TFCOM
Telephone dialer



Installation

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Tecnofire DETECTION
by Tecnoalarm

Setup and use manuals of the TFA1-298 - TFA2-596 - TFA4-1192 systems		
Code	**Product**	**Type of manual**
21ISTR09815	TFA1-298	Installation manual
21ISTR08995	TFA2-596 TFA4-1192	Installation manual
21ISTR08994	TFA2-596 TFA4-1192	User manual
21ISTR08992	TFA1-298 TFA2-596 TFA4-1192	PC based setup manual

CONFORMITY

The equipment complies with the standard EN 54-21:2006. Conformity with REG.305/2011. Conformity with the directive RTTE.
Dialer TFCOM - Approval certificate 0051-CPR- 0454
Last two digits of the year in which the marking was affixed: 16
Declaration of performance number 016_TFCOM
The declarations of conformity can be found at: www.tecnofiredetection.com

CE 0051

Conformity with the directive RTTE.
Communication terminal: PSTN+GSM (optional)
Category: TTE Class 1
Notified body for optional ESP GSM-GPRS module: CE0889



Certificate of Constancy of performance

0051 – CPR – 0454

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

Alarm transmission and fault warning routing equipment

Model: **TFCOM**

Trademark: **Tecnofire**

Other information:
Firmware version: 1.3.00

Produced by:

TECNOALARM S.r.l.
Via Ciriè 38 – 10099 San Mauro Torinese (TO)

In the manufacturing plant(s):

PI.O000TG

This certificate attests that all provisions concerning the assessment and verification of constancy of performance and the performances described in Annex ZA of the standard(s)

EN 54-21:2006

under system **1** are applied and that

the product fulfills all the prescribed requirements set out above.

This certificate was first issued on 2016-04-15 and will remain valid as long as the test methods and/or factory production control requirements included in the harmonized standard, used to assess the performance of the declared characteristics, do not change, and the product, and the manufacturing conditions in the plant are not modified significantly

V Baggio

IMQ S.p.A.
CPR Technical Director
(Eng. V. Baggio)

Milano, 2016-04-15

This certificate was issued by IMQ S.p.A., a notified body according to Regulation 305/2011/EU.
IMQ S.p.A. Identification Number is: 0051.

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1 - OBLIGATIONS AND REQUIREMENTS

Introduction
Before installing a TFCOM dialer, please carefully read this manual; it contains important information and warnings on the installation modes which must be observed.

Operating limits and purposes of the fire detection systems
It is essential to know that a fire detection system does not ensure protection and immunity against damage of any kind and amount, generated by or deriving from fires.
It is essential to begin by stating that any fire system in charge of detection, extinguishing, actuations, evacuation etc. must be installed and maintained in its best working order, according to the instructions provided by the manufacturer and/or by the designer.
Tecnofire fire detection systems can promptly notify the personnel in charge about the occurrence of dangerous fires.
The system can also automatically handle the events and then, according to the setting mode: broadcast messages urging the evacuation of the premises, enable automatic remote control systems, CCTV systems, extinguishing systems, stop all situations and events that may feed the fire, in order to preserve the safety of persons and of the premises and assets contained in them.

Cautions and warnings
This document contains the procedures required to perform a successful installation of the product. However, the interpretation and correct application of its contents cannot be separated from the necessary training of the technical staff, responsible for the installation of the products covered by this manual.
In particular, the technical staff in charge of installation should have the necessary basic technical preparation, should know and properly apply the regulations in force, relating to the installation of fire protection systems, and more generally should know all the regulations in force concerning plant standards, installation, maintenance and electrical safety.
Moreover, the technical staff must have a thorough knowledge of the product, acquired attending specific training courses, at Tecnofire (fire prevention division of Tecnoalarm S.r.l.).

Environmental requirements
The TFCOM dialer must be installed within structures or buildings with climate characteristics of temperature and humidity (non condensing), that do not exceed the values reported in the homologation of the products. The specific values of operating temperature and humidity of the Tecnofire products can be found in the relevant technical properties tables.

Usage requirements
To avoid damage, or even risky malfunctions, in the management of the devices designed to control devices and systems operationally dependent from the TFCOM dialer, it is compulsory to use only the components and devices indicated by Tecnofire.
The interface with complementary systems manufactured by third parties must be realized with Tecnofire input and output modules, making sure each time of the correct functional fit. If in doubt, always refer to the Tecnofire technical support service.

Technical service
The Tecnofire technical service is always at your disposal to solve technical issues related to installation, clarify product features and application of Tecnofire products.

Power sources
During system planning, it is important to take into account that the autonomy of operation required by the legislation is respected, properly sizing the primary power source (from mains) and the secondary power source (backup batteries). Please note that in case of mains power outage, the system ensures its operation using the backup batteries for a limited time.

Induced damage
Before working on any component of the System, to avoid damage to the equipment during installation and in all subsequent maintenance works, it is always necessary to disconnect all primary power sources (mains) and secondary power sources (backup batteries) of the system. To avoid damage caused by electrostatic voltage, always carefully handle the electronic cards of the devices, avoiding touching the electronic components directly.

2 - OVERVIEW

The TFCOM phone dialer by Tecnofire is designed and built in accordance with the standard EN 54-21:2006.

The TFCOM dialer is designed within a ISO 9001 quality management system that involves the application of a set of design rules and schedules all subsequent test and control activities necessary for the production of all the items that make up the above device. All the components of the equipment were selected for the intended purposes.
Their specifications are met when the environmental conditions outside the enclosure correspond to those specified for the class 3K5 of the standard EN 60721-3-3:1995.

Indoor use: the dialer should be installed in a location protected from the inclemency of the weather. Temperature and humidity control is not required in the installation environments.

The dialer consists of a metal cabinet able to contain a 12V-7Ah battery and two macro elements:
a controller card, called CPU, which houses the connecting terminals and a signal card.

2.1 Technical specifications and functions

Overview	Device Name	**TFCOM**
	Description	**Telephone dialer**
	Communication protocol	**FIRE-BUS**
	Addressing	**Dip-switch**
	Connection	**RS485 Bus**
Telephony	Speech synthesis	**Yes**
	Dialers	**8**
	Phone numbers (IP addresses)	**8+8 (24 characters)**
	Communicable events	**33 (categories)**
	Event zones which can be communicated	**5 (types by zone)**
	Communication protocols	**29**
	Telephone queue items	**32**
PSTN vector	PSTN phone transmitter	**ATE2**
	PSTN vector compliant	**ETSI ES 203 021-1**
	Transmission time D4 10sec	**Vocal mode 12sec. Contact ID17 sec.**
	Transmission time M3 60sec	**Vocal mode 12sec. Contact ID19 sec.**
GSM-GPRS vector	GSM-GPRS vector (option)	**TFESP GSM-GPRS**
	GSM phone transmitter	**ATE4 (GPRS)**
	Transmission time D4 10sec	**SIA IP DC-09 10sec**
	Transmission time M3 60sec	**SIA IP DC-09 10sec**
Hardware specification	Data memory	**Flash 1Gbit**
	Management interface	**USB Port**
Outputs	Fault signalling relay	**Protected - Imax 750mA**

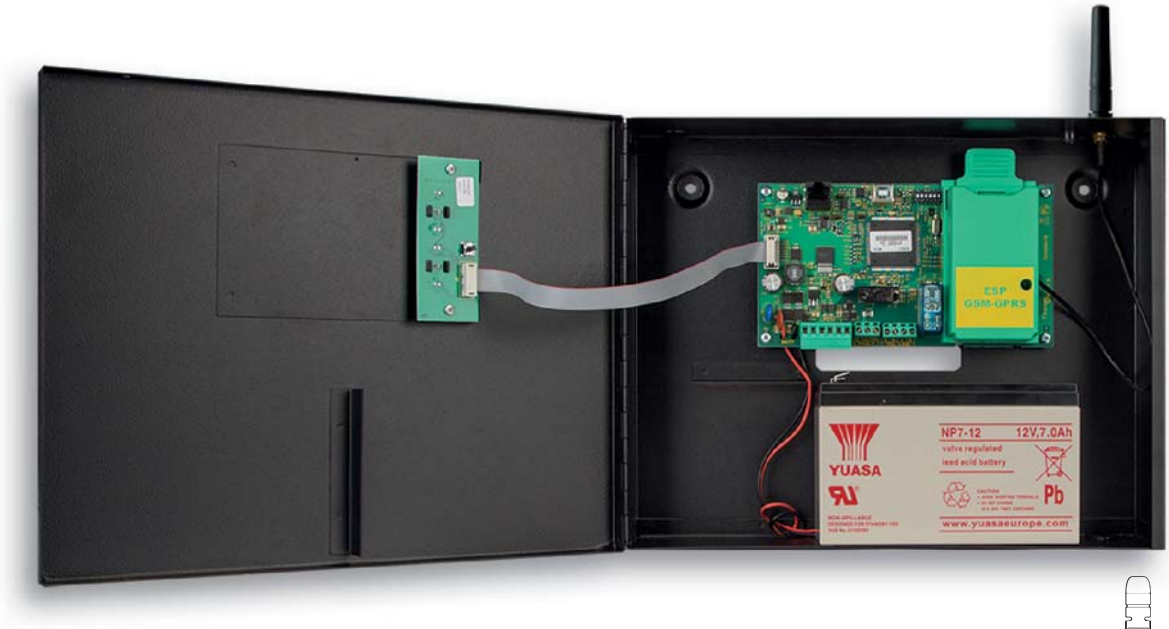
Buffer battery	Flammability class	**V-2 or higher**
	Trip voltage	**For Vbat <8,9V**
	Current for battery charger	**0.85A maximum**
	Charge time	**100% in 12 hours**
Electrical specifications	Power supply	**From Serial Bus**
	Rated Voltage	**24V DC**
	Operating voltage	**20V...27.6V DC**
	Typical draw (standby)	**90mA @ 24V DC**
	Max draw (when transmitting)	**140mA @ 24V DC**
Physical specifications	Operating temperature:	**-5°C...+40°C**
	Relative Humidity	**10% ... 93% (non-condensing)**
	Battery housing	**1 (12V/7Ah)**
	Protection Degree	**IP30**
	Enclosure	**Metal**
	Dimensions (L x H x D)	**315 x 255 x 82mm**
	Antenna height	**65mm**
	Weight	**2.5Kg**
RTTE 99/05/EC conformity	Class 1/TTE	**CE 0889**
Reg. 305/2011 conformity	Fire standard	**EN 54-21:2006**
	Phone standard	**EN 50136-1-1 EN 50136-2-1**
	Approval certificate	**0051-CPR-0454**
	Year of CE marking	**16**
	Number of the declaration of performance	**016_TFCOM**
	Certification body	**IMQ**
	Approved for use in combination with control units TFA1-298, TFA2-596 and TFA4-1192	

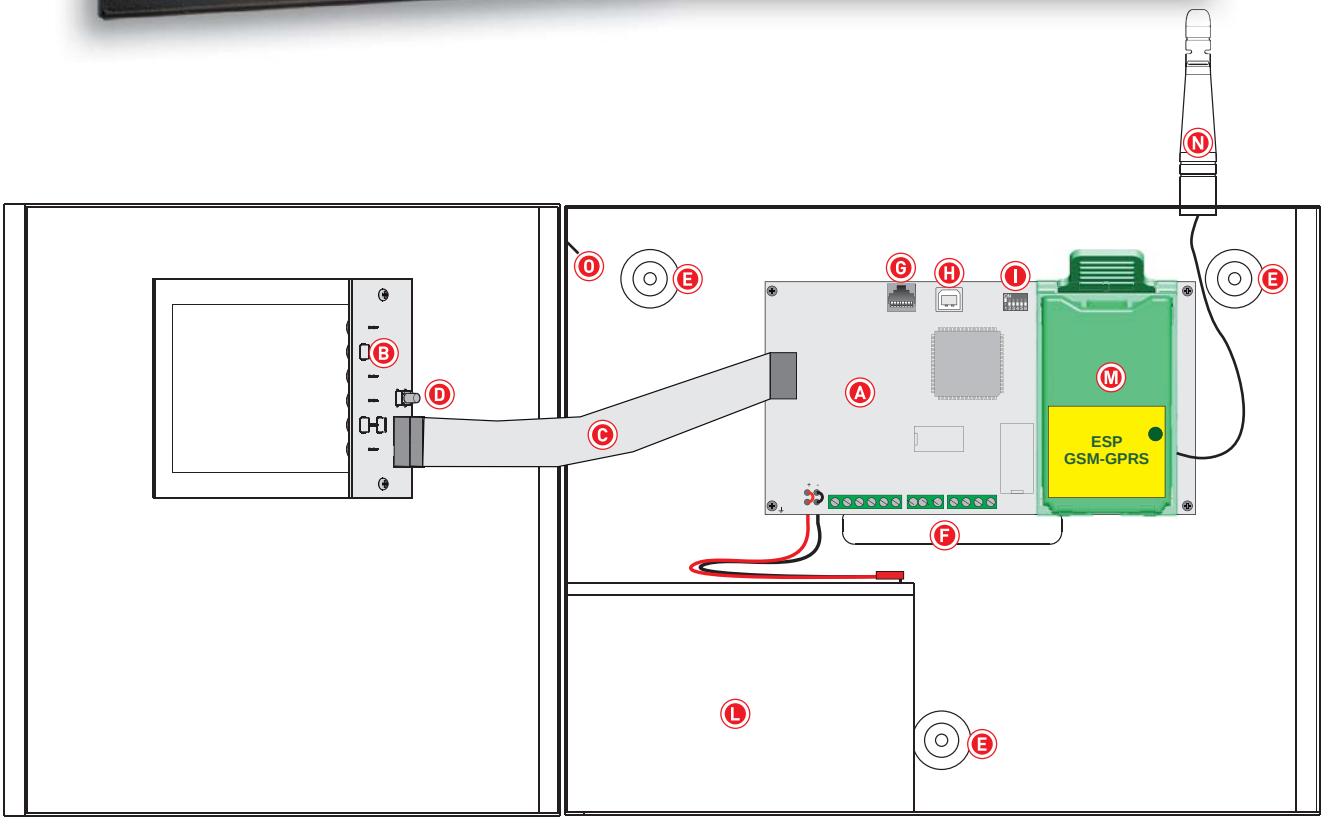
3 - INSTALLATION NOTES

Introduction

In Italy the installation of this device is regulated by UNI and national standards, including DM 37 of 22 Jan 2008 which requires that fire protection systems are installed exclusively by licensed companies and operators, provided with professional technical requirements (items 3-4-5) regarding "executive design", "installation", and "maintenance".

3.1 Assembly view





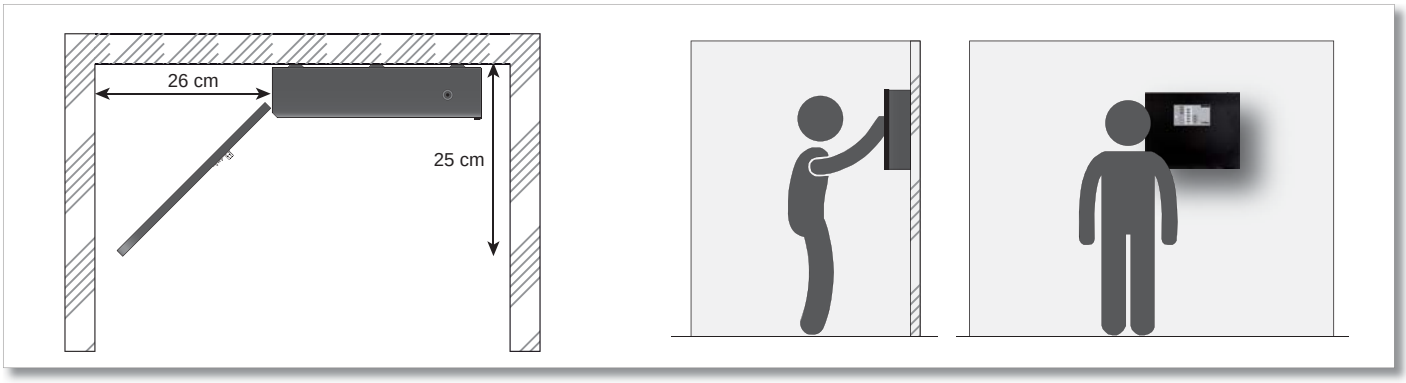
A	CPU card	F	Cable entry	L	Position of battery 12V/7Ah
B	Notification LED card	G	TTL port	M	Optional module ESP GSM-GPRS
C	Interconnection wiring	H	USB Port	N	Optional module ESP GSM-GPRS antenna
D	Test button for signalling LEDs	I	Addressing dip-switches	O	* Ground connection faston
E	Wall mount holes				

* The functional connection of the ground on the cabinet provides an exit path for any overvoltage coming from the PSTN phone line.

3.2 Enclosure fastening

The dialer cabinet must be installed in a position protected from accidental collisions, at a height that allows full visibility of the signalling LEDs to operators and authorized staff.
To facilitate the operations during installation and subsequent maintenance activities, it is recommended not to install the left side of the cabinet close to a corner, but to always provide for a minimum distance of at least 26cm.
Fasten the cabinet of the dialer, level, using 3 screw anchors with 6mm diameter.

General notes - Operator safety
As required for any electrical equipment, the dialer must not be subjected to water drops or water-splashing, no objects filled with liquids should be placed in its direct vicinity. The dialer should be installed at a safe distance from heat sources (radiators, etc.).
The dialer must be properly ventilated, its enclosure must not be covered by objects that prevent proper thermal dissipation.



3.3 Connection cables

The cables to be used for the connections are regulated by installation standards and rules.
The installer shall ascertain the current legislative requirements for each country. These are flame retardant, low smoke emission and halogen free cables.
The (Italian) standards UNI 9795 specify and detail the various national and European regulations related to the cables to be used for the construction of fire detection systems.
Among these standards we mention (non-exhaustive list):
CEI 20-105; EN 50200; EN 60228; CEI 20-29; CEI 20-11; EN 50363; CEI 20-36; CEI 20-35; EN 60332; CEI 20-37; EN 50267; IEC 60332; IEC 61034; IEC 6754.

The TFCOM dialer is an expansion device for the TFAXFIRE control units and is connected to them via the Master and/or Slave RS485 BUS. The BUS can be connected in open loop or closed loop mode. In the case of open loop connection, the RS485 BUS ring must be terminated on the last device connected to the serial line. On the TFCOM dialer, the BUS can be terminated by closing the JP8 jumper.
Connection configurations vary. For details, see the examples in the relevant installation manuals. For the control units TFA2-596 and TFA4-1192 refer to the manual "21ISTR08995", for the control unit TFA1-298, refer to the manual "21ISTR09815".

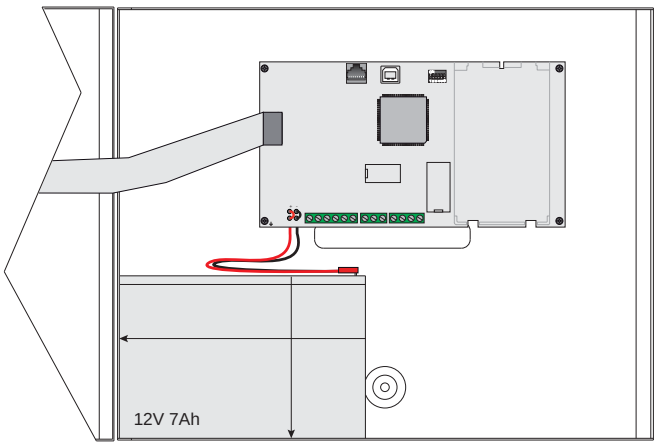
For connecting the RS485 BUSES of the system, it is recommended to use twisted, shielded, multipole cable with flexible wire.
The maximum length allowed for the RS485 Bus lines (Slave and Master) is 1000 mt. You can achieve greater distances using a fibre optic connection instead of an electric cable. For the sizing of the cables to be used for wiring, refer to the table that indicates, based on the extent of the Bus, the minimum sections that must be observed.

Bus extension / cable section table		
Bus Extension	**Power supply wires**	**Signal wires (twisted pair)**
1000 meters	**Minimum required section 2x1.5 mm²**	**Minimum required section 2x1 mm²**
>1000 meters	**Locate a power source downstream the fiber connection**	**Use a fibre-optic connection**

For reasons of electrical safety and induced interference rejection, the cable shield must be connected in such a way as to never be interrupted, always connecting on every device the shield of the input line with the shield of the output line.
The cable shield must be grounded, the connection must be made only at one point, inside the cabinet of the control unit.
The available fault output relay is part of a "SELV" power supply network (EN 60950-1).
The output can be interfaced only to other circuits that are within the "SELV" safety voltages.

3.4 Battery - Secondary power supply

Battery lock
In accordance with the EN 54 standards, it is mandatory to lock the battery.
Two special brackets welded respectively on the inner side of the door and on the bottom when the cabinet is closed avoid the accidental movement of the battery.
To allow the brackets to lock the battery, it is essential to use a 12V/7Ah battery, with dimensions (W x H x D) 178 x 64 x 34mm.
The battery must be placed in the cabinet in the position shown in the drawing on the right.

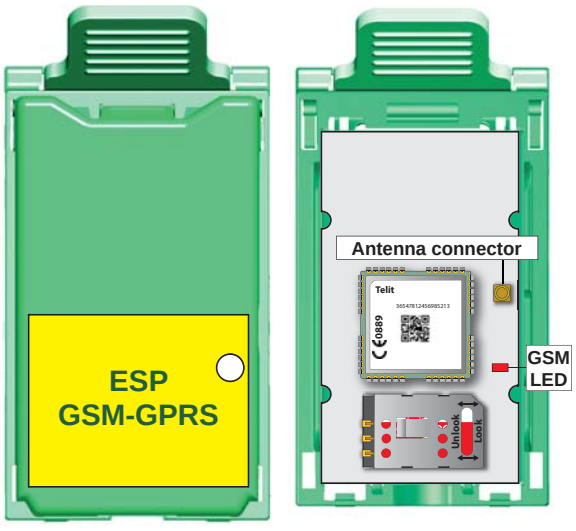


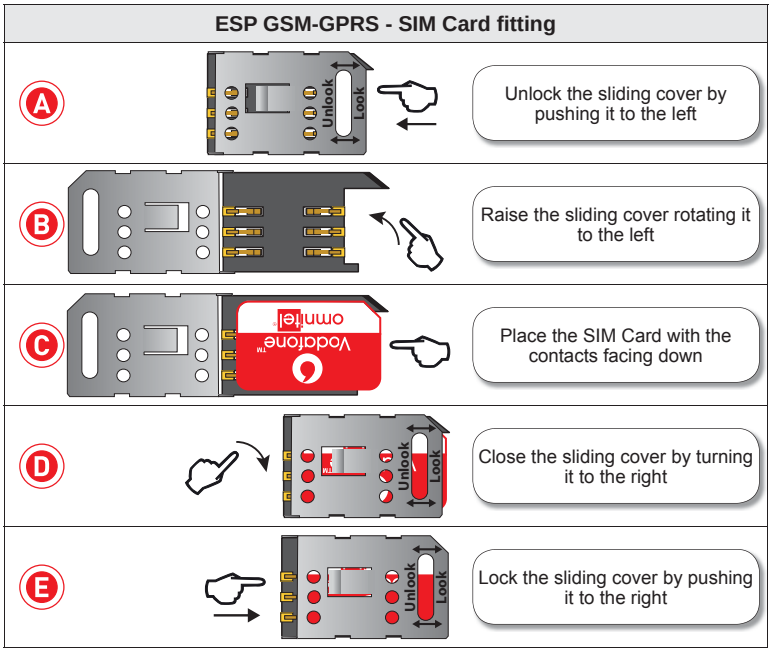
Battery position

Automatic disconnection
In case of operation in the absence of the primary supply voltage (24V DC from the system), the battery automatically activates. When the battery voltage drops to a value ≤ 8.9V DC for a duration of 15 minutes, the battery is automatically disconnected, to prevent its complete discharge and consequent functional degradation.
Beware: the battery automatic disconnection function can be disabled via the jumper JP10.

3-5 ESP GSM-GPRS expansion

Assembly
Electrically connect the expansion module to the CPU card connecting it to the dedicated slot of the motherboard.
Free the antenna mounting hole by removing the closing cap.
Connect the antenna terminal on the relevant connector of the module.
Insert and lock the SIM Card.

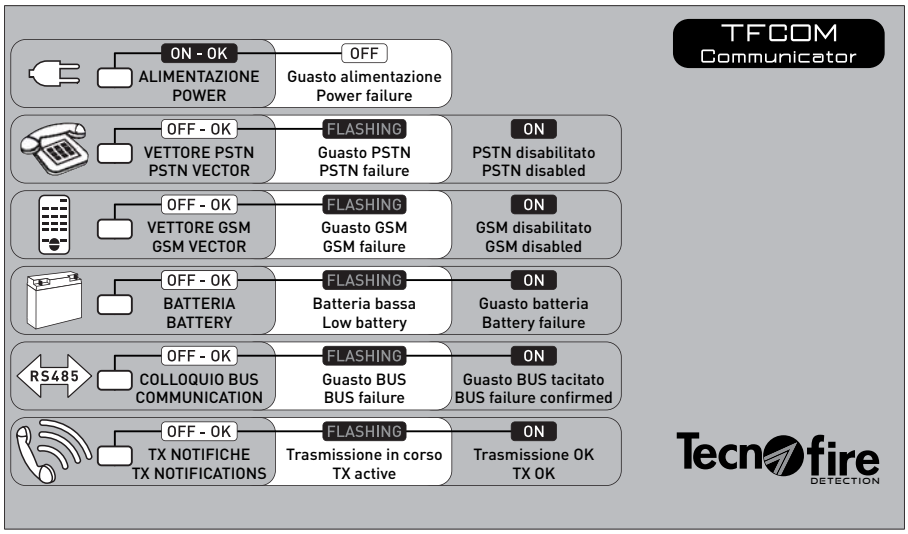




4 - SIGNALLING INTERFACE

4.1 Front panel

The signalling interface of the dialer consists of 6 signalling LEDs, with which the user can interpret the functional states of the dialer.



4.2 Indicator LEDs

The table describes the functions and reporting procedures of the LEDs on the front panel of the control unit.
As required by EN 54/2 regulations concerning light signals, the ON/OFF flashing frequency of the LEDs is:

- 2.5 sec. ON/2.5 sec. OFF (slow flashing) for fault notifications
- 0.5 sec. ON/0.5 sec. OFF (fast flashing) for alarm notifications

Notification	Colour	Type of notification	Notification modes	
POWER	Green	Reports the power supply status of the device	**Off**	Power supply off
			On	Power supply on
PSTN VECTOR	Yellow	Reports the status of the PSTN section	**Off**	PSTN Dialer OK
			Flashing light	PSTN Dialer KO
			On	PSTN dialer not enabled
GSM VECTOR	Yellow	Reports the status of the GSM section	**Off**	GSM Dialer OK
			Flashing light	GSM Dialer KO
			On	GSM dialer not enabled
BATTERY	Yellow	Reports the status of the backup battery Drained or faulty/missing battery	**Off**	Battery charged and operating
			Flashing light	Low battery (drained)
			On	Battery fault or missing battery
COMMUNICATIONS	Yellow	Indicates the state of the connections between the devices connected on BUS485 (control units and/or repeaters)	**Off**	Communication with devices on BUS485 OK
			Flashing light	Communication fault on BUS485 (not acknowledged)
			On	Communication fault on BUS485 (acknowledged)
TX NOTIFICATIONS	Red	Reports the transmission states of phone notifications to remote receiving devices.	**Off**	No phone notification transmitted
			Quick flashing	Telephone notification transmission in progress
			On	Telephone notification transmitted successfully

Note: Battery LED - the notification remains visible until the alarms are reset, only if automatic acknowledgement of faults is turned off.

5 - SYSTEM - OPERATING MODES

Attention:
the operations described in this chapter illustrate functions accessible at System level.
Therefore, these operations can only be performed by accessing the Central Unit that manages the System on which the TFCOM dialer operates.
None of the operations described in this chapter may be performed via the equipment described in this manual.

5.1 - Operational levels and access codes

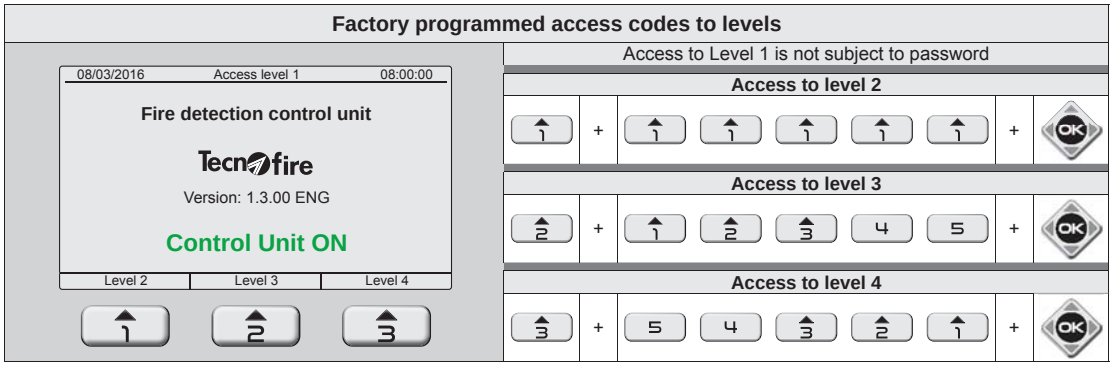
The TFAXFIRE Systems provide 4 access levels and 10 access codes.
The levels are: Level 1, Level 2, Level 3 and Level 4.
The table "Access codes to factory programmed levels" illustrates the sequence of keys to type to access the levels.
Access key to the level + Code + Confirmation Key.

Level 1
The control unit, in standby mode, provides access to the functions reserved to Level 1. Without having to enter a code, you can perform the following operations:
A - Access the upper levels with the keys: 1 or 2 or 3 and the relevant password
B - Acknowledge the alarm pressing the ACKNOWLEDGE key
C- Display the previously acknowledged ongoing alarms, stored in the event categories folders.

Level 2
You can access Level 2 pressing the key 1 and entering the relevant "user" code.
At level 2, it is possible to perform all the operations of the previous level and the following operations:
A - Reset the unit pressing the RESET key.
B- Switch the unit operating state: Manned to Unmanned and vice versa.
C- Manually activate an Evacuation alarm.
D - Access the list of menus reserved to Level 2.

Level 3
You can access Level 3 pressing the key 2 and entering the relevant "Installer/maintainer" code of the staff authorized to edit important operating parameters. At level 3 it is possible to perform all the operations of the previous levels and to access the menus reserved to Level 3:

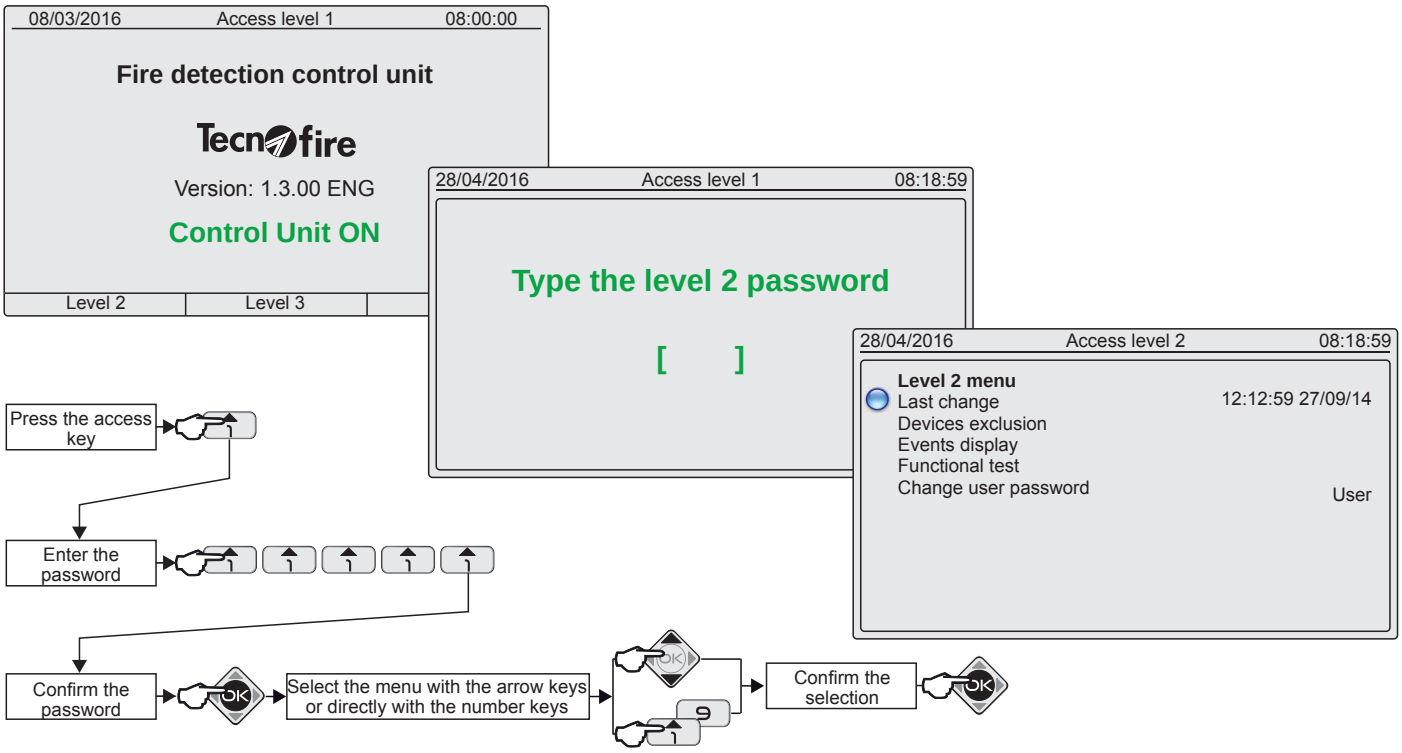
Level 4
It is possible to access Level 4 by pressing the key 3 and entering the code of the "Staff authorized by the manufacturer", that is highly qualified personnel authorised by the manufacturer to carry out technical services of particular importance.
To access the level 4, insert the KEY jumper of the control panel, too.
At level 4 it is possible to perform all the operations of the previous levels and to access the menus reserved to Level 4.



5.2 - Access level 2

Access Mode

To access the menus follow the operating sequence illustrated in the drawing, or read the following instructions.
The password used in the example is the one set at the factory. Replace the numerical sequence shown with your password.
The password consists of five digits; after entering, confirm it with the OK button.
The blue cursor displayed on the left side of the menu list is the selection pointer. The pointer can be moved using the arrow keys up or down. The choice of the menus can also be done by entering the quick selection number.



Menus which can be accessed at level 2

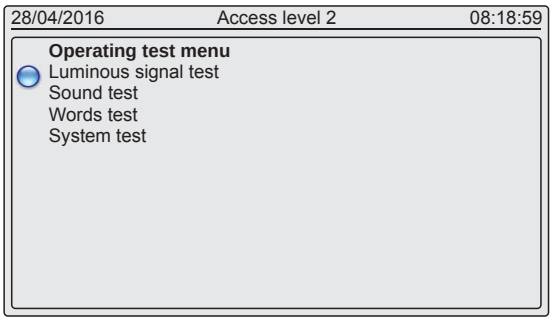
Level 2 access allows authorized users provided with password to browse and use the appropriate menus.
For each available menu, the table shows the quick selection number (index number), the menu name and its function.

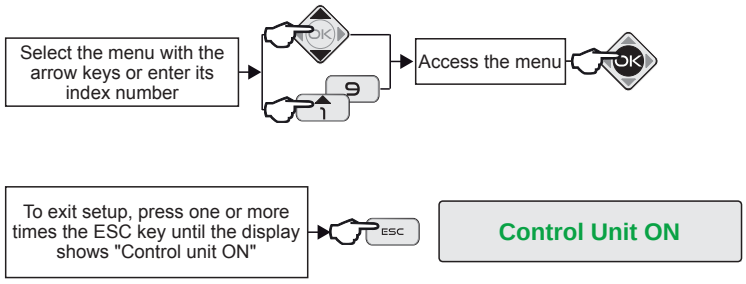
Contents	Menu name	Menu function
1	Last change	Displays the time and date of the last modification to the System setup
2	Devices exclusion	The menu allows to exclude and/or include the devices that make up the System
3	Events display	The menu displays the history of the operating events of the System recorded by the Control Unit
4	Functional test	The menu allows to perform functional tests on the devices that make up the System
5	Change user password	The menu allows to change the access level 2 password (User)

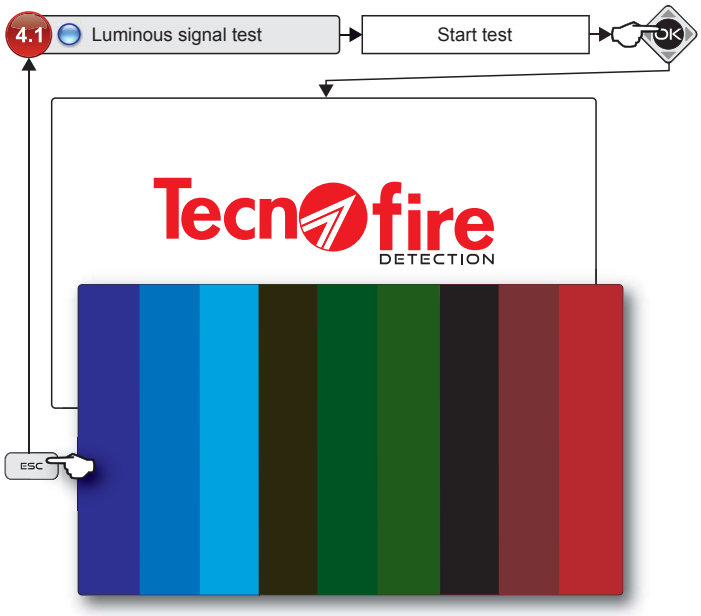
5.3 - Operating test

The control unit, via the functional test menu, allows to perform the functional test of the signalling LEDs of the TFCOM dialer.
The Functional test menu includes 4 sub-menus with which you can perform a few simple functional tests.
The first menu allows to check the indicator lights of the display and of the LEDs on the front panel of the control unit and TFCOM dialer.

Contents	Menu name	Menu function
4.1	Luminous signal test	The menu starts a test procedure of the display and of the signalling LEDs of the control unit
4.2	Sound test	The menu allows to test the operation of the centre speaker in siren mode
4.3	Words test	The menu allows to test the operation of the centre speaker in speaker mode
4.4	System test	The menu allows to select the programmed Zones to submit them to the functional test procedure







4.1 - Luminous signal test

The Luminous signal test is used to check the operation of luminous signalling devices of the control unit and of the TFCOM dialer.

To start the Luminous signal test, follow the steps provided in the diagram.

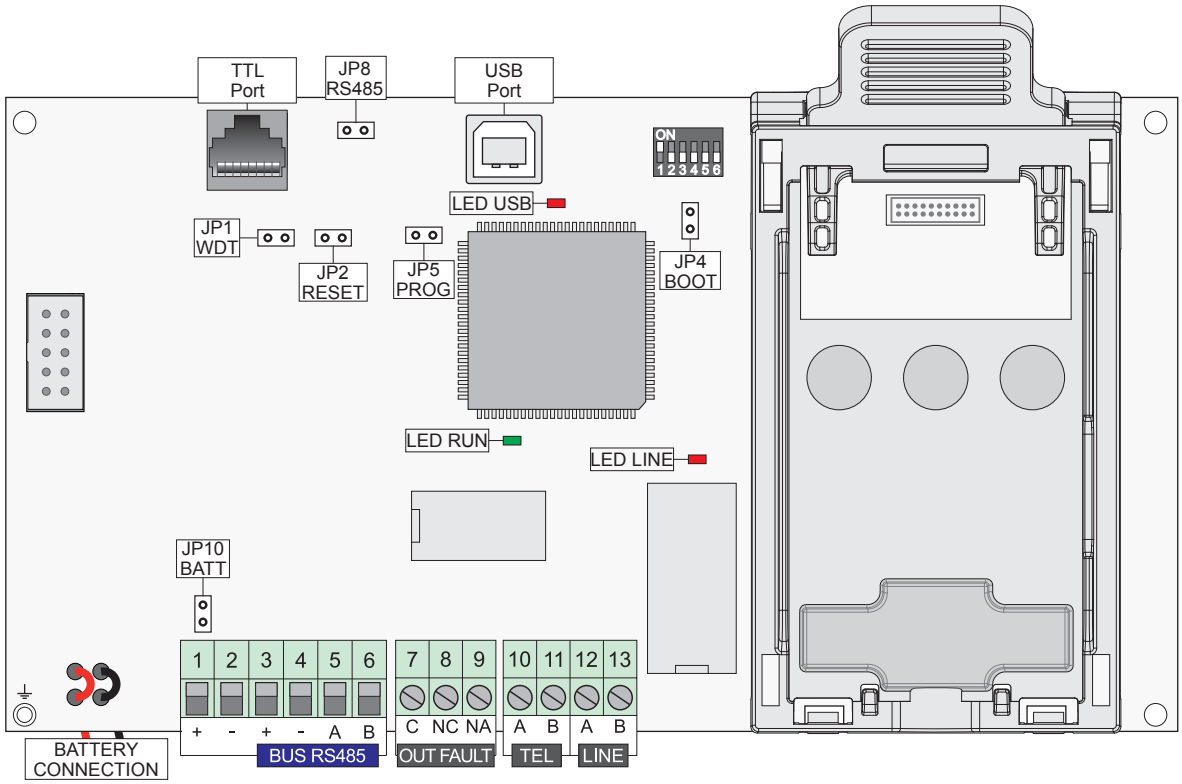
At test start, the control unit turns on steadily all the signalling LEDs of its front panel, the display alternates between two sample images to prove its functionality.

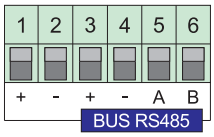
At the same time the System turns on steadily all the signalling LEDs of the front panel of the TFCOM dialer.

6 - CARD DESCRIPTION

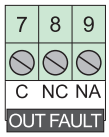
6.1 - Card topology

The dialer consists of two cards, the CPU card and the LED card. The CPU card is responsible for the functional management of the dialer, the LED card is the signalling interface of the device.

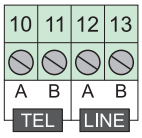




RS485 BUS		Notes	
1	Supply positive	Power input of the serial line	24V DC
2	Supply negative		
3	Supply positive	Power output of the serial line	24V DC
4	Supply negative		
5	Communication channel A	Communication channels of the serial line	
6	Communication channel B		



Fault notification output		Notes		
7	Common contact	Fault output	Relay (free contact)	Contacts protected with PTC Imax 0.75A
8	Normally closed contact			
9	Normally open contact			



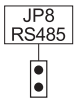
Phone line			Notes
10	A (TEL)	Telephone line output (A)	V DC phone line
11	B (TEL)	Telephone line output (B)	
12	A (LINE)	Telephone line input (A)	
13	B (LINE)	Telephone line input (B)	

EN 54

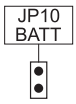
ATTENTION - LIMITATIONS OF USE OF THE OUTPUTS
The FAULT output (terminals 7, 8, 9) is not supervised (type J according to EN 54-1 nomenclature) and therefore, in accordance with EN 54-2, should not be used to control devices for the transmission of fault notifications

WARNING - DEVICE POWER SUPPLY
The serial line power supply consists of two power terminals in accordance with EN 54-21.

Identification	Colour	Function
RUN LED	Green	LED monitoring the functional state of the dialer. Flashing: normal operation state
LINE LED	Red	LED signalling the use of the PSTN phone line by the dialer
USB LED	Red	LED monitoring the activities of the USB port; flashes to indicate data exchange



Jumper JP8 - Termination of RS485 serial line	
Open	With the jumper open, the Bus is not terminated. Open the jumper when the dialer is not the last device connected on the Bus. Condition valid for both wiring configurations of the line Bus: open or closed
Closed	With the jumper closed, the Bus is terminated. Close the jumper when the dialer is the last device connected on the Bus. Of course only if the connection Bus is in open line configuration.



Battery JP10 jumper - Battery automatic release	
Open	With the jumper open, the battery is automatically released due to low battery voltage for Vbat <8.9V DC. The polarity reversal safety is enabled.
Closed	With the jumper closed, the battery automatic release function is disabled. The polarity reversal safety is disabled

Jumpers for management of high-level procedures

The management of the high-level procedures, such as update, reset, etc.., provide for the use of various jumpers available on the dialer card. The following describes the specific functions relating to each of them.

JP1 WDT DISABLE - The jumper disables the WATCHDOG hardware of the dialer, in its normal operating condition, the jumper **must always be open**. In some procedures, such as firmware download from serial port, the jumper must temporarily be closed.

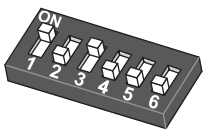
JP2 RESET - The jumper is used to reset, restart the microprocessor. In the normal operating condition, the jumper **must always be open**. In some procedures, such as during upgrade, the jumper must temporarily be closed.

JP4 BOOT - In normal operating condition, the jumper **must always be open**. With the jumper closed in the startup procedure, the dialer instead of starting the standard application software, remains in bootloader state, allowing to perform a firmware update via the USB port.

JP5 PROG - The jumper is used to perform the firmware upgrade of the telephone communicator via serial bus. In normal operating condition, the jumper **must always be open**. In the firmware update procedure, the jumper must temporarily be closed.

Identification	Normal condition	Function	Supervision
JP1 -WDT	Open	Watchdog reset disable	Supervised location
JP2 - RESET	Open	Hardware reset	
JP4 - BOOT	Open	Used to upgrade the product firmware via the USB port and during DEBUG	
JP5 - PROG	Open	Used to update the firmware of the product via the serial port	

SW2 Serial address setup



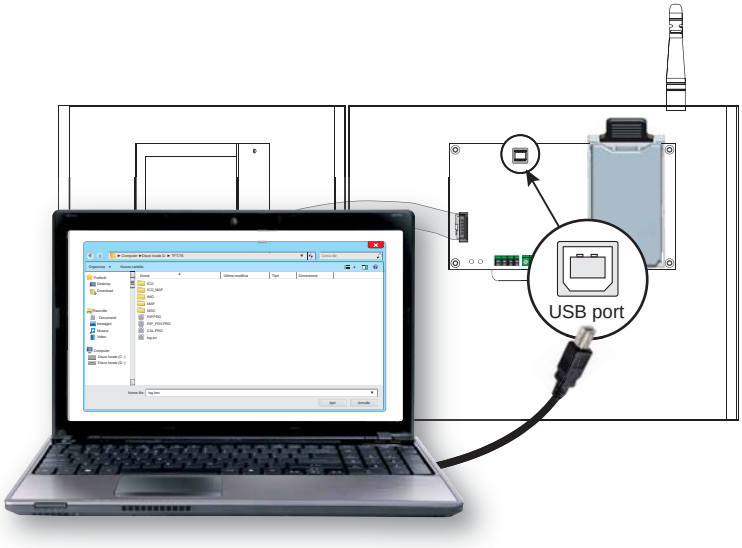
Address	1	2	3	4	5	6
0	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF
10	OFF	ON	OFF	ON	OFF	OFF
11	ON	ON	OFF	ON	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF
13	ON	OFF	ON	ON	OFF	OFF
14	OFF	ON	ON	ON	OFF	OFF
15	ON	ON	ON	ON	OFF	OFF
16	OFF	OFF	OFF	OFF	ON	OFF

Notes	The setting of address 0 disables the operation of the dialer Accepted addresses range from 1 to 16. All other logic combinations are reserved

6-2 USB interface

USB interface - Port
The USB port allows to connect the dialer directly to a PC, with which it is possible to update the dialer firmware.
The procedure is illustrated in the system manual "PC based TFAXFIRE setup".
The USB interface allows to access the Flash memory of the dialer (the memory is seen by the PC as an external drive).
With this procedure you can customize the vocabulary used by speech synthesis to forward voice messages.

Identification	Function
USB - Port	Connection to a PC for setup and firmware update



7 - MAINTENANCE

Periodic maintenance of the system
For perfect efficiency of the fire detection system, the customer shall provide for a preventive maintenance program.
The frequency of inspections depends on several factors; it is recommended to perform an inspection on average every 6 months (unless specifically required otherwise). Maintenance should be carried out by specialized personnel provided with the necessary know-how and equipment to perform adequate maintenance work. It is assumed that the information needed to perform a proper maintenance can be provided by the designers and/or by the manufacturers the fire detection system.
The maintenance guidelines are provided in the Italian standard UNI 11224.
The most significant checks should include at least:

- Functional state of power supply units and accumulators (APS) of the control unit and of the system power modules.
- State of the batteries of the self-powered devices (sirens, dialers).
- Functional tests of the sensors that make up the system.
- Checks about the state of cleanliness of the analysis chambers of the optical sensors.
- Efficiency of the control organs of the control unit and repeaters.
- Functional and operational efficiency of the acknowledgement, evacuation and system recovery procedures.
- Efficiency of manual alarm button module.
- Efficiency of optical and acoustic notification module.
- Efficiency of dialers (phone call tests).
- Verification of system actuations entrusted to input and output interface modules, etc.
- Check for correct tightening of the terminals wires.
- Final drafting of a test report signed by the maintainer and by the customer for acceptance.

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