Current from battery in **Alarm Condition** in the absence of mains voltage 230 Vac:
 - **CPU-8000** Card at nominal voltage (24Vdc): 100mA with LCD-8000-L (or LCD-8000-F) connected on-board; 108mA LCD not connected
 - **1x LIB-8000** at nominal voltage (24Vdc): 75mA
 - **LCD-8000-L** at nominal voltage (24Vdc) and full backlight : 169mA if the LCD is connected to the CPU-8000 Card; 218mA if LCD have remote connection (by CAN-LCD-8000 adaptor)
 - **LCD-8000-F** at nominal voltage (24Vdc) and full backlight : 215mA if the LCD is connected to the CPU-8000 Card; 274mA if LCD have remote connection (by CAN-LCD-8000 adaptor)
 - + external loads

See the appendix at the end of this manual for proper battery calculation in Stand-by and in Alarm condition.

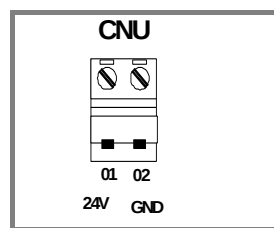
User power supply output

The AM-8000 control unit has one 24 Vdc fixed output

The output is protected by 4 A FAST fuse
Use the fixed voltage output to power external loads such as, for example, LCD repeaters displays.

User Output + Sounder Output:

- 28 Vdc + 3% - 17%, max ripple 500mV
- 3,5A (the sum of the current MUST NOT EXCEED THE MAXIMUM CURRENT available from the power supply)



User power supply output connection

(refer to basic board topography)

Fuse list

230 V mains voltage	3,15 AL
Battery Output	7 A RESETTABLE
User power supply output	4 A RESETTABLE
Sounder output	1,35 A RESETTABLE

Relay outputs

FUNCTION	CHARACTERISTICS
Siren	1 contact controlled by 24Vcc / 2A resistive
General Alarm	Max 2A resistive 30 Vdc, NA-NC selectable through Jumper JALL (refer to basic board topography)
General Fault	Max 2A resistive 30 Vdc, NA-NC selectable through Jumper JGST (refer to basic board topography)
USR1	Max 2A resistive 30 Vdc, NA-NC selectable through Jumper JUSR1 (refer to basic board topography)
USR2	Max 2A resistive 30 Vdc, NA-NC selectable through Jumper JUSR2 (refer to basic board topography)

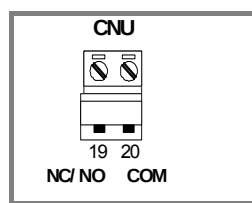


EN54-2 8.8

General Fault Output

Contact range: max 30 VAC/DC, 2A,
Non-inductive loads
Selection of type of contact (Normally open or
Normally closed) through JGST Jumper on
board (refer to basic board topography)

- The General Fault relay is usually in energized state. It is de-energized in Fault 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



Main Fault output connections
(refer to basic board topography)

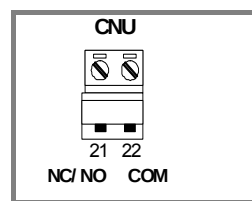


EN54-2 7.7

General Alarm Output

Contact range: max 30 VAC/DC, 2A,
Non-inductive loads
Selection of type of contact (Normally open or
Normally closed) through JALL Jumper on board
(refer to basic board topography)

- 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.



Main Alarm output connections
(refer to basic board topography)



EN54-2 7.7

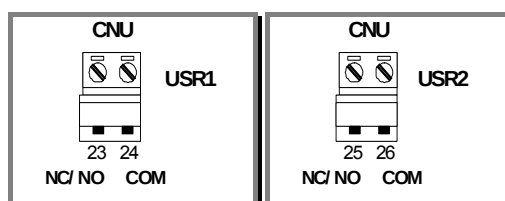
Outputs USR1 and USR2

Contact range: max 30 VAC/DC, 2A,
Non-inductive loads
Selection of type of contact (Normally open or
Normally closed) through JURS1 e JUSR2
Jumpers on board (refer to basic board
topography)

NOTE:

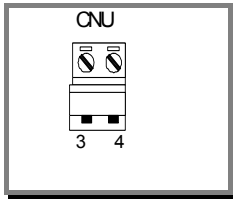
To program the activation of these outputs refer
to "Am-8000 Programming Manual"

- The USR1 and USR2 relays are 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.



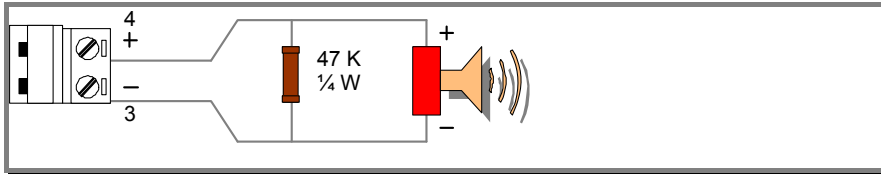
USR1 e USR2 output connections
(refer to basic board topography)

Sounder connection - controlled output



Siren output connections
(refer to basic board topography)

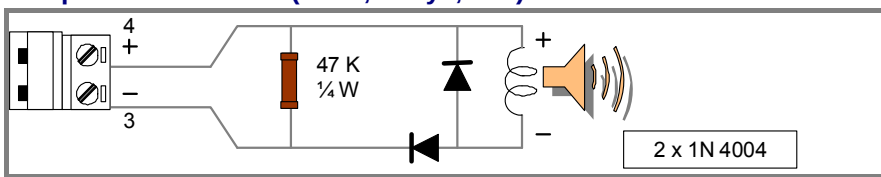
Polarized devices (electronic sirens, etc.)



NOTE:

Connect the 47K , 1/4 W EOL resistor only on last sounder of the line

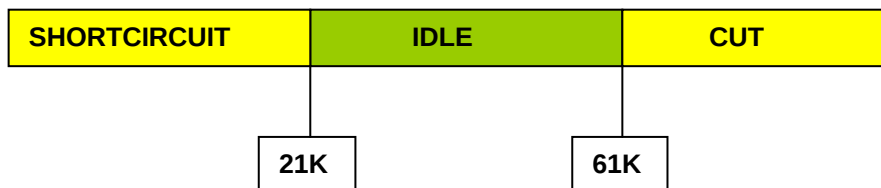
Non-polarized devices (Bells, relays, etc.)



ATTENTION:

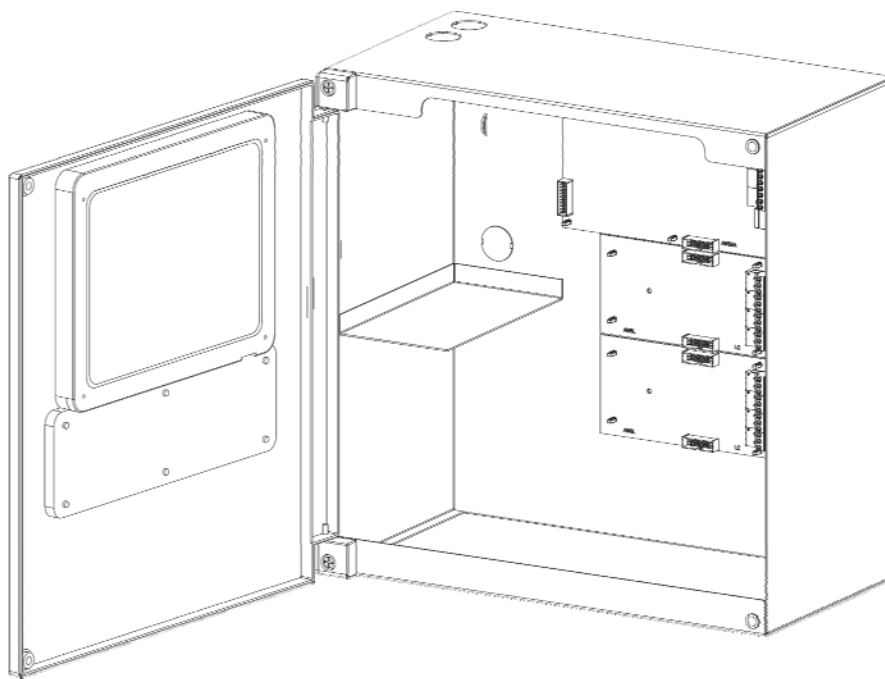
Polarity displayed are in Alarm condition, at idle condition, they are inverted

Sounder output operation window



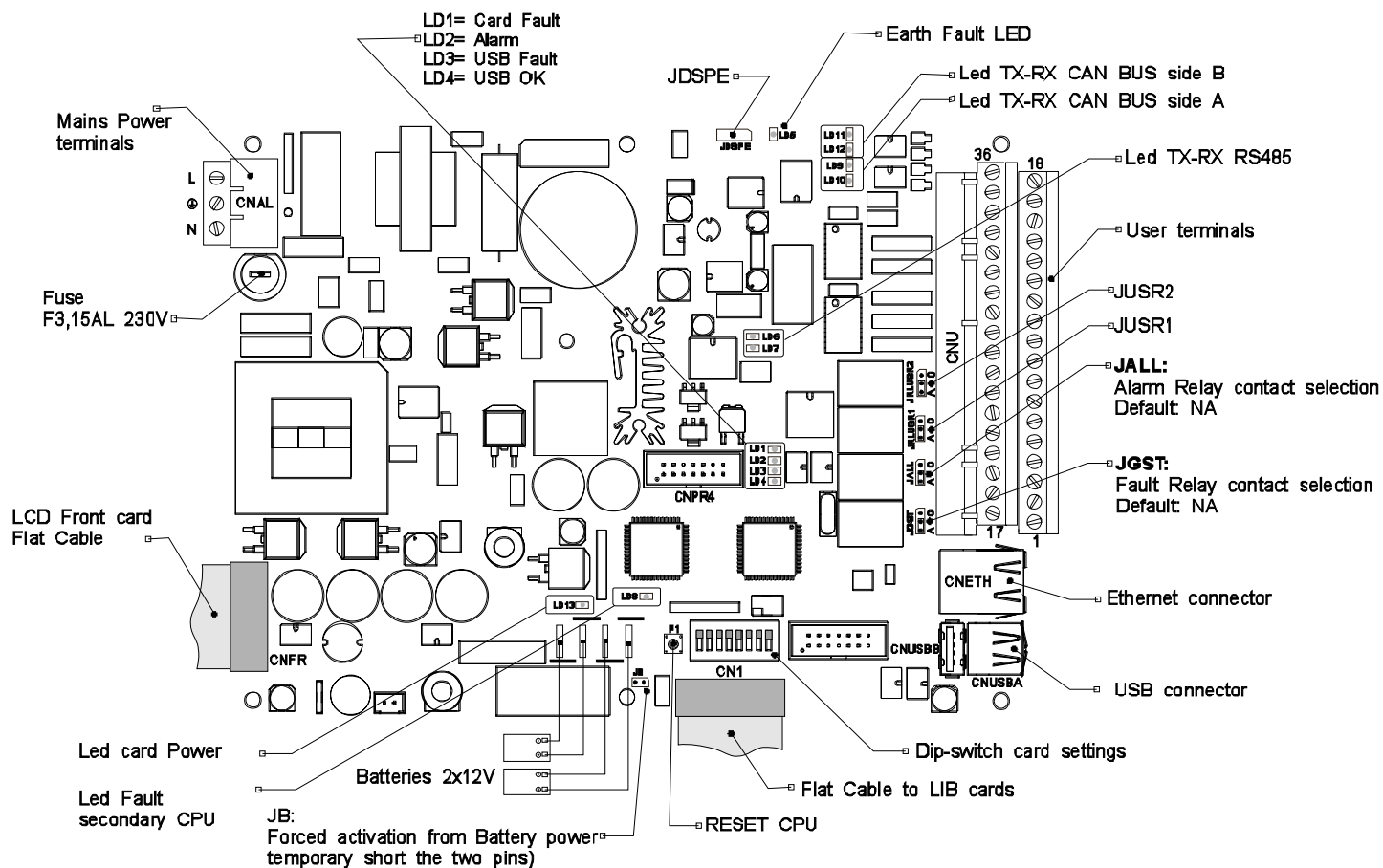
SYSTEM COMPONENTS

Black Box



- Each Black Box is equipped of one CPU card and can contain up to 2 Loop Interface cards (LIB-8000)
- Each LIB card can drive up to 2 ADV loop
- Each ADV Loop line can connect up to 159 detector and 159 Modules in Advanced protocol or 99+99 in CLIP mode.

AM-8000 CPU card



CNA terminal block

N°	description	Function	Note
1	Phase	230Vac mains Power Fused with 3,15 AL	
2	Earth		
3	Neutral		

CNU terminal block

N°	Name	description	Note
1	+24V USR	Fused with 4 A fuse	
2	GND USR		
3	Sounder/ Siren (positive in non alarm)	Fused with 1,35A resettable fuse (this is a (polarity inversion output).	EOL resistor = 47KΩ
4	Sounder/ Siren (Negative in non alarm)		
5	Not used		
6	LIN +	RS.485 Opto-insulated	NO EOL Internal resistor
7	GNDIS		
8	LIN -		
9	VPPLA	POWER supply line for LCD CAN bus devices	Can-Bus (Output Line) with internal EOL resistor Power Supply line is protected with a 4° Fuse
10	GNDP		
11	CDAHA	Communication line (side A) for CAN BUS NETWORK	
12	GND		
13	CDALA		
14	VPPL1	POWER supply line for CAN bus AUDIO devices	AUDIO 1 Line Can-Bus with internal EOL resistor Power Supply line is protected with a 4° Fuse
15	GND1		
16	CAN H1	Communication line (side A) for AUDIO CAN bus devices	
17	GND		
18	CAH L1		
19	General Fault : NO-NC	General Fault Relay	Contacts : 2A 30V Normally-Open or Closed selectable via JGST Jumper
20	General Fault : C		
21	General Alarm : NO-NC	General Alarm Relay	Contacts : 2A 30V Normally-Open or Closed selectable via JALL Jumper
22	General Alarm : C		
23	User1 : NO-NC	User 1 Relay	Contacts : 2A 30V Normally-Open or Closed selectable via JUSR1
24	User1 : C		
25	User2 : NO-NC	User 2 Relay	Contacts : 2A 30V Normally-Open or Closed selectable via JUSR2
26	User2 : C		
27	VPPLB	POWER supply line for CAN bus LCD devices	Can-Bus (Input Line) with internal EOL resistor Power Supply line is protected with a 4° Fuse
28	GNDP		
29	CDAHB	Communication line (side B) for CAN BUS NETWORK	
30	GND		
31	CDALB		
32	VPPL2	POWER supply line for AUDIO CAN bus devices	AUDIO 2 Line Can-Bus with internal EOL resistor Power Supply line is protected with a 4° Fuse
33	GND1		
34	CAN H2	Communication line (side A) for AUDIO CAN bus 2	
35	GND		
36	CAN L2		

DIP SWITCH on CPU CARD

1	2	3	4	5	6	7	8
ADDRESS				Download config.	Load conf.	Tech use only	SW Upgrade
ON	off	off	off	off	off	off	off
off	ON	off	off				
ON	ON	off	off				
off	off	ON	off				
ON	off	ON	off				
off	ON	ON	off				
ON	ON	ON	off				
off	off	off	ON				
Box ID = proper configuration				ON	off	off	off
Box ID = proper configuration				off	ON	off	off
Box ID = proper configuration				off	off	off	ON

Black Box n.1

Black Box n.2

Black Box n.3

Black Box n.4

Black Box n.5

Black Box n.6

Black Box n.7

Black Box n.8

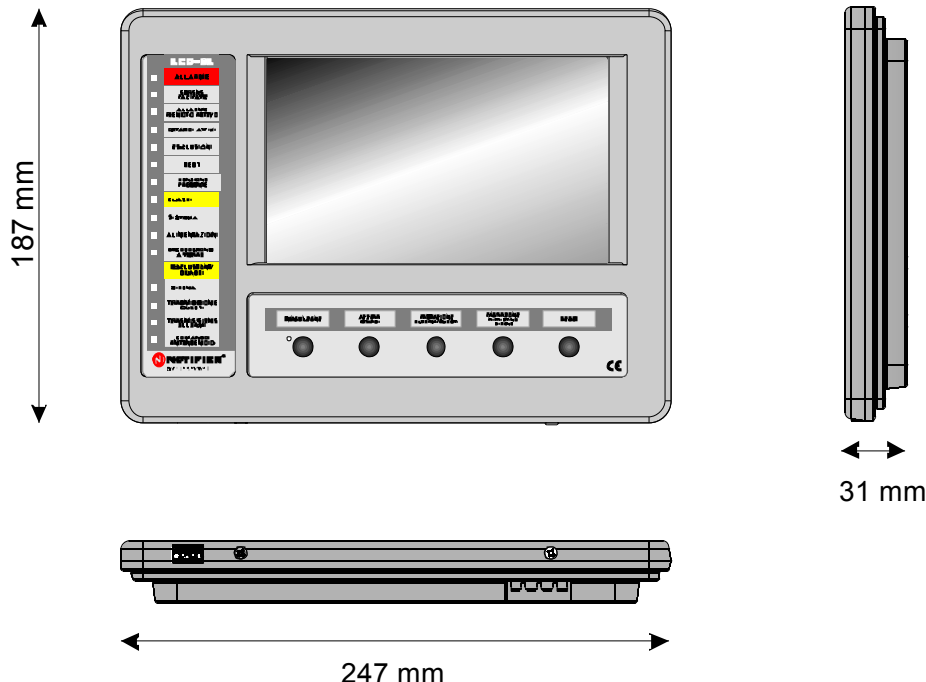
Dip 5 = ON
from USB key loads configuration
previously prepared by PK-8000 SW Tool

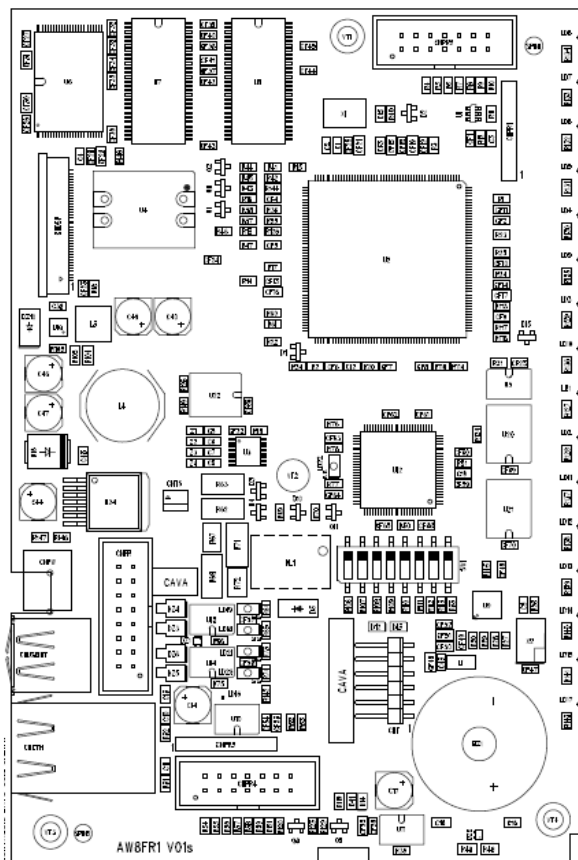
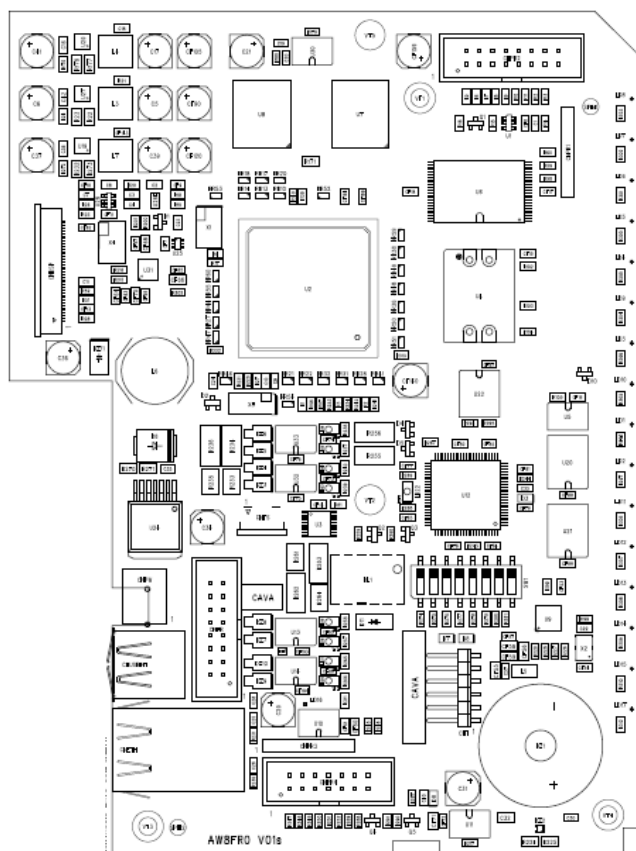
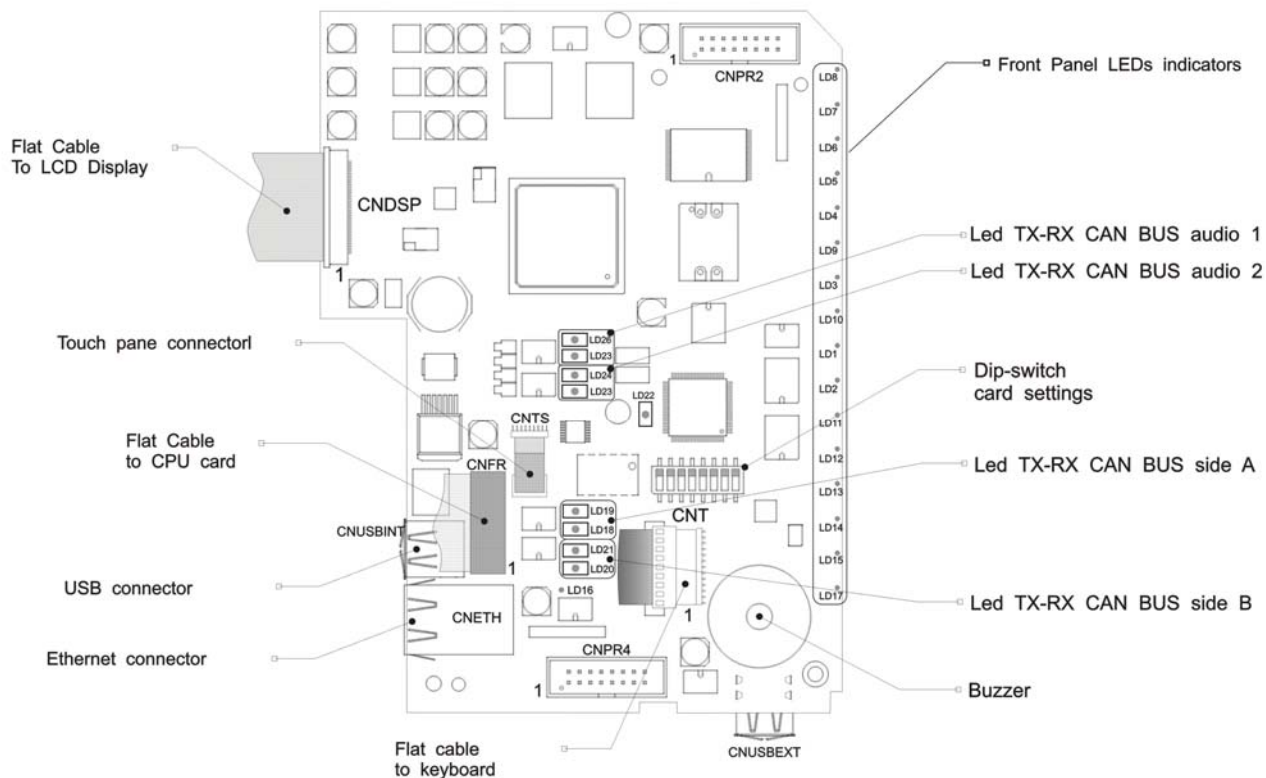
Dip 6= ON
copy the configuration in the USB
memory key

Dip 8= ON
Use only by authorized Technician

Note : Set the dip-SW 5-6-8 in ON for the time necessary to perform the function. Restore it in OFF position for Normal operations.

AM-8000 Front Panel LCD





NOTE:

The two CPU cards of the two available LCD models (LCD-800-F and LCD-8000-L differs in the component and in the software, but maintain all end-user Connectors and Dip Switches in the same positions and with the same pin-out.

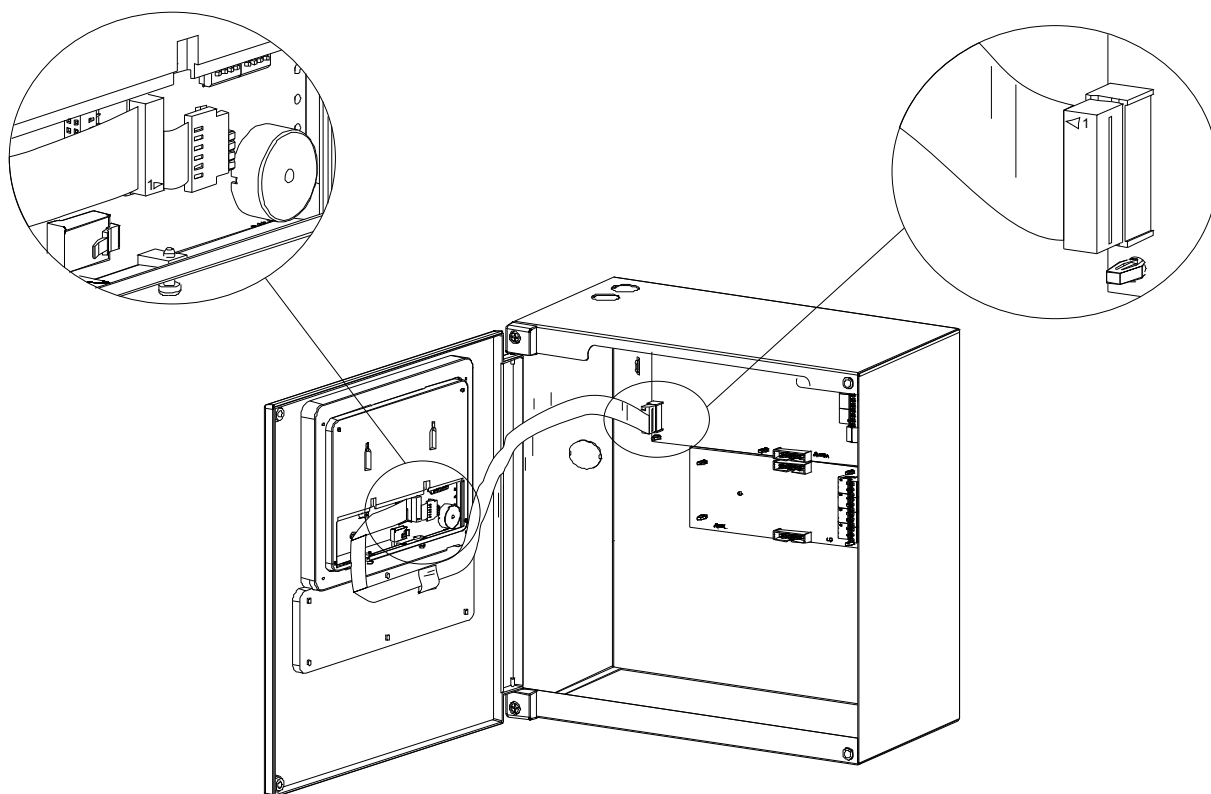
DIP SWITCH settings on LCD CARD

1	2	3	4	5	6	7	8			
ADDRESS				OFF only			SW Upgrade			
ON	off	off	off	off			off	LCD n.1	Normal Operation	
off	ON	off	off	off				LCD n.2	Normal Operation	
ON	ON	off	off	off				LCD n.3	Normal Operation	
off	off	ON	off	off				LCD n.4	Normal Operation	
ON	off	ON	off	off				LCD n.5	Normal Operation	
off	ON	ON	off	off				LCD n.6	Normal Operation	
ON	ON	ON	off	off				LCD n.7	Normal Operation	
off	off	off	ON	off				LCD n.8	Normal Operation	
ID: proper configuration				Off		Off	Off	ON	LCD n. ID	Use only under manufacturer authorization

LCD-8000-L /F installed in the Black-Box front door

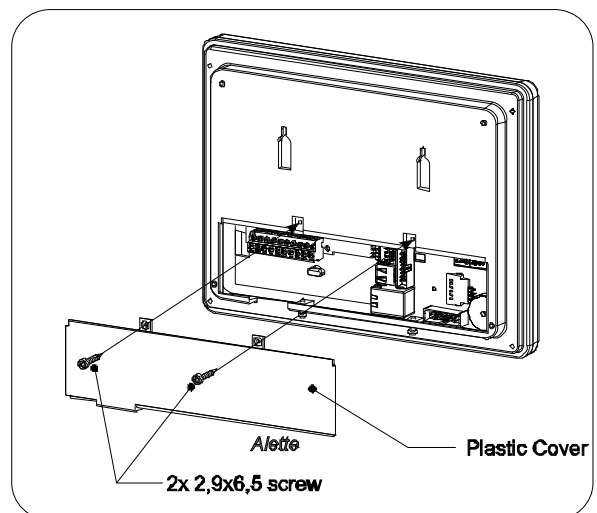
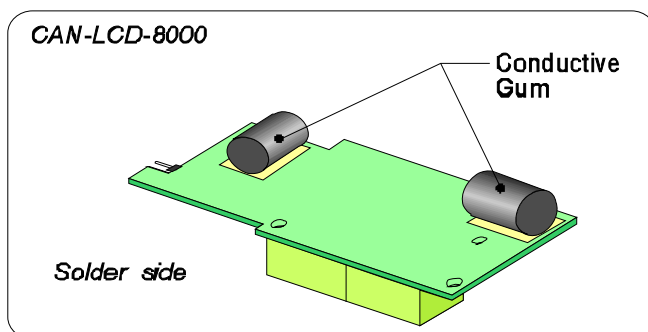
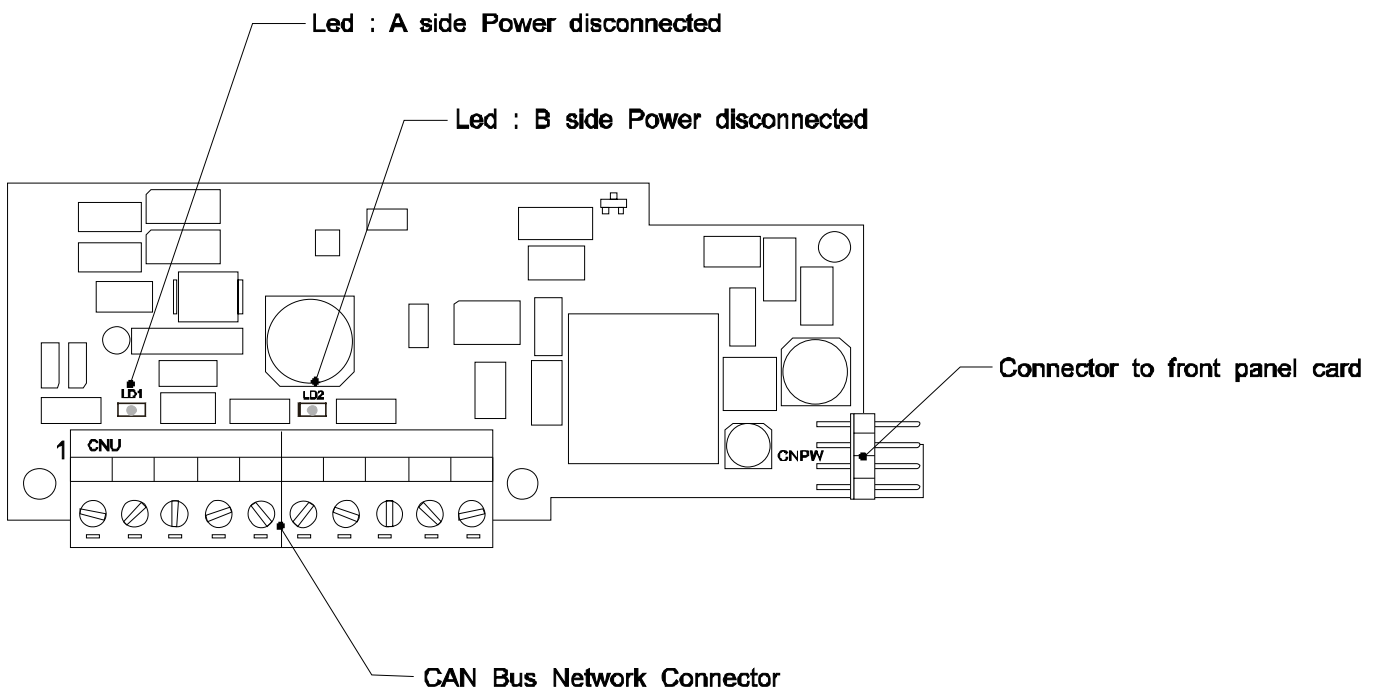
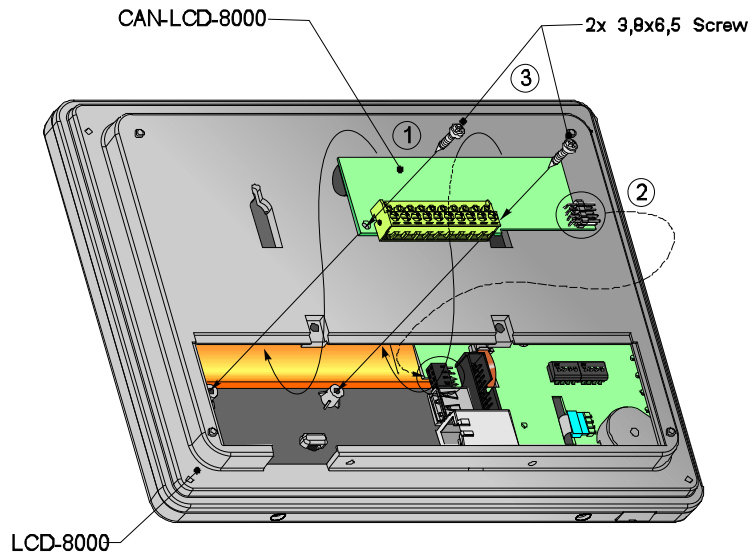
To install the LCD on the Front Panel door:

- Open the door
- Take-off the plastic cover removing the front Label and cutting the 4 plastic connection
- Fit the LCD in the square hole and fix it using 4 screw as illustrated
- Connect the Flat Cable as schow in the picture.



LCD-8000-L /F installed along the CAN-Bus Network : use CAN-LCD-8000 CARD

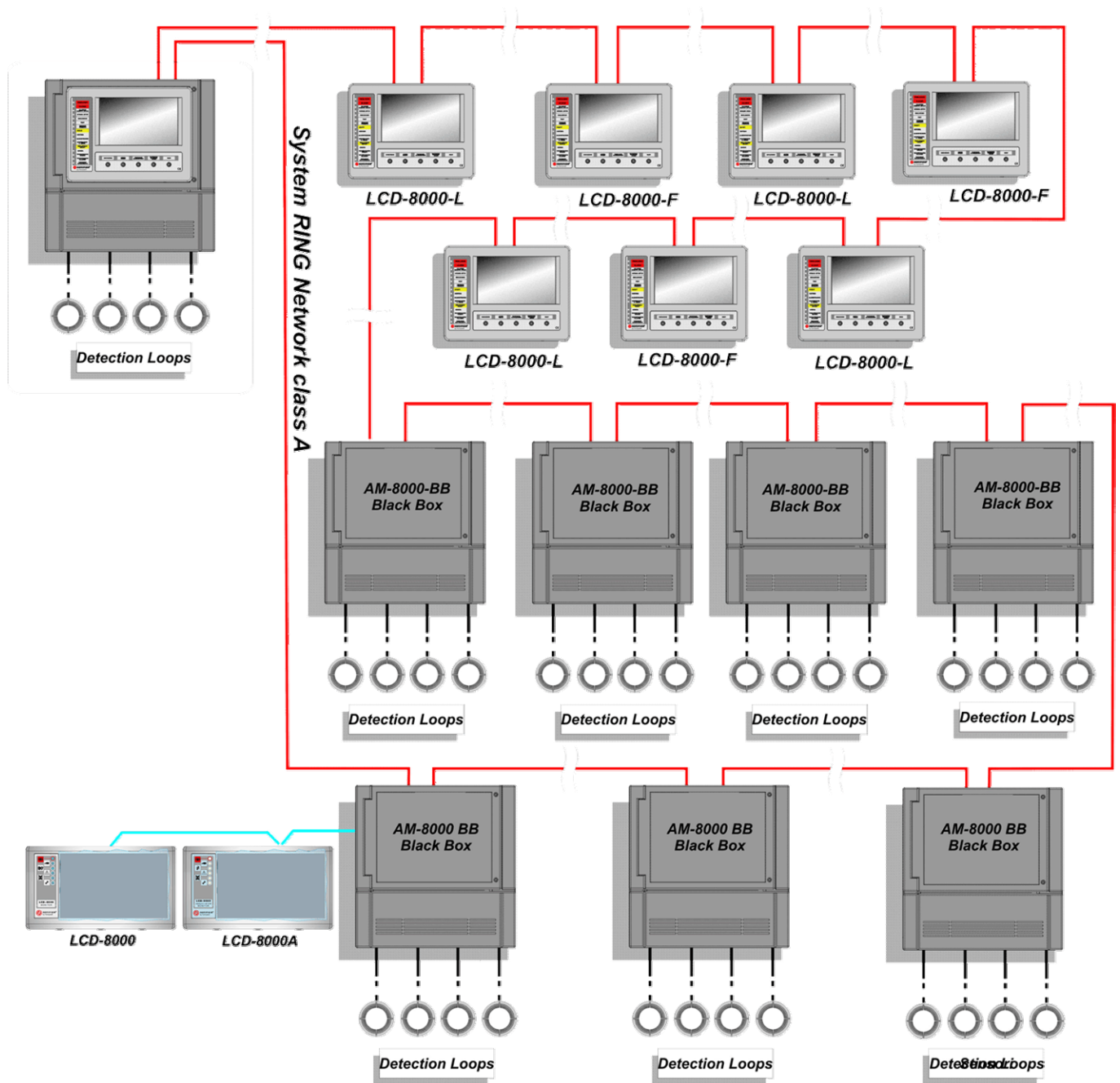
This card is necessary when the LCD is not installed in the same cabinet with the AM-8000 CPU



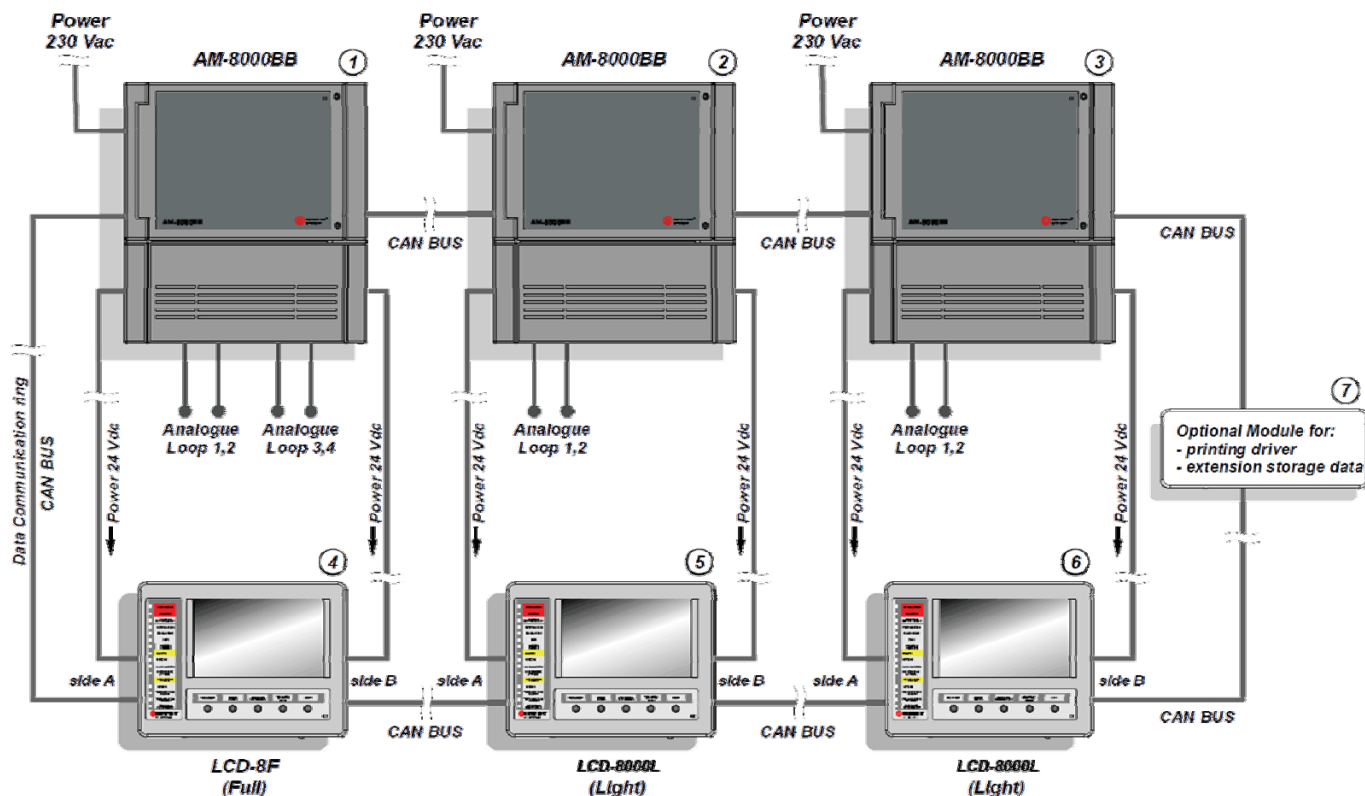
Display	-Si TFT 7"wide (800x3rgbx480) with resistive touch screen. Antiglare surface. LED Backlite software controlled.
Keyboard	5 buttons + touch screen
Buzzer	Monotone
Real Time Clock	Internal RTC with replaceable battery
Power Supply	When installed inside the Black Box, the LCD-8000 is powered from the Panel with a flat Cable (max 2 mt)) When installed outside the Black Box , the CAN-LCD-8000 card must be used and an external power (min 18Vcc a - max 40Vcc) must be provided
Operating Temperature	-5°C a +40°C
Humidity	Max 95% no condensation
Stockage temperature	-10°C a +50°C
Current consumption	
LCD-8000-L	backlight low: 148mA in Normal condition; 218mA in alarm condition @ 24Vcc
LCD-8000-F	full backlight: 236mA in Normal condition; 274mA in alarm condition @ 24Vcc
CAN-LCD-8000	16mA @ 24Vcc

CAN-LCD-8000 card			
CNFR : 10 pins connector to connect the LCD in a remote mode			
1	VPP LA		External Power supply for side A : min.18 Vdc – max.40 Vdc. Protected with a 1A35 Fuse.
2	GNDP		
3	CDA HA		CanBus side A Communication
4	GND		
5	CDA LA		
6	VPP LB		External Power supply for side B : min.18 Vdc – max.40 Vdc. Protected with a 1A35 Fuse.
7	GNDP		
8	CDA HB		CanBus side B Communication
9	GND		
10	CDA LB		

AM-8000 SYSTEM



System Network Wiring



EN54-2

8.2.6 - 12.5.3

Panels with components in separate cabinet:
Fault condition & indication.

- ❖ Both LCD-8000-F and LCD-8000-L units are integral part of the AM-8000 system. This implies that are “not only” events repeaters, but also enable the operator to perform all EN 54.2 **mandatory functions** like configuration, test, disabling etc.
- ❖ What said, implies that the **connection to the AM-8000 CAN-Bus MUST BE wired in Class A (Loop) configuration.**
- ❖ And also the **Power supply connection MUST BE in the same configuration.**

If this function is not appropriately followed, it can contravene the EN54 requirements.

Here are some samples of the power supply and CAN bus wiring.

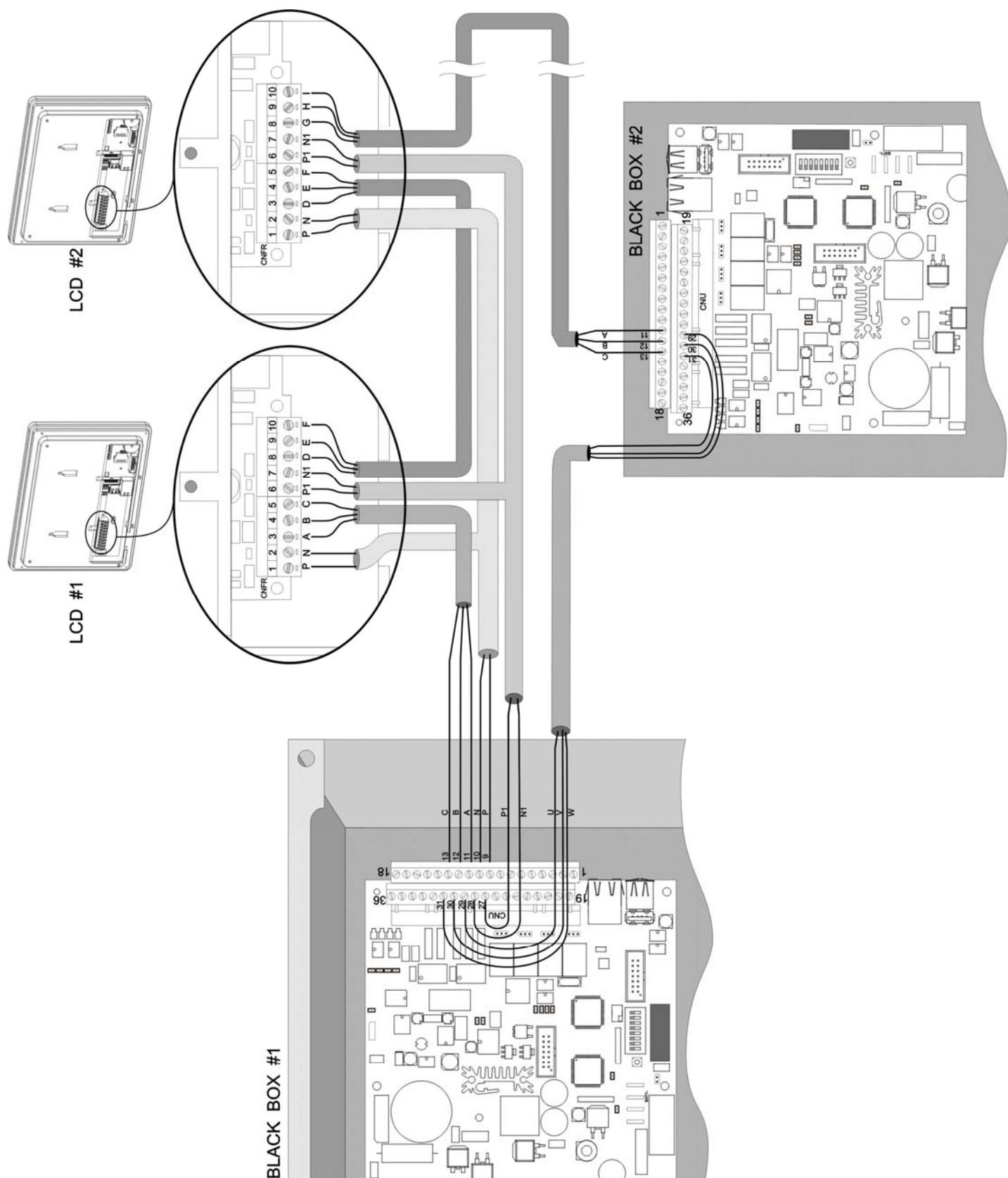
Note that :

- Each LCD have TWO connections for the CAN Network
- Each LCD have TWO connections for the Power Supply
- CAN-Bus IN-OUT connections must be wired in separated path
- LCD Power IN-OUT connections must be wired in separated path

Power source for the LCD-8000L and LCD-8000F can be :

- One Black Box for all LCDs , or....
- Each LCD can be powered from the nearest Black Box , or....
- One LCD can use a local EN 54.4 certified Power Supply unit but in this case the Power line must be splitted and the two connection path must be physically separated.

System Wiring Example



Communication Cable

Cable used for CAN Bus connection must be : Twisted pair – Shielded – Impedance: 120 Ohm

Shield wire have to be connected to the negative terminal on both side to guarantee the reference continuity.

Suggested cables are :

Double pair for both CAN-Bus + Power supply:

- ☐ **Belden 3082 A Multi-Conductor (18 AWG for CAN-Bus + 15 AWG for Power supply)**
Using this cable, maximum distance from first to last equipment is: 800 mt at maximum transmission speed of 31250 bit/sec
- ☐ **Belden 3086 A Multi-Conductor (20 AWG for CAN-Bus + 16 AWG for Power supply)**
Using this cable, maximum distance from first to last equipment is: 400 mt at maximum transmission speed of 31250 bit/sec

Single pair for CAN-Bus:

- ☐ **Belden 3105 A Twisted pair (22 AWG for Can-Bus only)**
Using this cable, maximum distance from first to last equipment is: 300 mt at maximum transmission speed of 31250 bit/sec

Power Supply Cable

- ☐ Power supply cable can be a twisted pair with copper section proportional to :
 - o the distance from first and last equipment,
 - o Number and current consumption of all devices along the line.
 - o must guarantee the minimum voltage need to the properly functionality of all peripherals at maximum current.

Can Bus Typology

Similary to all RS-485 communication line, the CAN Bus is a Point-to-Point sequential serie connection. The wire must have a 120 Ohm resistor at each end.

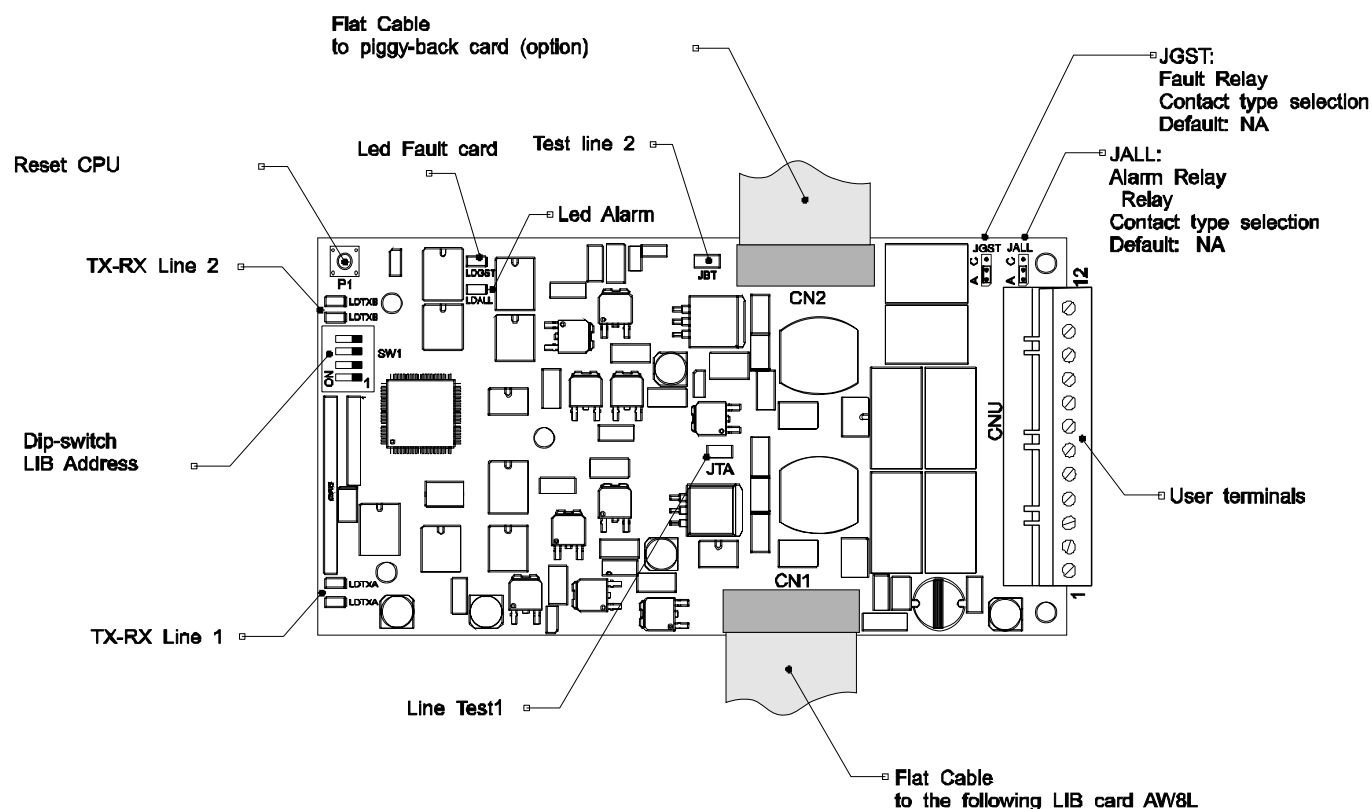
The typology used is a Class A (closed line – Loop) .

It's not necessary to follow the sequential serie on the peripherals addresses.

T-taps are not permitted.

Cable must be wired in conduits separated by the mains power line and anyway wiring must be compliant to laws and rules valid in the country of the installation.

LIB-8000 Card



DIP SWITCHES TO PROGRAM LIB NUMBER

DIP SWITCH SW1				
	1	2	3	4
LIB1	ON	OFF	OFF	OFF
LIB2	OFF	ON	OFF	OFF

LIB-8000 CNU terminal Block

N°	Description	Characteristics	Note
12	Fault relay "Common"	Max 30V 1A	Select N.O./N.C. with JGST Jumper
11	Fault relay N.C./ N.O.		
10	Alarm Relay "Common"	Max 30V 1A	Select N.O./N.C. with JALL Jumper
9	Alarm Relay N.C./N.O.		
8	Line 2 B-	Detection LINE 2	
7	Line 2 B+		
6	Line 2 A-		
5	Line 2 A+		
4	Line 1 B-	Detection LINE 1	
3	Line 1 B+		
2	Line 1 A-		
1	Line 1 A+		

Communication lines with Detectors / Modules

The AM-8000 control unit 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.



In case of short circuit cannot be lost more than 32 alarm points

- If more than 32 devices (ref. EN54.2) are installed on a line, this must be configured as closed Loop (style 6).
- 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.
- If the line is in Style 6 (Loop) an appropriate number of insulators devices must be provided, in such way to don't lost more than 32 points in case of short circuit.



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 terminal block.

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.)
- Shielded pair cable
- Max. admitted capacity : 0,5 uF

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.

Minimum Cable Section

Up to 500 mt.	cable 2 x 0,5 mm ²
Up to 1.000 mt.	cable 2 x 1 mm ²
Up to 1.500 mt.	cable 2 x 1,5 mm ²
Up to 3.000 mt.	cable 2 x 2,5 mm ²

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:

- ☐ 159 Detectors using Advanced Protocol
- ☐ 159 input and/or output modules

Isolator 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.

Input Modules

The addressable inputs modules allow the AM-8000 system to monitor contacts, manual alarm call points, 4 wires conventional detectors, and several other devices with alarm contact outputs.

Output modules

Through addressable output modules, the AM-8000 system, by means of the programmable CBE equations, can activate the indication circuits or output relays through voltage free contacts or supervised class A controls.

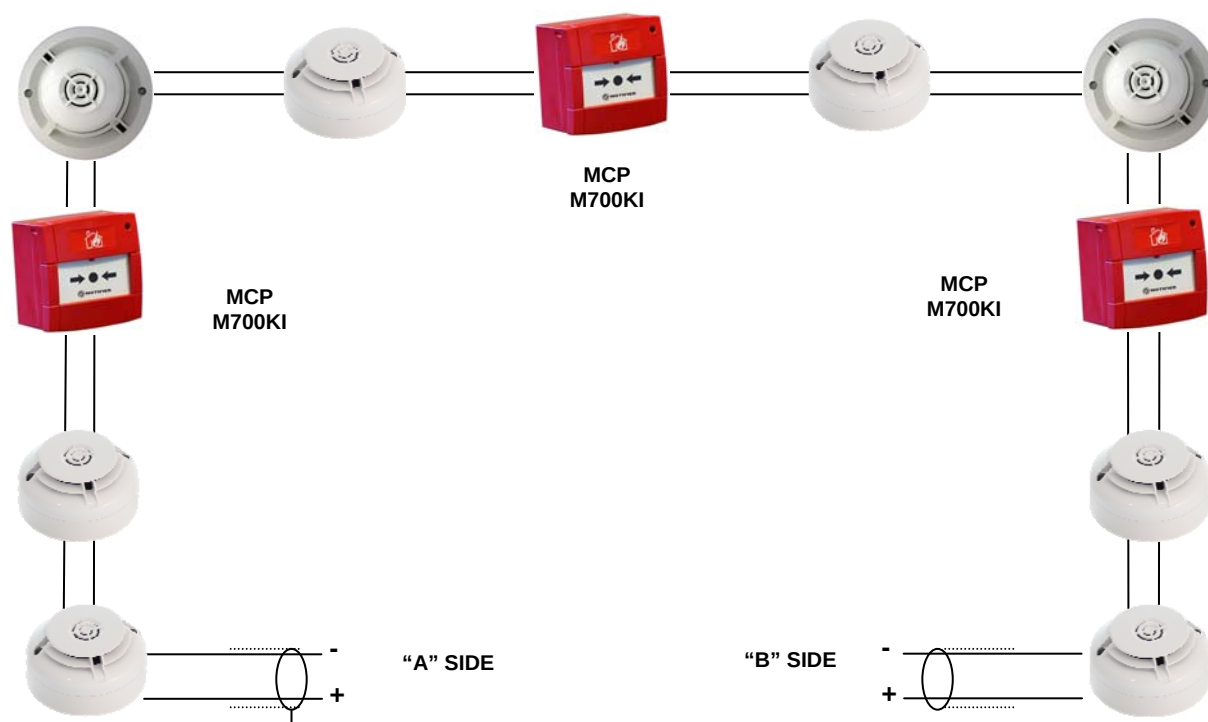
Intelligent detectors

The AM-8000 control unit can communicate only with analogue detectors declared as compatible by NOTIFIER ITALIA. In particular, all Advanced protocols devices of the NFX series will enable to use the maximum address capability of 159 detectors each line.

MODULE AND SENSOR CONNECTION

For the specific device connections , please refer to :
“Analogue system device installation manual”
document : M-199.1-SCH-ITA or M-199.1-SCH-ENG
by Notifier Italia.

Example of closed line (style 6 or Loop)



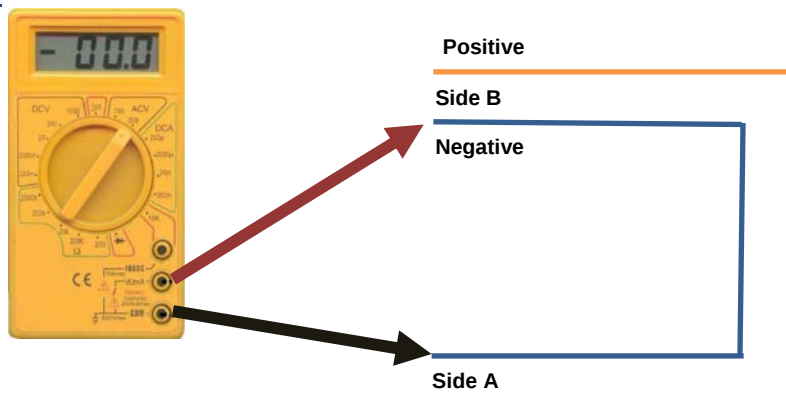
The total length of the loop couple (from the Panel Loop output and input) SHALL NOT exceed 3.000 mt.

Test procedure for analogue system lines

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

NOTE: A DIGITAL MULTI METER IS REQUIRED

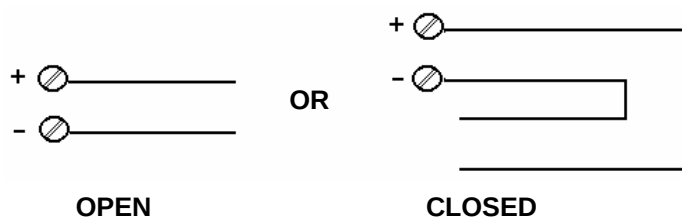
Line resistance



The direct current resistance of the negative wire of the loop SHALL NOT exceed 20 Ohm.
The measurement must be performed by disconnecting the channels "A" and "B" from the LIB Multi meter points are to be connected to the Negative wire terminals.
To have the total loop wire resistance, multiply by 2 the value read on the Negative side.

Line insulation

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



Test 1:

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

Check : Resistance: 1 - 1.3 MOhm

Test 2:

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

Check : Resistance: 0.7 - 0.9 MOhm

Screen shield insulation from 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.

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.

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".

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.

System Test and Commissioning

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 multi-meter (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-03 and 04 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 "POWER OK" = on
- Yellow led " FAULTS" = flashing;
- Buzzer = continuous sound

By pressing the Buzzer Silencing key, the buzzer is switched off and the "POWER UP" fault 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 "POWER OK" = on
- yellow led "FAULTS" = off
- no faults 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.

SYSTEM PERIODICAL MAINTENANCE

Check that the green led "POWER OK" is on
Check that all other control unit leds are off

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

Use the arrow keys ▲ ▼ 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 AM-8000 control unit and check the following conditions:

- The indication of "MAINS LOSS" on the display
- Yellow led "FAULTS" flashing.
- Yellow led "POWER OK" on
- Yellow led "MAINS" on
- General Fault 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 "SILENCE ALARM/FAULT" key and check the following conditions:

- There is no indication of Alarm in progress on the display
- Yellow led "FAULTS" off
- Yellow led "POWER OK" on.
- Yellow led "MAINS" off
- General Fault relay deactivated

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

- The indication of "BATTERIES NOT CONNECTED" on the display
- Yellow led "FAULTS" flashing.
- Yellow led "POWER OK" on.
- Yellow led "MAINS" on
- General Fault relay active

Re-connect the batteries and press the "SILENCE ALARM/FAULT" key and check:

- No breakdown signalling on the display
- Yellow led "FAULT" off
- Yellow led "POWER OK" off
- Yellow led "MAINS" off
- General Fault relay deactivated

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

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

Press the "SILENCE ALARM/FAULT" key and subsequently the "SILENCE / RESOUND SIREN" key; the request to enter the level 2 password is displayed (default = 22222).

Enter the password and check the following conditions:

- yellow led SILENCE SOUNDER off
- red led "ALARM" on.
- Siren output deactivated

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:

- yellow led SILENCE SOUNDER 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 "POWER OK" is on.

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 4 Ampere is available on the power supply for the system operation

Item	Q	NORMALcondition		ALARM condition	
		A		B	
		Current each	Total Current (dev x Q)	Current each	Total Current (dev x Q)
AM-8000					
CPU- 8000		115 mA		135 mA	
LIB-8000		80 mA		90 mA	
CAN-LCD-8000		25 mA		25 mA	
LCD-8000-L		125 mA		230 mA	
LCD-8000-F		165 mA		270 mA	
Devices connected to Sounder Output ¹		0	0		
Loops ² Current					
Refer to Table 2					
Loop 1					
Loop 2					
Loop 3					
Loop 4					
User Output current ³		(Max 1.5A)		(Max 1.5A)	
LCD-6000					
Bells		0	0		
Sounders		0	0		
Strobes		0	0		
Other devices					
		Total ⁴ =		Total =	
			(x24h) or (x72h) =		x 0.5 h =
		Stand-by (A)	Ah	Alarm (B)	Ah
Ah Battery = (A + B) x 1.2 ⁵ =					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 500 mA**.

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 1,5 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 4 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 1,2 factor to take account of the battery manufacturing tolerances.

Table 2

PERIPHERALS POWER BY LOOPS			
Device type	Quantity	Current Total in normal condition	Current Total in Alarm condition
Detectors serie NFX			
Detectors serie 700			
MCP			
Single Modules serie 700			
Double Modules serie 700			
Modules serie MA			
MMX-10 N			
CMX-10 R			
Isolation modules			
Addressable Sounders (Power from loop)			
Other devices			
N.B. Total must be less than 0,500 A		Total (loop N.1) :	Total (loop N.1) :
Detectors serie NFX			
Detectors serie 700			
MCP			
Single Modules serie 700			
Double Modules serie 700			
Modules serie MA			
MMX-10 N			
CMX-10 R			
Isolation modules			
Addressable Sounders (Power from loop)			
Other devices			
N.B. Total must be less than 0,500 A		Total (loop N.2) :	Total (loop N.2) :
Detectors serie NFX			
Detectors serie 700			
MCP			
Single Modules serie 700			
Double Modules serie 700			
Modules serie MA			
MMX-10 N			
CMX-10 R			
Isolation modules			
Addressable Sounders (Power from loop)			
Other devices			
N.B. Total must be less than 0,500 A		Total (loop N.3) :	Total (loop N.3) :
Detectors serie NFX			
Detectors serie 700			
MCP			
Single Modules serie 700			
Double Modules serie 700			
Modules serie MA			
MMX-10 N			
CMX-10 R			
Isolation modules			
Addressable Sounders (Power from loop)			
Other devices			
N.B. Total must be less than 0,500 A		Total (loop N.4) :	Total (loop N.4) :

Summary of Current consumption of Loop devices:

Device	Current		NOTE
	Normal	Alarm	
SDX-751ME	300 μ A	6,5 mA	
SDX-751TEM	300 μ A	7 mA	
FDX-551E	300 μ A	7 mA	
FDX-551HTE	300 μ A	7 mA	
NFXI-OPT	300 μ A	4 mA	
NFXI-TDIFF	300 μ A	4 mA	
NFXI-TFIX 58/78	300 μ A	4 mA	
NFXI-SMT2	300 μ A	4 mA	
PINNACLE	330 μ A	6,5 mA	
HPX-751	300 μ A	5 mA	
SMART 3	200 μ A	7mA	
SMART 4	200 μ A	7mA	
LPB-700 / 400	2 mA	8,5mA	Loop Power
LPB-700T	2 mA	8,5mA	24 Vcc external
MMX-102E	100 μ A	5 mA	
M710E-CZ	288 μ A	8.8mA	External Power
M710E-CZ	1.5 mA	8.8mA	Loop Power
M710E-CZR	500 μ A	8.8 mA	External Power
M710E-CZR	6,5 mA	8,8 mA	Loop Power
ZMX-1E	200 μ A	9 mA	External Power
IMX-1	200 μ A	4 mA	
M710-E	310 μ A	5 mA	
MMA1-I	400 μ A	5 mA	
MCX-3	450 μ A	5 mA	
M701E	310 μ A	5 mA	
CMA1-I	410 μ A	5 mA	
M500KA	200 μ A	5 mA	
M700K	260 μ A	5 mA	
M700KI	360 μ A	5 mA	
NBG-12LX	100 μ A	5 mA	
P700	390 μ A	5 mA	
M720	340 μ A	5 mA	
M721	340 μ A	5 mA	
M701E-240	275 μ A	8,8 mA	
CMA-11	340 μ A	6 mA	
CMA22	700 μ A	7 mA	
MCX-55M	2.7 mA	30mA	
MMX-10M	2,7 mA	30mA	
CMX-10R	4mA	30mA	
AWS32/R-I	220 μ A	6.5mA	Maximum Volume
AWS32/R/RD-I	220 μ A	9.7mA	Maximum Volume
AWB/RD-I	220 μ A	2,2 mA	
ABS32/PW-I	220 μ A	6,5 mA	
ABSB32/PW/RD-I	220 μ A	9,8 mA	
DNRE	300 μ A	4 mA	Depends from Detector installed
WL-NTM	20 mA	25 mA	

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