MP504TG

Remote control alarm control panel

Installation Manual

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PREFACE

STRUCTURE OF THIS MANUAL

This manual is organized into chapters and the covered subjects are arranged in a sequence so as to match, on a step-by-step basis, the various phases ranging from the system's **design** and **installation** up to the subsequent **maintenance**.

The descriptions relative to the system's **programming** and **configuration** are given in the **Programming Manual.**

The descriptions relative to the final user's system utilization are given in the **User Manual.**

STANDARDS USED IN THIS MANUAL

For the sake of clarity, the following conventional standards are used throughout this manual:
For instance, **120 OK** means "type in 120, then press OK".
▲, ►, ▼ 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 suggestion.

GLOSSARY

AND
Logical function that requires that all the operational terms are true in order to have true as result.
AWAY
Complete arming of the system.
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.
Communicator
Telephone transmitter able to send and transfer alarm signalling and events on the telephone line.
Default
A device's initial value prior to configuration or when the factory-set values are resumed.
DTMF
Dual Tone Multi Frequency; it indicates the telephone "tone" dialing mode.
Event
Event that happens accidentally or when a certain condition is met, for example when a certain time has passed.
Entry
Point of access to the rooms and premises protected by the intrusion system.
Physical address
Method used by the control panel to identify and reach inputs and outputs.
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.
Input
A point (terminal pin) 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.
OC
Open Collector transistor.
OR
Logical function that requires that at least one of the operational terms is true in order to have true as result.
Protocol
Rules that manage the data exchange or transmission among devices.
PSTN
Acronym for Public Switched Telephone Network; it indicates the public telephone network.
STAY
Partial arming of the system.
Tamper
Micro-contact for the device protection.

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".
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.
TC
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.
Exit
A point (terminal pin) for physical connection of a device that will enable the MP504 system to operate in the external environment, e.g. by signalling an alarm (by means of a siren), communicating a system state (by means of a warning lamp or a acoustic warning device) or activating electric equipment.

1 MP504 SYSTEM

1.1   MAIN CHARACTERISTICS

The MP504 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 key 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.
- **Back-up on a USB key**: the full system programming can be saved and retrieved by means of the special USB interface available. This very interface enables you to connect the control panel to a local PC.
- **Ethernet connection**: the system can be remotely controller and managed by means of a PC equipped with Hi-Connect SW, by connecting the control panel, through the special Ethernet interface available, with a LAN (Local Area Network) or to the Internet by means of a modem or ADSL router.
- **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.
- **Wide input configuration capability**: every single input can be configured according to type and configuration.
  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.
- **Voice alarm call:** ability to send voice calls with messages specific for the type of alarm.
- **Video function**: this function allows you to remotely control, by means of a video gateway connected to the MP504TG control panel, the images generated by four analog cameras. The image recordings, which are activated by the selected system events, can be sent, via e-mail, to PCs, mobiles phones, smartphones, etc.
- **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.

The MP504 system makes it possible to generate service signallings for "**rescue request**" following the activation of a dedicated key or after detecting the lack of movement within the environments.

⚠️   **Note:** The "**rescue request**" be considered only an auxiliary function of the intrusion system. Therefore, the MP504 system cannot be used as a remote rescue system according to the law regulations in force.

The MP504TG makes it possible to manage fire detectors (i.e. smoke, buttons, etc.) by connecting the latter with the properly programmed inputs, in order to issue service signallings of the "**fire alarm**" type.

⚠️   **Note:** The "**fire alarm**" shall be considered only an auxiliary function of the intrusion system. Therefore, the MP504 system cannot be used as a fire detection system according to the law regulations in force.

To implement a system capable of fully meeting the requirements typical to a fire detection system, it is recommended that you should refer to the "Fire prevention" section of the Elkron main catalogue.

1.2 GENERAL DESCRIPTION
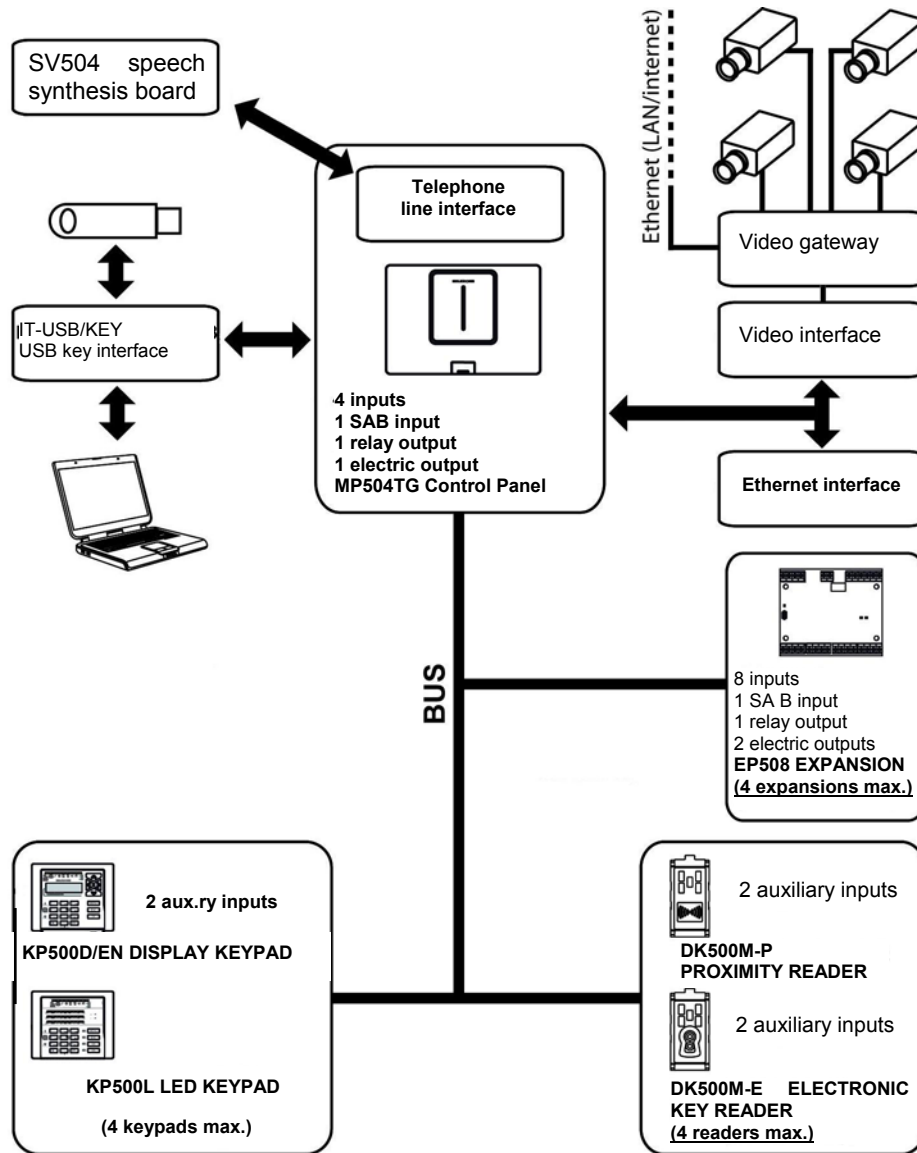
Figure 1 - MP504 system maximum dimensions

1.2.1 System architecture

The MP504 wired alarm and security system is a modular system, suitable for small-medium size installations in residential, industrial and service sectors. 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.

The system can also automate repetitive operations, based on a weekly cycle, with the timing programmer embedded in the control panel.

Remote alarm signallings can be carried out with vocal message or numeric protocol (for connection to alarm reception centres).

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.

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1.2.3   Arming modes STAY and AWAY

The two arming modes of the system are:
- <u>STAY Mode</u>: the system is partially armed, it is useful, for example, when you only want to arm the external perimeter part. In this case, only persons inside the coverage area of the system are permitted.
- <u>AWAY Mode</u>: the system is totally armed, which means that both the external perimeter part and all other foreseen internal protections are armed. A presence detected anywhere in the coverage area of the system will generate an alarm.

For further information see programming Manual.

1.2.4   System maximum dimensions and its expansion capability

MP504 system may be expanded to include:
- 2 EP508 expansions
- 4 KP500D/EN or KP500L keypads, in desired configuration
- 4 readers, for DK500M-E electronic key or DK500M-P proximity key, in desired configuration
- 24 user codes (one Master code and one Installer code included)
- 24 DK50 electronic keys or DK30 proximity keys, in desired configuration

The maximum system expansion can include up to:
- 24 general use inputs (obtainable as follows: 4 in the control panel + 8 EP508 n.1 expansions + 8 EP508 n.2 expansions + 4 auxiliary inputs of the keypad and/or readers)
- 3 tamper inputs (1 in the control panel + 1 for each EP508 expansion)
- 3 relay outputs (1 in the control panel + 1 for each EP508 expansion)
- 5 electric outputs (1 in the control panel + 2 for each EP508 expansion)

See Figure 1.

1.2.5   Electric mains voltage control criteria

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 are managed by generating specific events:

MAINS ABSENCE EVENT
This event detects the lack of mains voltage. The system is powered by the battery – it will not generate the alarm immediately; on the contrary, it will only notify this condition by causing the control panel and keypad power supply green LEDs to go out and also record the event in the event log. Moreover, it will start the count of the "Mains absence time" (this time can be set by the installer, in the "Parameters" menu, by setting values of 1 h, 2 h and 4 h). Every time the mains voltage is resumed, the "Mains absence time" count will be reset.

CONTINUOUS MAINS ABSENCE ALARM
If the mains voltage absence continues up to the expiry of the "Mains absence time" set, the system will generate the **"Continuous mains absence alarm"** by activating the respective outputs and sending the dedicated message by means of the telephone communicator. The alarm will be stored into the event log.
This functions comes useful especially at places where temporary electric mains supply cut-offs often occur; thus, you will avoid sending a telephone call to inform about a brief black-out and making a subsequent call to resume the system.
Note: in the event that, in case of electric mains absence, the battery voltage drops below the 11.5V threshold value, the **"Continuous mains absence alarm"**, will be immediately generated even if the "Mains absence time" has not elapsed.

ELECTRIC MAINS RESUMPTION
The electric mains resumption will be considered only if the mains voltage goes on steadily for at least 5 minutes. Any further brief interruption will cause the above time to be reset.
The electric mains resumption will be stored into the event log.

1.2.6   Battery management criteria

The system can detect battery efficiency.
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.

⚠ **Warning:** the control panel can perform the checks on the battery only by using the PS515 power supply, which also provides the terminal "C", which is necessary to perform the battery test.

CHECKING AND CHARGING THE BATTERY WITH THE ELECTRIC MAINS AVAILABLE
A periodic battery test is carried out to check the battery efficiency out.
This test is performed:
* **After 30 seconds** from the control panel power supply or electric mains resumption
* every 24 hours (automatic test)
* after a "Battery test" command in the Technical menu or Master menu (manual test).

The test lasts for 60 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, **"Alarm Low battery"** alarm described in the Programming Manual. The "Low battery" condition will last until the subsequent "Battery test" concluded successfully. If the electric mains is not available, the battery test will not be performed.

Remark: in order for the control panel to perform the battery tests, it is necessary to use the PS515 power supply module or similar and to connect control terminal "C".

CHECKING THE BATTERY WITH THE ELECTRIC MAINS NOT AVAILABLE
The battery will be checked continuously even in case of <u>electric mains not available</u>.
When the battery voltage falls under 11,5V, the "**Low battery**" event is generated.
When the voltage at the battery terminals drops further below 10.5 V, the control panel will stop all of its activities pending the mains voltage resumption.
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, refer to the Programming Manual.

1.2.7   Self-diagnosis

The system carries out independent checks to ensure the correct system operation.
In addition to the battery and electric mains presence test, the following checks will be carried out:
* checks of the system supply voltages
* checks of correct device data exchange
* checks of correct CPU operation
* checks of the PSTN telephone line (refer to the Programming Manuals)

When the system detects a critical condition, a specific message will be displayed; both the beginning and the conclusion of the anomalous event will be recorded into the event log. Some anomalies will also cause the activation of dedicated outputs (refer to the Programming Manual, Chapter 2 – Alarms, Events, Inputs, Outputs and Signallings).

1.3 SYSTEM CONNECTIVITY

The MP504 system connections to the outside are described in the next paragraphs.
The table below shows the possible simultaneous connection instances.

PSTN	LAN ETHERNET	VIDEO GATEWAY	USB
✓	✓		
✓		✓	
✓			✓
	✓		
		✓	
			✓

1.3.1 Vocal telephone connection
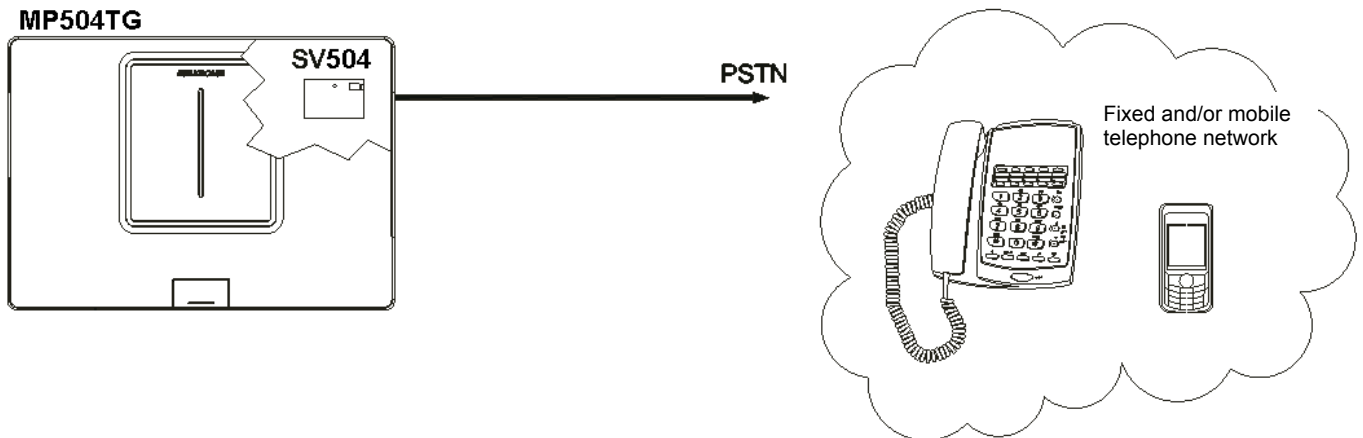
Figure 2

Performances:

VOCAL ALARM TRANSMISSION
through outbound calls
- vocal signalling and alarm transmission.
- rescue request call transmission.

USER REMOTE MANAGEMENT THROUGH THE TELEPHONE
through inbound calls
- Remote management and DTMF commands for:
  - system state interrogation (alarms and anomalies found)
  - partitions activation and deactivation

1.3.2 Connection with a remote PC
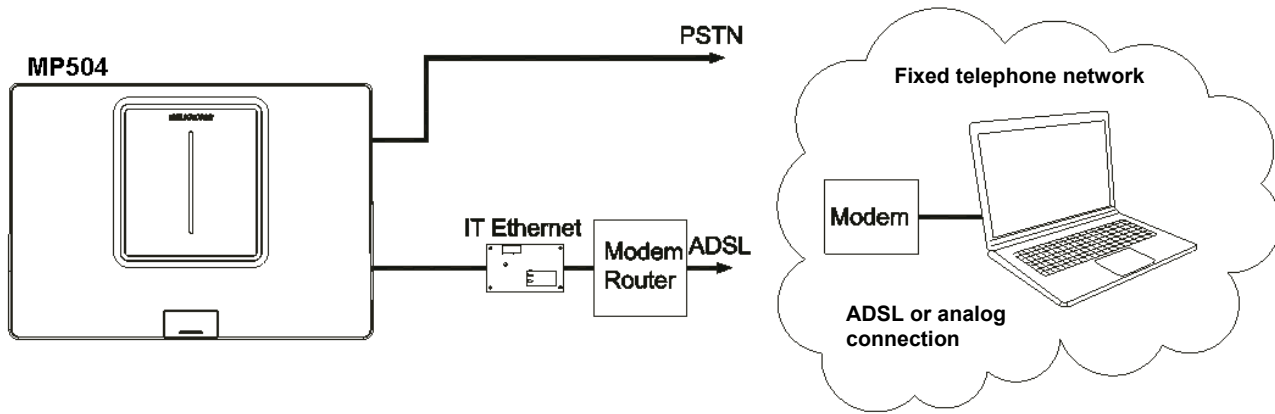
Figure 3

Performances:

ALARM TRANSMISSION
through outbound calls
- alarm and signalling transmission on the PC.

INSTALLER REMOTE MANAGEMENT AND PROGRAMMING THROUGH THE PC
through inbound or outbound calls with call-backs
- Remote programming for:
  - system programming and configuration
- Remote management for:
  - system state interrogation (active/inactive system, alarms and anomalies found)
  - input state displaying
  - partitions activation and deactivation
  - input exclusion and inclusion
  - code and key enable and disable
  - event log reading

Notes:
- IT ETHERNET (LAN) interfaces are optional.
- The PC shall be equipped with Hi-Connect SW; as regards the Ethernet interface, the Hi-Connect SW (release 3.10 or superior)

1.3.3 Connection with a local PC
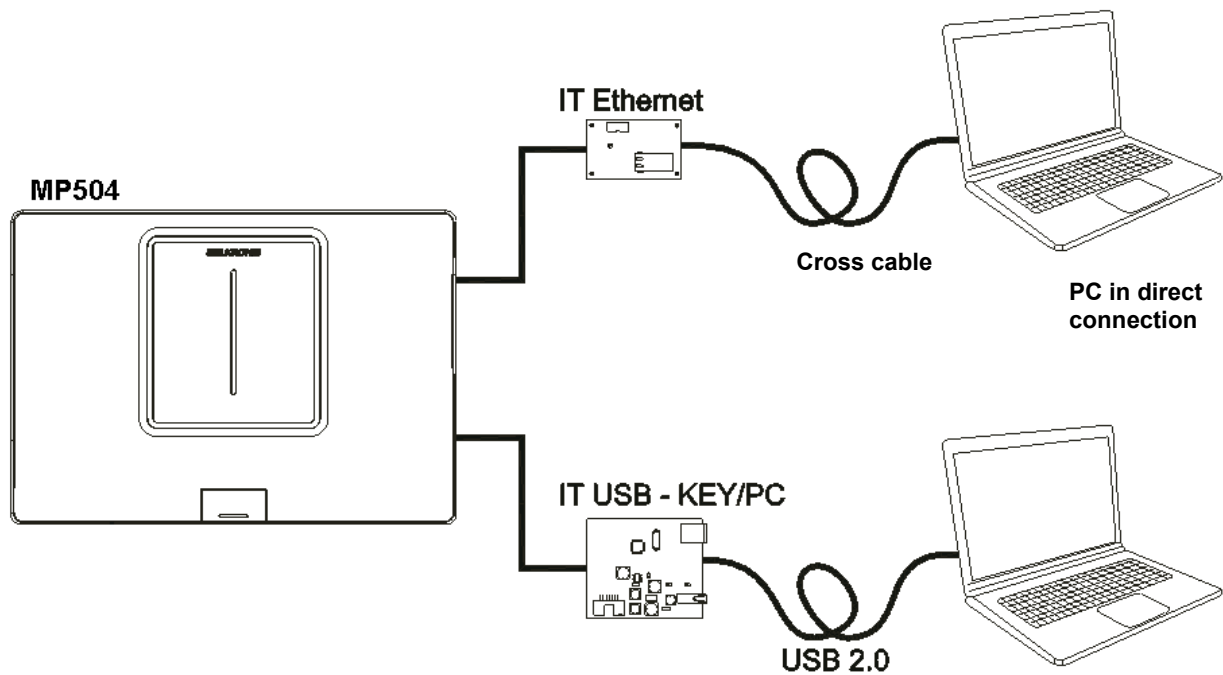
Figure 4

Performances:
Performances are the same as 1.3.2.

Notes:
- The USB interface is typically used during the maintenance operations, to program the control panel.
  If also the Videogateway is connected to the control panel, the Videogateway serial interface shall be disconnected if you wish to make use of the USB interface.
- When the USB interface is being used, the connection with the IT ETHERNET (LAN) interface will not be active.
- The PC shall be equipped with Hi-Connect SW; in case the Ethernet interface is used, the Hi-Connect SW shall be release 3.10 or superior.

1.3.4 Connection with a numeric centre
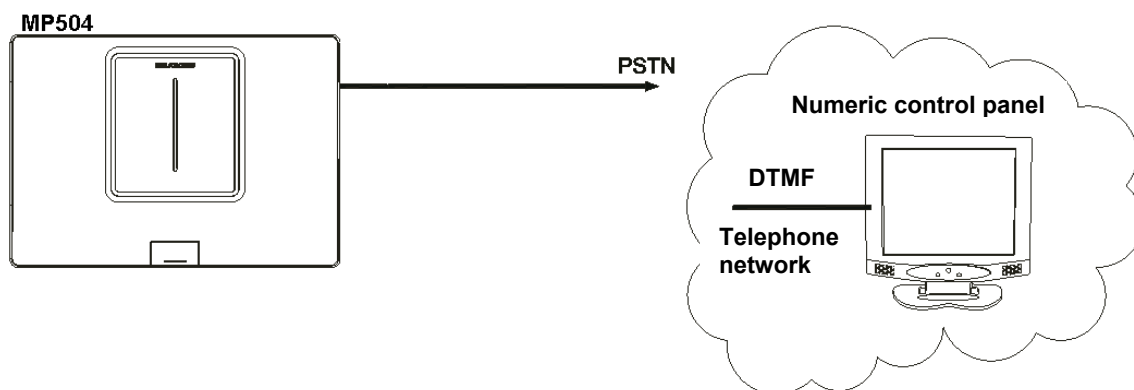
Figure 5

Performances:

REMOTE SURVEILLANCE
through outbound calls
- alarm and signalling transmission on a numeric control panel with IDP, ADF and C200b protocols

1.3.5 Connection with the Videogateway

MP504

4 inputs

Serial IT

Video Gateway

Ethernet **Modem Router** **ADSL**

INTERNET

e-mails enclosing the frames shot

Smartphones Handheld computer

HI-Vision

HI-Vision
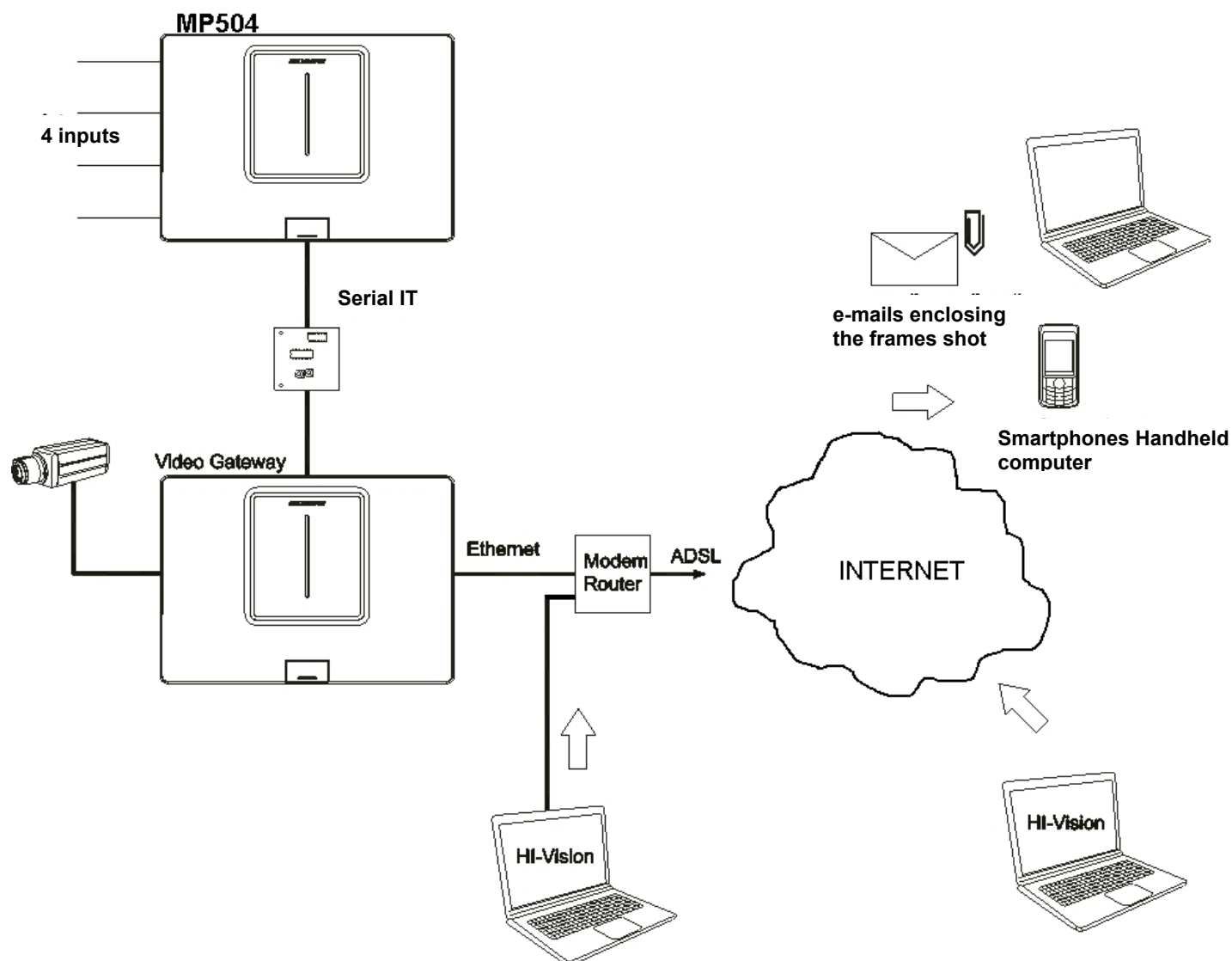
Figure 6

Performances:

VIDEOCONTROL
▪ Transmission of intrusion alarm e-mails enclosing the frames shot by the camera matched to the input that detected the intrusion. By activating the Push e-mail service by means of your own mail server, you can instantly receive the alarm video.
▪ Real-time video control through the PC by means of the Hi-Vision SW, with provision for video and frame recording.

Note:
• The PC shall be equipped with Hi-Vision SW.

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.

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1.4 SYSTEM COMPONENTS

1.4.1 MP504TG control panel
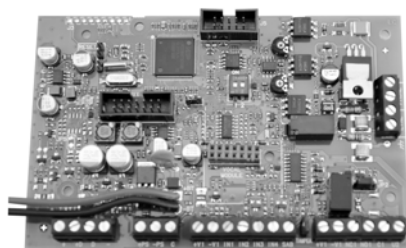
The MP504TG control panel is provided as an electronic board, and must be supplemented with its own container protected against opening and removal, it can internally contain a power supply and a battery buffer, such as the Plastic box for MP508/MP504" or the "Plastic box for MP120/MP504" Elkron (see below).

The MP504TG 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 MP504TG control panel has the capacity to keep a record of the 1,000 most recent events that have occurred, for example, burglar alarm, sabotage, arming and disarming; it is equipped with a timer.

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:
- 4 programmable inputs;
- 1 tamper input;
- 2 programmable outputs (1 relay and 1 electric OC);
- 1 interface for PSTN telephone line, with input and output;
- 1 connector for the service keypad (not available on all models);
- 1 connector for the protection against tampering of the casing;

To power the MP504TG control panel and devices, it is necessary a power supply that can provide – 14.4 Vcc ± 1% – 1, PS515 type, which will also include terminal "C", which is necessary to perform the battery test.
The control panel must be connected to a 12V─, 7Ah battery buffer.

The capacities of the MP504TGTG control panel can be increased through the expansions, 8 EP508 inputs and the SV504 vocal synthesis board.
The programming facility is guaranteed by the USB interface, and by the Ethernet Interface.

1.4.2 KP500D/EN display keypad

KP500D/EN display keypad, for internal use, allows to command and program the MP504 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, timing programmer, open input, excluded inputs, alarm, tamper, partitions status);
- 12 alphanumeric keys, protected by a cover;
- 7 navigation keys ;
- 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.

Remark: the KP500D/EN keypad has been certified according to EN 50131 **only** for operating with the MP508TG/EN Control panel.

1.4.3 KP500L LED keypad

KP500L LED keypad, for internal use, allows to command and program the MP504 system. The keypad is provided with:
- 24 LEDs for inputs status signalling;
- LEDs for system status signalling (power supply, failure, maintenance, timing programmer, open input, excluded inputs, alarm, tamper, partitions status);
- 12 alphanumeric keys, protected by a cover;
- 4 navigation keys;
- buzzer with adjustable acoustic level

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

1.4.4 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 Axolute, Gewiss Playbus, Ave Habitat Sistema 45, Vimar Idea, Vimar 8000. Vimar Eikon.
The reader is powered by the bus, that connects it to the control panel, and configured by programming procedure.

1.4.5 DK500M-E/B electronic key reader

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

1.4.6 DK50 electronic key

DK50 is an electronic key for total or partial activation and deactivation of the system. Every key has a unique code, set by the manufacturer, 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.

1.4.7 DK500M-P proximity reader

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

1.4.8 DK500M-P/B proximity reader

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

1.4.9 DK30 proximity key

DK30 is a transponder key for total or partial activation and deactivation of the system. Every key has a unique code, set by the manufacturer, 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.

1.4.10 Customization kit for DK30-50 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.

1.4.11 EP508 – 8 inputs expansion
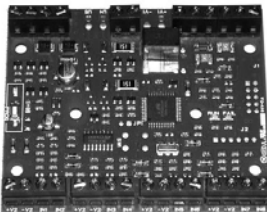
EP508 is an expansion module provided with:
- 8 programmable alarm inputs;
- 1 SAB balanced input;
- 1 relay output;
- 2 electric outputs, freely programmable.

It allows the detectors connection in traditional parallel mode.

1.4.12 SV504 speech synthesis board

SV504 is the speech synthesis board, allows the recording and playback of vocal messages.
The recording of the messages is performed through the microphones with the headset supplied.

1.4.13 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 MP504TG control panel for control panel programming and a USB key (Pen Drive) for save and restore of the whole system programming, as well as the event log, the codes and keys.

1.4.14 Power supply module

PS515 switching power supply module provides DC power supply to the control panel and to the other connected electronic devices.
It is supplied with terminal "C", which is required to perform the battery test.

The power supply module provides 14,4 V — ± 1% 1,5 A.
Input voltage: 220 – 240 Vac 50/60 Hz.

1.4.15 Cable for KP SERVICE service keypad

The cable for service keypad is used to connect the control panel to the service keypad (KP500D/EN) in order to carry out the system programming.

The cable is provided with a connector compatible with the SERVICE connector of the MP504TG control panel motherboard.
For connection see paragraph 3.7.6

1.4.16 Hi-Connect application software

Hi-Connect is the software for local programming with computer and remote management of the MP504TG 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, 7
- CD ROM reader
- Available serial port or USB

1.4.17 Ethernet interface

The Ethernet interface enables you to connect the MP504TG control panel with a LAN (Local Area Network) network or the Internet by means of a modem or an ADSL router. Thus, you can control and manage the system remotely through a PC equipped with Hi-Connect SW.

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

1.4.18 Video gateway

The Video gateway is used to include in the system up to 4 analog 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 MP504TG control panel with a dedicated serial interface.
The connection of the Video gateway to the control panel is alternative to the connection of the Ethernet interface.

1.4.19 Plastic box for MP508TG/MP504TG

This container lodges the MP504TG control panel and the PS515 power supply.
It is sized to contain a 7 Ah battery and even offer the possibility of mounting the EP508 expansions.
It is equipped with a TAMPER device against opening and removal.

1.4.20 Plastic box per MP120/MP504TG

This container lodges the MP504TG control panel and the PS515 power supply.
It is sized to lodge a 7 Ah battery and even offer the possibility of mounting the EP508 expansions.
It is prepared for a TAMPER device against opening and removal.

1.4.21 Plastic box per EP508

This lodges an EP508 expansion.
It is equipped with a TAMPER device against opening and removal.

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	Q.ty	Consumption (mA)	
		unit	total
MP504TG control panel	1	100	100
Current reserved for battery recharging	1	650	650
KP500D/EN display keypad			
KP500L LED keypad			
DK500M-E electronic key reader			
DK500M-P proximity reader			
EP508 8 inputs expansion			
SV504 speech synthesis board			
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 (in control panel and additional power supply unit) must supply a current equal or higher than the requested current calculated in point 2.1 *Requested devices and current consumption*.

2.2.1 Power supply of the system by the MP504TG control panel power supply.

The MP504TG control panel is equipped with a PS515 power supply, that provides 1500 mA a 14,4 V—, The supplied current will be shared:

100 mA   used by the control panel electronics.

650 mA   reserved for control panel backup battery recharging.

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

2.2.2 Power supply with additional power supply units

When the necessary current calculated in paragraph 2.1 *Required devices and current consumption*, is higher than the power supply of the control panel can provide, it is necessary to add additional power supplies, by choosing for example from among Elkron ASxx range.
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 § 3.7.2 *Additional power supply connection.*

2.2.3 Batteries' capacity 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:

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

where
$C_{BATTERIES}$ 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, 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).

Please note that the MP504TG control panel provides for a 7Ah — 12V battery connection, if a larger battery is required in order to satisfy the hours of autonomy, it is necessary to subdivide the power supply of the system by using additional power supplies.

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2.3 DEVICES POSITIONING

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

2.3.1 MP504TG control panel placement

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

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 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 a dry place
- near the accesses of the area to be protected;
- inside built-in or wall-mounted cabinets, by making use of the carrying plates, protected by the MR03I and MR04E anti-tampering devices (tampers).

2.3.4 Expansions placement

If the expansions are used outside the MP504TG control panel, they must be installed:
- in a dry place
- in terminal boxes or similar housings, suitably protected by anti-tampering devices (tamper);
- in an interior that is not passageway 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.

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 MP504 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—

i.e. 0.75 V on the positive wire and 0.75 V on the negative wire.

The calculation formula is
$$V_{CONTROL\ PANEL} = 2 \times lenght \times R_{CABLE} \times I_{DEVICES}$$
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 mm^2 (*)	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 mm^2.

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 use a shielded multi-core cable for intrusion systems.
Shieldings can be connected together in the control panel to the negative pole of the power supply.

2.4.2 Power supply bus and data dimensioning

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 lengths shall not exceed 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.

DAISY CHAINED

STAR

MIXED
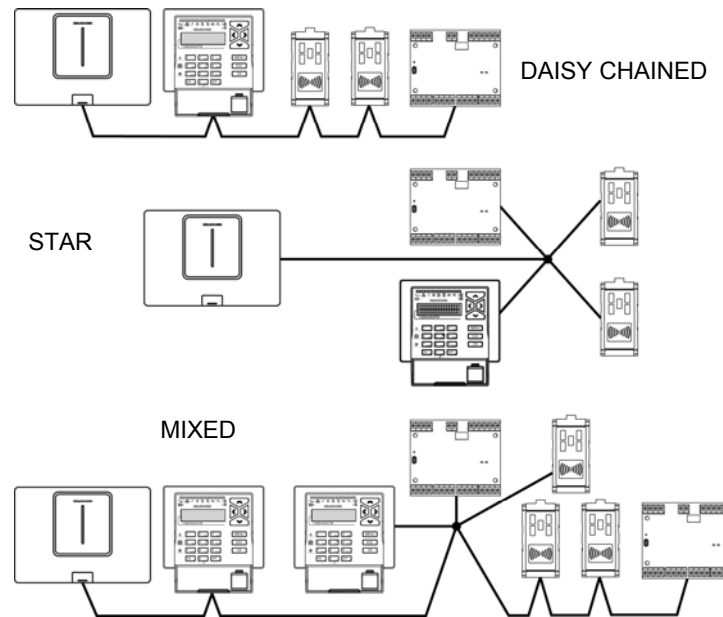
Figure 7 – Bus connection types

⚠ **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.
To determine the section of the + and – supply leads found on the bus, refer to § 2.4.1, as regards the +D and D data wires, a section of at least 0,22 mm^2 shall be used.

2.4.3 Inputs / Outputs connection dimensioning

The length of every single connection segment between detector or actuator and system device must not exceed 500 m.

In case quick inputs (i.e. blind, inertia device, etc.), the cable length shall not exceed 100 metres.

To determine the section of the supply leads for the detectors or actuators, refer to § 2.4.1, as regards the wires that connect the inputs, a section of at least 0,22 mm^2 shall be used.

3 MP504 SYSTEM INSTALLATION

3.1 INSTALLATION PROCEDURE

For the MP504 system mounting follow the steps below:
1. Cables laying.
2. Assembly of the electronic board of the MP504TG control panel in a suitable container.
3. Optional parts and accessories mounting in the control panel.
4. Control panel wall mounting.
5. Wiring inside the control panel
6. Expansions, keypads and readers installation and wirings.
7. Detectors and alarm/signalling devices installation and wirings.
8. Devices acquisition.
9. System configuration and test (procedures are described in the Programming Manual).

This sequence reduces to the minimum the time necessary to make a MP504, 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. Before laying the cables, verify their design.

⚠️ **Warning**: during cables laying phase keep the intrusion 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

The MP504TG control panel is provided as an electronic board, and must be supplemented with its own container protected against opening and removal, it can internally contain a power supply and a battery buffer, such as the Plastic box for MP508/MP504" or the "Plastic box for MP120/MP504" Elkron.
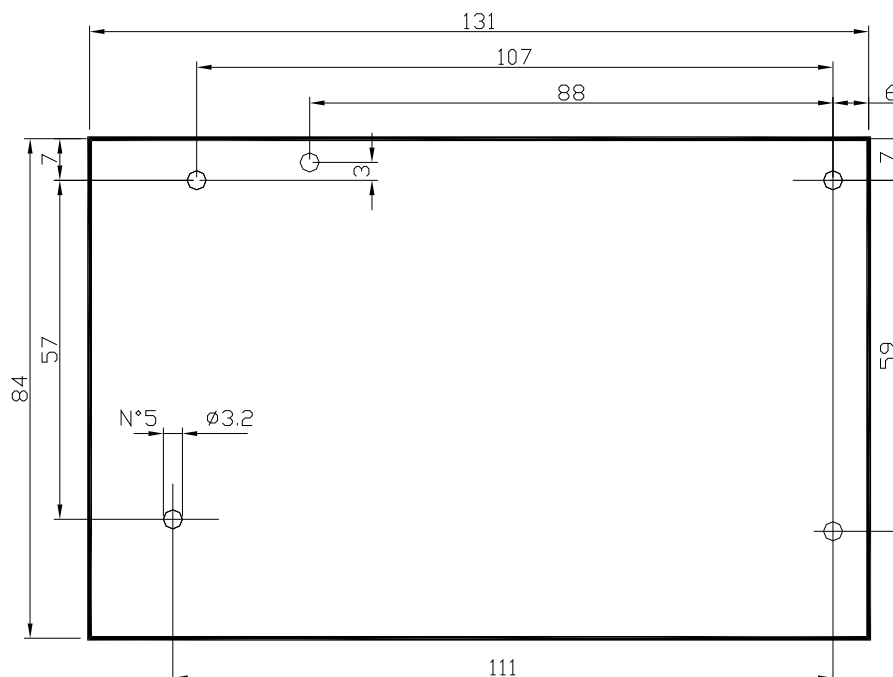
Figure 8 – Board dimensions

To power the MP504TG control panel and devices, it is necessary a 1.5A power supply that can provide – 14.4 Vcc ± 1% – 1, such as the PS515, which will also include terminal "C", which is necessary to perform the battery test.

The control panel must be connected to a 12V−, 7Ah battery buffer.

Connect the devices for detecting the opening and removal of the casing to the connector for the TAMPER (P), removing the jumper.   The tamper devices must be N.C.

⚠️ **Warning:** in the installation operations of the control panel, pay great attention to not inadvertently damage the motherboard.

3.3.1 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.
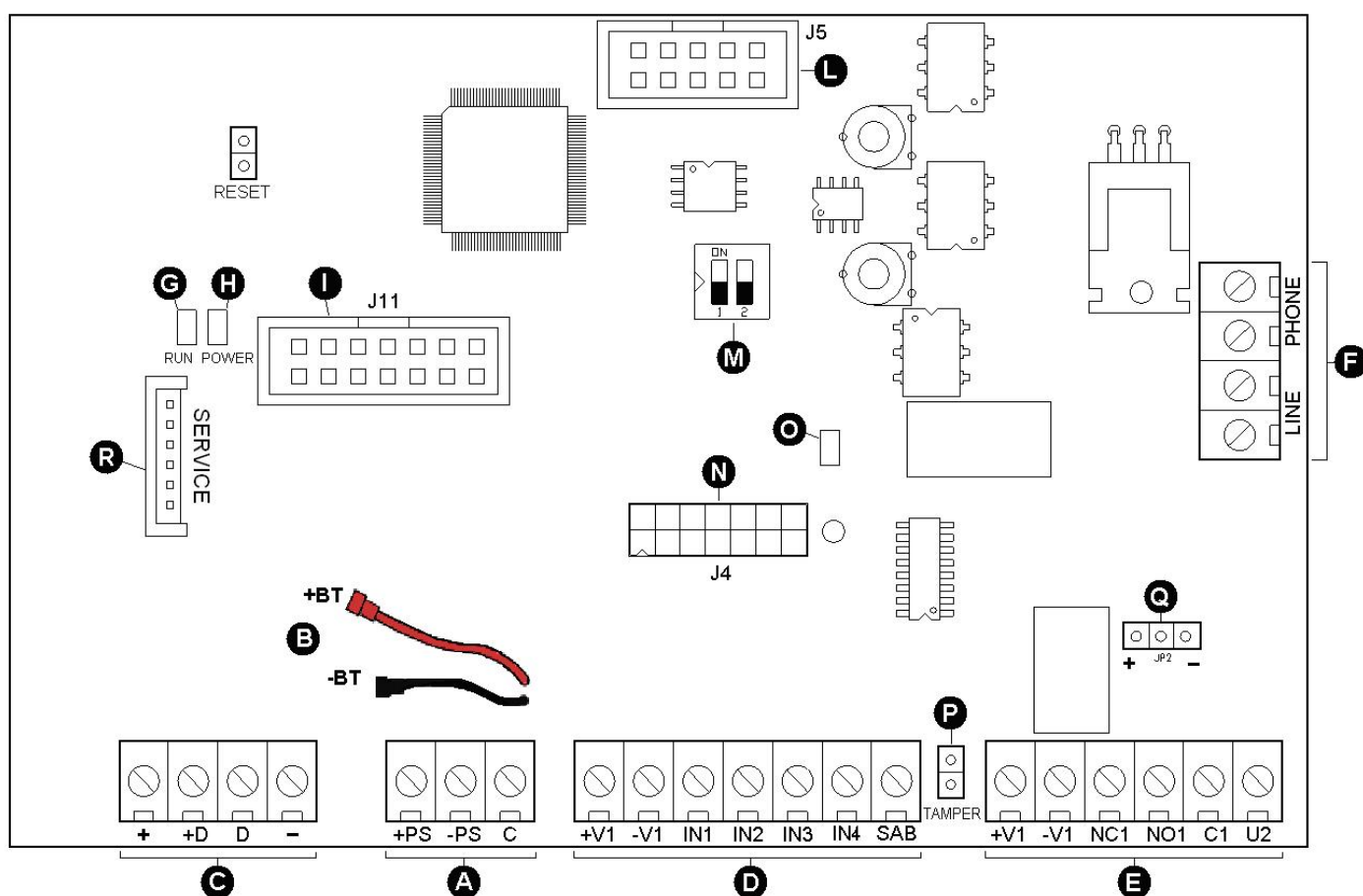
Figure 9 – Connections and control panel main parts

Part	Terminal pin / Part	Description
A	+PS	Power supply input +14,4 V (to the power supply unit positive pole)
	-PS	Power supply input (to the power supply unit negative pole)
	C	Control output command (C input power supply unit type PS515)
B	+BT	Positive pole of the battery buffer
	-BT	Negative pole of the battery buffer
C	+	BUS Power supply (13.8V— limited to 1.1A for the connected devices via bus
	-	
	+D	Data transmission/reception BUS
	D	
D	+V1	Power supply of the output detectors and actuators connected to the Control panel (13.8V— limited to 750 mA).
	-V1	Two pairs of supply clamps are available on the main board.
	IN1	Alarm input 1
	IN2	Alarm input 2
	IN3	Alarm input 3
	IN4	Alarm input 4
	SAB	24h input (for system self-protection). It shall always be BALANCED.
E	+V1	See above
	-V1	
	NC1	Relay output 1 – normally closed contact
	NO1	Relay output 1 – normally open contact
	C1	Relay output 1 – common (max. 1 A - 24 V—)
	U2	Electric output 2 (protected, with max. current of 100 mA)

F	LINE	PSTN telephone line input
	PHONE	PSTN telephone line output
G	RUN	Control panel operation signalling green LED. **ON steady** = control panel initialization in progress **One brief blink every 2 seconds** = control panel with no peripheral device acquired; this is the factory setting that occurs upon the first power-on **Slow blinking** = normal operating conditions
H	POWER	230 V network presence signalling green LED
I	J11	Connector for the USB interface
L	J5	Connector for the video and Ethernet interface
M	DIP SWITCH	Parameter reset dip-switch – refer to *Functions associated with the dip-switches* (as a rule, they shall be left in the OFF position)
N	J4	Connector for vocal synthesis board
O	PSTN	Telephone line engagement Yellow LED
P	TAMPER	Connector for connection of the Control panel tamper
Q	JP2	output U2 configuration jumper
R	SERVICE	Connector for the service keypad connection (not available on all models) *See § 3.7.6*

The U2 electrical output can be singularly configured as "Positive referred" or "Negative referred" through the jumper of the JP2 jumper. The factory setting is "Positive referred".

The Figure 10 is an example of jumper JP2 (Q) position.

POSITIVE
reference

NEGATIVE
reference

(default)
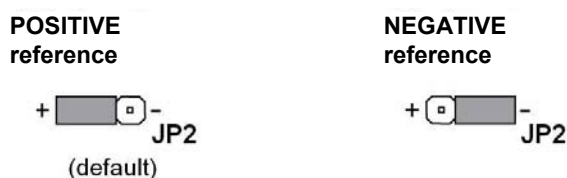
Figure 10 - Electric outputs hardware configuration

For connection details (power supply, inputs, outputs, bus, …), see § *3.7 Connections.*

Functions associated to dip switches
To activate the reset functions associated to dip switches it is necessary to follow the indications given in paragraphs 5.9.6 and 5.9.7.

DIP-SWITCH	POSITION	FUNCTION
1	OFF	Normal operation
	ON *	Factory-set parameter hardware reset
2	OFF	Normal operation
	ON *	Installer code reset

* = set to ON before "POWER ON".

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3.3.2   Speech synthesis board mounting
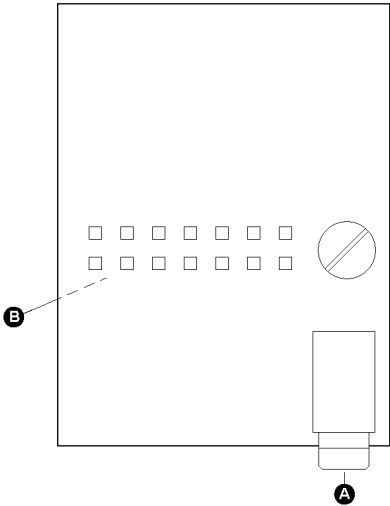
Figure 11 - Speech synthesis board

A	Jack for earphone (provided with product)
B	Connector with support spacer

To mount the speech synthesis board follow the procedure below:
- Insert the pin connector into the appropriate connector (N) on the motherboard (Figure 9).
- Tighten the plastic nut provided, to the support spacer through the hole prepared on the motherboard.
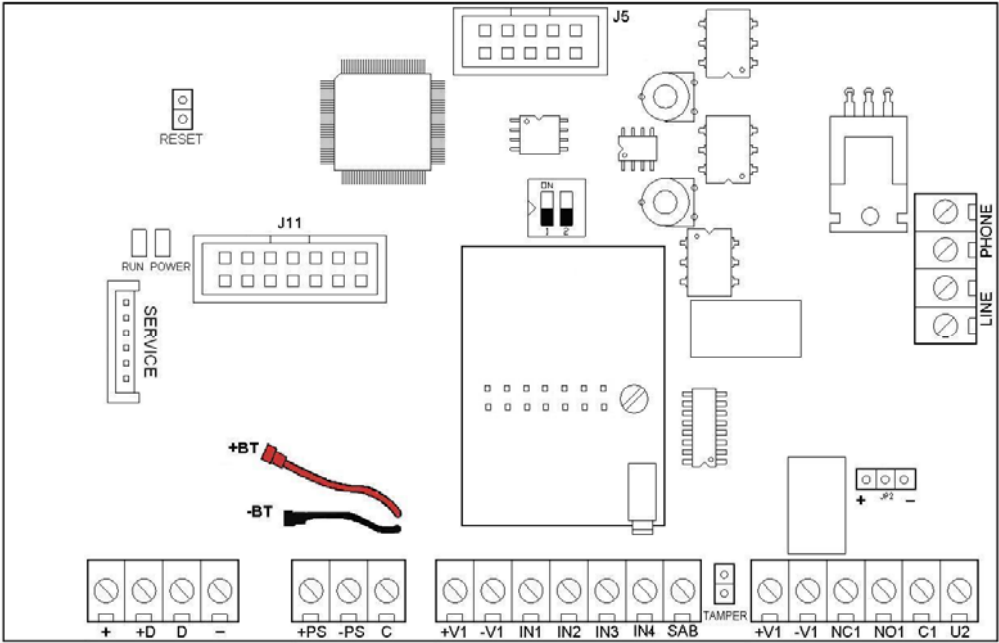
Figure 12 – Speech synthesis board mounting

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

Connect the USB Interface to the connector **(I)** of the control panel before connecting to the PC.

⚠ **Warning**: If also the Videogateway is connected to the control panel, the Videogateway serial interface shall be disconnected if you wish to make use of the USB interface.

3.4 EP508 EXPANSION INSTALLATION

The EP508 expansion can be installed not only in the MP504TG control panel, but also in a wall mounting box CP/EXP – MP4J00111.
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.
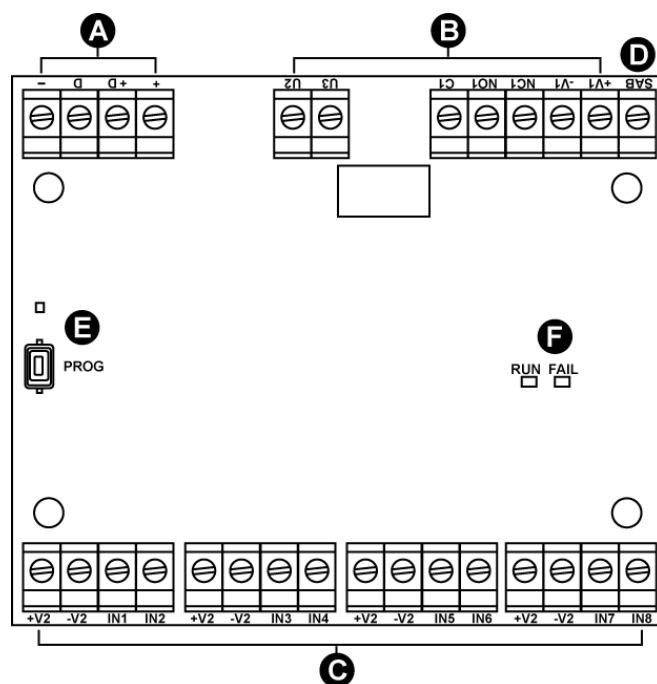
Figure 13 - EP508 expansion

| Part	Terminal pin / Part	Description
A	+	BUS for power supply input expansion through the bus
	+D	Data transmission/reception BUS
	D	
	—	BUS for power supply input expansion through the bus
B	+V1	Output actuator power supply (13.2 V— limited to 500 mA)
	-V1	
	NC1	Relay output 1 – normally closed contact
	NO1	Relay output 1 – normally open contact
	C1	Relay output 1 – common (max. 1 A - 24 V—)
	U2	Electric output 2 (protected, with max. current of 10 mA)
	U3	Electric output 3 (protected, with max. current of 10 mA)
C	+V2	Power supply for the detectors connected to the expansion (13.2 V – limited to 500 mA).
	-V2	Four pairs of supply clamps are available on the expansion.
	IN1	Alarm input 1
	IN2	Alarm input 2
	IN3	Alarm input 3
	IN4	Alarm input 4
	IN5	Alarm input 5
	IN6	Alarm input 6
	IN7	Alarm input 7
	IN8	Alarm input 8
D	SAB	24-h input (for system self-protection). It shall always be BALANCED
E	Yellow LED key	Device acquisition key and LED
F	RUN	Operation signalling green LED (refer to the Programming Manual for more details) **Slow blinking** = normal operating conditions **Fast blinking** = signalling of failure to Exchange data with the control panel for at least one minute

For wiring details (power supply, inputs, outputs, bus,...) refer to paragraphs 3.7 *Connections.*

3.5   KEYPAD INSTALLATION

The KP500D/EN keypad is provided with two auxiliary inputs referred to positive, that are freely programmable.

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.
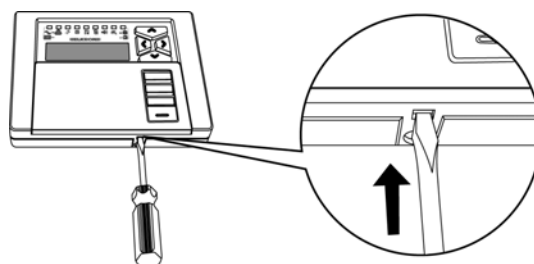
Figure 14 - Keypad opening

2.   To run the cables, open one of the pre-cut holes (D) on the keypad bottom for cables passing. Otherwise it is possible to use the pre-cut holes for trunkings (F).
3.   Secure the keypad bottom to the wall by means of four 6 mm plugs (not provided).

⚠   **Warning:** before fixing, verify the bottom direction: the loudspeaker grid must be in the upper right corner.

4.   Connect any devices to the auxiliary inputs.
     To wire with greater convenience, we recommend unsheathing the cable up to the access hole.

For wiring details (power supply, inputs, outputs, bus,...) refer to paragraphs 3.7 Connections.
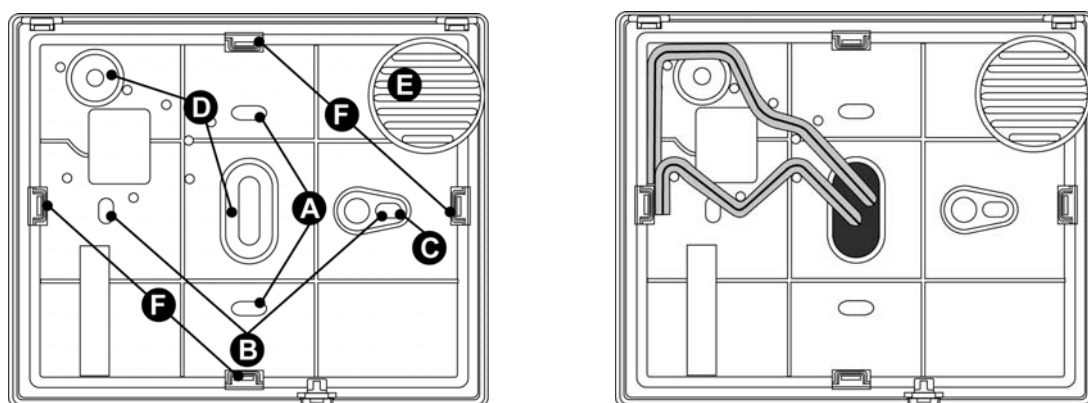
Figure 15 - Keypad holes and cables apertures

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 boards are slightly different according to the model.

KP500D/EN   **KP500L**
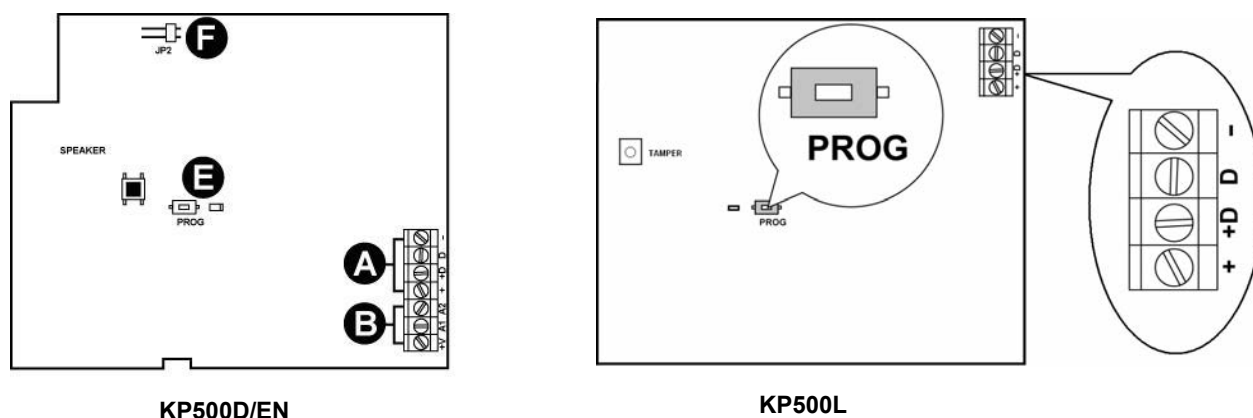
Figura 16 - Keypad boards

Part	Terminal pin / Part	Description
A	+	BUS for expansion unit power supply through the bus
	+D	Data transmission/reception BUS
	D	
	—	BUS for keypad unit power supply through the bus
B	+V	Auxiliary input power supply (13.8V – limited to 100 mA)
	A1	Auxiliary input 1
	A2	Auxiliary input 2
E	Yellow LED key	Device acquisition key and LED
F	JP2	Keypad tamper exclusion jumper (jumper ON = tamper OFF)

3.6 READER INSTALLATION

The key and proximity readers are installed in boxes, wall- or flush-mounted and placed in a dry place.
The reader is suitable for being installed on the BTicino Magic frames and, by making use of a BTicino adapter (code A5374/1), on the BTicino TT Matix frames as well. Moreover, the readers can, by means of adapter frames (not provided), be plugged as outlets in the main home lines, for example BTicino Living International, BTicino Light, BTicino Axolute, Gewiss Playbus, Ave Habitat Sistema 45, Vimar Idea, Vimar 8000 , Vimar Eikon etc.

⚠ **Warning**: in accordance with the CEI 79.2 standards, the readers installed outside the protected area shall be protected by the MR03I or MR04E anti-tamper devices (tamper) connected to the SAB line.

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

To install the reader follow the procedure below:
1. Connect the reader to the bus.
2. Force the reader, together with the adapter (if any), onto the outlet frame provided, by placing it, if possible, at such a position that will allow you to access the programming LED and the key both of which situated on the reader side
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 (either of the wall- or flush-mounted type) are to be installed in the same box, leave at least the space corresponding to an outlet between them.

💡 **Suggestion**: it is possible to use one of the reader auxiliary inputs, properly programmed, to connect the protection tamper of the wall- or flush-mounted boxes..

For connection details (power supply, inputs, bus, etc.), see paragraphs 3.7 Connections.

3.7   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.

⚠ **Warning**: for the dimensioning of the cables, refer to chapter 2 .

⚠ **Warning**: the system must be supplied by mains power only when all the devices have been correctly installed and it is possible to proceed to their acquisition.

3.7.1   Data Bus connection

Connect +, +D, D and – terminal pins and the bus 4-wires cable that will allow the communication among control panel, readers, keypads and expansions, if present.
The data bus requires no terminating resistors.
The cable shieldings can be connected together in the control panel to the negative (–) pole of PS515 power supply.
The Figure shows how to connect together the different devices with the bus line.
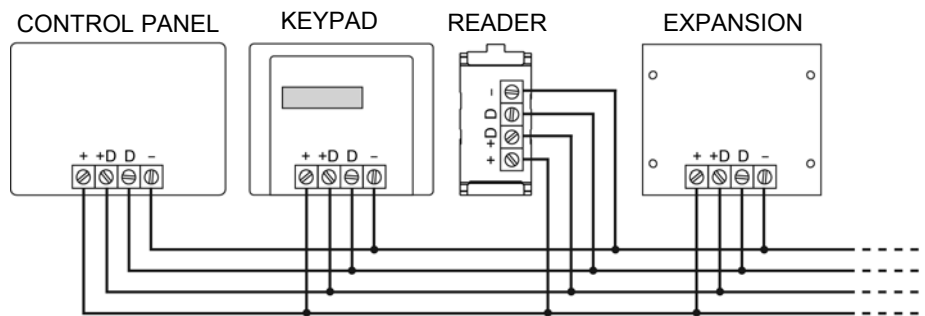
Figure 17 - Connections on bus

3.7.2   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).
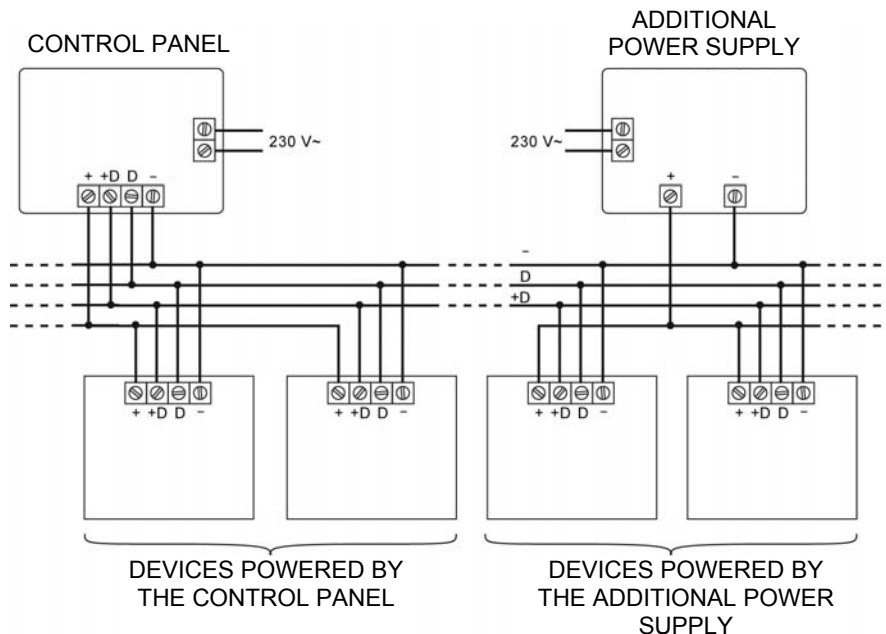
Figure 18 - Additional power supply units connection

3.7.3 Connection of PC21 analysis board 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, of an EP508 expansion card.
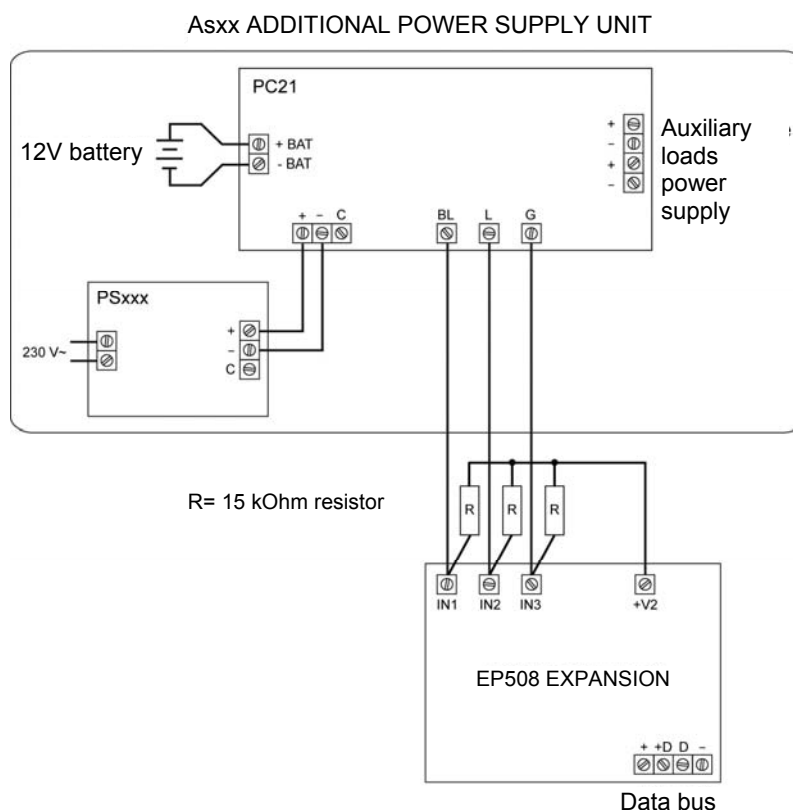
Figure 19 – Connection of PC21 analysis board with 3 inputs

The three 15 Kohm balancing resistors are used to polarize the signals of the PC21 board.
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 board.
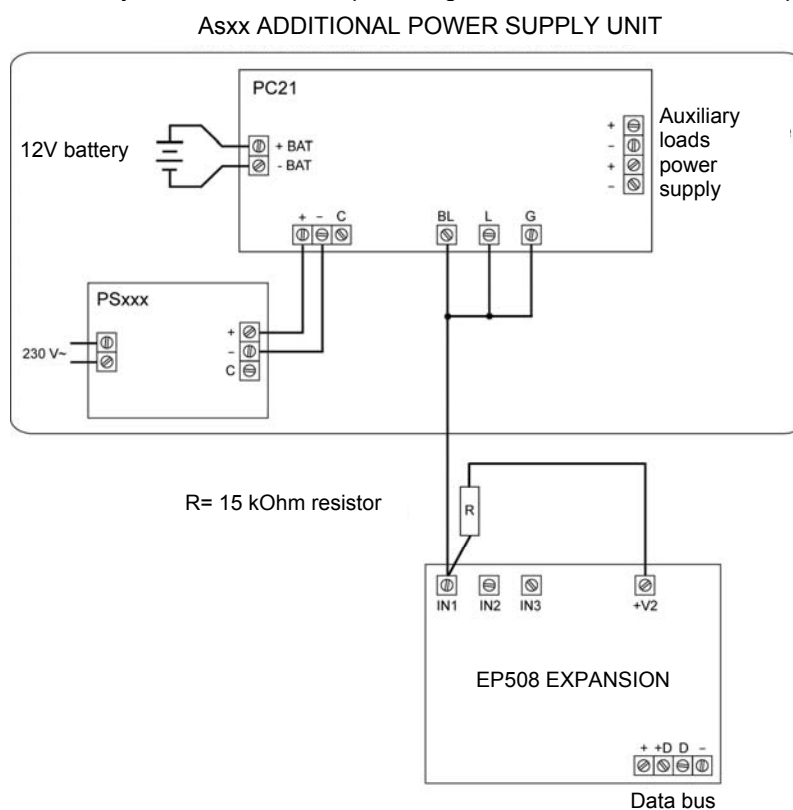
Figure 20 – Connection of a PC21 analysis board with one input

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

3.7.4 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.

Figure 21 - Inputs connections
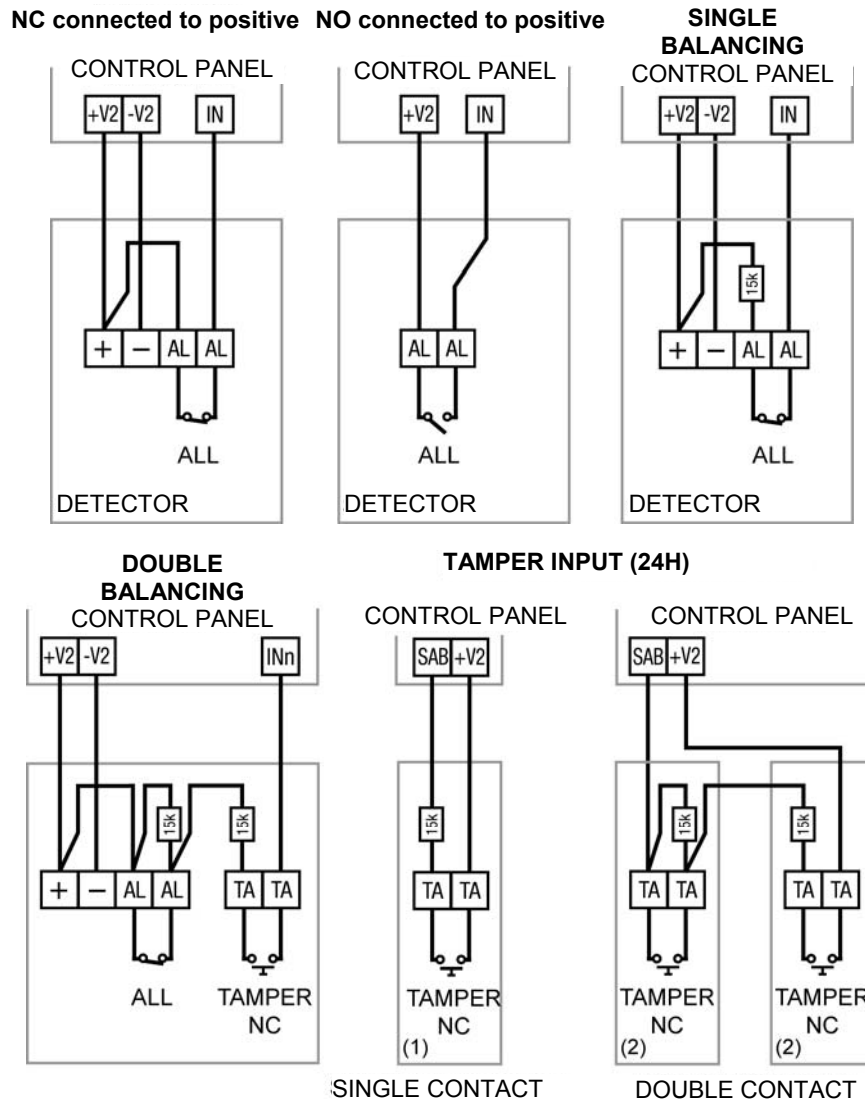
(1) Detector; (2) Sirens or other auxiliary contacts

Colour code for 15 kohm, 1% tolerance resistor

Brown
Green
Black
Red
Brown

All the resistors provided with the MP504 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.

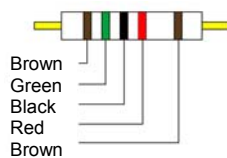| Input status according to the type				Voltage on the input terminal pin (*)	Resistor between input and +V1
N.C. double BIL	**N.C. single BIL**	**N.C.**	**N.O.**		
TAMPER (wires short circuit)	TAMPER (wires short circuit)	NORMAL	INPUT ALARM	11,8 ÷ 13,8 V	0 ohm
NORMAL	NORMAL			6,7 ÷ 7,9 V	15 kohm
INPUT 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.

3.7.5 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 have an exchange contact between terminal C (common connection) and the NC (normally closed) and NO (normally open contact.) terminals.
A relay output is available both in the control panel, and in the expansion: 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).

The electric outputs can be used to control the excited relay or the signalling LEDs. It is possible to transform an electric output into a relay output by means of the Elkron MR02 module, equipped with two relays with one exchange.
There is an electric relay in the control panel: U2, and can be configured as "Positive referred" or "Negative referred", as detailed in Figure 9 (§ 3.3.1).
In the expansion are available 2 electric outputs only "positive referred": U2 and U3.
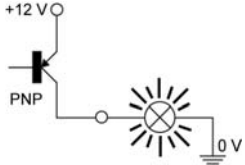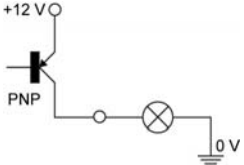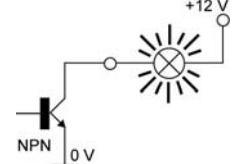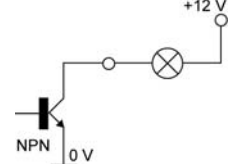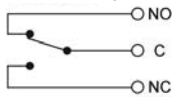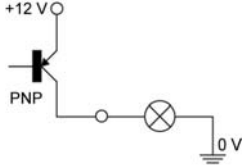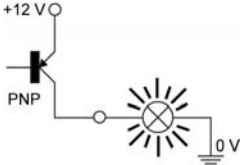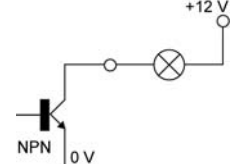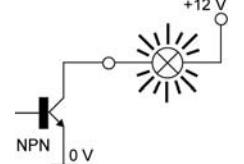
Output normal condition

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 NO — C — NC	Not Excited relay NO — C — NC
POSITIVE referred ELECTRIC OUTPUT	+12 V PNP 0 V	+12 V PNP 0 V
NEGATIVE referred ELECTRIC OUTPUT	+12 V NPN 0 V	+12 V NPN 0 V

N.L. programmed output		
	Normal	**Active**
RELAY OUTPUT	Not Excited relay NO — C — NC	Excited relay NO — C — NC
POSITIVE referred ELECTRIC OUTPUT	+12 V PNP 0 V	+12 V PNP 0 V
NEGATIVE referred ELECTRIC OUTPUT	+12 V NPN 0 V	+12 V NPN 0 V

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

3.7.6 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 22 – Cable for KP SERVICE keypad

–	**D**	**+ D**	**+**
Black	White	Blue	Brown

3.7.7 Telephone line connection (optional)

If it is desired to connect the control panel to the PSTN telephone line, use one of the following diagrams:
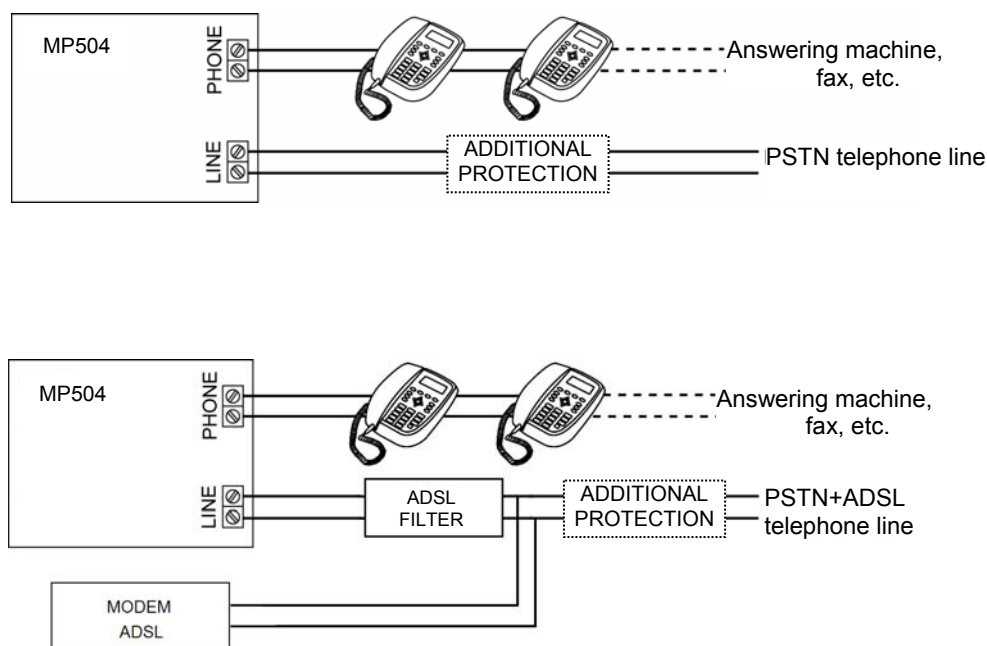
Figura 23 - Telephone connections

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 the board 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.

ELKRON

3.8 EXAMPLE OF CONNECTION DIAGRAM WITH N.C. INPUTS
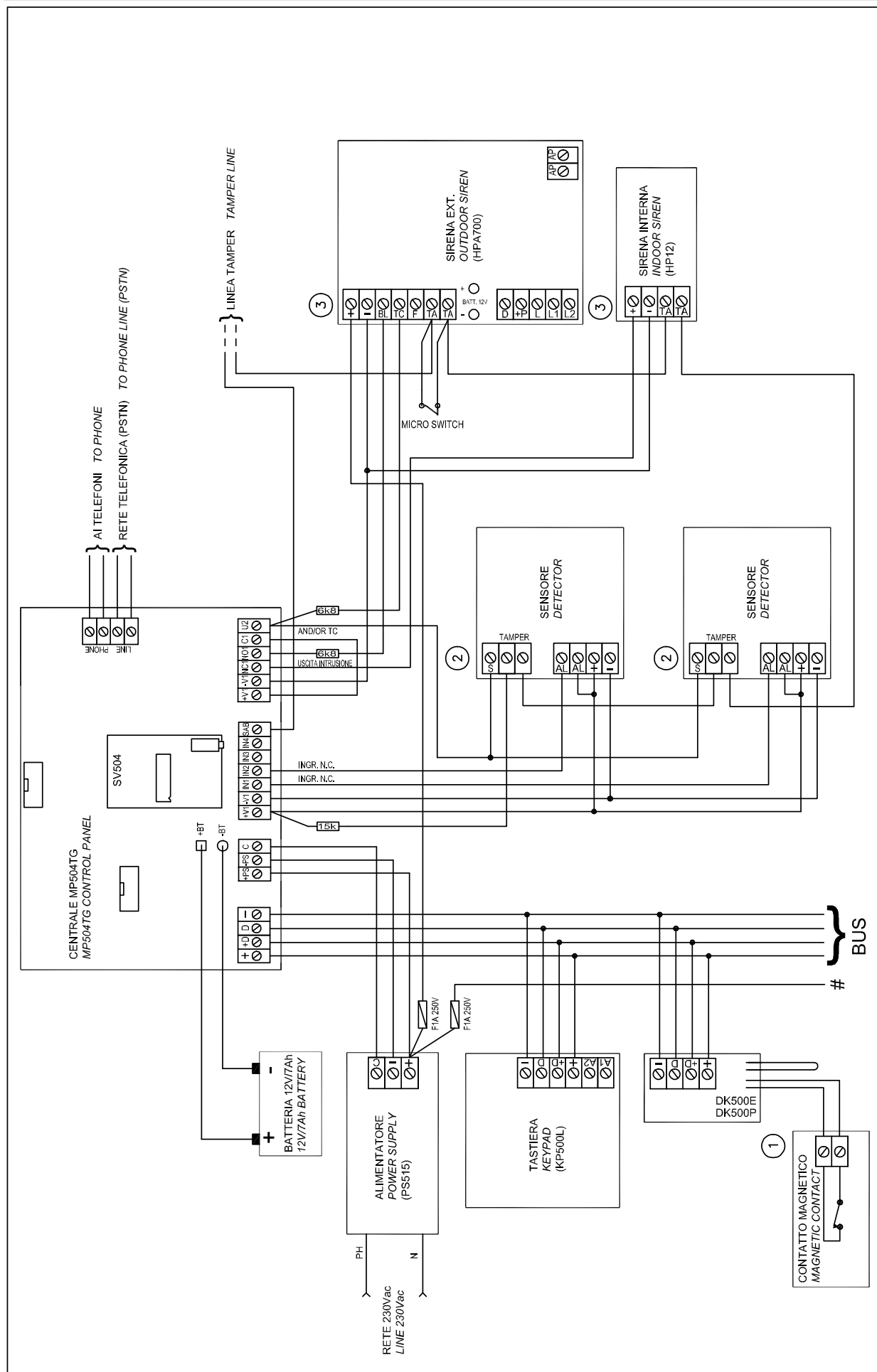
1) Example of connection on N.C. input   2) Example of connection with alarm on N.C. input and tamper on SAB input
3) Example of connection with tamper on SAB input
IMPORTANT! Every detector must be powered by the device that controls it..

SIRENA EXT. / OUTDOOR SIREN (HPA700)

AP AP

+ − BL TC F TA TA

BATT. 12V + −

D +P F L1 L2

MICRO SWITCH

③

SENSORE / DETECTOR

TAMPER S

AL AL + −

②

SENSORE / DETECTOR

TAMPER S

AL AL + −

CONTATTO MAGNETICO / MAGNETIC CONTACT

①

SENSORE TAPPARELLA / ROLLER DETECTOR

④

ESPANSIONE / EXPANSION (EP500)

9NI 7NI ZA− ZA+   9NI 8NI ZA− ZA+   7NI 8NI ZA− ZA+   7NI 7NI ZA− ZA+

INGR. N.C.   INGR. N.C.   INGR. N.C.   INGR. TAPPARELLA

1.5k

SAB +V1 −V1 NC1 NO1 C1   U2 U3   + +D D −

USCITA INTRUSIONE   6k8   AND/OR TC   6k8   AND/OR TC

BUS

#

BUS

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.

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3) Example of connection with tamper on SAB input
5) Example of connection on double BAL input
6) Example of connection with tamper and alarm 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.

SIRENA EXT. *OUTDOOR SIREN* (HPA700)

MODULO OPZIONI *OPTION MODULE*

AP AP

TAMPER

BATT. 12V

MICRO SWITCH

SENSORE *DETECTOR*

TAMPER

CONTATTO MAGNETICO *MAGNETIC CONTACT*

SENSORE TAPPARELLA *ROLLER DETECTOR*

ESPANSIONE *EXPANSION* (EP500)

INGR. MANOMISSIONE DOPPIO BIL.

INGR. GUASTO N.C.

INGR. DOPPIO BIL.

INGR. DOPPIO BIL.

INGR. TAPPARELLA

USCITA INTRUSIONE

AND/OR TC

AND/OR TC

SAB+ V1- V1+ NC1 NO1 C1

DK500E DK500P

SENSORE TAPPARELLA *ROLLER DETECTOR*

LINEA TAMPER *TAMPER LINE*

1.5K

6K8

BUS

BUS

#

4) Example of connection with alarm on rolling shutter input
6) Example of connection with alarm and tamper on double BAL input

5) Example of connection 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/ ACQUISITION

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 that you should activate them before the control panel.

Connect the battery using the faston connectors to the respective terminals: red "+", black "–", and then provide the power supply voltage.

⚠️ **Warning**: for system total poweroff, follow the procedure described in paragraph 5.11 *SYSTEM TOTAL POWEROFF.*

The battery voltage, at the end of the charging phase, reaches a nominal voltage of 13,8 V.

Verify in the different system parts that the voltage on devices is compliant with indications in paragraph 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 key 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 keys (PROG). The following figures show the position of these keys.

| KEYPAD | EXPANSION | READER |
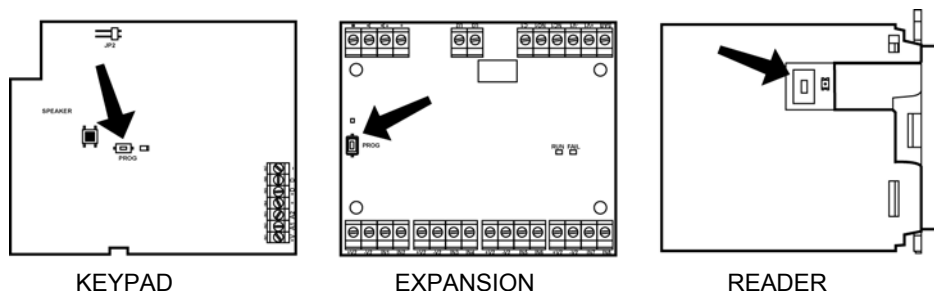
Figure 24 - Programming keys position

⚠️ **Warning**: the following instructions assume that the devices have not been previously acquired.
Otherwise see the following.

To acquire the system bus devices follow the instructions below:

1. Choose, from among the keypads found in the system, the one from which you wish to acquire the system devices. You can also use the service keypad (see § 4.4). If LED keypad KP500L is used, see below.
2. Upon the "SELECT SYSTEM MP508TG/EN ?" request: press **ESC** to select *"non EN"* mode.
3. Press the programming key of the selected keypad (after it has stopped ringing). The control panel carries out the registration and assigns the "KP01" address to the keypad. If, on the contrary, the service keypad has been selected, the latter will be assigned the "KP08" address.
4. On the acquired keypad appears «MAINTENANCE» «LINGUA-LANGUAGE» menu.
   If you want to change the language, press **OK** key, otherwise press ▼ key until «MAINTENANCE ACQUIRE» appears and go to step 7.
5. « LINGUA-LANGUAGE» «KP01:KP 01» appears on the display. KP01 is the first system keypad, that is the only just acquired one. If you are making use of the service keypad, the writing «KP08:KP 08» will be displayed. Press **OK** key.
6. «ITALIANO» appears on the display. Select with ▼▲ keys the desired language and confirm the selection by pressing **OK** key.
7. «Download in progress >>>>...» appears on the display and at the end of the new language download appears «Download OK». Press **OK**, **ESC**, then go to step 3.

⚠️ **Warning:** during the download, the keypad must not be completely powered down!

8. "ACQUIRE IN PROGRESS..." appears on the display: the control panel is ready to acquire other devices.
9. Proceed to acquire the other devices, by pressing the programming key for each of the devices. The yellow LED placed next to the device key will go out as soon as the device is acquired. Every time a new device is acquired, the keypad will emit three beeps. The type of device (KP=keypad; EP=expansion; DK=reader) and the address assigned to the same will appear on the display.
After all the devices have been acquired, press **ESC** to exit the menu.
Now you can proceed to configure the system as explained 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
- DK01
- DK02

4.3 ACQUIRING PERIPHERAL UNITS VIA LED KEYPAD KP500L

1. Press chosen keypad programming push key (after it has stopped ringing). Control panel performs recording assigning address "KP01" to it.
2. The system automatically prearranges itself to status «MAINTENANCE» (LED status is equal to fast flashing system) / «ACQUIRING» and control panel is ready to acquire other devices (keypad buzzer sends out waiting beep sounds).
3. Acquire the other devices, pressing the programming push key of each one of them.
Yellow LED, located by device push key, goes off as soon as acquired.
Whenever a new device is acquired, the keypad sends out 3 beep sounds and displays address assigned to it on LEDs 1 – 24 as below:

      expansions: LEDs 1 ÷ 3
      keypads: LEDs 9 ÷ 12
      readers: LEDs 17 ÷ 20

After the acquisition of all devices has terminated, press more times 🔲 to quit the menu.
Now the system can be configured as illustrated in Programming Manual.

4.4 SERVICE KEYPAD USE

For system acquisition and programming operations, it is possible to use a KP500D&EN keypad directly connected to the SERVICE connector of the central panel with the proper cable. For details see paragraph § 3.7.6 *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.

5   SYSTEM MAINTENANCE

This paragraph describes the ways and methods of taking maintenance actions for the system. As regards the menu navigation methods and also the functions made available by the "Maintenance" submenu, refer to the Programming Manual.

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.

The access the maintenance procedure, proceed as follows:
1. Fully switch the system off.
2. Use the Master code (default 1111) to enable the Installer code, then exit the Master menu.
3. Access the Installer menu (default 0000), then select the « MAINTENANCE » item and confirm by pressing **OK**.
4. The respective LED will light up on the keypads to confirm that the maintenance mode has been accessed.

If, under this condition, the control panel tamper is opened, the system will remain in the maintenance phase even if you exit the « MAINTENANCE » menu (the "MAINTENANCE" LED will remain ON).
This is useful if you wish to continue to operating the keypad while the system is in the maintenance state, e.g. if you wish to carry out a real-time check, by means of the "Sabotage" and "Inputs open" LEDs, of the state relative to the various inputs.

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   ACCESS TO MAINTENANCE PROCEDURE VIA LED KEYPAD KP500L

1. Disarm the system thoroughly
2. By Master code (default 1111), enable Technical code; then quit Master menu
3. Enter Technical menu (default 0000)
4. Select « MAINTENANCE » by entering function code **9** and confirm by pressing key ⏎ MENU .
5. Arm Maintenance by entering **1** (enable) and confirm by pressing key ⏎ MENU
    As a confirmation of Maintenance entry, special LED on the keypads is put on.

5.3   ADDITION AND ACQUISITION OF A NEW DEVICE

To acquire a new device on bus, for example a keypad or a reader, follow the instructions below:
1. Fully switch the system off (see § 5.11 *Full system switch-off*).
2. Connect the new device to the bus.
3. Power the system again. The yellow LED of the new device will blink slowly for 10 seconds; then, the blinking rate will change.
4. In Installer menu select «MAINTENANCE» / «ACQUIRE» item and confirm with **OK** key.
5. "ACQUIRE IN PROGRESS..." appears on the display: press the device programming key to acquire it. The respective yellow LED will go out.
6. Complete the installation of the new device and exit from the maintenance menu.
7. Configure the new device with programming procedure (refer to the Programming Manual).

5.4   ACCESS TO ACQUISITION PROCEDURE VIA LED KEYPAD KP500L

1. Put the system off thoroughly (see § 5.11)
2. Connect the new device to the bus
3. Feed the system again. The yellow LED of new device flashes slow for 10 seconds, then it changes its flashing rate
4. Enter Technical menu (default 0000)
5. Select « MAINTENANCE » by entering function code **9** and confirm by key ⏎ MENU
6. Arm Maintenance by entering **1** (enable) and confirm by key ⏎ MENU
    As a confirmation of Maintenance entry, special LED on the keypads is put on
7. Select «ACQUISITION» by introducing function code **47** and confirm by key ⏎ MENU
8. Control panel is ready to acquire the devices; press device programming push key to acquire the device; its yellow LED goes off
9. Complete the installation of new device and quit maintenance menu
10. Configure new device by programming (see Programming Manual)

5.5 REPLACING DEVICE

To replace a previously acquired device on the bus, proceed as follows:
1. Remove the device to be replaced (see § 5.7 *Removing a device*).
2. Fully switch the system off (see § 5.11 *Full system switch-off*).
3. Disconnect the older device and connect the new device to the bus.
4. Power the system again. The yellow LED of the new device will blink slowly for 10 seconds; then, the blinking rate will change.
5. Select the item « MAINTENANCE » / « ACQUISITION » in the Technical menu, then confirm by pressing **OK**.
6. The "ACQUISITION IN PROGRESS..." message will appear on the display: press the programming key of the device to acquire the latter (the device's yellow LED will go out). The control panel will assign the same address as the removed device to the new device.
7. Complete the installation of the new device and exit from the maintenance menu.
8. Configure the new device with programming procedure (refer to Programming Manual) with the parameters of the removed device.

5.6 DEVICE IDENTIFICATION

5.6.1 Device interrogation

To know the address of a device previously acquired on the bus, proceed as follows:
1. Activate the maintenance state (see § 5.1 *Maintenance procedure*) to avoid generating tampering events.
2. Press and release the programming key relative to the device the address of which is to be known.
3. The device's yellow LED will emit a number of blinks equal to its own address number.

5.6.2 Device search

To identify a certain device on the bus, proceed as follows:
1. Activate the maintenance state (see § 5.1 *Maintenance procedure*) to avoid generating tampering events.
2. Select the « MAINTENANCE » / « SHOW ADDRESSES » item in the Technical menu.
3. Select the type of device to be identified, within the sub menu; then select, within the proposed list, the device number and confirm by pressing **OK**. The "IN PROGRESS …" message will appear.
4. Next, examine all of the installed devices: the acquisition yellow LED of the device with the requested address will blink.

5.6.3 Look for a device via LED keypad KP500L

1. Arm maintenance status (see § **Errore. L'origine riferimento non è stata trovata.**) to avoid to generate tamper events.
2. Select «SHOW ADDRESSES» by entering function code 520 and confirm by key 🔁 MENU.
3. Then select the type of device to be identified by entering:
   1 for expansions
   2 for keypads
   3 for readers
   and confirm by pressing 🔁 MENU key
4. LEDs 1÷ 4 display existing devices.
5. Enter the number of the device to look for and confirm by key 🔁 MENU.
6. Then look into all installed devices: the device with requested address will have the acquisition yellow LED flashing

5.7 REMOVING A DEVICE

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 § 5.1 *Maintenance procedure*).
2. In Installer menu select «MAINTENANCE» «DELETE».
3. Select the type of device to be removed, then select, within the proposed list, the device number. The device is not considered as connected to the control panel any more and its memory is reset to factory values.
4. Fully switch the system off (see § 5.11 *Full system switch-off*).
5. Physically disconnect the device from the bus.
6. Power the system again

To resume the removed device's factory-set parameters – and be able to subsequently acquire the device again – the device shall be reset as described in § 5.9.8 *Device reset*.

Note: the control panel automatically provides to keep at least one keypad.

If, due to any one reason, keypad 1 has to be replaced and <u>no other keypad is available on the system</u>, the HW shall be reset to the factory settings; moreover, every single device shall be reset (Device reset) and the acquisition shall be repeated for all the devices. If keypad 1 has to be replaced and <u>other keypads are available on the system,</u> perform a total reset through any of these keypads, then repeat the acquisition procedure for all the devices.
Otherwise, you can pre-acquire the new keypad by means of address 1 by making use of another control panel and, then, place the same directly on the system.

5.8   REMOVING A DEVICE VIA LED KEYPAD KP500L

1. Arm Maintenance status (see § **Errore. L'origine riferimento non è stata trovata.**).
2. Select «REMOVE» by entering function code **48** and confirm by key ⮐ MENU .
3. Then select the type of device to be identified by entering:
   1 for expansions
   2 for keypads
   3 for readers
   and confirm by key ⮐ MENU .
4. LEDs 1÷4 display existing devices
5. Enter the number of the device to remove and confirm by key ⮐ MENU . The device is not considered as connected to control panel any more and its memory is reset to factory values.
6. Put the system off thoroughly (see § 5.1).
7. Physically disconnect the device from the bus.
8. Feed the system again

5.9   FACTORY-SET PARAMETER RESET

The table below shows the various possibilities of resetting the control panel and the system devices to the factory settings, depending on the individual needs.
The factory-set (default) parameters are shown in the Programming Manual – *Factory-set parameter and programming summarizing tables.*

	Partial reset	Total reset	Installer, Master and user code reset	Installer code hardware reset	Factory-set parameter hardware reset	Device reset
CONTROL PANEL MEMORY PARAMETERS						
Control panel programming	■	■			■	
Device addresses		■			■	
Event log		■			■	
Intsaller code		■	■	■	■	
Master code		■	■		■	
User codes		■	■		■	
Keys		■			■	
DEVICE MEMORY PARAMETERS						
Device number		■				■
Device parameters	■	■				■

The control panel programming involves configuring and naming the inputs, outputs, times and partitions, timing programmer, parameters and telephone numbers.

The event log may also be removed from the Technical menu under the « EVENT LOG» item; refer to the Programming Manual for more details.

The keys can be removed individually also by the Master menu or the Technical menu under the «SETTINGS» item; refer to the Programming Manual for more details.

To set a keypad back to the Italian language, you shall access the «MAINTENANCE» / «LINGUA-LANGUAGE» item through the Technical menu, in accordance with the sequence below:
Installer Code **OK Menu ▲ OK**

The display will show « LINGUA-LANGUAGE» «KP01:KP 01». Select the number of the keypad for which the Italian language is to be resumed, then press **OK**.
Scroll through the languages by means of the ▼ and ▲ keys until you reach « ITALIANO», then confirm the selection by pressing **OK**.
The display will show «Download in progress >>...» and, after the new language has been downloaded, «Download OK».

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

5.9.1 Partial reset

It sets the system device and control panel programmings back to the factory-set parameters.
The event log, codes, keys and device acquisitions will not be removed.

To perform the partial reset:
1. Select the « MAINTENANCE » / « PARTIAL RESET » item within the Technical menu, then confirm by pressing **OK**.
2. When the « ARE YOU SURE?» message is displayed, press **OK** to confirm or **ESC** to cancel the operation.
3. By pressing **OK**, the « PARTIAL RESET » «IN PROGRESS...» message will appear on the display and the buzzer will ring.
   Al termine dell'operazione riappare « MAINTENANCE » « PARTIAL RESET ».
4. Now you can proceed to re-program the system.

5.9.2 Reset partially via LED keypad KP500L

1. Arm maintenance status (see § **Errore. L'origine riferimento non è stata trovata.**).
2. Select «RESET PARTIALLY» by entering function code **510** and confirm by key ⬅ MENU .
3. Enter Technical code again and confirm by key ⬅ MENU
4. Now you can reprogram the system.

5.9.3 Total reset

It sets the control panel fully back to the factory settings.

To perform the total reset:
1. Select the « MAINTENANCE » / « TOTAL RESET » item within the Technical menu, then confirm by pressing **OK**.
2. When the « ARE YOU SURE?» message is displayed, press **OK** to confirm or **ESC** to cancel the operation.
3. By pressing **OK**, the "IN PROGRESS …" message will appear and the buzzer will ring.
4. When the operation is completed, a line of small dots will appear on the display. Switch the system off, then start again from Chapter 4 SYSTEM START-UP/ ACQUISITION.

5.9.4 Global Reset via LED keypad KP500L

1. Activate maintenance status (see § **Errore. L'origine riferimento non è stata trovata.**).
2. Select «GLOBAL RESET» by entering function code **500** and confirm by key ⬅ MENU .
3. Enter Technical code again and confirm by key ⬅ MENU .
4. Now you can reprogram the system
5. Put off the system and restart from chapter 4.

5.9.5 Installer, Master and user code reset

To reset the Installer, Master or user codes to their factory settings, access the «SETTINGS» / «USERS» / «DEFAULT CODE» item through the Master menu or the Technical menu, then select the desired code and confirm by pressing **OK**.
See Programming Manual.

5.9.6 Installer code hardware reset

To reset the Installer code to its factory setting, if the Master code is not known, proceed as follows:
1. Fully switch the control panel off (see §5.11 *Full system switch-off*).
2. Set dip-switch 2 (see §. 3.3.1) to ON
3. Switch On the control panel: in the initializing procedure the Installer code will be restored to its default value (0000) and will be automatically enabled.
4. When the control panel "RUN" green LED starts blinking, set dip-switch 2 to OFF.

5.9.7 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 it is possible to use the hardware reset. Consider that this mode has not the same effects as the total reset (§ 5.9.3) 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 § 5.9.8 *Devices reset*.

To perform the hardware reset follow the instructions below:
1. Completely unpower the control panel (see § 5.11 *Full system switch-off*).
2. Set the Dip-switch 1 (see § 3.3.1) in ON mode.
3. Power again the control panel; during initialization phase all the parameters will be reset to their factory values.
4. When the control panel "RUN" green LED starts blinking, set again the Dip-switch 1 in OFF mode.
5. Restart from chapter 4 SYSTEM START-UP/ ACQUISITION.

5.9.8 Device reset

The removal of any one device found in the system and connected to the bus shall take place according to the procedure described in paragraph 5.7 *Removing a device*.
The device reset can be performer only in exceptional cases, e.g. in the event that a device has already been acquired by another control panel or following a "Factory-set parameter hardware reset".

Please bear in mind that this mode will only perform data removal on the device; if the device is acquired on the control panel too, it will continue to be found there.

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" key until the yellow LED changes the blinking frequency.
3. Release the key: the Reset phase is ended. The yellow LED will keep on blinking until the device will be acquired again (for acquisition, see (for acquisition, see § 5.5 *Device acquisition*.

5.10 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 § 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.
5. Perform a battery test (refer to Programming Manual).
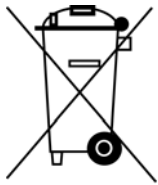
WARNING The disposal of lead batteries is regulated by precise legal provisions; they must be taken to specific collection centres.

5.11 SYSTEM TOTAL POWEROFF

If the system must be totally turned off, follow the instructions below:
1. Activate the maintenance state (see § 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 2 and 3).

Wait at least one minute prior to powering again.

Warning: it is <u>essential</u> that the control panel shall be set to the maintenance state before it is switched off.
Failure to comply with the above instruction may cause data loss and adversely affect the system operation.

5.12 TROUBLESHOOTING PROCEDURES

TEMPORARY FAULT MEMORY PHRASE	EVENT LOG PHRASE	EVENT	DETAILS	TROUBLESHOOTING ACTION
ANOM. +PS CONTROL PANEL	START OF FAILURE	UC00. ANOM. CONTROL PANEL +PS	Anomalous voltage input to the control panel terminal pin +PS (power supply unit voltage).	The power supply unit voltage has been found to be either < 13.5 V or > 15 V.	Check the power supply unit voltage, both in no-load condition (i.e. disconnected from the control panel) and loaded condition (i.e. connected to the control panel): it shall range between 14.25 V and 14.55 V. In case of a 4 A power supply unit, this voltage can be controller by means of a trimmer. If the voltage falls down when the power supply unit is connected to the control panel, verify that no overload is found by disconnecting one supply branch at a time. If the voltage goes up when the power supply unit is connected to the control panel, verify that no anomalous supply from a self-powered device reaches the +SR terminal pin..
ANOM. +SR CONTROL PANEL		UC00. ANOM. CONTROL PANEL +SR	Anomalous voltage output to the control panel terminal pin +SR (self-powered device power supply).	The voltage on the output terminal pin +SR has been found to be either < 11.4 V or > 14.9 V.	If the voltage measured on the +SR is either low or missing, verify that no overload or verify that no overload or short-circuit is found. If the voltage measured on the +SR is high, verify that a supply from a self-powered device does not reach the terminal pin (self-powered devices shall have a diode to prevent the above from occurring).
ANOM. +V1 CONTROL PANEL		UC00. ANOM. CONTROL PANEL +V1	Output voltage to the + V1 terminal of the anomalous control panel (power supply for the detectors on the inputs and the actuators on the outputs).	The voltage on the output terminal pin +V1 has been found to be either < 12.9 V or > 14.2V.	If the voltage measured on the +V1 is either low or missing, verify that no overload or short-circuit is found. If the voltage measured on the +V1 is high, verify that no anomalous power supply originates from the system.
ANOM. +D CONTROL PANEL		UC00. ANOM. CONTROL PANEL +D	Anomalous voltage output to the control panel terminal pin +D (data bus polarization).	The voltage on the output terminal pin +D has been found to be either < 13 V or > 15 V.	If the voltage measured on the +D is either low or missing, verify that no overload or short-circuit is found. If the voltage measured on the +D is high, verify that no anomalous power supply originates from the system
ANOM. +VBUS CONTROL PANEL		UC00. ANOM. CONTROL PANEL +VBUS	Anomalous voltage output to the control panel terminal pin positive (data bus positive power supply).	The voltage on the output terminal pin positive has been found to be either < 12.9 V or > 14.2 V.	If the voltage measured on the + is either low or missing, verify that no overload or short-circuit is found. If the voltage measured on the + is high, verify that no anomalous power supply originates from the system.
-	END OF FAILURE	" "	" "	The voltage previously found to be anomalous falls within the normal range.	

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TEMPORARY FAULT MEMORY PHRASE	EVENT LOG PHRASE		EVENT	DETAILS	TROUBLESHOOTING ACTION
ANOM. +V2 KPnn.KP xx	START OF FAILURE	KPnn.KP xx ANOM. +V2	Anomalous voltage output from the +V device (input detector power supply).	The voltage on the output device terminal pin +V has been found to be < 7 V or > 14.3 V.	If the voltage measured on the device +V is either low or missing, verify that no overload or short-circuit is found. If the voltage measured on the device +V is high, verify that no anomalous power supply from the system reaches the terminal pin; also verify the voltage delivered on the terminal pin positive (it shall not be > 14.3 V).
ANOM. +V2 DKnn.DK xx		DKnn.DK xx ANOM. +V2	" "	" "	" "
ANOM. +V2 EPnn.EP xx		EPnn.EP xx ANOM. +V2	" "	" "	" "
-	END OF FAILURE	" "	" "	The voltage previously found to be anomalous falls within the normal range.	

TEMPORARY FAULT MEMORY PHRASE	EVENT LOG PHRASE		EVENT	DETAILS	TROUBLESHOOTING ACTION
PSTN FAILURE CONTROL PANEL	START OF FAILURE	UC00.CONTROL PANEL PSTN FAILURE	Anomaly found on the PSTN telephone line.	Failure to detect the line dial tone over 3 tests, either during an automatic line check or when attempting at sending a message. NOTE: the line test will, if enabled, be performer every 15 minutes.	Verify whether the PSTN network has been enabled mistakenly, if it is not used. Check the telephone line connection on the "LINE" ingoing terminal pins. Verify that the telephone line is in good working order. Verify that no telephone device is connected upstream, between the control panel and the telephone line; in case of a PABX switchboard connection, exclude the line tests.
-	END OF FAILURE	" "	The anomaly on the PSTN telephone line is no longer found.	PSTN line test or telephone call concluded successfully.	

TEMPORARY FAULT MEMORY PHRASE	EVENT LOG PHRASE		EVENT	DETAILS	TROUBLESHOOTING ACTION
LAN FAILURE CONTROL PANEL	START OF FAILURE	UC00.CONTROL PANEL LAN FAILURE	Anomaly found on the LAN channel.	Failure to transmit after 3 consecutive attempts at sending the event on the LAN channel.	Check the IT Ethernet (LAN) interface connections. Check the connection to the LAN or the modem/router network. Check the operation of the modem/router.
-	END OF FAILURE	" "	The anomaly on the LAN channel is no longer found.	Communication on the Ethernet LAN channel completed successfully.	

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BUS ANOM KPnn.KP xx	START OF BUS ANOM.	KPnn.KP xx FAILURE TO EXCHANGE DATA BUS	Failure to Exchange data with the device.	The device did not respond to the control panel.	Check the device(s) wiring(s) to the bus (i.e. check for disconnected or short-circuited or inverted wires). Check the bus power supply.
BUS ANOM DKnn.DK xx		DKnn.DK xx FAILURE TO EXCHANGE DATA BUS	" "	" "	" "
BUS ANOM. Epnn.EP xx		Epnn.EP xx FAILURE TO EXCHANGE DATA BUS	" "	" "	" "
	END OF BUS ANOM.	" "	" "	The device(s) has/have started again to exchange data with the control panel.	

TEMPORARY FAULT MEMORY PHRASE	EVENT LOG PHRASE		EVENT	DETAILS	TROUBLESHOOTING ACTION
-	START OF INST. LACK OF POWER ANOM..	CONTROL PANEL LACK OF POWER	Instant lack of power on the control panel.	The power supply unit voltage has been found to be < 9 V for at least 3 seconds.	Check the presence and connection of the lack of power. Verify that the connection between the power supply unit and the control panel (+PS and -PS) is in good working order.
-	END OF INST. LACK OF POWER ANOM..	CONTROL PANEL LACK OF POWER	Lack of power resumption on the control panel.	The power supply unit voltage has been found to be > 9 V for at least 3 consecutive seconds.	

TEMPORARY FAULT MEMORY PHRASE	EVENT LOG PHRASE		EVENT	DETAILS	TROUBLESHOOTING ACTION
-	START OF LACK OF POWER ANOM	CONTROL PANEL LACK OF POWER	Lack of power absence on the control pane lover more than the preset time.	The power supply unit voltage has been found to be < 9 V over more that the "Mains absence time" preset time.	Check the presence and connection of the Lack of power. Verify that the connection between the power supply unit and the control panel (+PS and -PS) is in good working order.
-	END OF LACK OF POWER ANOM.	CONTROL PANEL LACK OF POWER	Lack of power resumption on the control panel.	The power supply unit voltage has been found to be > 9 V for at least 5 consecutive minutes.	

TEMPORARY FAULT MEMORY PHRASE	EVENT LOG PHRASE		EVENT	DETAILS	TROUBLESHOOTING ACTION
-	START OF BATT ANOM.	CONTROL PANEL LOW BATT.	Battery absence on the control panel.	The battery voltage has been found to be < 2 V.	Check the battery connection. Replace the battery.
-			Battery inefficient.	The battery voltage has been found to be < 12.5 V during the test.	If the anomaly persists during a few days, replace the battery.
-			Battery down.	During a Lack of power, the battery voltage has fallen below 11.5 V.	If, after the mains voltage has been resumed, the anomaly persists over a few days, replace the battery.
-	END OF BATT ANOM.	CONTROL PANEL LOW BATT.	Battery connection resumption on the control panel.	The battery voltage has been found to be > 2 V.	
-			Battery found to be efficient following a subsequent test.	The battery voltage has been found to be > 12.5 V during the test.	

6 TECHNICAL CHARACTERISTICS

6.1 MP504TG CONTROL PANEL

Supply voltage of the control panel	14,4 V ± 1%
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
Battery provided	12 V – 7 Ah
Maximum current supplied for charging the battery:	650 mA
Battery charging nominal voltage	13,8 V—
Flat battery threshold	11,5 V
Automatic battery test	every 24 hours (in mains presence condition)
Nominal voltage on terminal pin +	13,8 V—
Corrente max. erogabile dal morsetto + (protected by self-resetting fuse)	1100 mA
Nominal voltage on terminal pin +V1	13,8 V—
Max. overall current deliverable from the +V1 terminal (protected by self-resetting fuse)	750 mA
Max. switching voltage and current of U1 output relay contact	1 A – 24 V– with resistive load
U2 electric output max. source current	100 mA
Control panel-peripherals serial line bus max. length	400 m
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	100 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	da 0 s a 90 s
Exit time	da 0 s a 90 s
Alarm time	programmable from 30 s to 9 minutes (default: 3 minutes)
Tamper alarm time	programmable from 30 s to 9 minutes (default: 3 minutes)
Failure signalling	optical (LED) and electric for control panel low battery, fuses, expansions boards low power supply
Declared working temperature	-5 °C ÷ +45 °C
Working temperature compliant with CEI standards	+5 °C ÷ +40 °C
Working relative humidity	95% a 45 °C
Storage temperature range	-20 °C ÷ +60 °C

For further information see also § 1.2.4.
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6.2 KP500D/EN DISPLAY KEYPAD

Rated supply 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)
Nominal voltage on +V outputs	13,8 V—
Max. source current on +V outputs	100 mA
Control panel-peripherals serial line bus max. length	400 m
Lunghezza max. del collegamento tra ciascun detectore e la tastiera	500 m
Max. length of connection between every detector and the keypad	100 m
Communication type	serial Elkron protocol
Anti-tampering tamper	Standard, with clear-text signalling sent to the control panel
Auxiliary inputs	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% a 45 °C
Storage temperature range	-20 °C ÷ +60 °C
Housing protection degree	IP40 / IK02

6.3 DK500M-E ELECTRONIC KEY READER

Rated supply 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 bus 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	100 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 PROXIMITY READER

Rated supply 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 bus 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	100 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

Rated supply 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 bus max. length	400 m
Max. length of connection between every detector and the Expansion	500 m
Max. length of connection between a fast detector (rolling shutter, inertial) and the Expansion	100 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% a 45 °C
Storage temperature range	-20 °C ÷ +60 °C

6.6   SV504 SPEECH SYNTHESIS BOARD

Rated supply voltage	13,8 V — (taken from the control panel)
Speech synthesis board 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)
Max. number of messages that can be recorded	13

6.7   USB INTERFACE FOR CONNECTION WITH THE PC AND THE USB KEYS   IT-USB/KEY

Rated supply voltage	13,8 V— (collected from the control panel through a flat cable)
USB interface operating voltage	da 9 V— a 15 V—
Absorption at the rated voltage of 13.8 V—	5 mA max. stand-by mode (both USB key and PC not connected) 65 mA max. with the USB key in the read/write mode 15 mA max. with the PC connected and exchanging data
Max. current delivered to the USB key	100 mA

6.8   ETHERNET INTERFACE

Rated supply voltage	13,8 V— (collected from the control panel through a flat cable)
Ethernet interface operating voltage	9 V— to 15 V—
Rated current absorbed at 13.8 V—	60 mA stand-by mode (cable not connected) 110 mA depending on the Eth. Network 10Mbps (amber LED 1) 90 mA depending on the Eth. network 100Mbps (green LED 1)

6.9   SERIAL INTERFACE FOR VIDEOGATEWAY

Rated supply voltage	3,3 V— (collected from the control panel through a flat cable)
Serial interface operating voltage	9 V— to 15 V—
Absorption at the rated voltage of 12V—	1 mA stand-by mode 5 mA max with the PC connected and exchanging data

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 trans-receiver devices and for telecommunication terminal devices was abolished.

Elkron MP504TG 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 multi-frequency bi-tonal 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 analog 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 available at Elkron Customer Service or in the web site.

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