GB

MP508M/TG
MP508TG

Tele manageable alarm control panel

Installation Manual

CE

ELKRON

IS0237-CA

Via G. Carducci, 3 – 10092 Beinasco (TO) – ITALY
Tel. +39 (0)11.3986711 – Fax +39 (0)11.3499434
www.elkron.it - mailto: info@elkron.it

TABLE OF CONTENTS

PREFACE

TARGET AUDIENCE FOR THIS MANUAL

This manual is specifically meant for installers, in order to give them all the information needed to configure an intrusion system with Elkron MP508TG control panel.

STRUCTURE OF THIS MANUAL

The manual is divided in chapters. Even if, according to personal experiences, some chapters may be skipped, it is recommended to read them all, because your competence can be improved.

STANDARDS USED IN THIS MANUAL

For the sake of clarity, the following conventional standards are used throughout this manual:
➔ divides the entries made using a keypad. For example **120 ➔ OK** means "enter 120 and then press the OK button".
Words written in *non proportional italic font* indicate that you have to replace this term with the corresponding value. For example, if the installer access code is 000000, ***Code Installer*** ➔ **OK** means "enter 000000 and then press the OK button".

▲, ►, ▼ and ◄ indicate the corresponding navigation arrow keys on the keypad.

Finally, take care of the following symbols:


This symbol indicates an important warning.


This symbol indicates an interesting suggestion.

GLOSSARY

AND
Logical function that requires that all the operational terms are true in order to have true as result.
Area
Group of one or more partitions.
Communicator
Telephone transmitter able to send and transfer alarm signalling and events on the telephone line. Furthermore, it allows to remotely interact with the system, by the telephone line.
Configuration
Change of the physical structure of a device, or setting of its parameters, to adapt it to the use it is designed to.
dB
Abbreviation for decibel, logarithmic measurement unit of sound intensity or electric power, referred to a reference value.
Default
See preset.
Delay time
Time that the user has at disposition from the instant that he opens the delayed input in the instant the alarm is generated. It can be programmed for every single input.
DTMF
Acronym for Dual Tone Multi Frequency; it indicates the telephone "tone" dialling mode.
Entry time
Time that the user has at disposition from the instant that he opens the first input to deactivate the desired partition/s and avoid the intrusion alarm generation from the inputs configured as "Path".
Exit time
Time that the user has at disposition from the instant that he activates the partition/s to exit from the protected area and avoid the intrusion alarm generation from the inputs configured as "Path".
Event
Event that happens accidentally or when a certain condition is met, for example when a certain time has passed.
Input
Point for the physical connection of a detector (typically a detector or a contact).
To an input can also be connected more than one detector, that is considered as a single physical unit. The input is defined as open when the detectors signals that it is not in standby condition any more, for example because an intrusion attempt has occurred.
Interface
Device that allows to connect and interact together devices with different technological characteristics or to use different transmission means.
Logical address
Alternative method of addressing, that the user can freely assign, used by the control panel to display inputs and outputs and to identify them in the messages.

OC
Open Collector transistor.
Open
An input is open when it receives the signalling from a detector that is not in standby condition anymore, for example because an intrusion attempt has occurred.
OR
Logical function that requires that at least one of the operational terms is true in order to have true as result.
Output
Point for the physical connection of a device, that allows the control panel to act in the external world, for example to signal an alarm (with a siren), to communicate a system status (with a warning light or an acoustic signaller) or to activate electrical devices.
Partition
Group of inputs, outputs, user codes and keys associated to a space to be controlled.
Path
Group of one ore more inputs that temporarily prevent the alarm signalling of the connected detectors, in order to allow the entry or the exit from a protected partition.
The length of the temporary disabling is defined as entry time or exit time.
Preset
Initial status or value of a device before its configuration or when it is reset to factory values.
Protocol
Rules that manage the data exchange or transmission among devices.
PSTN
Acronym for Public Switched Telephone Network; it indicates the public telephone network.
Physical address
Method used by the control panel to identify and reach inputs and outputs.
Random
Casual generation of variable data, usually a number.
Tamper
Micro-contact for the device protection.
TC
Acronym for Trigger Control, it is a control signal (voltage) that can disable the correct operation of a detector or of a signalling device, by putting it, for example, in standby condition.

1 – MP508TG SYSTEM

1.1 MAIN CHARACTERISTICS

The MP508TG system offers new and interesting features in comparison to other systems available on the market, as the following:

- **Fast system start-up**: to acquire the devices it is not necessary to set the addresses with dip-switch. It is sufficient to press their programming button and the control panel will send to the device the assigned address and the factory settings.
- **Service keypad:** it is possible to connect to the control panel a temporary service keypad, by a dedicated connector, for programming or maintenance. The service keypad can be disconnected from the system at the end of the installation, without needing to program again the control panel.
- **Advanced technological alarms**: when a "technological" event occurs, for example the flood of a room, the system can activate specific actions, as for example the water electric valve closing, and also sends the corresponding alarms. In order to manage different situations, the system is provided with three outputs management types.
- **Rescue call:** with a dedicated input it is possible to send a phone call and inform the receiver with a vocal message concerning the help request.
  If the system is provided with a KP500DV vocal keypad, afterwards it will be possible to call the control panel and communicate in hands-free mode with the person that issued the alarm.
- **Door opener:** it is possible to drive an electric lock with an output configured as "door opener". In this way it is possible to limit the access in specific areas only to authorized personnel. Date, time and user that requested the opening are stored in the control panel.
- **Savings on call cost**: by using the GSM telephone number identification by the control panel, it is possible to generate a command on a specific output. In this way it is possible, for example, to open the automatic gate of the vehicle entrance, by calling the control panel from the car with the mobile and hanging up after the first 3-4 rings, without entering the code.
- **Wide input configuration capability**: every single input can be configured according to type (seven) and configuration (twenty). Every single input of control panel, keypad, expansion, reader, can also manage Elkron VSD3 and MMZ01 inertial detectors and Elkron MF01 and MF02 rolling shutter detectors.
- **Vocal help for remote management**: the system helps the user in the telephone management with vocal messages.
- **Service messages playback:** capability to give the user diagnostic information with vocal hands-free messages from the vocal keypad.
- **Video function**: with a video gateway connected to the MP508TG control panel it is also possible to examine the images of four analogic cameras. Images recording, activated by the selected system events, can be sent to PC, mobiles, smartphone, etc, with e-mail.
- **Advanced alarm vocal calls:** capability to send vocal calls with a specific message for single partitions and/or inputs.
- **Automatic functions**: with a time programmer embedded in the control panel, it is possible to set a weekly list of automatic commands. Commands types can be ACTIVATE or DEACTIVATE and can be used, for example, for a garden irrigation system or a boiler for heating. Besides the above mentioned functions, that can be defined as service functions, it is also possible to manage automatically the alarm system arming or disarming, or set time bands in which a specific code or key are not enabled. For example, during holidays the domestic help key or code is disabled.

1.2 GENERAL DESCRIPTION

1.2.1 System architecture

The MP508TG wired alarm and security system is a modular system, suitable for small-medium size installations in residential, industrial and service sectors. The peripheral devices (8 inputs expansions, keypads, readers) are connected to the microprocessor control panel with a proprietary field bus. Detectors, sirens and other signalling devices are connected to inputs and outputs present in the control panel and in the other listed devices.
The system can be locally or remotely managed, with mobile, fixed telephone and internet.
The Hi-Connect software allows to manage, program and check all the system also remotely; all the settings can be stored in an usual USB key.
Service activations can also be carried out via SMS.
The system can also automate repetitive operations, based on a weekly cycle, with the time programmer embedded in the control panel.
Remote alarm signallings can be carried out with vocal message, SMS or numeric protocol (for connection to alarm reception centres).
If the system includes a vocal keypad it is possible to activate, also when the intrusion system is armed, the environmental listening and listen by telephone what occurs in the room.

1.2.2 The data bus

The data bus is the connection line that transfers, over 4 wires, information and 12V⎓ power supply among control panel, keypads, readers and expansions.

In this way the wiring becomes easier because, for example, it is possible to manage with only 4 wires information of a group of detectors placed far from the control panel, gathered on a remote EP508 expansion.

1.2.3 Partitions and Areas

The **partition** is a virtual space that can be programmed and configured with specific characteristics, which will be acquired by the different associated units. It is possible to freely associate to the partitions several units as inputs, outputs, keypads, readers, etc. The same unit can belong to more than one partition at the same time.
Every system can contain a partition number from 1 to 8.

The **area** is a group of partitions, associated to one or more users, that allows to limit the user operation only on the parts of his competence. Every system may contain a area number from 2 to 4. For area management consider that:

- A partition may belong only to one area, but the units (inputs, outputs, keypads, etc.) can belong to more than one partition. This means that the same unit may be associated to several areas even if it belongs to different partitions.
- A user code (or an electronic or proximity key) may be associated to several areas; so it is possible to create areas managed together by different users.
- It is not mandatory to use areas, but if they are used, each system partition must be associated to areas (this means that it is not possible to have partitions not associated to a area).
- To a area may be associated up to 7 partitions. This means that, if there are 8 partitions, must be present at least 2 areas. The correct area usage allows to "split" the MP508TG control panel into small virtual stand-alone control panels (4 max).

Area usage – example: Two-family home with 2 areas

The two different areas share the same control panel, but they can manage separately their users, because they have dedicated partitions, command devices, telephone numbers for alarm calls and event log.
Every area will be able to operate only on the parts of its competence and display only its information (system status, events, alarms, etc.), as if they were two separated systems.

Warning: If no multi-user system is needed, it is suggested not to use areas.

1.2.4 System maximum dimensions and its expansion capability

MP508TG system may be expanded to include:

- 7 EP508 expansions
- 8 KP500D or KP500DV keypads, in desired configuration
- 16 readers, for DK500M-E electronic key or DK500M-P proximity key, in desired configuration
- 32 user codes (one Master code and one Installer code included)
- 32 DK50 electronic keys or DK30 proximity keys, in desired configuration

The maximum system expansion can include up to:

- 64 inputs for general use
- 8 tamper inputs (1 in the control panel + 1 for each EP508 expansion)
- 9 relay outputs (2 in the control panel + 1 for each EP508 expansion)
- 18 electric outputs (4 in the control panel + 2 for each EP508 expansion)

1.2.5 Power supply management rules (mains and battery)

The system can check the mains presence in the control panel. This is detected by the mains presence in the power supply unit. The mains absence and return is managed by generating specific events. The time between the effective mains fail and the mains fail event signalling can be programmed (mains fail timeout, parameters menu, 230V mains, values 1h, 2h, 4h), while the mains return time is fixed (5 minutes)
The mains fail is signalled by two particular modes, that consider the mains fail effective time.

1.2.6 Immediate lack of power

It is valid for every lack of power for times shorter than the programmed mains fail timeout and mains return.
This event follows in real time all lack of power and returns.
After every mains return the timeout is reset. It does not generate the lack of power alarm.

1.2.7 Continuous lack of power

Continuous lack of power for a time longer or equal to the programmed time. This event, preceded by "Immediate lack of power", generates a lack of power alarm.

Note: in case of lack of power and before the lack of power timeout expiration, if the battery voltage decreases under 11.5V threshold, this timeout ends immediately, in order to generate the lack of power alarm immediately, followed by the low battery alarm.

1.2.8 Mains return

The mains return is considered only in case of mains presence for at least 5 minutes continuously. Short interruptions, if present, causes the reset of this time.

1.2.9 Battery check with present mains

The system can detect all the possible operating conditions of the backup battery and manage them properly in automatic mode.
The detection is based on the voltage present on the battery terminals +BT and –BT.
The control panel checks the battery status in two modes, according to the mains presence or absence.

In case of mains presence, is checked the battery presence or absence; if the battery presence is not detected, or if the battery is deeply discharged, the system goes in "Absent battery" status. In this case the battery charging circuit **is off** and so, **if the battery is not connected, at the end of the connection cables (red and black faston) there is no voltage.**

A periodic battery test is carried out to check the battery efficiency out.
The battery is usually kept charged.
This test is performed:

- **After 30 minutes** from the control panel power supply
- Every 24 hours (automatic test)
- After a "Battery test" command in the installer menu (manual test)

The test lasts for 30 seconds; during this time the battery is charged. If the battery proves to be inefficient, the test is interrupted and a "Low battery" event is generated, with immediate effects, described in § 2.1.15 "Low battery" alarm in the Programming Manual. The "Low battery" status is held until the next successful battery test. In case of mains fail, the battery test is not performed.
Note: if during charging phase, because of troubles, the battery voltage reaches 14V, the charging circuit is automatically deactivated to prevent the battery damaging.

1.2.10 Battery check with lack of power

In case of lack of power the battery is continuously checked.
When the battery voltage falls under 11,5V, the "Low battery event" is generated.
The "Low battery" status is reset after the mains return and after a successful battery test.
For further details about the management of these events, see the Programming Manual.

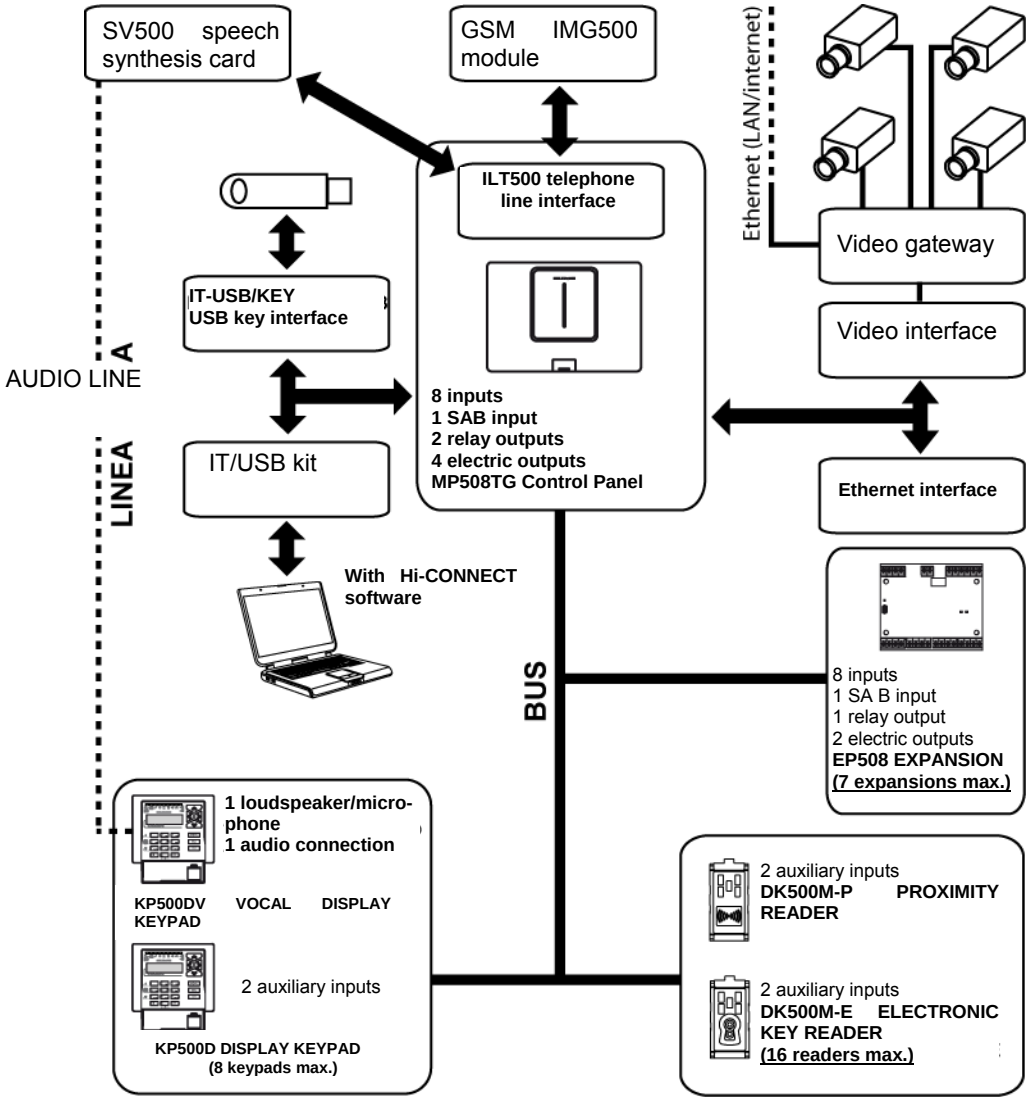


Figure 1 - MP508TG system maximum dimensions

1.3 SYSTEM COMPONENTS

1.3.1 MP508TG control panel

The MP508TG control panel manages all the system, receives and processes information coming from the peripherals connected via bus, and activates, if necessary, the devices and the alarm signalling. It can manage separately the signallings concerning the different events: intrusion attempts, tamper attempts, start of a fire, technological alarms (for example flood), rescue and panic calls. The control panel manages up to 8 different partitions, that can be grouped in areas (4 max), if desired.

For system programming it is possible to use a keypad or, for greater convenience, a local PC connected to the control panel via the USB kit and provided with the Hi-Connect software. All the programming can be transferred on a USB key.
The programming with keypad is easier because of a tree menu available in 10 languages.

In the control panel there are:

- 8 programmable inputs;
- 1 tamper input;
- 6 programmable outputs (2 relay and 4 electric OC);
- 1 ILT500 interface for PSTN telephone line, with input and output;
- 1 connector for service keypad.

All the internal circuits and devices are powered by a switching power supply 230 V~ - 14,4 Vdc – 1,5Ah; it is possible to house a 12V⎓, 7Ah backup battery.
Other control panel characteristics are the following:

- protection against opening and removal;
- capability to store the last 1000 occurred events, for example intrusion alarm, tamper, system or partition activation or deactivation;
- removable rising clamp terminal pins to make the wiring easier;
- time programmer management.

MP508TG control panel performances can be increased with EP508 8-inputs expansions, SV500I speech synthesis card, GSM IMG500 module.
Installation and programming are easy, thanks to removable rising clamp terminal pins, to interfaces for PC-Kit USB and to Ethernet interface.

1.3.2 MP508M/TG control panel

Similar to MP508TG control panel, with metal housing with 230 V~ – 14,4 Vdc – 4A switching power supply; it is designed to house a 12V⎓, 17Ah or 26 Ah backup battery.

Note: to ensure recharging times imposed by standards, the battery must be 17 Ah. For further details, see § 2.2.3 and § 2.2.4.

1.3.3 KP500D display keypad

KP500D display keypad, for internal use, allows to command and program the MP508TG system. The keypad is provided with:

- 2 x 16 character backlit LCD display with contrast and brightness adjustment;
- 9 LEDs for system status signalling (power supply, failure, maintenance, time programmer, open input, excluded inputs, alarm, tamper, partitions status);
- 12 alphanumeric buttons, protected by a cover;
- 7 navigation buttons;
- buzzer with adjustable acoustic level;
- 2 programmable inputs.

The keypad is protected against opening and removal and is powered by the bus that connects it to the control panel.

1.3.4 KP500DV vocal display keypad

Similar to the KP500D display keypad, but instead of the two programmable inputs is provided with a microphone, loudspeaker and audio connection for environmental listening, communication with the external world and/or the alarm reception centre, sending of callback vocal messages.

1.3.5 DK500M-E electronic key reader

The DK500M-E electronic key reader is the reader for DK50 keys. The device is provided with:

- 5 signalling LEDs: 4 for system status and 1 for alarm memory;
- 2 alarm inputs.

With optional adapter frames, the reader can be plugged as an outlet into devices of the following home lines: BTicino Living International, BTicino Light, BTicino Living, Gewiss Playbus, Ave Habitat Sistema 45, Vimar Idea, Vimar 8000.
The reader is powered by the bus, that connects it to the control panel, and configured by programming procedure.

1.3.6 DK500M-E/B electronic key reader

Device with the same characteristics as the DK500M-E electronic key reader, but white.

1.3.7 DK50 electronic key

DK50 is an electronic key for total or partial activation and disactivation of the system. Every key has a unique code, set by the manifacturer, with more than 1099 billions values.
It is possible to program up to 32 keys and every single key can be enabled or disabled and provided with a descriptive name.
In order to use the DK50 programmable key, the DK500M-E electronic key reader must be present in the system.

1.3.8 DK500M-P proximity reader

Similar to the DK500M-E reader, but suitable for DK30 transponder key use.

1.3.9 DK500M-P/B proximity reader

Device with the same characteristics as the DK500M-P proximity reader, but white.

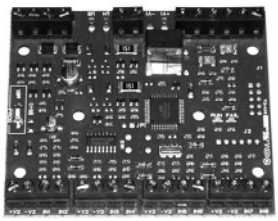
1.3.10 DK30 proximity key

DK30 is a transponder key for total or partial activation and disactivation of the system. Every key has a unique code, set by the manifacturer, with more than 1099 billions values.
It is possible to program up to 32 keys and every single key can be enabled or disabled and provided with a descriptive name.
In order to use the DK30 key, the DK500M-P proximity reader must be present in the system.

1.3.11 Customization kit for K30-50 keys

This kit allows to customize DK30 and/or DK50 keys with coloured inserts; 6 different colours are available, in order to combine up to 27 customizations.

1.3.12 EP508 8-inputs expansion



EP508 is an expansion module provided with:

- 8 programmable alarm inputs;
- 1 SAB balanced input;
- 1 relay output;
- 2 electric outputs, freely programmable.

It allows the detectors connection in traditional parallel mode.

1.3.13 SV500GB speech synthesis card

SV500GB is the speech synthesizer module, with messages pre-recorded in English, that allows to record and listen to vocal messages.
For message recording it is possible to use the KP500DV vocal display keypad or the microphone with the provided earphone.
Are available speech synthesis cards with messages pre-recorded in other languages.

1.3.14 GSM IMG500 module

MG500 is the interface allowing to connect the MP508TG and MP508M/TG control panel to the GSM network, for sending of alarm signalling and reception of remote commands.
The interface is provided with a dual-band GSM transmitter/receiver (900/1800 MHz) and with an antenna to be installed in the control panel.
If the control panel position does not ensure for the GSM module a sufficient field strength, it is possible to use the **GSM 1** antenna (not provided).
If the GSM module is used with the MP508M/TG metal control panel, it is necessary to replace the provided antenna with the **GSM 2** antenna used in case of metal housing or to use **GSM 1** antenna (both are not provided).

1.3.15 GSM 1 antenna

GSM 1 remote antenna is provided with bracket, screw anchors for wall mounting and 5 m of cable assembly with SMA-M connector compatible with GSM IMG500 module.
It is useful when the control panel position does not ensure for the GSM module a sufficient field strength.

1.3.16 GSM 2 antenna for metal housing

Antenna for metal housing with SMA-M connector compatible with the GSM IMG500 module.
It must be used with the IMG500 module in the MP508M/TG control panel with metal housing.

1.3.17 USB interface for connection to PC and to USB IT-USB/KEY keys.

The IT-USB/KEY interface allows to connect a computer to the MP508TG or MP508M/TG control panel for control panel programming and a USB key (Pen Drive) for save and restore of the whole system programming.

1.3.18 IT-USB USB interface for connection to PC

IT-USB interface allows to connect a computer to the MP508TG or MP508M/TG control panel for control panel programming.

1.3.19 PS515 power supply module

PS515 switching power supply module provides DC power supply to the control panel and to the other connected electronic devices. The power supply module provides 14,4 V⎓ 1,5 A.

1.3.20 Cable for KP SERVICE service keypad

The cable for service keypad is used to connect the control panel to the service keypad (KP500D or KP500DV, as you like), in order to carry out the system programming.
The cable is provided with a connector compatible with the SERVICE connector of the MP508TG or MP508M/TG control panel motherboard.
For connection see paragraph *3.8.8 Cable connection for KP SERVICE service keypad.*

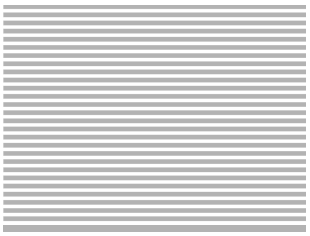
1.3.21 Hi-Connect application software

Hi-Connect is the software for local programming with computer and remote management of the MP508TG or MP508M/TG control panel.

The software works on Pc with the following minimum configuration:

- Pentium IV processor
- 256 MB Ram minimum
- 1,8 Ghz CPU
- Internet explorer 5 or superior
- Windows 2000/XP Service Pack 2/Vista,
- CD ROM reader
- Available serial port or USB

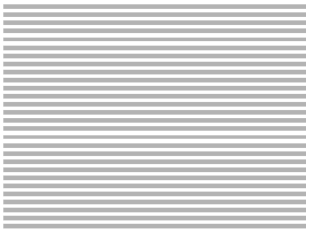
1.3.22 Ethernet interface



Ethernet interface is used to connect the MP508TG or MP508M/TG control panel to a LAN (Local Area Network) network or a modem or an ADSL router.

The Ethernet interface connection to the MP508TG control panel is an alternative to the video gateway connection.

1.3.23 Video gateway



The Video gateway is used to include in the system up to 4 analogic cameras, whose images can be seen in real time, or recorded and then examined on PC, mobile and other devices (attached to e-mail sent by the gateway).
The images recording is activated by the selected system events (intrusion, time commands, remote commands etc.).
Images resolution is 640 x 480 pixel max.

For connection to Internet is available an Ethernet connector, that allows to connect the video gateway to a LAN network or a modem or an ADSL router.

The video gateway is connected to the MP508TG or MP508M/TG control panel with a dedicated interface.
The connection of the Video gateway to the control panel is alternative to the connection of the Ethernet interface.

2 – SYSTEM DESIGN

2.1 REQUESTED DEVICES AND CURRENT CONSUMPTION

List in the following table the devices requested for the system and their quantity. Write also the single consumption of the devices, obtained in technical sheets, and the total consumption. The consumption to be considered for each device is the maximum one. To the total consumption add 10% for future expansions.

Device	**Qty**	**Consumption (mA)**	
		unit	**total**
MP508TG or MP508M/TG control panel (ILT500 interface included)	1	150	150
Current reserved for battery recharging Write 350 mA for MP508TG control panel or 850 mA for MP508M/TG control panel)	1	**……**	**……**
KP500D display keypad			
KP500DV vocal display keypad			
DK500M-E electronic key reader			
DK500M-P proximity reader			
EP508 8 inputs expansion			
SV500GB speech synthesis card			
GSM IMG500 interface module			
Video gateway			
Siren			
Siren			
Detector			
Detector			
Total consumption			
Current reserve for future expansions (+10% of total consumption)			
Requested current (mA)			

2.2 POWER SUPPLY UNITS AND BATTERIES DESIGN

The system power supply units (control panel and additional power supply unit, if present) must supply a current equal or higher than the requested current calculated in point 2.1 *Requested devices and current consumption*.

2.2.1 System power supply with MP508TG control panel only

The MP508TG control panel is equipped with a PS515 power supply, that provides 1500 mA at 14,4 V-. The supplied current is shared as follows:

150 mA **used by the control panel electronics, ILT500 telephone interface included.**

350 mA **reserved for control panel backup battery recharging and for the used acoustic signallers.**

1000 mA **available for the rest of the system (detectors, keypads, readers, expansions, interfaces etc.); remember that magnetics contacts do not consume current.**

So, if the requested current is not higher than 1500 mA, it is possible to power the whole system with the MP508TG control panel only.

2.2.2 System power supply with MP508M/TG control panel only

The MP508M/TG control panel is provided with a PS540 (S-60-15) power supply, that supplies 4000 mA at 14,4 V-. The available current is assigned as follows:

150 mA Used by the control panel electronic parts, included the ILT500 telephone interface.

850 mA Reserved for the control panel backup battery recharging and for acoustic signallers used in the system.

3000 mA Available for the rest of the system (detectors, keypads, readers, expansions, interfaces, etc.); remember that magnetic contacts do not use current.

So, if the requested current is not higher than 4000 mA, it is possible to power the whole system with the MP508M/TG control panel only.

2.2.3 Power supply with additional power supply units

If the requested current calculated in point *2.1 Requested devices and current consumption*, is higher than the current which the control panel can provide, it is necessary to add further power supply units. They can be selected among the power supply units of Elkron Asxx models.
If the power supply must also recharge a backup battery, its minimum current must be:

$$I_{POWER\ SUPPLY} = (C_{BATTERIES} \times 0{,}05) + I_{DEVICES}$$

where

$I_{POWER\ SUPPLY}$ is the current provided by the power supply unit, in Ampere

$C_{BATTERIES}$ is the battery capacity, in Ah (Ampere hour)

$I_{DEVICES}$ is the consumption of all devices (as results in technical sheets), in Ampere

This current supply capacity is requested by CEI 79-2 standards , specifying that the battery recharging of at least 80% of its capacity must be carried out within 24 hours (equivalent to the minimum recharging current, that is the 5% of battery capacity)
For additional power supply connection see paragraph *3.8.4 Additional power* supply connection.

2.2.4 Battery design

CEI 79-2 standards require for the system a battery endurance of 24 hours at least in case of mains fail.
The control panel battery and batteries of additional power supply units, if present, must be designed in order to guarantee that range and must be calculated as follows:

$$C_{BATTERY} = (I_{SYSTEM} \times \text{endurance time} \times 1{,}25) + (I_{ALARM} \times \text{alarm length} \times 0{,}02)$$

where

$C_{BATTERY}$ is the minimum battery capacity, in Ah

I_{SYSTEM} is the total consumption with activated system, in Ampere

I_{ALARM} is the total consumption during the alarm (not self-powered sirens and other alarm actuators included, for example GSM module), in Ampere

endurance time is the desired endurance, in hours (24 hours minimum, in compliance with CEI standards)

alarm length is the programmed alarm length, in minutes.

Example
A system with the following characteristics:
- armed system consumption: 0,225 A
- alarmed system consumption: 0,8 A
- alarm length: 10 minutes

is compliant with CEI standards if the battery has a minimum capacity of:

(0,225 x 24 x 1,25) + (0,8 x 10 x 0,02) = 6,75 Ah + 0,16 Ah = 6,91 Ah

A battery with a nominal capacity equal or higher than 7 Ah will be suitable for this purpose.

This calculation must be done for every backup battery, by referring to all the devices to be powered by the battery (devices consumption is obtained by their technical sheets).

Remember that the MP508TG control panel is planned to house a 12V⎓ 7Ah or 26Ah **(*)**; battery and the MP508M/TG control panel is planned to house a 12V⎓ 7Ah battery; if to obtain the requested endurance hours, a bigger battery is necessary, it is needed to split the system power supply, by using the additional power supply units.

(*)Note: with the MP508M/TG control panel, to ensure recharging times imposed by CEI 79-2 standards, the battery must be 17 Ah.

2.3 DEVICES POSITIONING

All the devices must be installed in the area protected by the instrusion system, except external sirens and devices provided with a cover protected against tampering.

2.3.1 MP508TG or MP508M/TG control panel placement

The control panel must be installed:
- on a dry, level wall;
- in an interior that is not passageway, sufficiently aired, not subject to excessive temperature changes and protected by the intrusion system;
- far from strong electromagnetic fields;
- at head height, to make installation and maintenance operations easier.

In case of use, immediately or in future, of the GSM communicator, it is necessary to verify the GSM field strength in the position chosen for the control panel.

2.3.2 Keypads placement

The keypads must be installed:
- on a dry, level wall;
- near the accesses of the area to be protected;
- in an interior that is not passageway, sufficiently aired, not subject to excessive temperature changes and protected by the intrusion system;
- at a height of 160 cm, for normal installations, or at a height of 120 cm, for installations suitable for disable persons.

For vocal keypads placement it is also necessary to consider their use (environmental listening, hands-free messages, etc.)
.

2.3.3 Readers placement (electronic keys and transponders)

The electronic key and transponder readers must be installed:
- in flush mounting boxes, by using the front plate frame;
- near the accesses of the area to be protected.

2.3.4 Expansions placement

If the expansions are used outside the MP508TG control panel, they must be installed:
- in terminal boxes or similar housings, suitably protected by anti-tampering devices (tamper);
- in an interior that is not passageway, sufficiently aired, not subject to excessive temperature changes and protected by the intrusion system;
- far from strong electromagnetic fields.

2.3.5 External optic-acoustic alarms placement

The external sirens must be installed:
- in a place that can not be easily reached (for example that needs the use of a ladder);
- in a position that can be easily seen from the street or other passageways.

2.3.6 Internal sirens placement

The internal sirens must be installed:
- in a place that can not be easily reached;
- where they can be easily heard, therefore not closed in storerooms, under stairs or in an isolated place.

2.3.7 Additional power supply units placement

The optional and additional power supply units must be placed as near as possible the devices to be powered, in order to minimize the voltage dropout due to the conductors length.

2.4 WIRING: DESIGN AND DEFINITION

2.4.1 Power supply cables design

The cable cross section must be chosen in order to have the correct power supply voltage for the devices, in order to obtain stability, efficiency and optimal noise immunity.
The cable cross section must be calculated considering the most critical system power supply condition, equivalent to mains fail and backup battery with minimum charge (10,5 V⎓). In these conditions, in full load conditions, for all the power supply terminals of the MP508TG system devices must be ensured at least 9 V- (check that the operating minimum voltage of the other devices is ensured, for example for IR detectors, actuators, sirens, etc.)
Therefore the maximum voltage dropout admitted on the cables is 1,5 V-, that is 0,75 V on the positive wire and 0,75 V on the negative wire.

The calculation formula is:

$$V_{CONTROL\ PANEL} = 2 \times length \times R_{CABLE} \times I_{DEVICES}$$

where

$V_{CONTROL\ PANEL}$	is the voltage dropout in Volt
length	is the cable length (single wire), in metres
R_{CABLE}	is the cable resistance in ohm/m
$I_{DEVICES}$	is the current required by the devices, in Ampere (value obtained by their technical sheets)

Copper cables resistance values are:

Section in mm² *	0,22	0,50	0,75	1,00	1,50
Resistance in ohm/m	0,0795	0,0350	0,0233	0,0175	0,0117

* Rules provide that the cable cross section can not be lower than 0,1 mm².

In case of complex power supply scheme, with more than one branch, it is necessary to perform the calculation for every single segment.

For wiring (except the audio bus, if present), use a shielded multi-core cable for intrusion systems. Shieldings can be connected together in the control panel to the negative pole of the PS515 or PS540 (S-60-15) power supply.

2.4.2 Power supply bus and data

The length of the 4-wires bus, that connects the devices and provides them with power supply and data transmission, must be as short as possible. The sum of all the bus segments must be less than 400 metres.

In order to obtain this result and make wiring operations easier, for system implementation it is possible to use freely any of the following types:

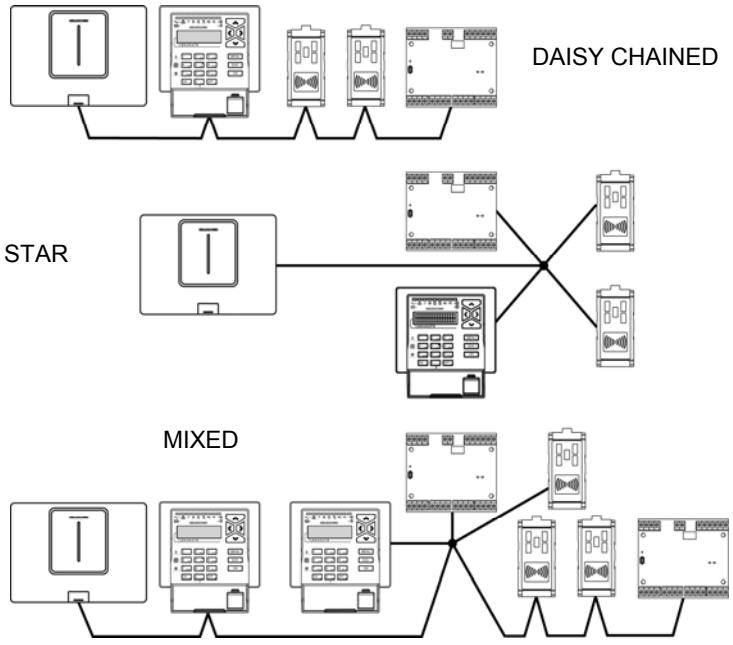


Figure 2 – Bus connection types

Warning: do not create closed loops with the bus, in order to avoid malfunction.

It is not needed to terminate the bus line or its single segments.

2.4.3 Audio bus

If vocal keypads are used, it is necessary to connect them to the SV500 speech synthesis card, that must be added in the MP508TG control panel. For audio bus connection it is only possible to use the daisy chained connection, starting from the control panel.
The total length of the audio bus can not exceed 300 metres.
To build the audio bus is used a normal telephone cable (twisted pair), regardless of polarity.

2.4.4 Inputs / Outputs

The length of every single connection segment between detector or actuator and system device must not exceed 500 m.
In case of use of fast inputs (rolling shutter, inertial...) the cable length must not exceed 20 m.

3 – MP508TG SYSTEM INSTALLATION

3.1 INSTALLATION PROCEDURE

For the MP508TG system mounting follow the steps below:

1. Cables laying.
2. Expansions, optional parts and accessories mounting in the control panel.
3. Control panel wall mounting.
4. Wiring inside the control panel.
5. Expansions, keypads and readers installation and wirings.
6. Detectors and alarm/signalling devices installation and wirings.
7. Devices acquisition.
8. System configuration and test (procedures are described in the Programming Manual)

This sequence reduces to the minimum the time necessary to make a MP508TG system working correctly and guarantees at the same time the best result.

3.2 CABLES LAYING

Lay all the necessary connection cables: bus, detectors, alarm and signalling devices, electric power supply, telephone connection and audio bus, if present. Before laying the cables, verify their design.

Warning: during cables laying phase keep the instrusion system cables separated from the electric installation cables of the apartment or office (separated paths).

Further information about wiring are gathered in paragraph *2.4 Wiring: design and definition.*

3.3 CONTROL PANEL INSTALLATION

Warning: during installation operations, take care not to damage accidentally the motherboard.

To gain access to the closing screw of the MP508TG control panel, open the lid on the screw by sliding it down, as shown in figure 3a.

To remove the cover of the MP508M/TG control panel, remove the hinge pivots, as shown in figure 3b.

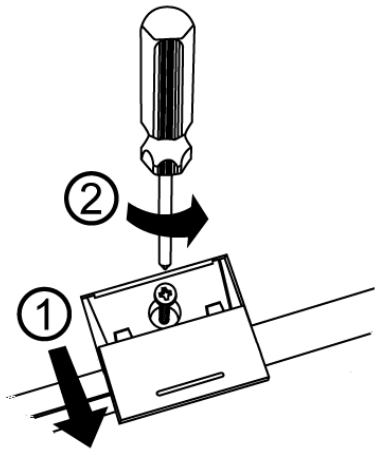


Figure 3a – MP508TG control panel opening

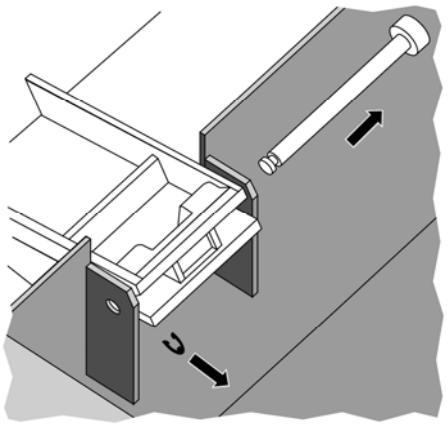
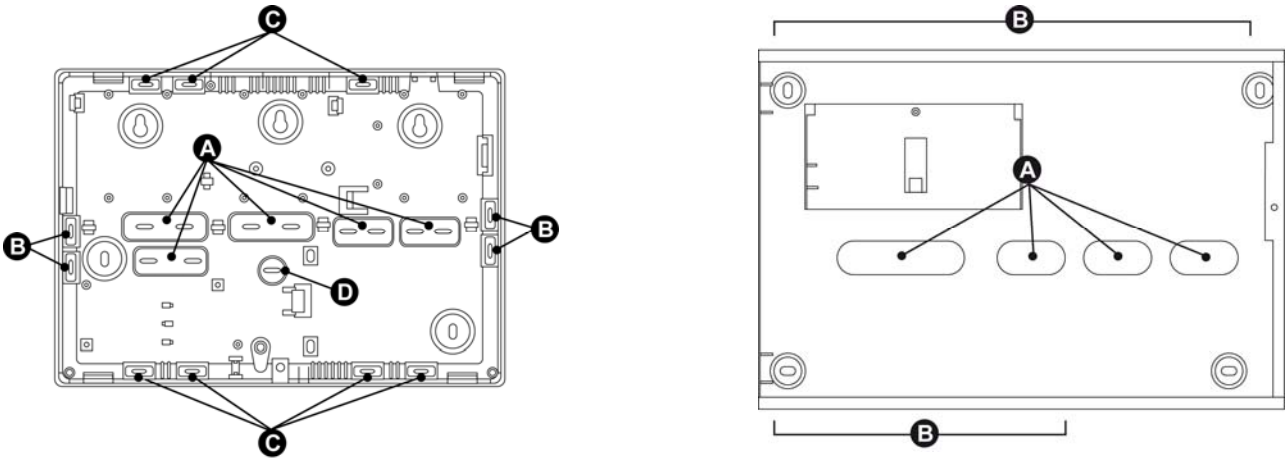


Figure 3b –Removal of MP508M/TG control panel cover

3.3.1 Cable apertures

In the following figure are shown all the apertures planned for the cable passage (power supply, bus, detectors and signalling devices, telephone line, if present) for both the MP508 control panels.



MP508TG MP508M/TG

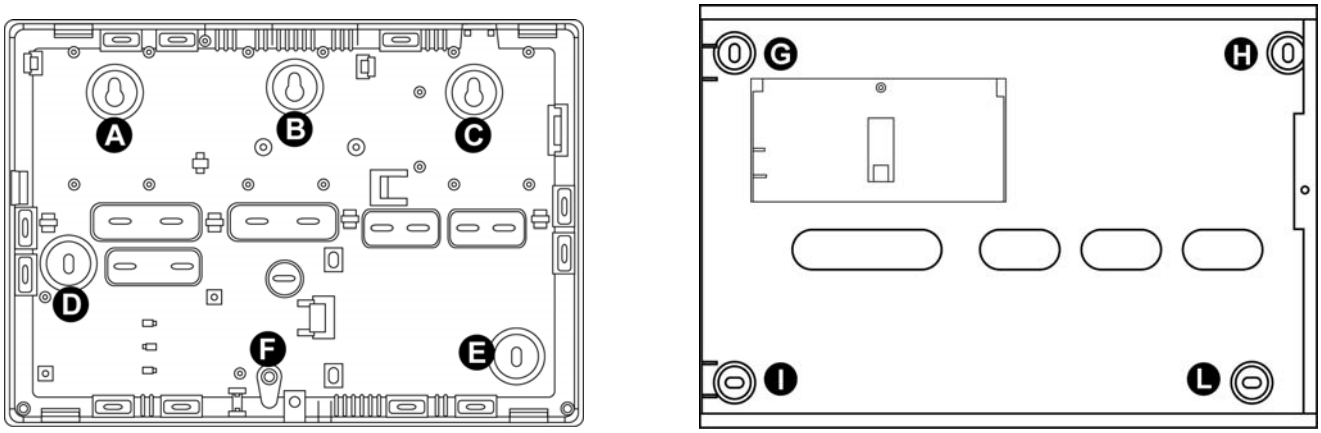
Figure 4 – Apertures for cables

Are available the following types of apertures: for flush mounting corrugated loom tubing (A), for cable trunking (B), for cable trunking / rigid pipe (C) and for flush mounting corrugated loom tubing for mains power supply 230 V~ (D).
For a correct control panel wall installation, it is suggested to use four screw anchors.

3.3.2 Wall mounting

In the following figure are shown the holes available for wall mounting, with screw anchors (not provided).

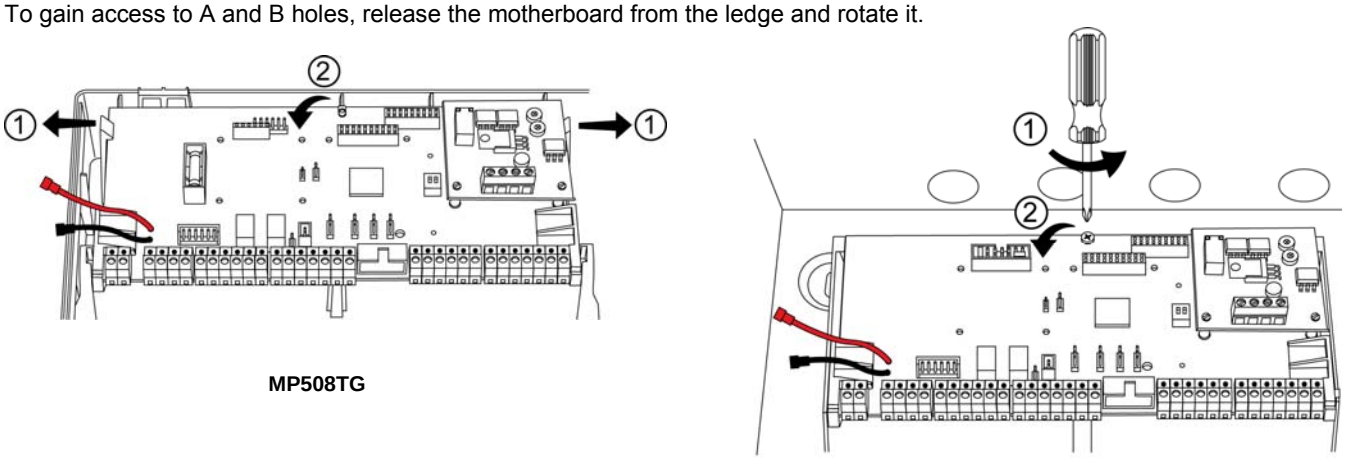
If in the control panel must be installed expansions and/or optional devices, these must be mounted before fixing the control panel to the wall; see the next chapter.



MP508TG MP508M/TG

Figure 5 – Holes for control panel fixing

To gain access to A and B holes, release the motherboard from the ledge and rotate it.



MP508TG MP508M/TG

Figure 6 – Motherboard release

To guarantee the “anti-removal” protection to the MP508TG control panel, it is also necessary to use the fixing hole F. For the MP508M/TG metal control panel it is necessary to mount the provided microswitch and the ledge screw anchor as shown. This microswitch must be connected to “SAB” terminal pin, in series to the anti-tamper line.

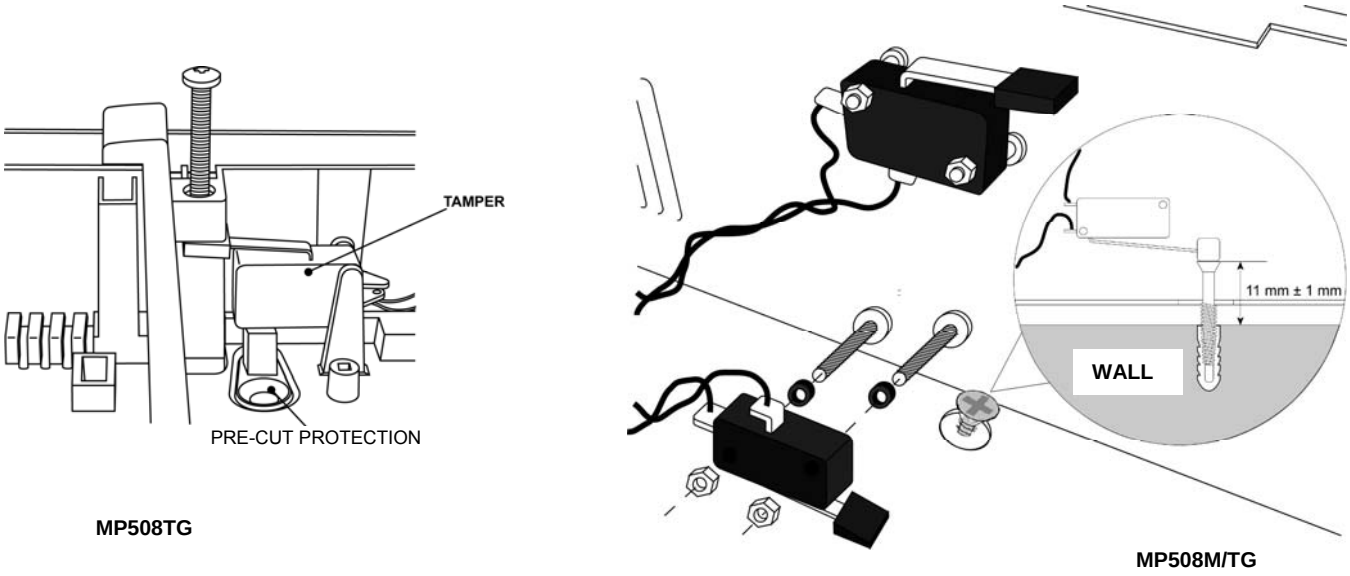


Figure 7 - Tamper

3.3.3 Description of main control panel parts

On the control panel motherboard are present different terminal pins for connection of power supply, backup battery, detectors, sirens, etc. To make connection operations easier, terminal pins can be removed and then inserted again on the motherboard.

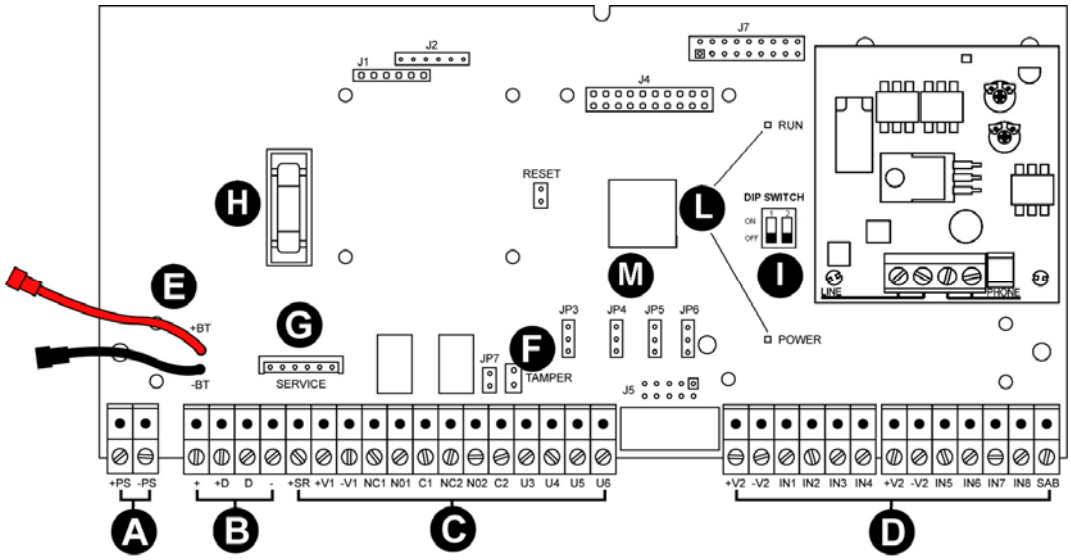


Figure 8 – Connections and control panel main parts

Group		Terminal pin	Connection
A	Power supply	+PS	To power supply positive pole
		-PS	To power supply negative pole
B	Bus	+	Devices powered by bus.
		+D	Data transmission via bus
		D	
		⎓	Devices powered by bus.
C	Outputs	+SR	Power supply (14,4 V⎓) for self-powered devices batteries recharging (for example sirens). **Warning**: in case of mains fail, +SR does not provide any voltage, therefore it must be used only to connect self-powered devices. Self-powered devices must have, in series to the positive pole, a reverse blocking diode. NOTE: all the Elkron self-powered actuators are provided with this device.
		+V1	Power supply for output actuators (limited at 500 mA)
		-V1	
		NC1	Normally closed contact of output 1 relay
		NO1	Normally open contact of output 1 relay
		C1	Output 1 relay common (1 A - 24 V⎓ max)
		NC2	Normally closed contact of output 2 relay
		NO2	Normally open contact of output 2 relay
		C2	Output 1 relay common (1 A - 24 V⎓ max)
		U3	Electric output 3 (protected against short circuit, max. current 10 mA)
		U4	Electric output 4 (protected against short circuit, max. current 10 mA)
		U5	Electric output 5 (protected against short circuit, max. current 10 mA)
		U6	Electric output 6 (protected against short circuit, max. current 10 mA)
D	Inputs	+V2	Power supply of detectors connected in the control panel (and possible connection for +/- 12V power supply of EP508 expansions – limited at 500 mA) On the motherboard are present two couples of power supply terminal pins.
		-V2	
		IN1	Alarm input no. 1
		IN2	Alarm input no. 2
		IN3	Alarm input no. 3
		IN4	Alarm input no. 4
		IN5	Alarm input no. 5
		IN6	Alarm input no. 6
		IN7	Alarm input no. 7
		IN8	Alarm input no. 8
		SAB	24h input (for system self-protection). It must always be BALANCED.

Group		Particular	Description
E	Battery	+BT	To backup battery positive pole
		-BT	To backup battery negative pole
F	Tamper	TAMPER	Connector for control panel tamper connection
		JP7	Jumper for control panel tamper exclusion Inserted jumper = excluded tamper
G	SERVICE	SERVICE	Connector for connection to service keypad § *3.8.8 Connection of the cable for KP SERVICE service keypad*
I	Dip switch	DIP SWITCH	the 2 dip switches must be left in OFF mode. For their use and to make reset procedures, see *Functions associated to dip switches.*
L	LED	RUN	Green LED to signal control panel operation (for details see the Programming Manual)
		POWER	Green led to signal 230V mains presence
M	Outputs jumper	JP3	Output U3 configuration jumper
		JP4	Output U4 configuration jumper
		JP5	Output U5 configuration jumper
		JP6	Output U6 configuration jumper

Every electric output U3, U4, U5 and U6 can be configured as “Positive reference” or “Negative reference” with jumpers JP3, JP4, JP5 and JP6. The default outputs configuration is “Positive reference”.
The figure 9 is an example of jumper JP3 position:

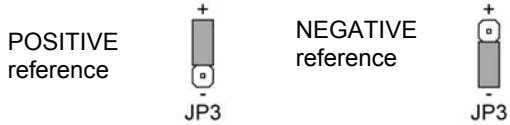


Figure 9 – Electric outputs hardware configuration

For connection details (power supply, inputs, outputs, bus, …), see chapter *3.8 Connections.*

Functions associated to dip switches
To activate the reset functions associated to dip switches it is necessary to unpower the control panel and power it again after setting in ON mode the selected dip switch.

DIP SWITCH	POSITION	FUNCTION
1	OFF	Normal operation
	ON *	Configuration reset
2	OFF	Normal operation
	ON *	Installer code reset

*= if set to ON before “POWER ON”

3.4 MOUNTING OF EXPANSIONS, OPTIONAL PARTS AND ACCESSORIES IN THE CONTROL PANEL

Warning: Optional parts and accessories connection and disconnection must always be executed when the control panel is not powered (mains and battery disconnected).

3.4.1 Fixing points for optional parts in the control panel

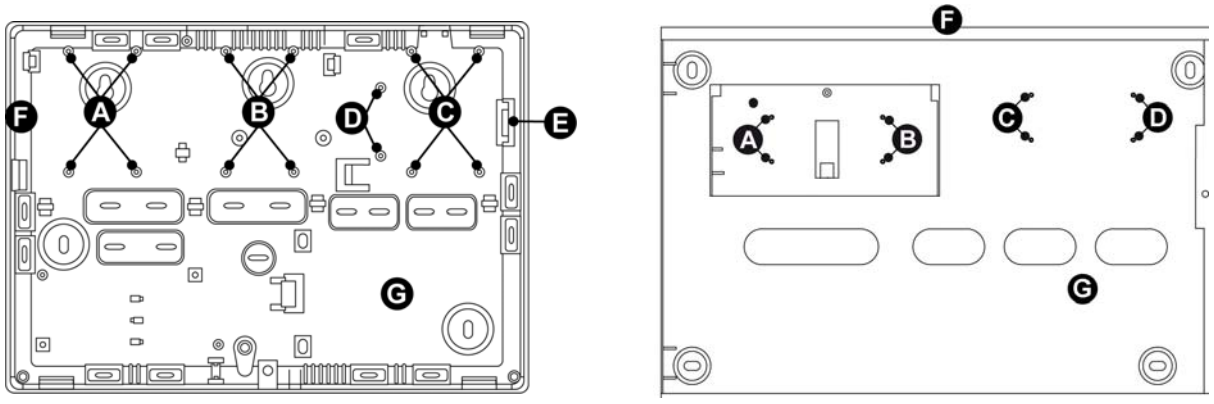
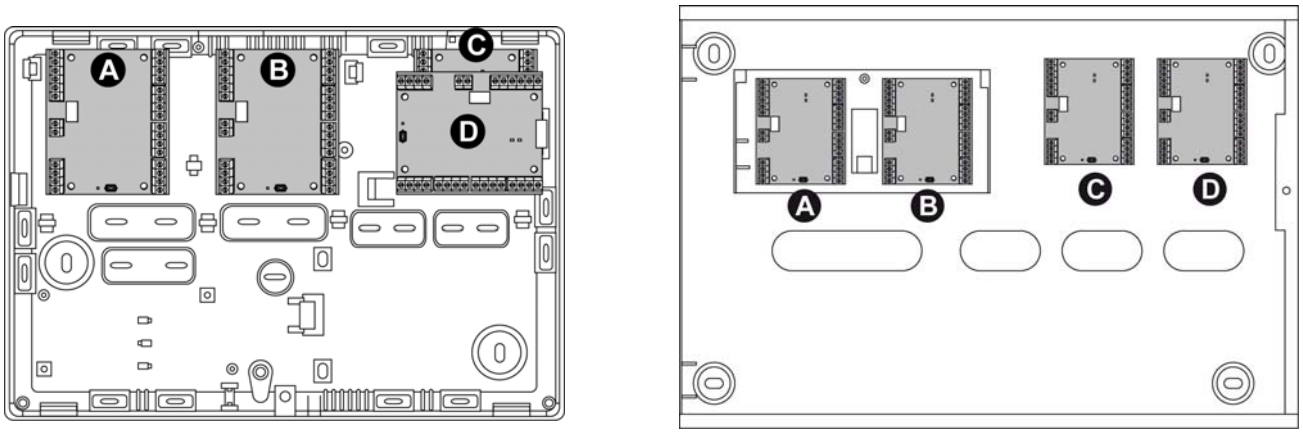


Figure 10 – Fixing points

A	Fixing points for EP508 expansion (position 1)
B	Fixing points for EP508 expansion (position 2)
C	Fixing points for EP508 expansion (position 3)
D	Fixing points for EP508 expansion (position 4)
E	Slot for EP508 expansion (position 4)
F	Housing for GSM 2 antenna
G	Housing for backup battery

3.4.2 Expansions mounting

In the MP508 control panels may be mounted 4 EP508 expansions (positions A, B, C and D); for the MP508M/TG control panel also use the provided spacers.
The expansions must be fixed with the provided self-tapping screws. Positions A and B are reachable by unhooking and rotating the motherboard (Figure 6); if the GSM communicator is used, it is not possible to use the position B.
For MP508TG position D, the card must be installed in raised position and rotated of 90°; insert the card in the right slot and fix it with 2 self-tapping screws on the two left supports; the programming button (PROG) must be between the left supports.



MP508TG **MP508MTG**

Figure 11 – Available positions for expansions

For further information about expansions installations modes and connection description, see paragraph *3.5 Expansion installation.*

3.4.3 Connectors for optional parts in the motherboard

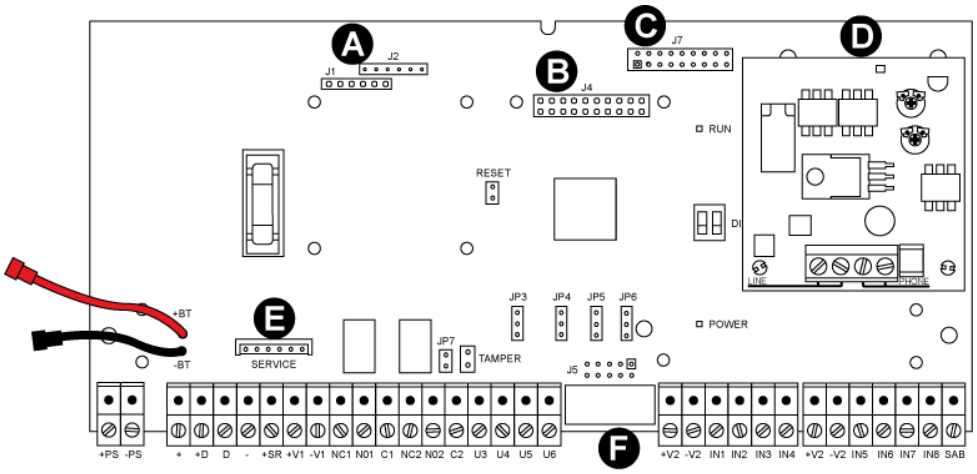


Figure 12 – Connectors for optional parts

A	J2 connector for USB interfaces for PC and USB key
B	Connector(J4) for speech synthesis card
C	Connector (J7) for GSM IMG500 module (with insertion on the motherboard bottom side)
D	ILT500 telephone line interface (provided with product) and terminal pins for PSTN telephone line connection
E	Connector (SERVICE) for the service keypad connection; see *§ 3.8.8 Connection of the cable for KP SERVICE service keypad*
F	Connector (J5) for video and Ethernet interface

3.4.4 Speech synthesis card mounting

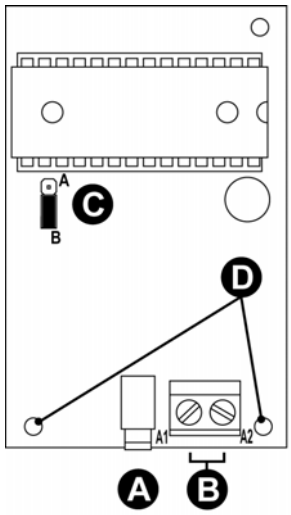


Figure 13 – Speech synthesis card

A	Jack for earphone (provided with product)
B	Terminal strip for audio bus
C	Recording input selection jumper
D	Holes for support spacers

To mount the speech synthesis card follow the procedure below:

- Put the two provided support spacers in the two holes D of the card (figure 13).
- Insert the comb connector in the appropriate motherboard connector (figure 14).
- Screw the provided plastic screws to the support spacers in the holes present on the motherboard.
- Select the input for messages recording with jumper C.

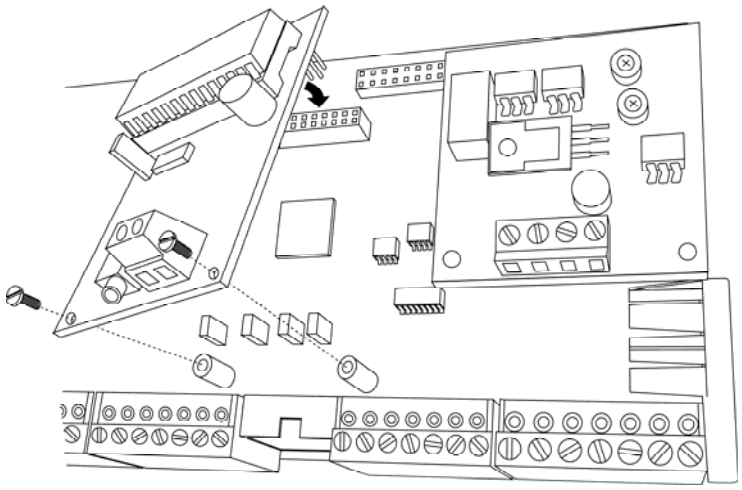


Figure 14 – Speech synthesis card mounting

The jumper position can also be changed afterwards, without unpowering the control panel. The jumper position does not affect the messages listening.

The recording is carried out with a vocal keypad connected to the audio bus.

The recording is carried out with the earphone connected to the special jack

The circuit diagram for connection is in paragraph *3.8.3 Audio bus connection*.

3.4.5 GSM module mounting

The GSM moudule is mounted **at the rear** of the control panel motherboard. To mount the module follow the procedure below:

- Release the motherboard, as shown in figure 6.
- Insert the three provided support spacers in the holes in the module sides, except the spacer under the antenna connector.
- Insert the comb connector in the motherboard holes corresponding to the connector C in figure 12.
- Screw the provided plastic screws to the support spacers in the holes present on the motherboard.
- Put the provided GSM antenna in its housing (figure 10, F) of the control panel base.

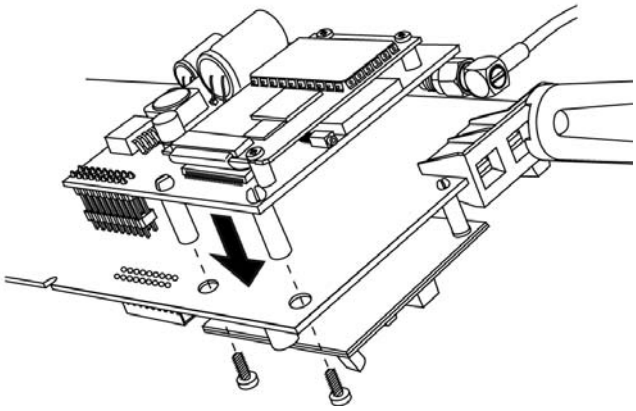


Figure 15 – GSM module

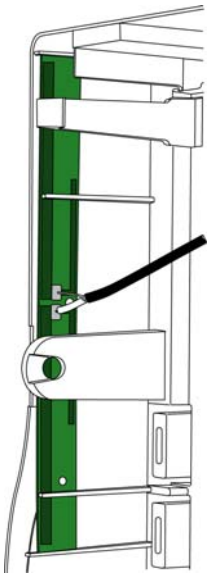


Figure 16 – GSM antenna insertion

NOTE:

- If the control panel position does not ensure for the GSM module a sufficient field strength, it is possible to use the **GSM 1** remote antenna 1 (not provided).
- If the GSM module is used with the MP508M/TG metal control panel, it is necessary to replache the provided antenna with the **GSM 2** antenna for metal housing, or to use the **GSM1** antenna (both are not provided).

- Open the SIM holder, by pressing with the point of a pencil the button on the holder side (figure 17).
- Insert the SIM, with the gold plated contacts visible from the outside, and close the holder (figure 18).

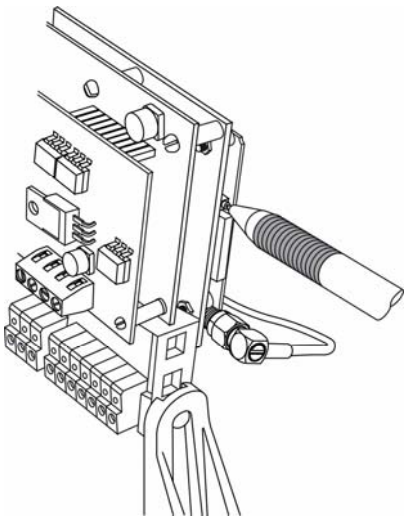


Figure 17 – SIM holder opening

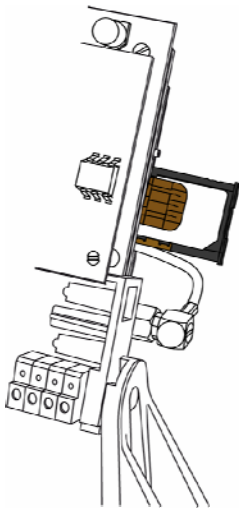


Figure 18 – SIM insertion

Warning: SIM insertion/removal must be carried out when the control panel is unpowered (mains and batteries disconnected); or it is necessary, before, to disable the GSM network for the operation time (see Programming Manual, § 3.14.22).

If the control panel position does not ensure for the GSM module a sufficient field strength, it is possible to use the GSM remote antenna 1 (not provided).

It is recommended to tighten well the antenna SMA connector on the interface, but take care not to damage it (0,9 Nm closing torque).

3.4.6 Mounting of IT-USB kit for connection to PC

Connect the IT-USB kit to the specific motherboard connector (figure 12, A)

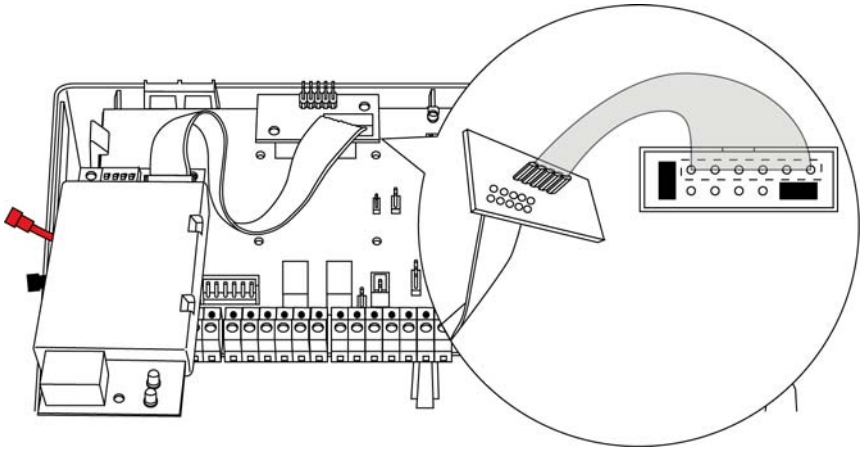


Figure 19 – IT-USB kit mounting

Set the kit dip switches as follows:

Dip switch			
1	2	3	4
ON	ON	OFF	OFF

3.4.7 IT-USB/KEY interface mounting for USB keys and connection to PC

In order to connect the IT-USB/KEY interface it is necessary to remove the two jumpers present in the motherboard connector (figure 12, A).

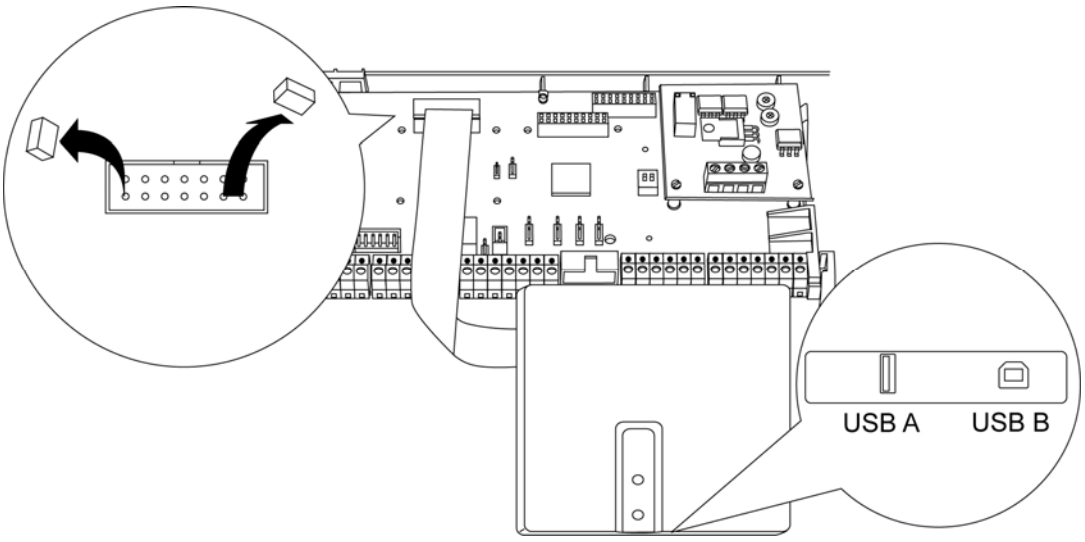


Figure 20 –IT-USB/KEY INTERFACE mounting

3.5 EP508 EXPANSION INSTALLAtion

The EP508 expansion can be installed not only in the MP508 control panel, but also in a wall mounting box (CP4F or CP8Z). The enclosure tamper must be connected to the SAB input of the expansion.
On the expansion are present the terminal pins for the connection of power supply, detectors, signalling devices, etc.

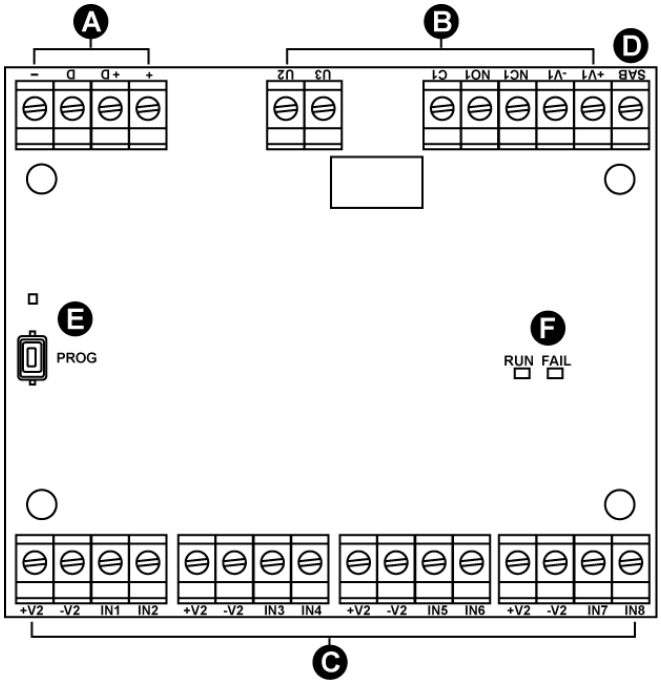


Figure 21 – EP508 expansion

	Group	Terminal pin or connection	Connection
A	Bus	+	Expansion powered by bus
		+D	Data transmission via bus
		D	
		–	Expansion powered by bus
B	Outputs	+V1	Power supply for output actuators (limited at 500 mA)
		-V1	
		NC1	Normally closed contact of output 1 relay
		NO1	Normally open contact of output 1 relay
		C1	Output 1 relay common (1 A - 24 V– max)
		U2	Electric output 2 (protected against short circuit, max current 10 mA)
		U3	Electric output 3 (protected against short circuit, max current 10 mA)
C	Inputs	+V2	Power supply of detectors connected in the control panel (limited at 500 mA). On the expansion are present four couples of power supply terminal pins.
		-V2	
		IN1	Alarm input no. 1
		IN2	Alarm input no. 2
		IN3	Alarm input no. 3
		IN4	Alarm input no. 4
		IN5	Alarm input no. 5
		IN6	Alarm input no. 6
		IN7	Alarm input no. 7
		IN8	Alarm input no. 8
D	Tamper	SAB	24h input (for system self-protection). It must always be BALANCED
E	Button and LED		for device acquisition
F	Led	RUN	Green LED for signalling of proper operation (for details see the Programming Manual)
		FAIL	Red LED for failure signalling (for details see the Programming Manual)

For wiring details (power supply, inputs, outputs, bus,...) refer to chapter *3.8 Connections.*

3.6 KEYPAD INSTALLATION

The KP500D keypad is provided with two auxiliary inputs referred to positive, that are freely programmable.
The KP500DV keypad is provided with loudspeaker/microphone for functions of messages recording and listening and environmental listening. For audio line is used a normal telephone pair.

The KP500 keypad may be wall mounted or installed on a 3-modules flush mounting box.

To install the keypad follow the procedure below:

1. Open the keypad by pressing lightly with a flat screwdriver on the point shown in the figure, to release the ledge.

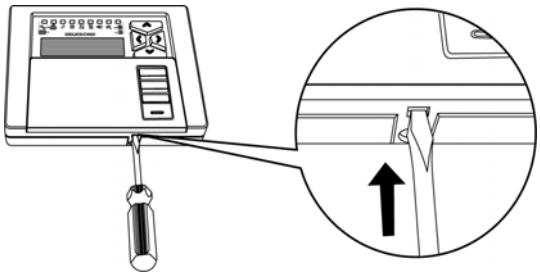


Figure 22 – Keypad opening

2. If a 3-modules box is not fixed, trace onto the wall, with a pencil, the position of the fixing holes (2 are sufficient); drill with a 6mm bit and insert 6 mm screw anchors (on wood walls screw anchors are not needed).
3. Open one of the pre-cut holes (D) on the keypad bottom for cables passing; the easier passage is through the round hole up, at left. Otherwise it is possible to use the pre-cut holes for trunkings (F).
4. Fix the keypad bottom to the wall; if the keypad is mounted on a 3-modules box, use the specific screws, otherwise use the screws of screw anchors. **Warning:** before fixing, verify the bottom direction: the loudspeaker grid must be in the upper right corner.
5. Connect the keypad to the bus, using +, +D, D and ─ terminal pins. For greater convenience, it is suggested to unsheathe the cable until the access hole.
6. Connect other devices, if present, to the auxiliary inputs or the audio line to the specific terminal pins.

For connection details (power supply, inputs, bus, etc.), see chapter *3.8 Connections.*

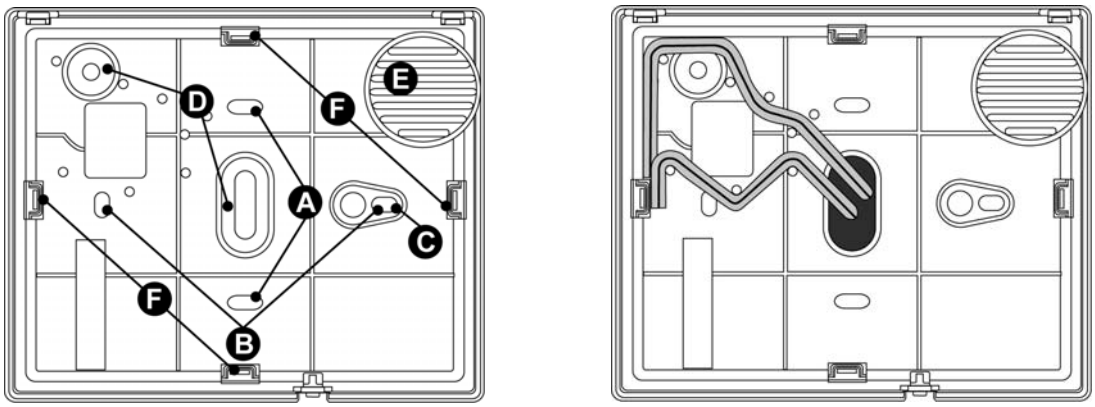


Figure 23 – Keypad holes and cables apertures

A	Holes for wall mounting
B	Holes for fixing on 3-modules box
C	Fixing hole for anti-removal protection
D	Pre-cut holes for cable passing
E	Loudspeaker grid
F	Pre-cut holes for trunkings

The keypad cards are slightly different according to the model.

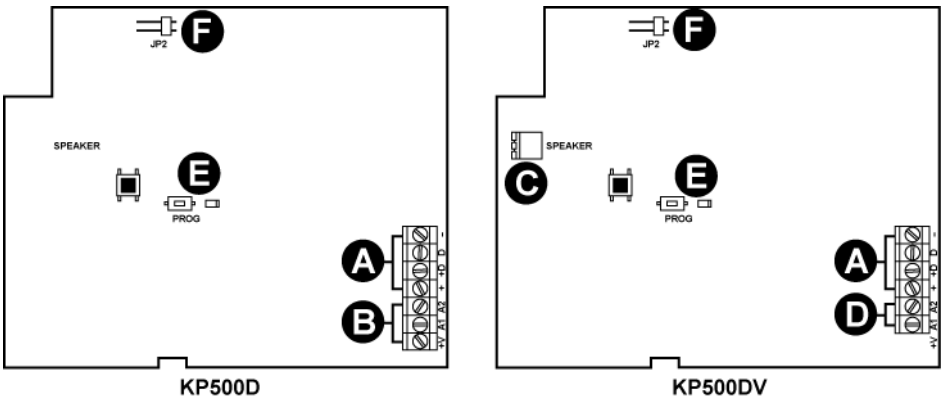


Figure 24 – Keypad cards

	Group	Terminal pin or connection	Connection
A	Bus	+	Keypad powered by bus
		+D	Data transmission via bus
		D	
		—	Keypad powered by bus.
B	Inputs (KP500D only)	+V	Power supply for auxiliary inputs (limited at 100 mA)
		A1	Auxiliary input 1
		A2	Auxiliary input 2
C	Connector for loudspeaker (KP500DV only)	SPEAKER	Loudspeaker
D	Audio (KP500DV only)	A1	Audio differential line
E	Button and LED		For device acquisition
F		JP2	Jumper for keypad tamper exclusion (jumper inserted = excluded tamper)

3.7 READER INSTALLATION

The key and proximity readers are installed in 3-modules boxes, wall or flush mounting.
With adapter frames (not provided), readers can be plugged as outlets in the main home lines, for example BTicino Living International, BTicino Light, BTicino Living, Gewiss Playbus, Ave Habitat Sistema 45, Vimar Idea, Vimar 8000 etc.

Warning: in compliance with CEI 79.2 rules, the readers installed outside the protected area must be enclosed in self-protected cases.

The readers are provided with two auxiliary inputs referred to positive, freely programmable.

To install the reader follow the procedure below:
1. Fit the reader in the specific adapter frame, in order to place it in the available box (wall or flush mounting)
2. Connect the reader to the bus, by using +, +D, D and — terminal pins.
3. Connect other devices, if present, to the reader auxiliary inputs: yellow wire for input no. 1 and green wire for input no. 2; for the connection, cut the wires and connect them to the detector.

Warning: if two proximity readers must be installed in the same box, wall or flush mounting, do not place them side by side, but leave between them at least the space corresponding to an outlet.

Suggestion: it is possible to use one of the reader auxiliary inputs to connect the protection tamper of wall or flush mounting boxes.

For connection details (power supply, inputs, bus, etc.), see chapter *3.8 Connections.*

3.8 CONNECTIONS

Connect together the different system devices, by using the cable previously laid. Connect also the control panel to the mains power supply and to the telephone cable, if present.

Note: the system power supply (mains and battery) is described in paragraph *4.1 System power supply.*

3.8.1 230 V~ power supply line

Warning: before connecting to the mains power, switch the mains interrupter off.

According to electrical safety regulations, for 230 V~ power supply it is necessary to use a double insulated cable (that is with a double sheath). Furthermore a suitable circuit breaker must be installed, such as a bipolar magnetothermic switch used to protect the mains power supply (figure 19); it is suggested to place the circuit breaker before the differential switch (so-called “earth leakage protection”), in order to disconnect the other units keeping the MP508TG system functions.

Note that it IS NOT ALLOWED TO TINPLATE the terminals of the mains (230 V~) cable, connected to the MP508TG control panel.

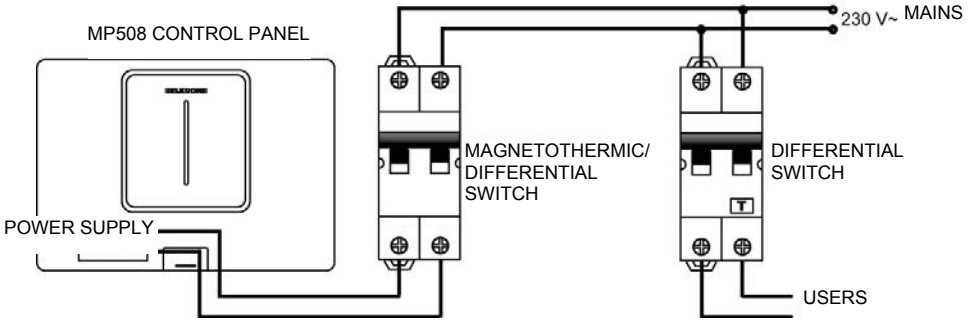


Figure 25 – MP508TG control panel power supply diagram

Mains connection

1. Fix the mains power supply cables to the two terminal pins of the PS515 or PS540 (S-60-15) power supply.
2. Block the mains power supply cables with the cable tie to the appropriate ring on the PS515 power supply unit or on the base of the MP508M/TG metal control panel.

Warning: the system will be powered by the mains only when all the devices have been correctly installed and it will be possible to acquire them.

3.8.2 Data bus

Connect +, +D, D and ─ terminal pins and the bus 4-wires cable that will allow the communication among control panel, readers, keypads and EP508 expansions, if present.

It is not needed to terminate the bus line or its single segments.

Shieldings can be connected together in the control panel to the negative pole of PS515 or PS540 (S-60-15) power supply.

For the centre of the star junction, if star typologies are used, it is possible to use bare terminal pins.

The figure 26 shows how to connect together the different devices with the bus line.

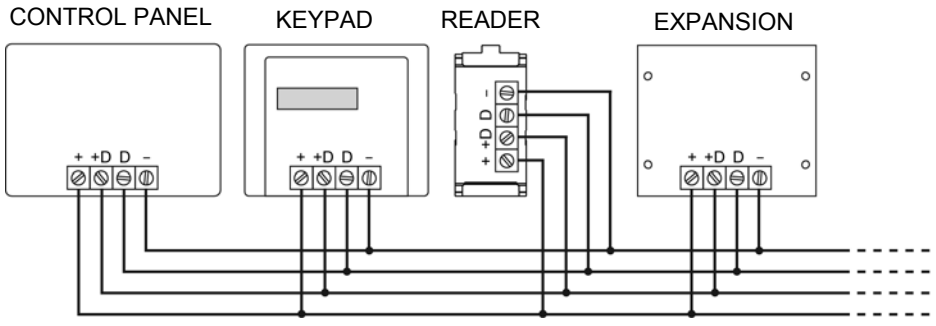


Figure 26 - Connections on bus

3.8.3 Audio bus

If necessary, connect the audio line twisted pair to A1 and A2 terminal pins of the speech synthesis card.
For audio bus connection it is not necessary to take into account the polarity.

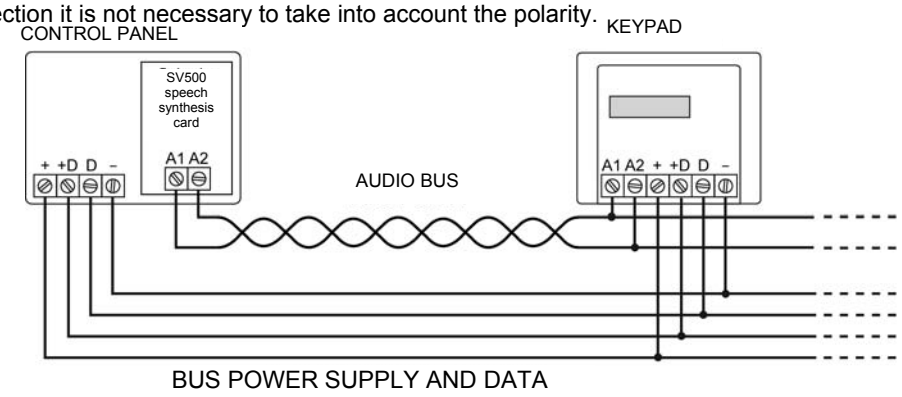


Figure 27 – Audio bus connection

3.8.4 Additional power supply units connection

For connection of more than one power supply source, the power supply positive + (of the control panel and additional) must be connected only to the devices that it powers.
On the bus are only shared the negative – of the power supply units and the data channel (+D and D).

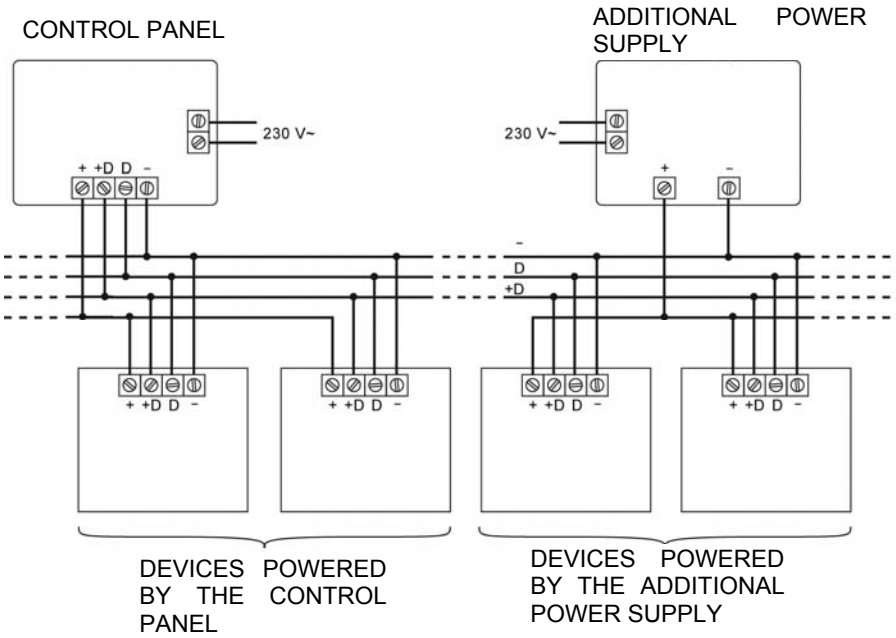


Figure 28 – Additional power supply units connection

3.8.5 Connection of PC21 analysis card to the EP508 expansion

To manage independently the signals of Low battery (BL), Mains fail (L) and Fuse failure (G) of an additional power supply unit Asxx, connect the outputs on the PC21 analysis card with 3 independent inputs, configured as “failure”, **N.O.** type, in balanced mode, of an EP508 expansion card.

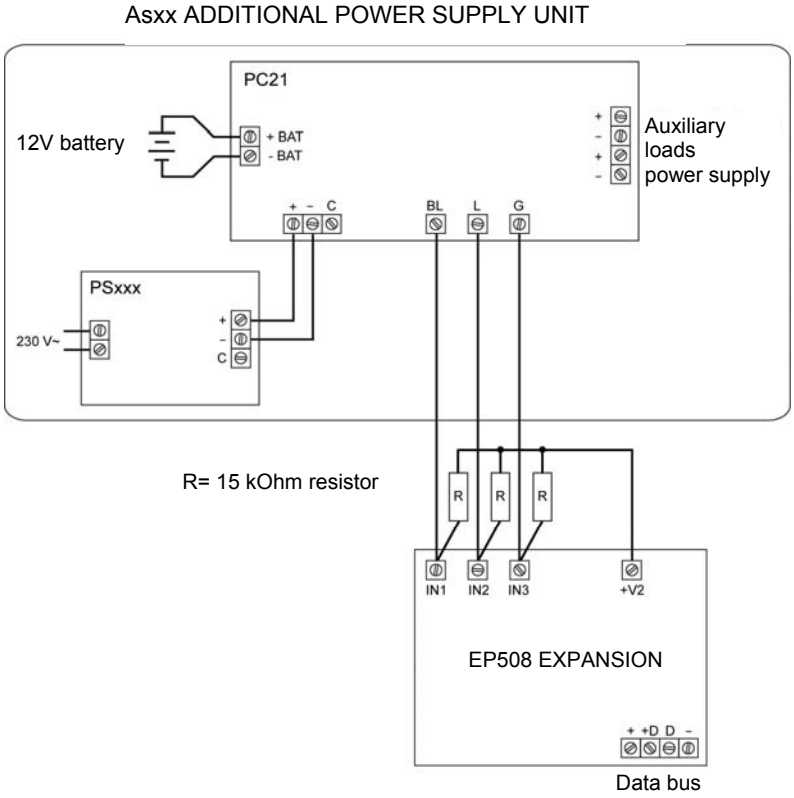


Figure 29 – Connection of PC21 analysis board with 3 inputs

The three 15 kohm balancing resistors are used to polarize the signals of the PC21 card.

Signals of Low battery (BL), Mains fail (L) and Fuse failure (G) of an additional power supply unit Asxx can be managed together, by connecting the outputs on the PC21 analysis board to a **N.O.** input, configured as “failure”, of an EP508 expansion card.

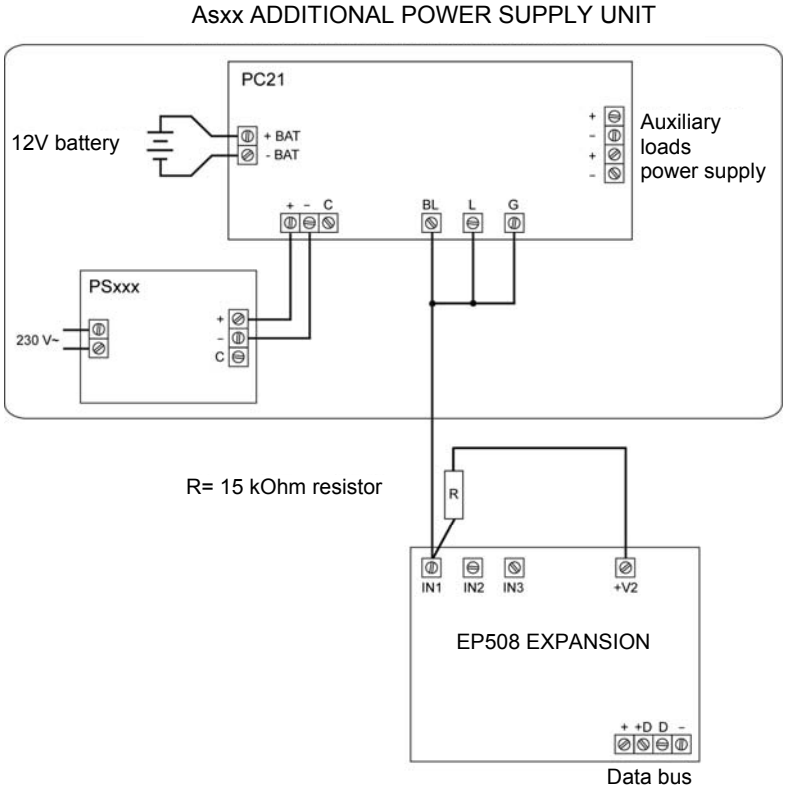


Figure 30 – Connection of a PC21 analysis card with one input

Warning: it is not necessary to close the not used inputs, because they can be excluded by programming procedure.

3.8.6 Inputs connections

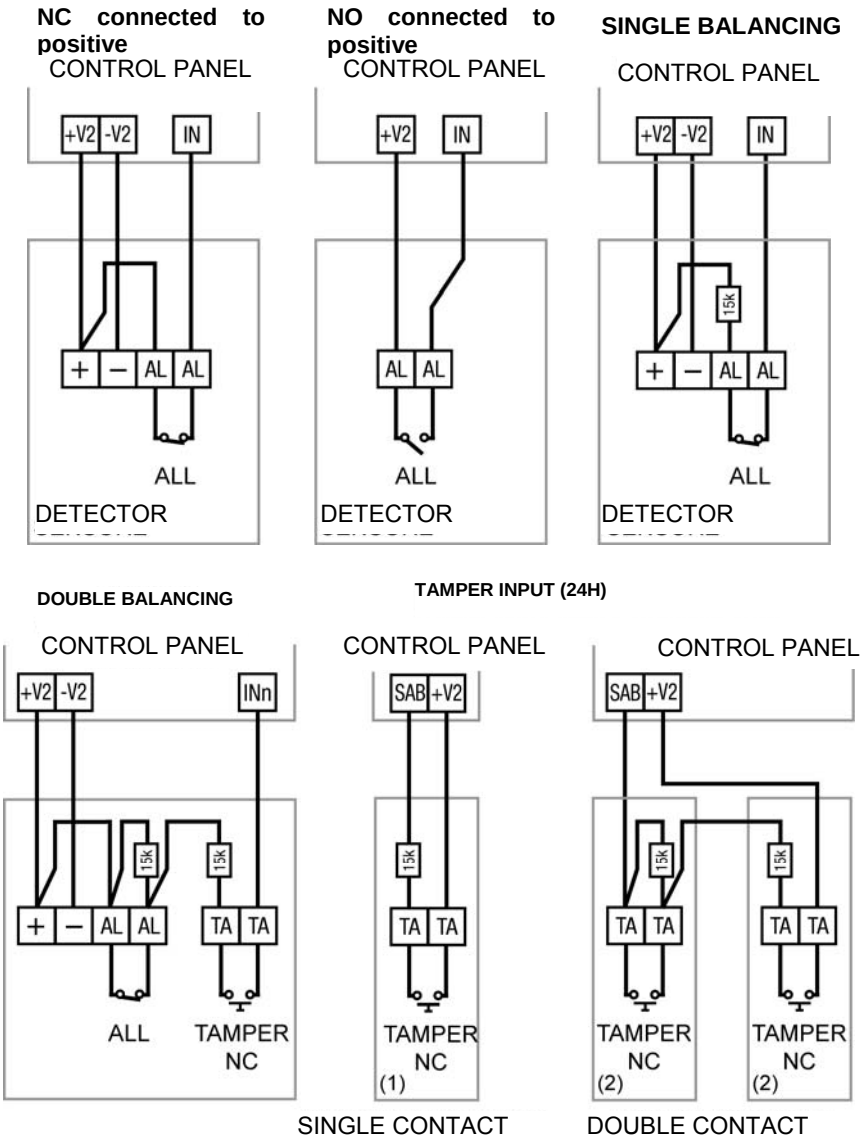
Inputs types depend on the detectors connection modes, while their configuration (for example intrusion, burglary, panic, fire, etc.) is defined by the programming procedure.

According to the connection type the inputs are the following:

- **NC** (normally closed): in standby condition the electric circuit connected to the input must be connected to the positive pole.
- **Single balancing**: in standby condition the electric circuit connected to the input must be connected to the positive pole with a 15 kohm resistor, 1% tolerance.
- **Double balancing**: in standby condition the electric circuit connected to the input must be connected with 2 15 kohm resistors, 1% tolerance
- **NO** (normally open): in standby condition the electric circuit connected to the input must be open (it is connected to the positive pole when it is alarmed).
- **Shock / Roller shutter**: this input type is used to connect detectors that generate fast signals (inertial, rolling shutter, seismic...). In this case the connection mode is fixed, NC type.
  Use Elkron VSD3 and MMZ01 inertial detectors or Elkron MF01 and MF02 rolling shutter detectors.

Warning: every detector must be powered by the device that controls it (control panel, expansion, keypad or reader). The balancing resistors must be connected to the power supply positive of the same device. Connections with different power supply can generate false alarms.
If it is not possible for cabling problems, use NC or NO inputs.

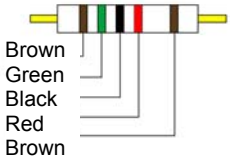
During programming, is specified the configuration for every single input.
Therefore it is possible to design a system with inputs of different types.



(1) Detector; (2) Sirens or other auxiliary contacts

Figure 31 – Inputs connections

Colour code for 15 kohm, 1% tolerance resistor



All the resistors provided with the MP508 system are 15 kohm, 1% tolerance.

Warning: it is not necessary to close the not used inputs, because they can be excluded by programming.

The following table shows the voltage thresholds used in the different input types.

Input status according to the type				Voltage on the input terminal pin (*)	Resistor between input and +V2
N.C. double BIL	**N.C. single BIL**	**N.C.**	**N.O.**		
TAMPER (wires short circuit)	TAMPER (wires short circuit)	NORMAL	INPUT ALARM	11,8 ÷ 13,8 V	0 ohm
NORMAL	NORMAL			6,7 ÷ 7,9 V	15 kohm
INPUT ALARM	INPUT ALARM	INPUT ALARM	NORMAL	4,6 ÷ 5,6 V	30 kohm
TAMPER (wires cut)				0 ÷ 0,5 V	∞ ohm

(*) with power supply voltage from 12 to 13,8 V.

3.8.7 Outputs connection

To the system outputs can also be connected alarm devices (sirens and flashlights), signalling devices (LED or buzzer) or other devices that automatically start working after the activation of a detector. Do not exceed the current or voltage values supported by the outputs (see technical characteristics of each product)

The outputs configuration (intrusion, tamper, burglary, panic, technological etc.) is specified afterwards with the programming procedure. At least one output must be programmed for alarm signalling (siren).

Two types of output are available: relay and electric type.

Relay outputs

The relay outputs are provided with an SPCO contact between the terminal pin C (common) and NC terminal pins (normally closed contact) and NO (normally open contact).

In the control panel are available 2 relay outputs: U1 and U2; in the expansion is available one relay output: U1.

Electric outputs

Electric outputs can be as follows:

- "positive referred", that provides +12 V
- "negative referred", that provides 0 V

In both cases the electric output is in "high impedance" state (∞ ohm) when it is open (without electric potential).

Electric outputs can be used to control power relays or signalling LEDs. It is possible to transform an electric output into a relay output with the Elkron MR02 module, provided with two relays with SPCO.

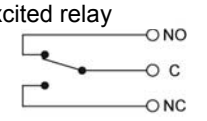
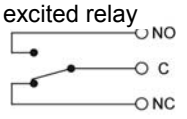
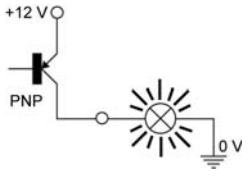
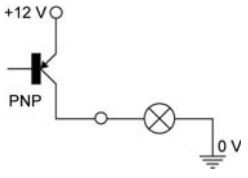
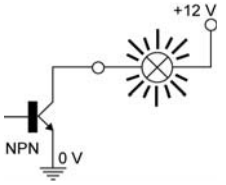
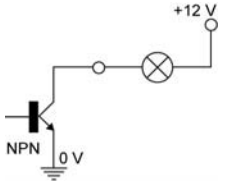
In the control panel are available 4 electric outputs: U3, U4, U5 and U6; each one can be configured as "positive referred" or "negative referred", as shown in *Figure 9 – Electric outputs hardware configuration* (paragraph 3.3.3).

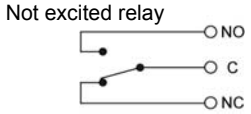
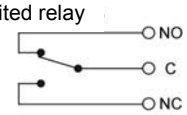
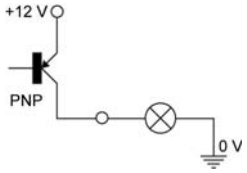
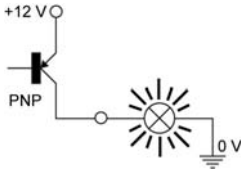
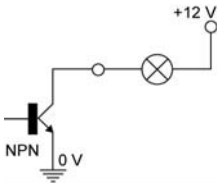
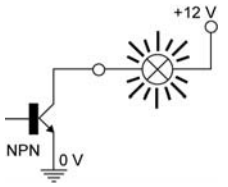
In the expansion are available 2 electric outputs only "positive referred": U2 and U3.

Output normal condition

The normal condition of every output can be programmed as N.H. or N.L. For details about programming see the Programming Manual.

The following tables show the status of the outputs in normal condition when they are active.

N.H. programmed output (positive security)		
	Normal	**Active**
RELAY OUTPUT	Excited relay 	Not excited relay 
POSITIVE referred ELECTRIC OUTPUT		
NEGATIVE referred ELECTRIC OUTPUT		

N.L. programmed output		
	Normal	**Active**
RELAY OUTPUT	Not excited relay 	Excited relay 
POSITIVE referred ELECTRIC OUTPUT		
NEGATIVE referred ELECTRIC OUTPUT		

To reduce the current consumption it is suggested to program as N.L. or NOT USED all the not used relay outputs

3.8.8 Connection of the cable for KP SERVICE service keypad

To connect directly a keypad to the control panel to SERVICE connector, connect the specific cable as shown below:

Figure 32 – Cable for KP SERVICE service keypad

–	D	+ D	+
Black	White	Blue	Brown

3.8.9 Telephone line connection (optional)

If it is desired to connect the control panel to the PSTN telephone line, use one of the following diagrams:

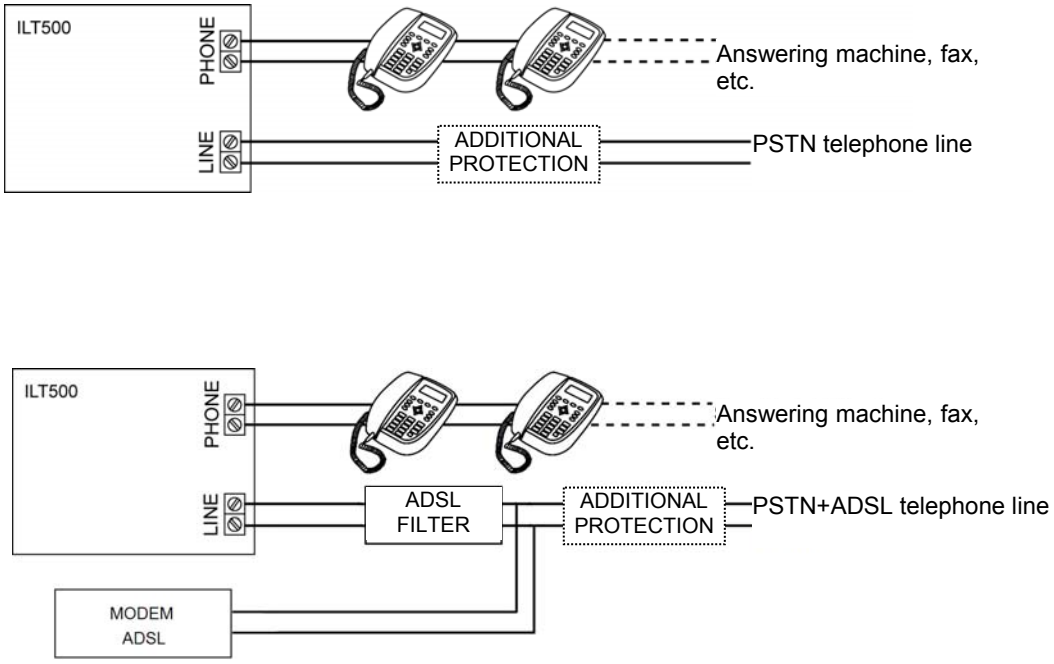


Figure 33 – Telephone connections

The control panel must be the first device connected to the incoming telephone line (all other devices, if present – fax, answering machine and telephones – must be placed after the control panel).
This connection type ensures that the control panel can always seize the telephone line in case of an alarm, excluding all the connected devices, if necessary.

Handle with care the telephone pair, because may be present the telephone exchange power supply voltage.
When connecting the pair to LA and LB terminal pins of the interface it is not necessary to take into account the polarity.
On ILT500 card is present a yellow LED indicating that the telephone line has been seized.

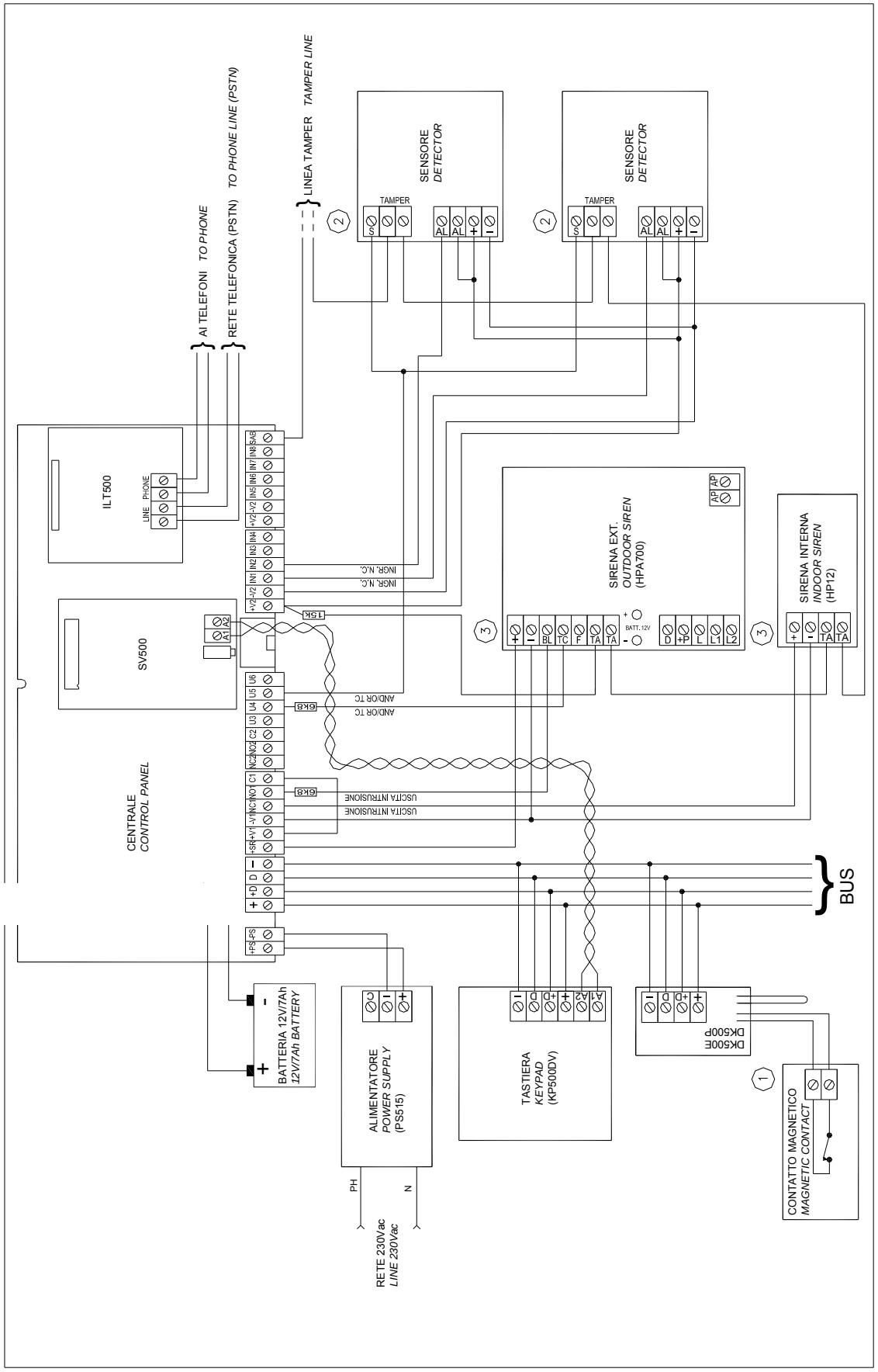
The telephone interface is already provided with a surge protector suitable for normal conditions, in compliance with standard requirements.
In case of danger of electrical discharges on the telephone line, it is suggested to install an additional surge protector (not provided) on the telephone line, before the control panel.

DISCLAIMER OF RESPONSIBILITY

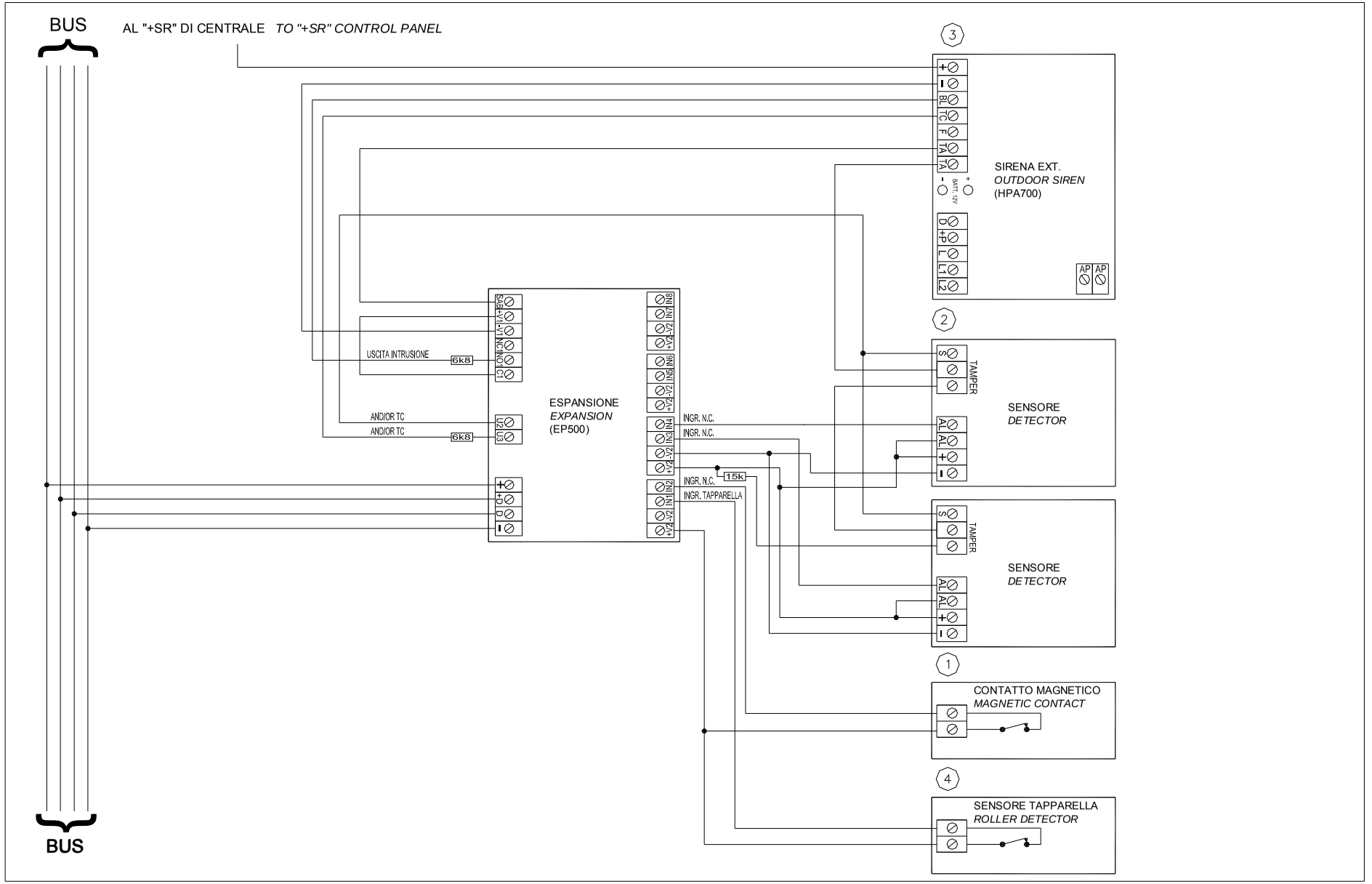
Elkron S.p.A. refuses to take responsibility concerning the non-availability, temporary or permanent, of PSTN telephone line or GSM, that could affect the sending of calls or programmed messages.

In case of weak or noisy field, it is possible that the performances of the GSM communication vector are reduced.

3.9 EXAMPLE OF CONNECTION DIAGRAM WITH N.C. INPUTS

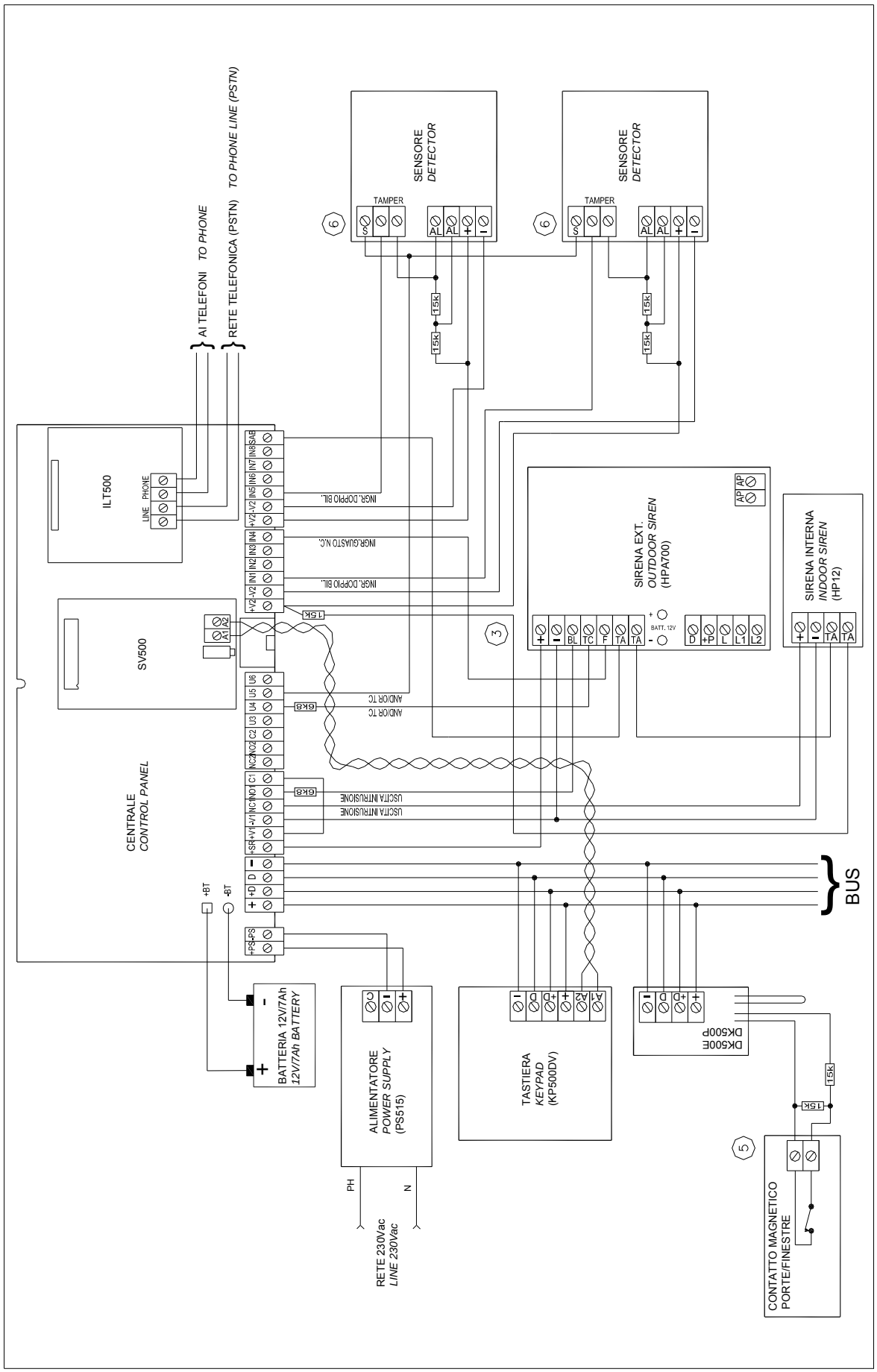


1) Example of connection on N.C. input 2) Example of connection with alarm on N.C. input and tamper on SAB input
3) Example of connection with tamper on SAB input 4) Example of connection with alarm on rolling shutter input
IMPORTANT! Every detector must be powered by the device that controls it.



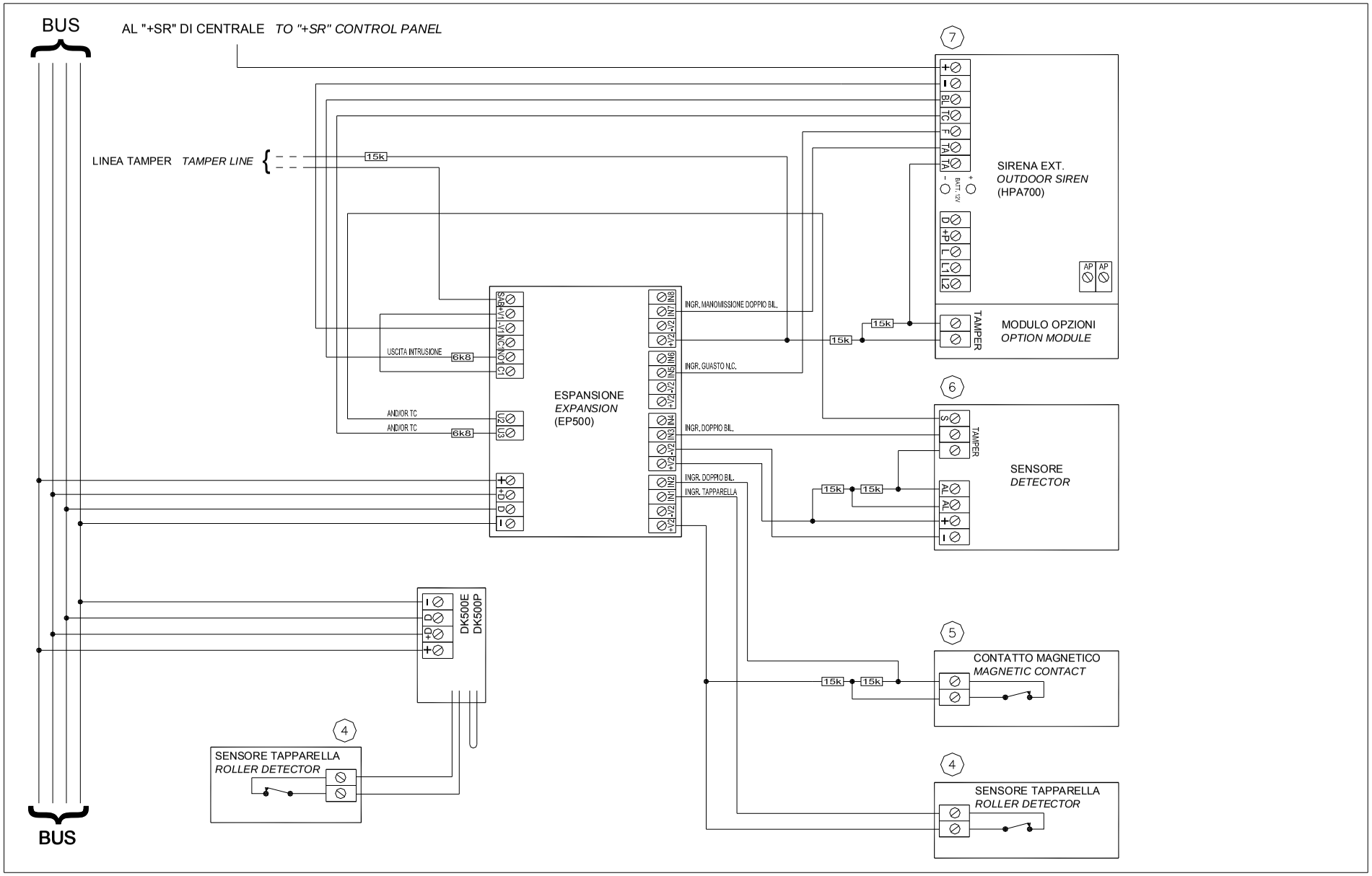
1) Example of connection on N.C. input 2) Example of connection with alarm on N.C. input and tamper on SAB input
3) Example of connection with tamper on SAB input 4) Example of connection with alarm on rolling shutter input
IMPORTANT! Every detector must be powered by the device that controls it.

3.10 EXAMPLE OF CONNECTION DIAGRAM WITH DOUBLE BAL. INPUTS



3) Example of connection with tamper on SAB input
4) Example of connection with alarm on rolling shutter input
5) Example of connection on double BAL input
6) Example of connection with tamper and alarm on double BAL input
7) Example of connection with tamper and anti-foam module on double BAL input .

IMPORTANT! Every detector must be powered by the device that controls it. Balancing resistors must be connected to the power supply positive pole of the same device.



3) Example of connection with tamper on SAB input
4) Example of connection with alarm on rolling shutter input
5) Example of connection on double BAL input
6) Example of connection with alarm and tamper on double BAL input
7) Example of connection with tamper and anti-foam module on double BAL input.

IMPORTANT! Every detector must be powered by the device that controls it. Balancing resistors must be connected to the power supply positive of the same device.

4 – SYSTEM START-UP

4.1 SYSTEM POWER SUPPLY

Before powering the system, it is necessary to check that all connections are correct.
Power the system by following the sequence described below.

In case of presence of additional power supply units, it is suggested to activate them, before the control panel.

Put the battery in the suitable housing and connect the faston connectors to the respective terminals: red "+", black "–", and then power the system.

Warning: for system total poweroff, follow the procedure described in paragraph *5.7 SYSTEM TOTAL POWEROFF.*

Warning: the control panel is provided with a battery checking circuit. If the battery is not connected, at the terminals of the connection cables (red and black faston) there is no voltage.

The battery voltage, at the end of the charging phase, reaches a nominal voltage of 13,8 V. The power supply unit does not need trimming.

Verify in the different system parts that the voltage on devices is compliant with indications in chapter *2.4 WIRING: design and definition.*

In the control panel the POWER LED (mains presence) turns on steady. After some seconds, when the start-up routines are ended and the control panel is full operating, the RUN LED starts blinking slowly (one flashing about every 2 seconds).

In the other devices, when they are powered, the yellow LED near the programming button blinks for 10 seconds (in the keypads also the buzzer rings).
After 10 seconds, this LED starts blinking slowly (one flashing about every 2 seconds) until the device is acquired, and then turns off.
If the device is already acquired and configured, the LED turns off after 10 seconds.

4.2 BUS PERIPHERALS ACQUISITION

For peripherals acquisition are used their programming buttons (PROG). The following figures show the position of these buttons.

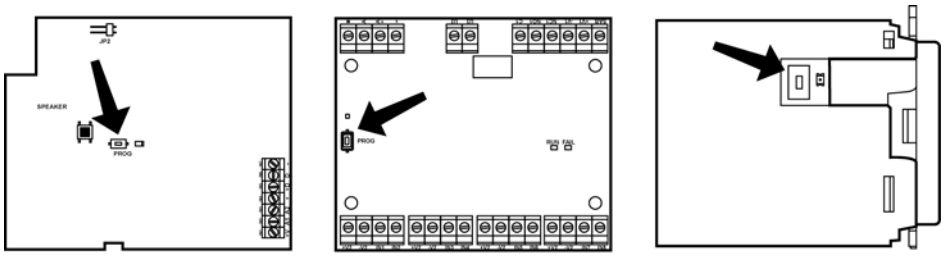


Figure 34 – Programming buttons position

Warning: the following instructions suppose that the devices have not been previously acquired.

To acquire the system bus devices follow the instructions below:

1. Select the keypad used to acquire the system devices, among system or service keypads.
2. Press the programming button of the selected keypad (after it has stopped ringing). The keypad sends to the control panel the registration request: if connections are correct, the control panel carries out the registration.
3. On the acquired keypad appears «MAINTENANCE» «LINGUA-LANGUAGE» menu. If you want to change the language, press **OK** button, otherwise press ▼ button until «MAINTENANCE ACQUIRE» appears and go to step 7.
4. « LINGUA-LANGUAGE» «KP01:KP 01» appears on the display. KP01 is the first system keypad, that is the only just acquired one. Press **OK** button.
5. «KP01:KP 01» «ITALIANO» appears on the display. Select with ▼▲ buttons the desired language and confirm the selection by pressing **OK** button.
6. «Download in corso >>>>...» appears on the display and at the end of the new language download appears «Download OK».
7. If you have to acquire other devices, press **OK** button, otherwise go to step 10.
8. If in the previous step you have pressed **OK** button, in order to acquire new devices, “ACQUIRE IN PROGRESS...” appears on the display.
9. Acquire the other devices, by pressing the programming button for each of them. Every time a new device is acquired, on the display appears the device type (KP=keypad; EP=expansion; DK=reader) and the address assigned to it.
10. After acquiring all the devices, it is possible to configure the system, as described in the Programming Manual.

Warning: addresses are assigned in progressive mode and according to the belonging family; it is not necessary to follow a fixed order. If you want the devices addresses follow a logical order, it is necessary to acquire them with that order.

Example: a system with two keypads, one expansion and two readers, will have the following sequence:

- KP01
- KP02
- EP01
- READ01
- READ02

It is possible to write the address of each device on the special labels provided with the control panel.

4.3 SERVICE KEYPAD USE

For system acquisition and programming operations, it is possible to use a keypad directly connected to the SERVICE connector of the central panel with the proper cable. For details see paragraph *3.8.8 Connection of the cable for KP SERVICE service keypad.*

The service keypad must be acquired with the procedure described in the previous chapter. The system automatically assigns to it the address no. 8.
At the end of operations it is possible to disconnect this keypad without generating tampers, so it is not necessary to delete it. If the keypad is included afterwards, it must not be acquired again and will be immediately active.

Warning: if the service keypad is used, it is not possible to have 8 keypads in the system (the address 8 has been already assigned, therefore it will be possible to connect 7 keypads max.).

5 – SYSTEM MAINTENANCE

5.1 MAINTENANCE PROCEDURE

The maintenance procedure is useful each time you want operate on the system, open the tamper of the control panel or any devices, or disconnect peripherals, without generating tamper events. In this phase any outputs of any alarm type will be activate and the telephone communicator will not be enabled to send calls, except for service calls (Test calls, Low battery, Mains fail, SIM expiration...). The Maintenance event, if programmed, can be sent with the telephone communicator to numbers with Numeric and Modem sending type.

To enter in the maintenance procedure follow the instructions below:
1. Totally disarm the system
2. With the Master code enables the Installer code and exit from the Master menu.
3. Enter in the Installer menu (***Code Installer*** ➔ **OK** ➔ **Menu**).
4. Press ▼ button repeatedly until «MAINTENANCE» appears on the display and confirm the selection with **OK** button
5. To confirm the entering in the maintenance procedure the special LED on the keypads turns on.
6. Open the control panel tamper

In this condition it is possible to exit from the menu by pressing repeatedly ESC button on the keypad used to enter in the procedure.
In fact the system stay in maintenance phase until the control panel tamper is open and the “Maintenance” LED stays on. It is suggested to exit from the menu, so that the keypad allows to display in real time, with “Tamper” and “Open inputs” LEDs, the temporary conditions of the devices subject to the maintenance procedure. Details are shown on the display with “MENU” , ▼▲ and “OK” buttons.

Before exiting from the maintenance state and go back to normal operating modes, it is necessary to verify that no tamper situations are present on devices (tamper and 24h SAB inputs closed, serial Bus correctly connected), and finally close the control panel.
As soon as the control panel tamper is closed, the “Maintenance” LED on the keypads turns off and from this moment on, every tamper attempt will be signalled, according to configurations.

5.2 OPTIONAL PARTS OR ACCESSORIES ADDITION

Optional devices and accessories may also be installed afterwards.
In this case, before performing any operations:
1. Activate the maintenance state (see paragraph *5.1 Maintenance procedure*) and open the control panel.
2. Disconnect from the control panel board both the battery power supply and the mains power supply. Disconnect also the power supply wire of the self-powered devices connected to “+SR” terminal pin.

Follow the instructions described in paragraph *3.4 Mounting of expansions, optional parts and accessories in the control panel*. At the end connect again the power supply (mains and battery).

5.3 DEVICE ACQUISITION

To acquire a new device on bus, for example a keypad or a reader, follow the instructions below:
1. Unpower the system by disconnecting from the control panel board both the battery power supply and the mains power supply. Disconnect also the power supply wire of the self-powered devices connected to “+SR” terminal pin. If present, disconnect also the additional power supply units.
2. Connect the new device to the bus.
3. Power again the system by following the procedure described in chapter *4.1 System power supply.* The yellow LED of the new device blinks slowly for 10 seconds, then changes the blinking frequency.
4. In Installer menu select «MAINTENANCE» «ACQUIRE» item and confirm with **OK** button.
5. When «ACQUIRE IN PROGRESS...» appears on the display,press and release the device programming button to acquire it.
6. Complete the installation of the new device and exit from the maintenance menu.
7. Configure the new device with programming procedure.

5.4 DEVICE DELETING

To remove a device from the bus, for example a keypad or a reader, it is sufficient to delete its address following the procedure below:
1. Activate the maintenance state (see paragraph *5.1 Maintenance procedure*).
2. In Installer menu select «MAINTENANCE» «DELETE».
3. In the menu select the device type to be deleted and from the list that appears select the desired device. The device is not considered as connected to the control panel any more and its memory is reset to factory values.
4. Unpower the system by disconnecting from the control panel board both the battery power supply and the mains power supply. Disconnect also the power supply wire of the self-powered devices connected to “+SR” terminal pin. If present, disconnect also the additional power supply units.
5. Physically disconnect the device from the bus, taking care that the remaining devices stay connected to the bus.
6. Power again the system by following the procedure described in chapter *4.1 System power supply.*

NOTE: the control panel automatically provides to keep at least one keypad, so it is not possible to delete all the system keypads, because when you try to delete the last one, the operation is not accepted.

5.5 RESET

Warning: reset operations are not reversible, so after reset it will be necessary to acquire and/or program again the concerned devices.

5.5.1 Partial reset

With partial reset, all system devices configurations, included control panel configurations, are reset to factory values.
Codes, keys and event log are not deleted.
To perform the partial reset:

1. Activate the maintenance state (see paragraph *5.1 Maintenance procedure*).
2. Press ▼ button repeatedly until «MAINTENANCE» « PARTIAL RESET » appears on the display and confirm the selection by pressing **OK** button.
3. « PARTIAL RESET » «ARE YOU SURE?» appears on the display. Press **OK** button to confirm and **ESC** button to abort the operation.
4. « PARTIAL RESET » «IN PROGRESS...» appears on the display and the buzzer rings.
   At the end of the «MAINTENANCE» « PARTIAL RESET » appears again.
5. Now it is possible to program again the system.

5.5.2 Total reset

With total reset, all the control panel configurations (inputs, outputs, times, partitions, time programmer, PSTN/GSM telephone parameters) are reset to factory values; all the previously acquired devices are removed and the respective configurations are reset to factory parameters and their address is deleted. The yellow LED turns on steady on all the devices.
To perform the total reset:

1. Activate the maintenance state (see paragraph *5.1 Maintenance procedure*).
2. Press ▼ button repeatedly until «MAINTENANCE» « GLOBAL RESET » appears on the display and confirm the selection by pressing **OK** button.
3. « GLOBAL RESET » «ARE YOU SURE?» appears on the display. Press **OK** button to confirm and **ESC** button to abort the operation.
4. "IN PROGRESS…" appears on the display and the buzzer rings.
5. At the end of the operation on the display appears a row of dots. Turn the system off and restart from chapter 4 *System start-up.*

5.5.3 User and Installer code reset

To reset User or Installer codes to factory values, follow the instructions below:

1. Enter in the Master menu (***Code Master*** ➔ **OK** ➔ **Menu**).
2. Press ▼ button repeatedly until «Ut01:MASTER» «SETTINGS» appears on the display and confirm the selection by pressing **OK** button.
3. Press ▼ button repeatedly until « SETTINGS » «USERS» appears on the display and confirm the selection by pressing **OK** button.
4. Press ▼ button repeatedly until «USERS» «DEFAULT CODE» appears on the display and confirm the selection by pressing **OK** button.
5. «DEFAULT CODE» «Ut00:INSTALLER» appears on the display. Press ▼▲ buttons to display the user whose code must be reset to the factory value and press **OK** button to confirm.
6. On the display appears a message that confirms the operation (user name and ARE YOU SURE?). Press **OK** button to confirm
7. «USERS» «DEFAULT CODE» appears on the display. If you want to reset to factory values other user codes, press **OK** button and follow the same procedure from step 5, otherwise press **ESC** button repeatedly to exit from the Master menu.

5.5.4 Master code reset

As described in the previous paragraph, it is possible to reset to the factory value also the Master code, by entering in the Installer menu.

In order to enable the Installer code it could be necessary to totally open and unpower the control panel; at the first powerup the Installer code is enabled.

5.5.5 Installer code hardware reset

To reset the Installer code to its factory value when the Master code is not known, follow the instructions below:
1. Completely unpower the control panel (remove mains and battery power supply)
2. Set the Dip-switch 2 (see par. 3.3.3) in ON mode
3. Power again the control panel; during initialization phase the Installer code will be set to its default value (000000)
4. Set again the Dip-switch 2 in OFF mode.

5.5.6 Factory default hardware reset

Only in special cases, for example if no keypads are available to access to the menu, if it is necessary to reset the control panel to the factory parameters (default), it is possible to use the hardware reset. Consider that this mode has not the same effects as the total reset (§ 5.5.2), because only the control panel is reset to the factory parameters. By using this procedure the single devices keep their configurations.
So at the end of this operation it is of primary importance to reset every single device, as described in § *5.5.7 "Devices reset".*

To perform the hardware reset follow the instructions below:
1. Completely unpower the control panel (remove mains and battery power supply)
2. Set the Dip-switch 1 (see § 3.3.3) in ON mode.
3. Power again the control panel; during initialization phase all the parameters will be reset to their factory values.
4. Set again the Dip-switch 1 in OFF mode.
5. Restart from chapter *4 System start-up.*

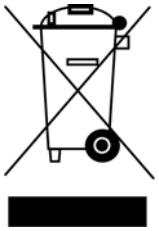
5.5.7 Devices reset

To delete the address of any devices and reset their configurations to the factory parameters, follow the instructions below:
1. Unpower the device and power it again. The yellow LED will start blinking slowly
2. Within 10 seconds press and keep pressed for about 5 seconds the "PROG" button until the yellow LED changes the blinking frequency.
3. Release the button: the Reset phase is ended. The yellow LED will keep on blinking until the device will be acquired again (for acquisition, see § *5.3 "Device acquisition*").

5.6 BATTERY REPLACEMENT

The control panel battery that does not keep the charge must be replaced by the installer with a similar one, in order not to damage the devices correct working.

To replace the battery follow the instructions below:
1. Activate the maintenance state (see paragraph *5.1 Maintenance procedure)* and open the control panel.
2. Disconnect the old battery and remove it from the control panel.
3. Put the new battery in the control panel and connect it with the special connectors, taking care of polarities.
4. Close the control panel.



WARNING The disposal of lead batteries is regulated by precise legal provisions; they must be taken to specific collection centres.

5.7 SYSTEM TOTAL POWEROFF

If the system must be totally turned off, follow the instructions below:

1. Activate the maintenance state (see paragraph *5.1 Maintenance procedure)* and open the control panel.
2. Unpower the system.
3. Disconnect the battery.
4. If additional power supply units are present, disconnect them by following the same sequence (points 1 and 3).

6 – TECHNICAL CHARACTERISTICS

6.1 MP508TG CONTROL PANEL AND PS515 POWER SUPPLY

Power supply nominal voltage	230V ±15%
Max. current consumption at 230V with PS515 with PS540 (S-60-15)	200 mA 750 mA
PS515 power supply output nominal voltage PS540 (S-60-15) power supply output nominal voltage	14,4 V—
MP508TG max. output current with PS515 MP508M/TG max. output current with PS540 (S-60-15)	1,5 A 4 A
Ripple max for PS515 Ripple max for PS540 (S-60-15)	100 mV p.p. with I = 1A 150 mV p.p. with I = 4A
Control panel working voltage	from 10,5 V— to 15 V—
Control panel board current consumption at 12V— (with excited relays, factory condition)	85 mA in normal condition with balanced inputs 90 mA with NC inputs
Control panel board max. current consumption (with not excited relays)	65 mA with balanced inputs 70 mA with NC inputs
Current available for external devices (keypads, detectors, sirens) MP508TG control panel MP508M/TG control panel	 1000 mA 3000 mA
Battery space in plastic enclosure MP508TG Battery space in metal enclosure MP508M/TG	12V – 7Ah 12V – 17Ah or 26 Ah (see § 2.2.3 and § 2.2.4)
Battery charging nominal voltage note 1)	13,8 V—
Flat battery threshold	11,5 V
Automatic battery test	every 24 hours (in mains presence condition)
Nominal voltage on terminal pin +SR note 2)	14,4 V—
+SR terminal pin output current	750 mA
Nominal voltage on terminal pin +	13,8 V—
+ terminal pin output current MP508TG control panel MP508M/TG control panel	 1100 mA 3000 mA
Nominal voltage on terminal pin +V1	13,8 V—
+V1 terminal pin output current	750 mA
Nominal voltage on terminal pins +V2	13,8 V—
+V2 terminal pins total max. output current	750 mA
Max. switching voltage and current of U1 and U2 outputs relay contact	1 A – 24 V– with resistive load
U3 electric output max. source current	100 mA
U4, U5, U6 electric outputs max. source current	10 mA
Anti tampering tamper	1 A – 24 V–
Control panel-peripherals serial line max. length	400 m
Audio line max. length (audio bus)	300 m with telephone pair
Max. length of connection between every detector or actuator and the control panel	500 m
Max. length of connection between a fast detector (rolling shutter, inertial) and the control panel	20 m
Max. number of possible codes	from 10.000 to 1.000.000
DK50 electronic keys possible codes	more than1099 thousand millions
DK30 proximity keys possible codes	more than1099 thousand millions
Entry time	from 0 s to 90 s
Exit time	from 0 s to 90 s
Alarm time	programmable from 30 s to 9 minutes (factory: 3 minutes)
Tamper alarm time	programmable from 30 s to 9 minutes (factory: 3 minutes)
Failure signalling	optical (LED) and electric for control panel low battery, fuses, expansions cards low power supply
Declared working temperature	-5°C ÷ +45°C
Working temperature compliant with CEI standards	+5°C ÷ +40°C
Working relative humidity	95% at 45°C
Storage temperature range	-20°C ÷ +60°C
Housing protection degree	IP30 / IK02

For further information see also "*1.2.4 System maximum dimensions and its expansion capability*".
Note 1): if the battery is not connected, at the end of connection cables (red and black fastons) there is no voltage.
Note 2): in case of mains absence, +SR does not provide voltage.

6.2 KP500D / KP500DV DISPLAY KEYPAD

Power supply nominal voltage	13,8 V— (taken with the bus)
Keypad working voltage	from 9 V— to 15 V—
Nominal current consumption at 12V—	20 mA (in normal condition, mains presence LED only) 32 mA (working, with backlight. at lev. 1) 115 mA (working, with backlight. at lev.4) 120 mA max (during message listening – DV version)
Nominal voltage on +V outputs	13,8 V—
Max. source current on +V outputs	100 mA
Control panel-peripherals serial line max. length	400 m
Audio line max. length (audio bus)	300 m with telephone pair
Max. length of connection between every detector and the keypad	500 m
Max. length of connection between a fast detector (rolling shutter, inertial) and the keypad	20 m
Communication type	serial Elkron protocol
Antitampering tamper	Standard, with clear-text signalling sent to the control panel
Auxiliary inputs (KP500D only)	2
Protection against fake codes entering	Yes
Declared working temperature	-5°C ÷ +45°C
Working temperature compliant with CEI standards	+5°C ÷ +40°C
Working relative humidity	95% at 45°C
Storage temperature range	-20°C ÷ +60°C
Housing protection degree	IP40 / IK02

6.3 DK500M-E ELECTRONIC KEY READER

Power supply nominal voltage	13,8 V — (taken with the bus)
Reader working voltage	from 9 V — to 15 V —
Consumption at nominal voltage of 12V—	6 mA in normal condition. 56 mA max (with all LEDs on)
Control panel-peripherals serial line max. length	400 m
Max. length of connection between every detector and the reader	500 m
Max. length of connection between a fast detector (rolling shutter, inertial) and the reader	20 m
Communication type	serial Elkron protocol
Auxiliary inputs	2
Declared working temperature	-5°C ÷ +45°C
Working temperature compliant with CEI standards	+5°C ÷ +40°C
Working relative humidity	95% at 45°C
Storage temperature range	-20°C ÷ +60°C
Housing protection degree	IP40 / IK02

6.4 DK500M-P ROXIMITY READER

Power supply nominal voltage	13,8 V — (taken with the bus)
Reader working voltage	from 9 V — to 15 V —
Consumption at nominal voltage of 12V—	30 mA in normal condition 82 mA (with all LEDs on)
Control panel-peripherals serial line max. length	400 m
Max. length of connection between every detector and the reader	500 m
Max. length of connection between a fast detector (rolling shutter, inertial) and the reader	20 m
Communication type	serial Elkron protocol
Auxiliary inputs	2
Declared working temperature	-5°C ÷ +45°C
Working temperature compliant with CEI standards	+5°C ÷ +40°C
Working relative humidity	95% at 45°C
Storage temperature range	-20°C ÷ +60°C
Housing protection degree	IP40 / IK02

6.5 8-INPUTS EP508 EXPANSION

Power supply nominal voltage	13,8 V ⎓ (taken with the bus)
Expansion working voltage	from 9V ⎓ to 15V ⎓
Consumption at nominal voltage of 12V⎓	35 mA in normal condition (with excited relay, factory condition). 22 mA max. with not excited relay
Nominal voltage on terminal pin +V1	13,2 V ⎓
+V1 terminal pin max.output current	500 mA
Nominal voltage on terminal pins +V2	13,2 V ⎓
+V2 terminal pins max.output current	500 mA
Max. switching voltage and current of U1 output relay	1 A – 24 V⎓ with resistive load
U2 and U3 electric outputs max. source current	10 mA
Control panel-peripherals serial line max. length	400 m
Max. length of connection between every detector and the reader	500 m
Max. length of connection between a fast detector (rolling shutter, inertial) and the reader	20 m
Communication type	serial Elkron protocol
Declared working temperature	-5°C ÷ +45°C
Working temperature compliant with CEI standards	+5°C ÷ +40°C
Working relative humidity	95% at 45°C
Storage temperature range	-20°C ÷ +60°C

6.6 SV500 SPEECH SYNTHESIS CARD

Power supply nominal voltage	13,8 V ⎓ (taken from the control panel)
Speech synthesis card working voltage	from 10,5 V ⎓ to 15 V ⎓
Consumption at nominal voltage of 13,8 V ⎓	3 mA in normal condition 20 mA max. (during message playback)
Audio line max. length	300 m with telephone pair
Max. number of messages that can be recorded	94

6.7 GSM IMG500 MODULE

Power supply nominal voltage	13,8 V ⎓ (taken from the control panel)
Consumption at nominal voltage of 12V⎓	150 mA

6.8 IT-USB USB INTERFACE FOR CONNECTION TO PC

Power supply nominal voltage	5V ⎓
Consumption at nominal voltage of 12V⎓	25 mA max.

NOTES

COMPLIANCE WITH R&TTE 99/05/CE DIRECTIVE
INFORMATION NOTE AND NETWORK COMPATIBILITY DECLARATION

On the 8th April 2000 the Ministry type-approval for transreceiver devices and for telecommunication terminal devices was abolished.
Elkron MP508 control panel – in all the available models – is compliant with R&TTE 99/05/CE directive.
This device has been designed to work with all PSTN (Public Switched Telephone Networks) with addressing performed by DTMF multifrequency bitonal signalling and is compliant with R&TTE 99/05/CE – ETSI TBR21 directive, according to 98/482/CE resolution of European Union Council for Pan-European connection as single terminal to an analogic PSTN network.
Because of differences among networks in the different countries, this approval does not ensure the correct working of all PSTN network terminal points.
Consequently it is suggested to follow the product technical instructions, concerning the possible specific hardware and software configurations.
In case of problems, and if the device should be used on other networks, first of all contact the supplier or the product manufacturer.
The CE declaration of conformity is availabl at Elkron Customer Service or in the web site.

CERTIFICATIONS

The MP508 system has been designed and built in compliance with CEI EN50131-1 standards.

ELKRON S.p.A.
Via G. Carducci, 3 – 10092 Beinasco (TO) – ITALY
Tel. +39 (0)11.3986711 – Fax +39 (0)11.3499434
www.elkron.it e-mail: info@elkron.it
Servizio Tecnico Clienti : stac@elkron.it