

Manual / Manuel

Central de detección y alarma de incendios convencional
Conventional fire detection and fire alarm control panel
Central de détection et alarme d'incendie conventionnelle

CLVR02EXT





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1 Presentation of the Conventional Fire Detection and Fire Alarm Control Panel CLVR.

The conventional fire detection and fire alarm control panel CLVR from COFEM, represents all the experience accumulated during the design and manufacture of control panels after more than 40 years in the marketplace.

This control panel consists of different models so as to be more precisely adapted to the needs of each installation, offering **4 models** of control panels with different capabilities: **CLVR02Z** (2 Zones), **CLVR04Z** (4 zones), **CLVR08Z** (8 Zones) and **CLVR12Z** (12 Zones) and **1 model** of **2 zones** with extinguishing function.

Technical characteristics:

- 2 zones control panel with extinguishing functionality for conventional detectors and call points use.
- Third additional zone configurable as an alarm and detection zone for conventional detectors and call points or as an input of a external system monitoring fire protection.
- Same technical features as conventional CLVR control panels (2 general sounder outputs, 1 alarm output, 1 fault output, 2 30Vdc outputs, test mode, threshold setup, metallic cabinet, etc).
- 3 modes of extinguishing operating:
 - Normal mode: Output R1 of extinguishing forewarning is activated with Zone 1 or Zone 2 in alarm status.
 - Consecutive mode: Output R1 is activated intermittently (1 second with Zone 1 or Zone 2 in alarm status, 0,5 seconds with Zones 1 and 2 in alarm status, and continuing once the output delay R2 extinguishing).
 - Simultaneous mode: Output R1 is activated with Zones 1 and 2 in alarm status.
- Stop extinguishing button and extinguishing activation button in the control panel board.
- Possibility to install stop and activation buttons near the flood zone.
- 1 extinguishing output ("R2") supervised, temporized supervised, temporized between 0 and 60 seconds, protected by a resettable fuse.
- Reset release delay after the extinguishing activation temporized between 0 and 30 minutes.
- MODBUS protocol over RS485 on demand.
- Possibility of ON-LINE software in a PC using the MODBUS functionality.
- CONTACTID on demand.
- Certified according EN 54-2, EN 54-4 and EN 12094-1 with CE mark.
- Size: 363x331x96 mm

TECHNICAL SPECIFICATIONS

Supply voltage	110/230V 50-60Hz/AC	Maximum current per zone	2 mA (on standby)
Output voltage	21V Nominal	End of line resistor	4 K7
Consumption in standby	70 mA	Sounder output voltaje S1	30Vdc 1,85 A
Consumption in alarm	140 mA	Sounder output voltaje S2	30Vdc 0,75 A
Batteries	2 x 12V 7Ah SLA	Fault output	Yes
Battery fuse	4 A	Environmental conditions	-10°C +50°C 20%-95% HR
Battery charger	500 mA 27V/DC 20°C	Measurements	363 x 331 x 96 mm
Elements per zone	32	Weight (without batteries)	4,3 Kg
Control Panel Power Supply	3 A	Standards	EN 54-2, EN 54-4, EN 12094-1
		Maximum current output 30V	1,5 A



2 Control Panel

2.1 Indication leds and control keys

Described below is the meaning of the indication leds and control keys of the main fire control panel CLVR02EXT.

2.1.1 Indication leds

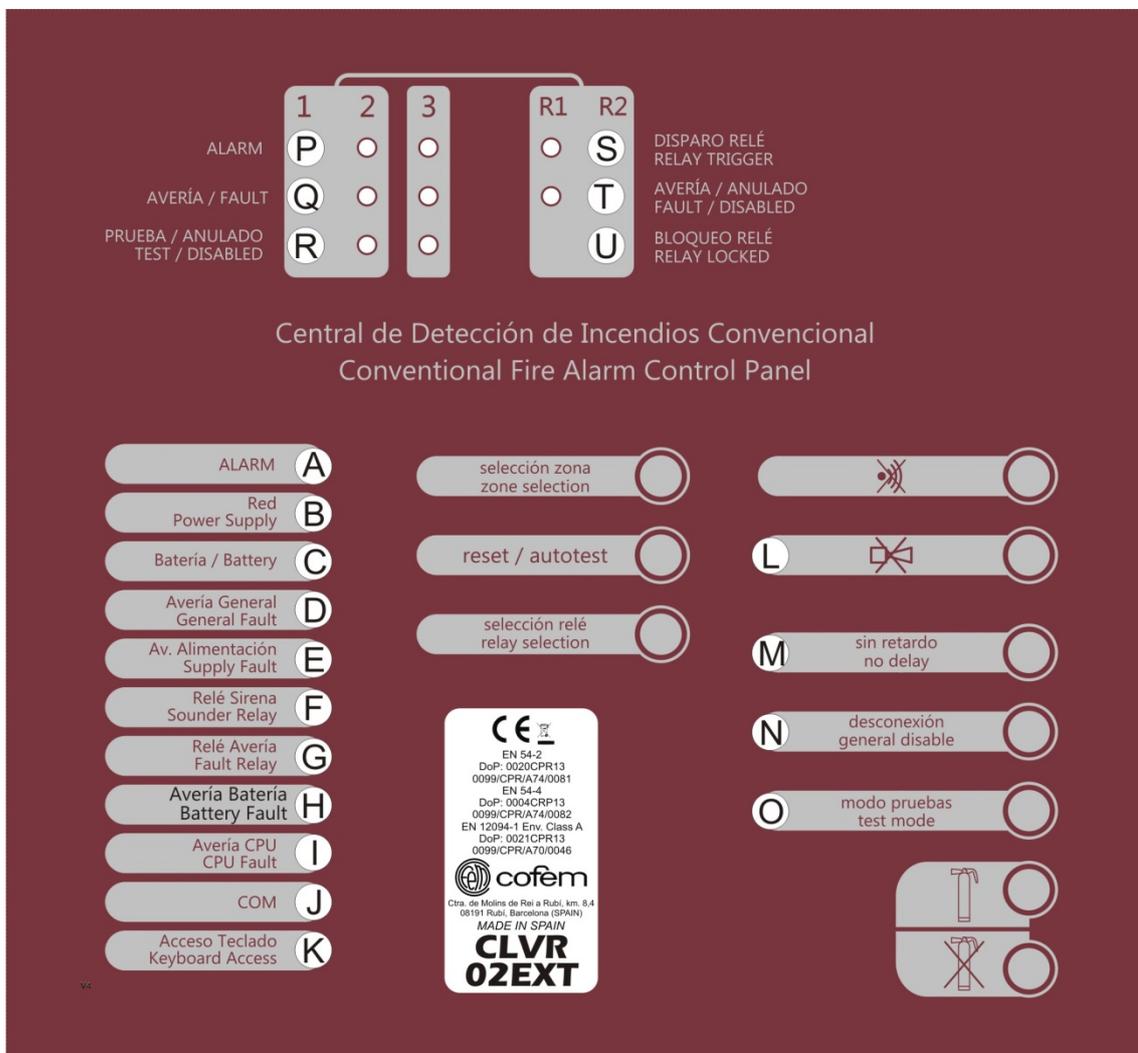
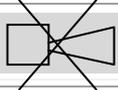


Figure 1: Main CLVR02EXT Control Panel



Indicator leds are described hereafter:

KEY	LED COLOUR	DESCRIPTION
ALARM (A)	Red	Fire alarm due to activation of manual call point or detector. ▶ Fixed
Red Power Supply (B)	Green	System operating through 230 V/AC power supply. ▶ Fixed
Bateria / Battery (C)	Green	System operating under batteries. ▶ Fixed
Avería General / General Fault (D)	Amber	System fault ▶ Fixed
Av. Alimentación / Supply Fault (E)	Amber	General power supply fault. ▶ Fixed ⇒ Fault 230V/AC input, batteries input, 30V output, etc
Relé Sirena / Sounder Relay (F)	Amber	General sounder output condition ▶ Fixed ⇒ Relay triggered ▶ Intermittent ⇒ Fault in the relay, line open, line crossed, sounder fuse etc.
Relé Avería / Fault Relay (G)	Amber	Condition of fault output ▶ Fixed ⇒ Relay triggered ▶ Intermittent ⇒ Fault in relay, line open, line crossed, fuse fault etc.
Avería Batería / Battery Fault (H)	Amber	Fault in the auxiliary battery supply ▶ fixed ⇒ Batteries faulty, discharged or missing. ▶ Intermittent ⇒ Fault in the battery charger.
Avería CPU / CPU Fault (I)	Amber	CPU fault ▶ Fixed ⇒ Control Panel not operating.
COM (J)	Amber	Control Panel communication through RS485 port ▶ Intermittent ⇒ Control panel communicatin
Acceso Teclado / Keyboard Access (K)	Amber	Level of access to keyboard of Control Panel. ▶ Off ⇒ Level 1. ▶ Fixed ⇒ Level 2. ▶ Intermittent ⇒ Level 3.
(L) 	Amber	Silence sounders ▶ Fixed ⇒ General relay sounder in silent position.
(M) sin Retardo / no delay	Amber	Disable delays of panel ▶ Fixed ⇒ Control panel operating without delays at the general sounder outputs, fault and extinguishing relay "R2".
(N) desconexión general / disable	Amber	Zone out of service. ▶ Fixed ⇒ At least 1 zone out of service.
(O) modo pruebas / test mode	Amber	Zone in test mode ▶ Fixed ⇒ At least 1 zone in test mode.
ALARM (P)	Red	Alarm in zone indicated. ▶ Fixed ⇒ activated by manual call point ▶ Intermittent ⇒ activated by Detector
AVERÍA / FAULT (Q)	Amber	Fault in zone indicated. ▶ Fixed ⇒ Open line fault. ▶ Intermittent ⇒ Crossed line fault.
PRUEBA / ANULADO / TEST / DISABLED (R)	Amber	Zone indicated in test or disabled ▶ Fixed ⇒ Zone disabled. ▶ Intermittent ⇒ Zone in test.
(S) DISPARO RELÉ / RELAY TRIGGER	Amber	Condition of relay. ▶ Fixed ⇒ Relay triggered. ▶ Intermittent ⇒ Relay activated in countdown (only extinguishing relay R2).
(T) AVERÍA / ANULADO / FAULT / DISABLED	Amber	Relay fault or disabled. ▶ Fixed ⇒ Relay disabled. ▶ Intermittent ⇒ Relay fault (Relay fault, line open, line crossed, etc).
(U) BLOQUEO RELÉ / RELAY LOCKED	Amber	Extinguishing relay locked (R2). ▶ Fixed ⇒ Activated Emergency abort. Panel may be reset. ▶ Intermittent ⇒ Extinguishing triggered. Delay time for reset still countdown.



2.1.2 Control keys

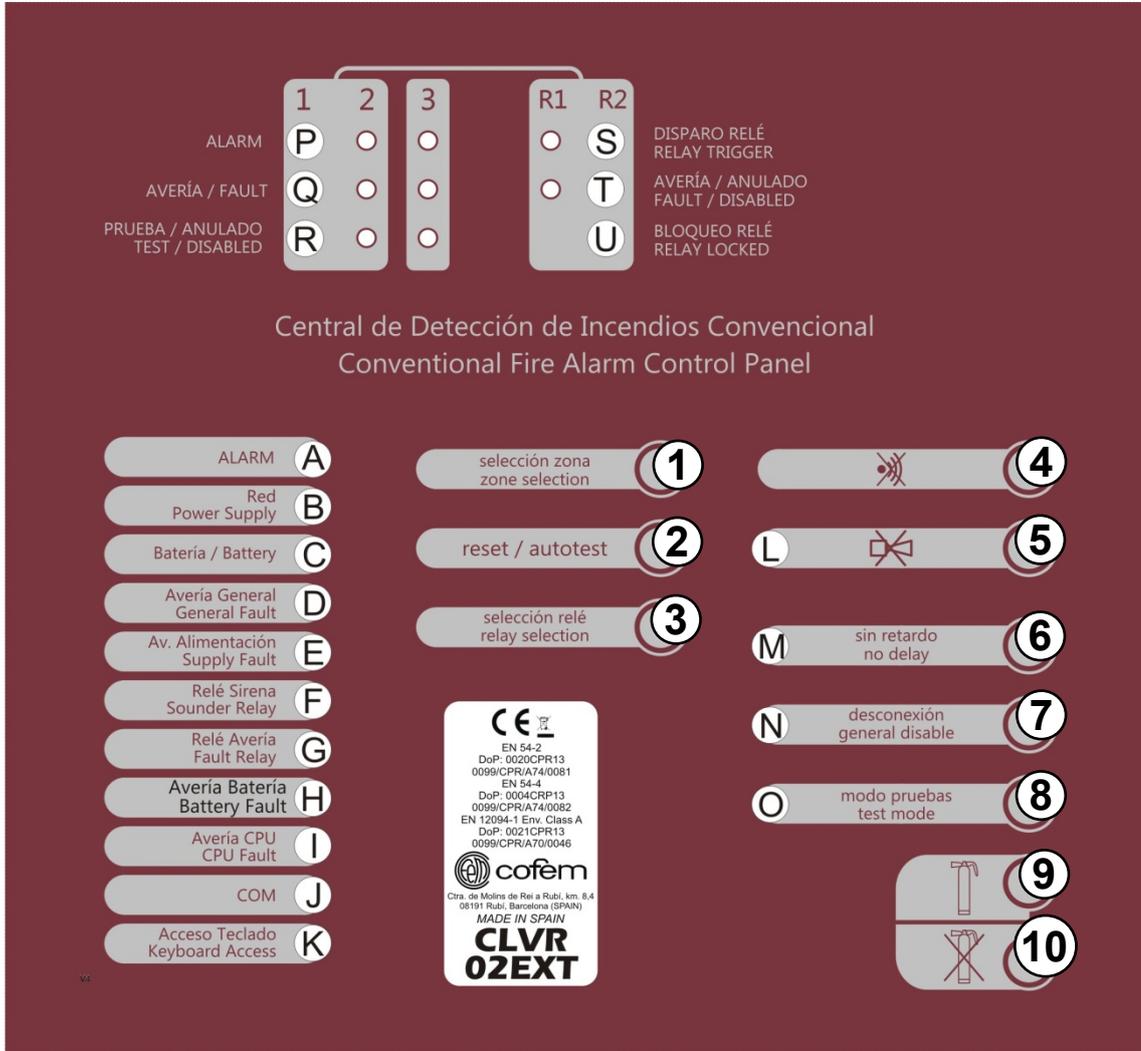


Figure 2: Main **CLVR02EXT** Control Panel

Control keys are described hereafter:



KEY	DESCRIPTION
	<p>Selection of a zone, to modify its condition. Accessible from access level 2.</p> <ul style="list-style-type: none"> ▶ 1 pressing ⇒ All the alarm leds will flash. ▶ Subsequent pressings ⇒ Selected zone changes (only led of that zone will flash).
	<p>Check condition of indication lamps/buzzer of the control panel. Also allows control panel to be reset. Accessible from access level 2.</p> <ul style="list-style-type: none"> ▶ 1 pressing ⇒ Activates buzzer and all LEDs. ▶ Press constantly ⇒ Resets control panel. ▶ 1 pressing: When a zone or relay is selected, it goes back to the state prior to selection. <p>Reference of software version and configuration version of delays. Firstly access level 3 must be entered.</p> <ul style="list-style-type: none"> ▶ 1 pressing ⇒ Buzzer is activated first and then all LEDs. Then the software version is shown. Then the delay configuration version.
	<p>Selection of relay. Accessible from access level 2.</p> <ul style="list-style-type: none"> ▶ 1 pressing ⇒ All relay LEDs will flash (Sounder & Fault). ▶ Subsequent pressings ⇒ Changes the selected relay (only that LED will flash)
	<p>Deactivation of the acoustic signal of the control panel due to alarm or fault. Accessible from access level 1.</p> <ul style="list-style-type: none"> ▶ 1 pressing ⇒ switches off the sounder noise. In the event of a new incident, the buzzer will activate automatically.
	<p>Locking/unlocking of the general sounder. Accessible from access level 2.</p> <ul style="list-style-type: none"> ▶ 1 pressing ⇒ Locking/Unlocking of the general sounder output whether in alarm mode or not.
	<p>Locking/unlocking of the delay of all outputs. Accessible from access level 2.</p> <ul style="list-style-type: none"> ▶ 1 pressing ⇒ Locks /unlocks the delay of all outputs (general sounder & fault). <p>Selection of configuration times of delays. First must enter access level 3 and select a relay (see key 3).</p> <ul style="list-style-type: none"> ▶ 1 pressing ⇒ Indication of the current delay. ▶ Subsequent pressings ⇒ Changes delay time selection.
	<p>Enabling/disabling of zone. First must enter access level 2 and select a zone (see key "1").</p> <ul style="list-style-type: none"> ▶ 1 pressing ⇒ Disables/enables selected zone.
	<p>Enabling/disabling of test mode of a zone. First must enter access level 2 and select a zone (see key "1").</p> <ul style="list-style-type: none"> ▶ 1 pressing ⇒ Enables/disables test mode in the selected zone.
	<p>Enabling of relay "R1" or "R2". First must enter access level 2 and select relay "R1" or "R2" (see key "3").</p> <ul style="list-style-type: none"> ▶ 1 pressing ⇒ Activates selected relay "R1" or "R2".
	<p>Stoppage of relay "R1" or emergency abort of relay "R2". First must enter access level 2 and select relay "R1" or "R2" (see key "3").</p> <ul style="list-style-type: none"> ▶ 1 pressing ⇒ Stoppage of relay "R1" or emergency abort of relay "R2". For "R2", if the output is enabled, it is not possible to abort it.

3 Description / Installation of the control panel

The control panel CLVR is based on a metal box, into which the different components are placed. The door is fitted to the box with 4 front bolts (letter A in figure 3) located near the corners.

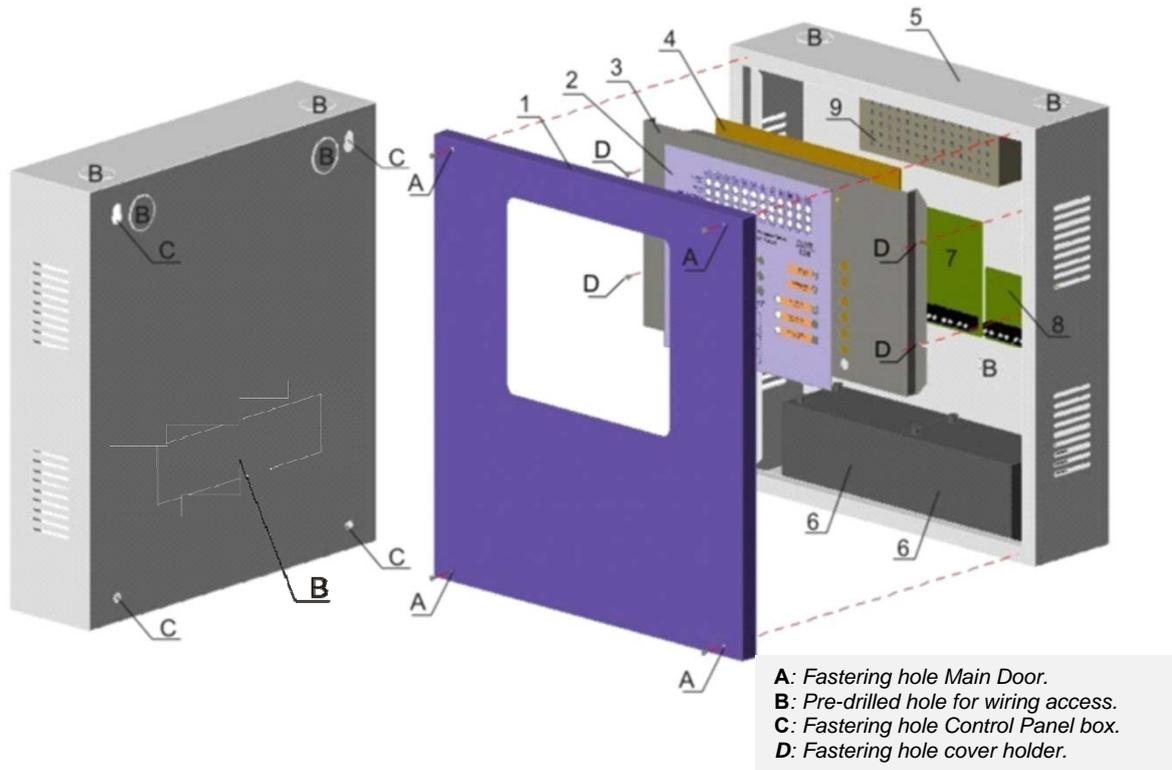


Figure 3: Diagram of box and main door

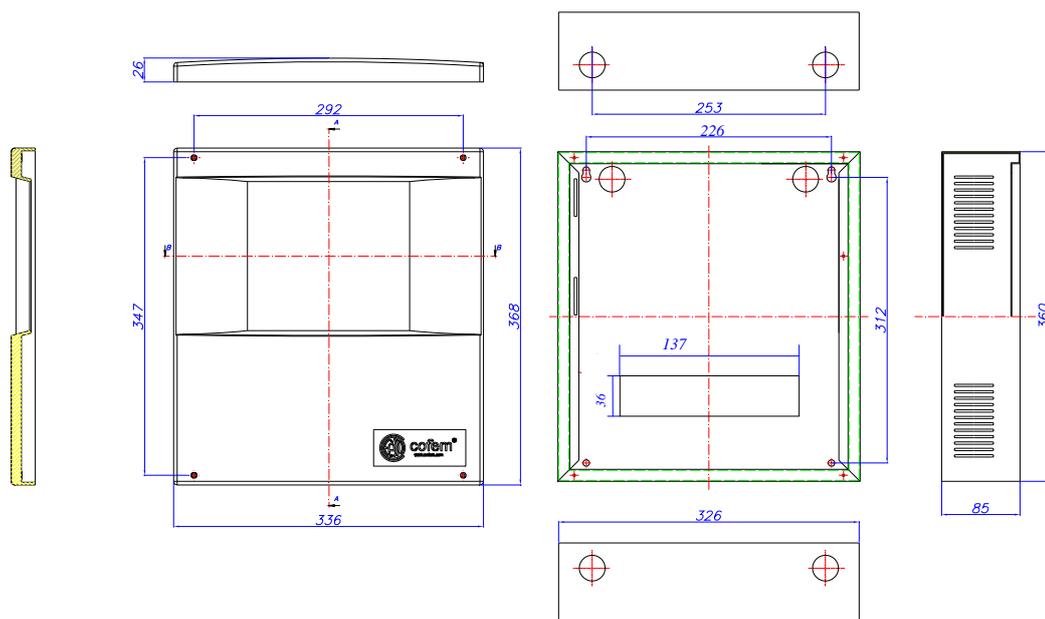


Figure 4: Door and main box measurements (mm).



1. **Main Door.**
2. **Label.**
3. **Label holder:** It is fitted to the upper frontal part of the box. It serves as a support for the CPU circuit in the rear side, and for the label on the outside for the control panel. It has a ground cable connecting closer axis pin with another pin sited inside the box in faston of the Output circuit.
4. **CPU circuit:** Fixed to the rear part of the label holder.
5. **Box.**
6. **Batteries:** The control panel has space reserved in the inner part of the box. It admits two 7 Ah batteries.
7. **Output circuits:** This card is on the centre left side of the box, with the terminals underneath the label holder.
8. **Extinguishing Unit:** CLVR02EXT Control Panel includes this unit with the outputs of the extinguishing relays.
9. **Power Supply:** Is fitted to the bottom of the box on the upper central part behind the label holder.

As far as the box is concerned, it is provided with 6 pre-drilled holes of 28 mm and 1 rectangular of 137 x 36 mm to allow access for wiring to the control panel (Letter B in figure 3).

In order to fit the box to the wall, there are 4 holes of 8 mm diameter on the rear side near the corners (letter C in figure 3).

Therefore, the installation process for the control panel is as follows (see figure 3):

- Drill the necessary holes for mounting the control panel on the wall. To do this, remember holes (C) located in the corners of the cover (see figure 3).
- Remove the box door by taking out bolts (A) from the corners.
- Open the pre-drilled holes (B) needed for passing the cables through to the control panel.
- Fit the box on the wall using holes (C).
- Carry out the connections needed in accordance with the requirements of the installation, the equipment used and the control panel.

The three 230 Vac (phase, neutral and earth) power supply terminals must be connected to the control panel. This connection is shown on a tag.

In order to manoeuvre the Cover holder, **care must be taken with the ground cable connecting one of its pin with a box pin or output circuit faston (depending on the model), and the connector of the CPU with the output circuit (see figure 18).**

Note: Any connection or movement of the control panel must be carried out with the panel disconnected, both from the power supply, and from the batteries.

- Connect the control panel following the diagrams of chapter 9.1.1. and configure it properly (delays and disconnections. See chapter 7). Install/remove the door of the cover holder as necessary (see figure 18).
- Carry out the operational tests required (alarm, fault, batteries test, etc.).
- If necessary, make a note of the references of each zone above the tag supplied with the control panel, remove the zones not in use, trimming and sticking them to the outside of the door.

4 Terminal box

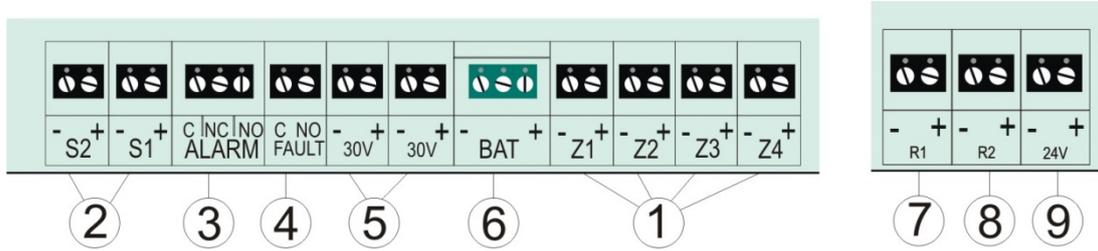


Figure 5: CLVR Control Panel wiring diagram.

1. Zone outputs:

Outputs of control panel for connection of detection zones.

It supplies, 24 Vdc aprox, in standby condition. With End Of Line resistance of 4K7, it supply 22 Vdc aprox. With detectors and wire, in standby condition, the voltage must not be under 19 Vdc aprox.

When voltage is higher than 22,6 Vdc aprox, Control panel indicates open line.

In detector alarm status, the detector forces voltage line in a range of 8 to 15 Vdc. For Manual Call Point alarm status, Manual call point force voltage in a range from 3 to 8 Vdc. Under 3 Vdc, Control Panel indicates crossed line.

Open line, detector alarm and manual call point thresholds can be modified using the CPU microswitches (see chapter 7.3).

2. Sounder output:

Control Panel has 2 sounder outputs monitored and independent with simultaneous activation protected by a fuse. In this way, in case of fault in one output, the other can still be operated by the control panel.

The outputs are activated simultaneously when an alarm occurs in the system and the programmed delay time is passed. It will disable when there is no alarm in the system.

It is possible to lock it (see control key 5).

In standby condition, the output delivers -14 Vdc aprox, and in active condition +29 Vdc aprox.

3. Alarm output:

Dry contact output not monitored.

In Alarm status, contacts Common- Normally Open (NO) of the relay are shorted. In any other status, contacts Common- Normally Closed (NC) of the relay are shorted.

4. Fault output:

Dry contact output not monitored.

In Fault status or Control Panel not electrically supplied, Common- Normally Open (NO) contacts are shorted meaning FAULT. With Control Panel electrically supplied and with not any fault, Common- Normally Open (NO) contacts are electrically Open.

5. Auxiliary Output of 30V:

Output of 30V monitored and protected by a fuse, which powers sounders, electromagnets of fire doors, etc.

NOTE: Monitoring of this output is only for crossed line.

6. Batteries output:

The batteries output, monitored and protected by a fuse, allows the batteries to be connected to the control panel.

Through this connection, batteries are charged and their condition monitored.

This output is protected against reverse polarity.



The capacity of the batteries connected to the control panel will depend on the number of zones and additional charges (e.g. Sounders, door electromagnets and fire doors, etc.). The use of 7 Ah batteries is recommended.

7. Advance Warning Extinguishing Output R1:

Extinguishing pre-warning output monitored and protected by a resettable fuse, designed to pre-warn of a possible discharge from the extinguishing output using sounders, illuminated signs etc.

It activates whenever an alarm occurs in the system.

It will disable when there is no alarm in the system.

It is possible to disconnect it (see control key 7) or stop it (see control key 11)

In standby the output delivers -14V and activates +30V.

8. Extinguishing output R2 to the flood zone:

Extinguishing output monitored and protected by a resettable fuse, delayable using the configuration menu, for connection of an extinguishing device.

It will activate whenever an alarm occurs in any of the zones of the system and the programmed delay time has passed.

Once activated, it cannot be disabled.

In standby the output delivers -14V and activates +30V.

NOTE: VERY IMPORTANT!!!

It can NOT be used Manual Call Points when control panel is installed for an extinguishing system.

9. Input of 24V from the extinguishing unit:

Input protected by fuse (F1) for supply of the extinguishing unit. This input is connected directly to the plant to allow operation of this unit.

10. Fuses:

Batteries fuse	FUS3	4 A
Fuse 30V	Autoresettable Fuse	1,5 A
Fuse S1	Autoresettable Fuse	1,85 A
Fuse S2	Autoresettable Fuse	0,75 A
Extinguishing Unit fuse	Autoresettable Fuse	1.85 A
Extinguishing Pre-warning fuse R1	Autoresettable Fuse	0,5 A
Extinguishing R2 fuse	Autoresettable Fuse	0,75 A

11. Electrical power supply input 230 Vac:

The three 230 Vac (phase, neutral and earth) power supply terminals must be connected to the control panel.

12. Wiring:

For wiring of the system, all the outputs must be 2 x 1,5 mm cable, BRAIDED AND SHIELDED HALOGEN FREE for distances up to 800 m. For higher distances up to 1500 m, 2 x 2,5 mm cable, BRAIDED AND SHIELDED HALOGEN FREE must be necessary.



5 Control panel operation

5.1. Description

Normal operation of this control panel is identical to that described for the zone control panel, except for the addition of the extinguishing capability.

This means that the CLVR 02Ext model has the functionality of a main fire detection and alarm control panel in accordance with what is laid down in standards EN 54-2 and EN 54-4, and in components for extinguishing systems using gaseous agents EN 12094-1.

The normal operation of the added extinguishing capability is described below.

NOTE: VERY IMPORTANT!!!

It can NOT be used Manual Call Points when control panel is installed for an extinguishing system.

The fire detectors are distributed between 2 zone outputs within the flooding zone, in accordance with what is laid down in the different standards and regulations which must be fulfilled, with the requirements of the equipment involved and with the wiring diagrams of this manual.

When a detector alarms, the control panel goes from the standby condition to the alarm condition.

The Advance Warning Extinguishing output relay (R1) triggers immediately. In this way, the warning equipment in the flooding zone is powered up (sounders, signs, etc).

The Advanced Warning Extinguishing output (relay R1) is monitored.

If a second detector in the same zone alarms, the system will remain in the same situation.

When a detector from the other zone activates, it is initiated the delay for triggering of the R2 extinguishing output.

Once the delay is complete, or if it has not been programmed, the extinguishing output (R2) will trigger.

Exit from this state is only possible by resetting the control panel. To do this, you must wait the delay time for reset, which can be programmed on the control panel.

If needed, the Extinguishing output (R2) can be triggered or aborted at any time. This can be carried out by using the control panel or the manual stop and triggering devices located in the zones surrounding the flooding zone, connected in accordance with the diagrams in this manual.

Both control key 10 (Activate Extinguishing) of the control panel and the *manual triggering device*, shall activate the Extinguishing output immediately (R2). If this key or manual triggering device is actuated with control panel in standby condition, it will be activated buzzer control panel and sounder, alarm and advanced warning extinguishing (R1) outputs.

Control key 11 (Stop Extinguishing) of the control panel, and the *manual extinguishing stop device* lock the R2 extinguishing output permanently as long as the R2 output has not been activated. This situation can only be unlocked by resetting the control panel. In the case of actuating the stop key or the manual extinguishing stop device with control panel in standby condition, it will be activated buzzer of the control panel.

The operation of R1 output can be modified by the possibilities described in Chapter 7.3.5.

5.2. Wiring diagrams

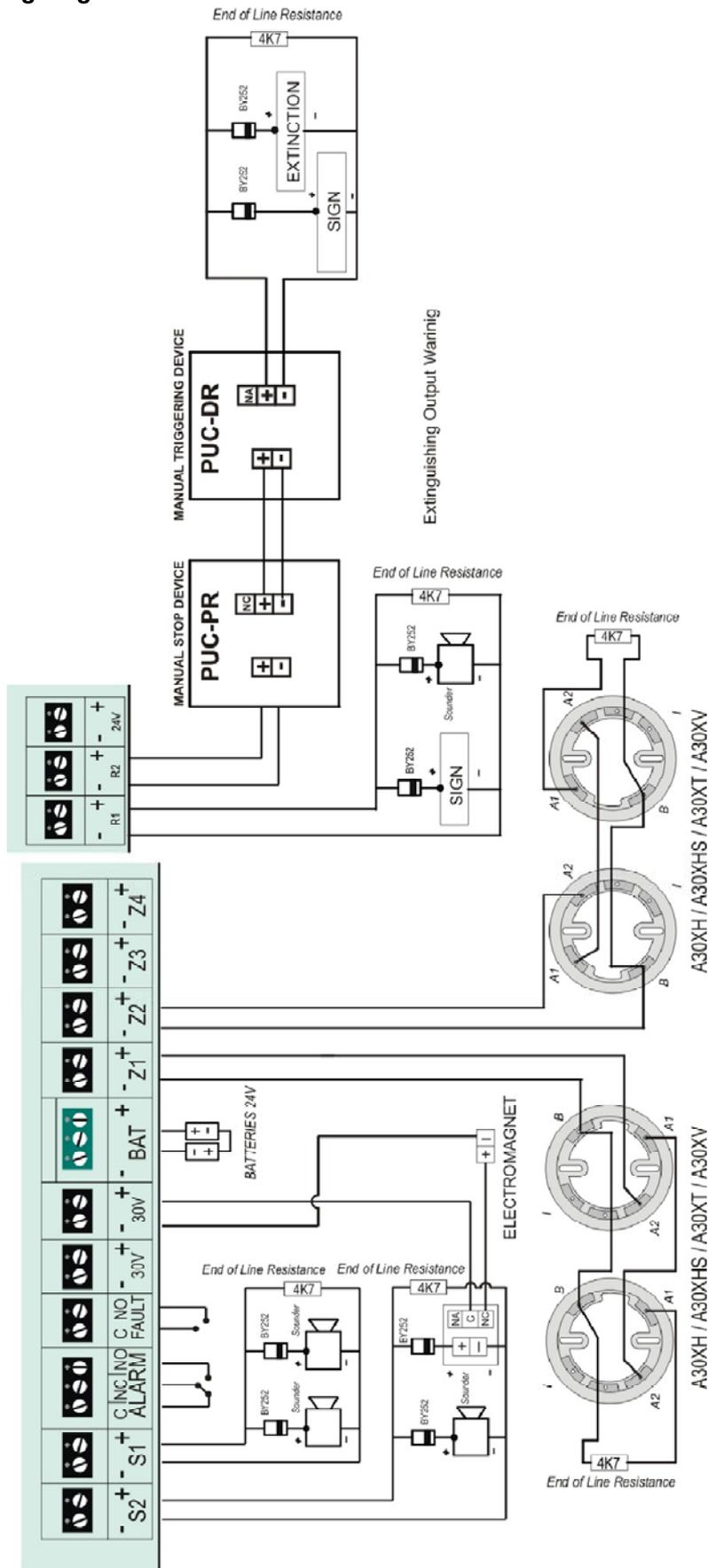
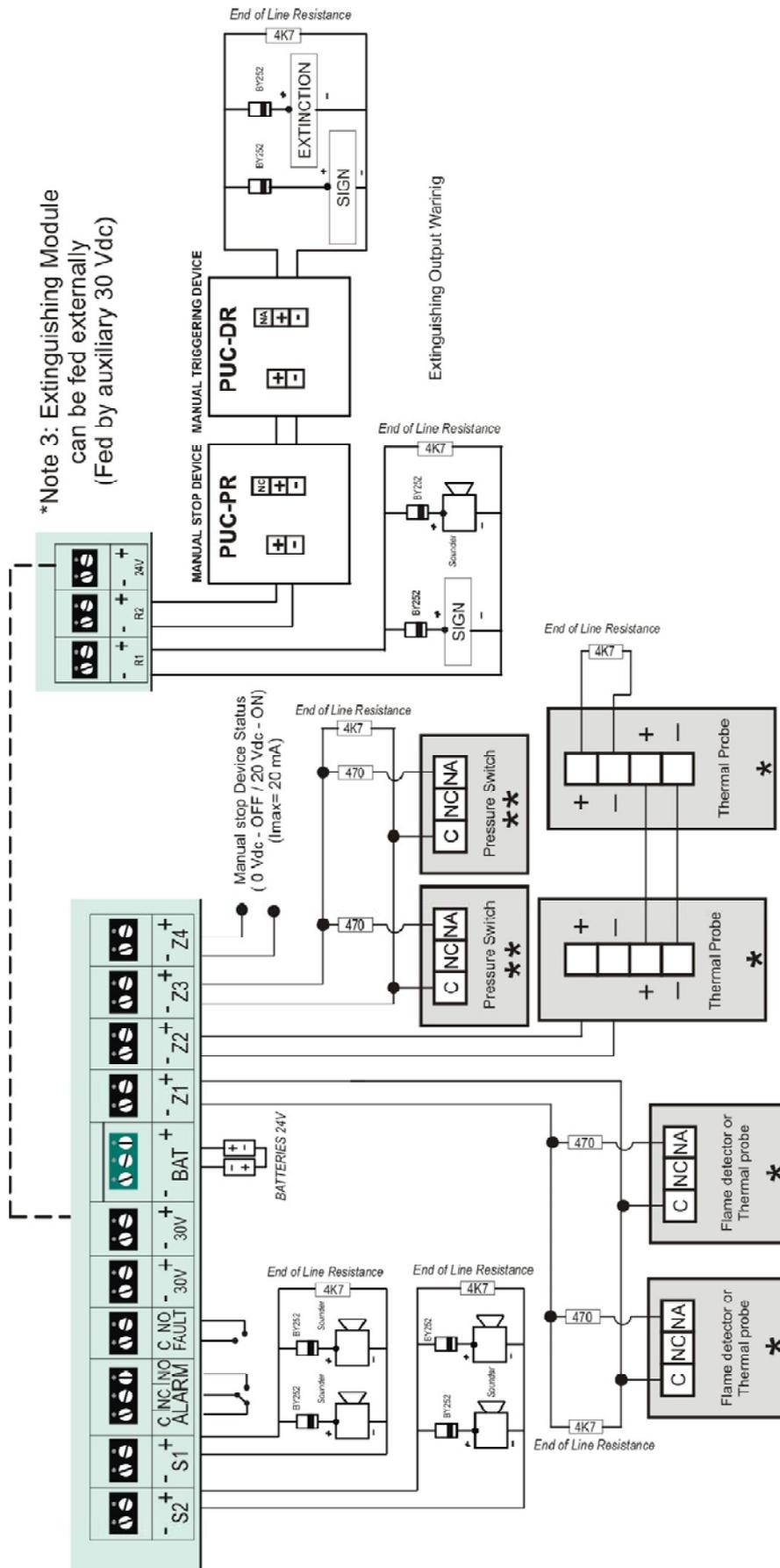


Figure 6.1: Example of wiring diagram



*Note 3: Extinguishing Module can be fed externally (Fed by auxiliary 30 Vdc)

*Note 1: Thermal probe Wiring depends on the specific model
**Note 2: Zone 3 used for pressure switch monitoring.

Figure 6.2: Example of wiring diagram

6 Access levels to the control panel

The control panel has 3 access levels. The following table shows the order for pressing the control keys and the functionality available in the different access levels. To access level 3, first activate level 2.

NOTE:

The number appearing on the control key corresponds to its description in chapter 2.1.2. and **NOT** to the number of times it must be pressed.

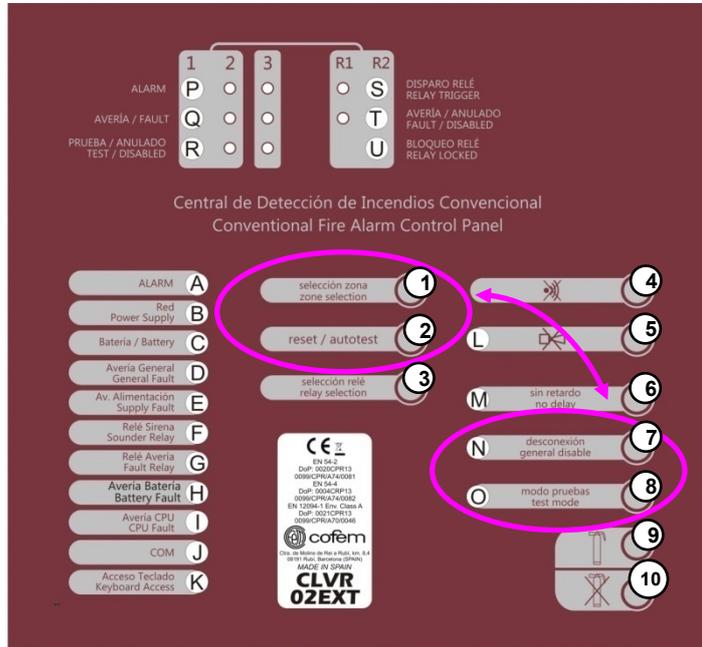


Figure 7: Keys used in the control panel access levels CLVR02EXT

Access level	Key combination (order of pressing)	Functionality
1	None	Stop buzzer
2	<ul style="list-style-type: none"> selección zona zone selection ① reset / autotest ② selección zona zone selection ① reset / autotest ② 	<ul style="list-style-type: none"> • Level 1 actions • Stop sounders • No delay • Disable zones/relays • Zone test mode
3	<ul style="list-style-type: none"> ○ modo pruebas test mode ⑧ ○ desconexión general disable ⑦ ○ modo pruebas test mode ⑧ ○ desconexión general disable ⑦ 	<ul style="list-style-type: none"> • Level 2 actions • Configuration of delays. • Reference of software version and configuration version of delay configuration.
<ul style="list-style-type: none"> • If no key is pressed, the access state will be abandoned after 30 seconds • In all control panels, the Stop buzzer key is the only one which can be used in level 1 		

7 Configuration of the control panel

7.1. Configuration of delays.

The delays of the “*Sounder relay output*” and “*Fault relay output*” are configured using the control keys on the control panel.

The time indication for these delays is displayed in binary code using the Battery Fault indicator, CPU Fault, COM and Keyboard Access leds.

Note: the programmed delays are maintained independently of the alarm comes from a detector, a manual call point, or a combination of them.

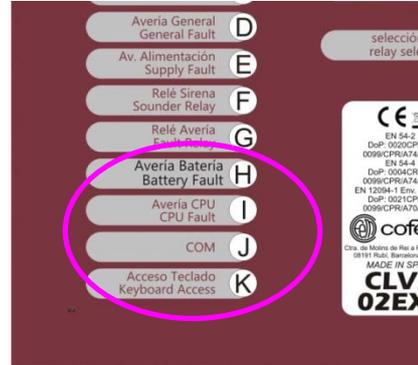


Figure 8: led indicators used for delay time configuration.

The procedure is as follows:

- 1) Activate access level 2 (press the control keys once in the following order: *Zone/Relay selection, Reset/Autotest, Zone/Relay selection, Reset/Autotest*).
- 2) Activate access level 3 (press the control keys once in the following order: *Test mode, Disable, Test mode, Disable*).
- 3) Select the relay to which you wish to apply the delay using the control key *Select Relay*.
- 4) Press the control key *No delay* in order to select the times. These are shown in the following table along with the corresponding state of the indicator lamps:

Note: The first button indicates the current delay.



Nº Pulsaciones		1	2	3	4	5	6	7	8	9	10	11	12	13
LEDS	Avería Bateria Battery Fault H	○	○	○	○	○	○	○	○	●	●	●	●	●
	Avería CPU CPU Fault I	○	○	○	○	●	●	●	●	○	○	○	○	●
	COM J	○	○	●	●	○	○	●	●	○	○	●	●	○
	Acceso Teclado Keyboard Access K	○	●	○	●	○	●	○	●	○	●	○	●	○
	Sounder Relay (minutes)	0	1	2	3	4	5	6	7	8	9	10	10	10
	Fault Relay (minutes)	0	1	2	3	4	5	6	7	8	9	10	10	10
	R2 Relay (seconds)	0	5	10	15	20	25	30	35	40	45	50	55	60
	Unlocking Delay (minutes)	0	5	10	15	20	25	30	30	30	30	30	30	30

Figure 9: Correlation between the N^{er} of pressings of the **no delay** control key, the state of the indication leds and the configured delay times.



7.2. Disabling of zones

The control panel allows disable zones if it is necessary.

Power supply will be cut on the disabled zones and no event will be generated on them.

In order to disable or re-enable a zone, the procedure is as follows:

- 1) Activate access level 2 (press the control keys once in the following order: *Zone Selection, Reset/Autotest, Zone Selection, Reset/Autotest*).
- 2) Select the zone which is to be disabled using the control key *Select Zone*.
- 3) Press the General *Disable* control key.

Note: Enabling / disabling of the zone shall be indicated by “R” indication led (see chapter 2.1.1).

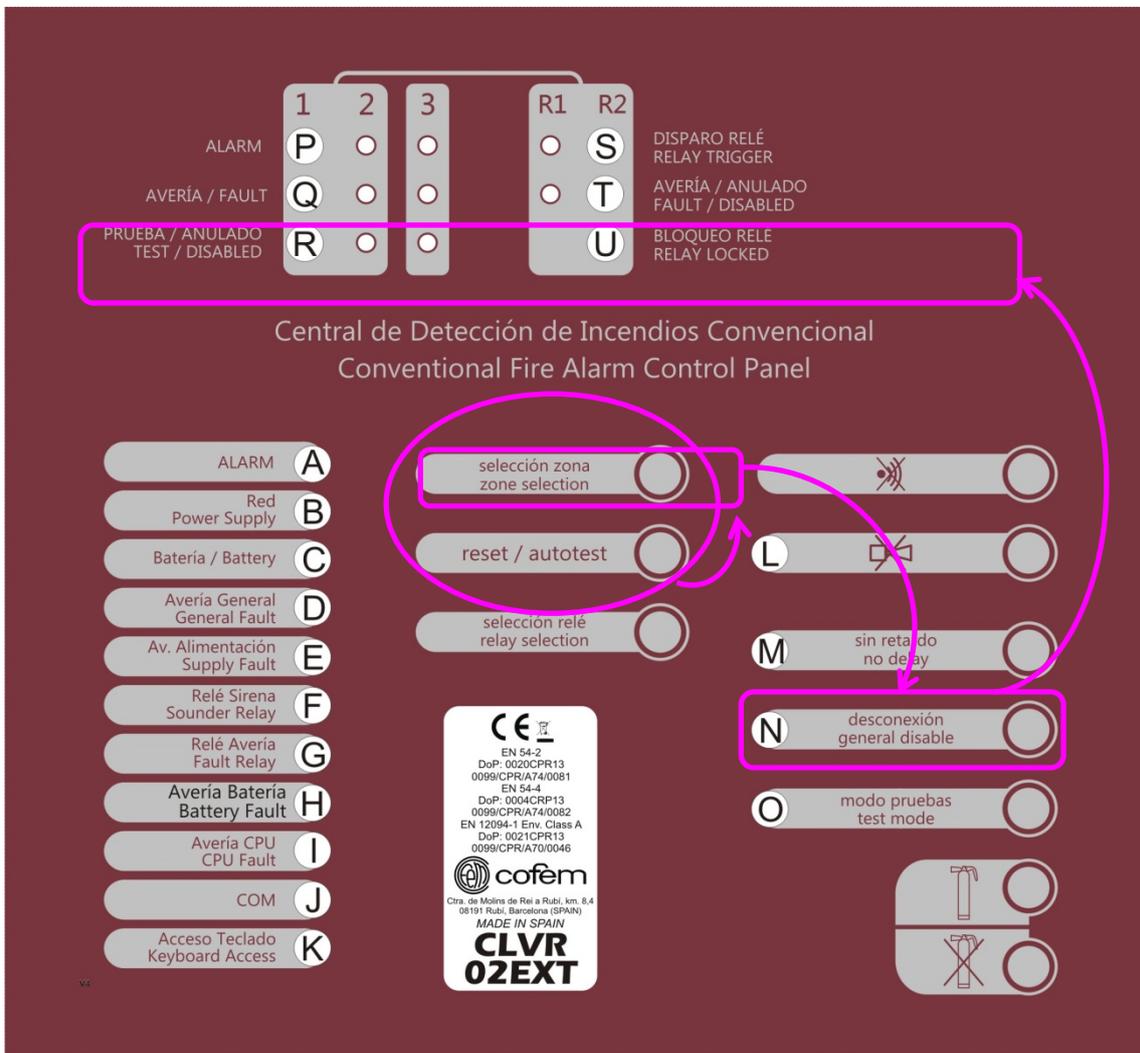


Figure 10: Control keys and indicators used for disabling zones.

7.3. Microwitch alternative settings

The Fire Control Panel CLVR has a microswitch with 8 switches for modification of the zones threshold. This allow better adjustment in the operation of the system because of installation issues or when using detectors or manual call points different from cofem's ones.



Figure 11 Microswitch situation at the back of the CPU circuit

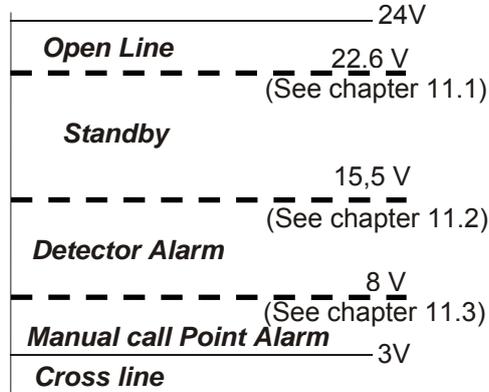


Figure 12 Detection thresholds

7.3.1 Open line threshold setting at the Microswitch.

The switch with numbers 1 and 2 allow modification of the open line threshold.

Microswitch CONFIGURATION	DESCRIPTION
	Open line threshold at 22,6 V. (Default Control panel setting)
	Open line threshold at 20,6 V.
	Open line threshold at 21,6 V.
	Open line threshold at 19,6 V.

7.3.2 Detector Alarm thershold setting at the Microswitch.

The switch with numbers 3 and 4 allow modification of the Detector Alarm threshold.

Microswitch CONFIGURATION	DESCRIPTION
	Detector alarm at 15,5 V. (Default Control panel setting)
	Detector alarm at 14 V.
	Detector alarm at 12,5 V.
	Detector alarm at 17 V.

7.3.3 Manual call point Alarm threshold setting at the Microswitch.

The switch with number 5 allows modification of the Manual call point threshold.

Microswitch CONFIGURATION	DESCRIPTION
	Manual call point threshold at 8 V. (Default Control panel setting)
	Manual call point threshold at 12 V

7.3.4 Last Zone operation mode setting at the Microswitch

The switch with number 6 allows modification of the Zone 3 operation mode. The Zone 3 can work as a normal detection zone or for the monitoring of the Extinguishing system receiving signal from a pressure switch.

In this last case, closing the pressure switch with a serial resistance of 470 Ω, gives indication of Open line fault at Zone 3 of the Control panel instead of an alarm.

Microswitch CONFIGURATION	DESCRIPTION
	Zone 3 in Standard Fire detection Mode. <ul style="list-style-type: none"> ▶ Detector Alarm is indicated as Detector Alarm. ▶ Manual call point Alarm is indicated as Manual call point Alarm. (Default Control Panel setting)
	Zone 3 in Fault signaling Mode. <ul style="list-style-type: none"> ▶ Detector Alarm is indicated as Open line Fault. ▶ Manual call point Alarm is indicated as Open line Fault.

11.5 Extinguishing operation mode setting at the Microswitch.

The switch with number 7 and 8 allow modification of the Extinguishing operation mode which means Control panel can be adjusted better to the circumstances that are required for the system.

Microswitch CONFIGURATION	DESCRIPTION
	Extinguishing system at Standard mode. <ul style="list-style-type: none"> ▶ The Advance Warning Extinguishing Output (R1) is activated with the first extinguishing zone (zone 1 or 2) in in Alarm status as explained at chapter 5 of the Manual. (Default Control Panel setting)
	Extinguishing System at Consecutive Mode. <ul style="list-style-type: none"> ▶ With one extinguishing zone in alarm status (zone 1 or 2), the Advance Warning Extinguishing Output (R1) is activated intermittently (1 second turn on, 1 second turn off). ▶ With two extinguishing zones in alarm status (zone 1 and 2), the Advance Warning Extinguishing Output (R1) is activated intermittently (0,25 seconds turn on, 0,25 seconds turn off). ▶ With two extinguishing zones in alarm status (zone 1 and 2), the Advance Warning Extinguishing Output (R1) is activated continuously when the delay of the Extinguishing Output (R2) has finished.
	Extinguishing System in Simultaneous Mode. <ul style="list-style-type: none"> ▶ The Advance Warning Extinguishing Output (R1) is activated continuously with the two extinguishing zones (zone 1 and 2) in alarm status.

8. Additional functions

8.1. MODBUS

On demand, Control panel CLVR incorporates MODBUS protocol communication under RS485 standard line.

This functionality allows control panel communication with external equipments for fire detection and fire alarm integration into other building systems (example in figure 13 option 2).

Tables of MODBUS communication for implementing in the system connected with CLVR control panel must be requested to seller.

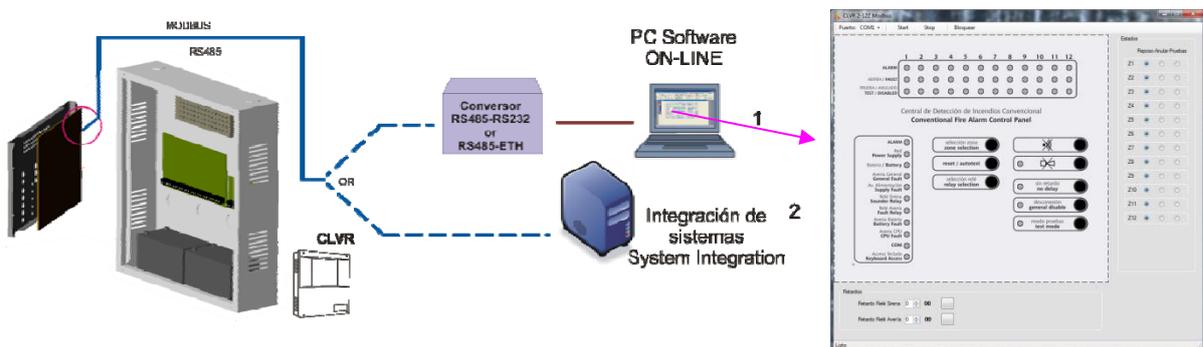


Figura 13 MODBUS Communication

Taking advantage of this communication system, it can be implemented an ON-LINE CLVR system in a PC (see example of figure 12 option 1). This option requires:

- RS485 converter to the PC port protocol (normally RS232 or ethernet)
- Installation of a software in a PC (by default, this software contains the required MODBUS table options for CLVR communication).

From this software "ON-LINE", it is shown the front of the control panel with their indications being able to act over their buttons.

9.2. CONTACTID

On demand, Control Panel CLVR incorporates a CONTACTID module inside the box.

Because of the size of this module, batteries must be sited in other additional box.

Documentation for module configuration must be requested to seller.

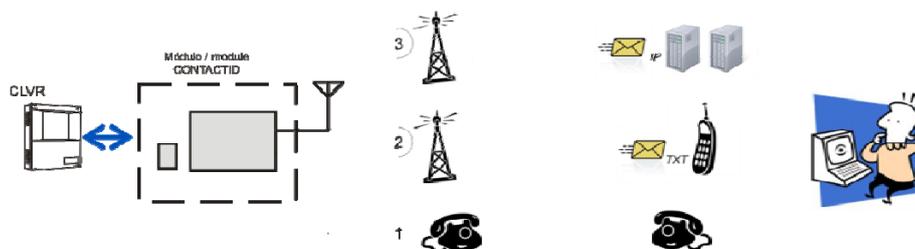


Figura 14 CONTACTID Communication



9. Operational tests

9.1. Control panel tests

9.1.1. Pre-checks

In order to ensure the system is functioning properly, the following pre-operational checks should be made, even before any test on the control panel or the system:

Note: Any connection or movement of the control panel must be carried out with the panel disconnected, both from the power supply, and from the batteries.

- 1) **ZONES:** Check the detectors and the end of line resistor (4K7) are connected properly, as well as the manual call points before connecting the control panel to the electrical power supply and activating the batteries.

Note: Take caution with the polarity of the Devices.

- 2) **POWER SUPPLY:** The voltage of the electricity power supply is 230 Vac 50 Hz. Connect the control panel to the electricity power supply.
- 3) **BATTERY:** Connect both components in series (**Pay attention to the polarity**). When voltage is present, there will be 24-27 Vdc on the battery terminals.
- 4) **ZONES:** With the system in standby, the voltage on the zone output terminals will be 22 Vdc.
- 5) **SOUNDER:** On the terminal box there must be -14 Vdc (It must not be disconnected).

The control panel must be put into standby mode activating the "B" indication led (see chapter 2.1.1).

Once these checks have been carried out, proceed with the configuration of the control panel and/or the remaining necessary tests.

9.1.2. Control panel tests

9.1.2.1. Alarm tests

In order to check that the alarm functions of the control panel are operating properly, the following operations must be carried out:

- 1) Disconnect the wires of the extinguishing relay (R2) at the input of the extinguishing mechanism to avoid triggering when the output of this control panel is activated.

Note: VERY IMPORTANT !!!

As we are in test mode, it will be prevent that the activation of the extinguishing output (R2) trigger the extinguishing mechanism of the flooding zone.

- 2) An alarm will be caused in one of the zones, verifying that:
 - a. The buzzer of the control panel is active.
 - b. The alarm output is active.
 - c. The "P" zone leds will be activate, general alarm "A" and triggering of the relay R1 "S" (see chapter 2.1.1).

Note: The indicator led "P" activates fixe or flashes depending on whether or not the alarm is triggered by a manual call point or a detector respectively.

- d. Advanced Warning Extinguishing output (R1) activates.
- e. The sounder output will activate, and the "F" indicator led in compliance with the configured delay.



- 3) Check that the equipment connected to the sounder outputs and advanced warning extinguishing output (R1) is operating correctly.
- 4) An alarm will be caused in the other zone, verifying that:
 - a. The indication led “S” of the extinguishing relay (R2) flashes during the delay for activation of its output.
 - b. Configured delay is achieved for activating the extinguishing relay output (R2).
 - c. Once the delay is complete, the extinguishing output will activate (R2) and the indication led “S” will light permanently.
- 5) Check that this voltage reaches the end of the wires that are connected at the input of the extinguishing mechanism.
- 6) Check that the configured delay time for reset after activation of extinguishing output (R2) is applied. The “U” extinguishing relay lock led (see chapter 2.1.1) must flash for the period from lock to reset. Afterwards, it will light permanently.
- 7) Reset of control panel. All the indicator leds must be disabled with the exception of “B” power supply (see chapter 2.1.1).
- 8) Check that the extinguishing relay output (R2) is in standby producing -14 Vdc.
- 9) Connect the extinguishing relay (R2) wires at the input of the extinguishing mechanism.

9.1.2.2. Test of extinguishing stop and trigger devices

In order to test that the stop and trigger devices are working properly, the following operations must be carried out:

Note: If testing of the delay time for reset after activation of the extinguishing output (R2) is not required, disable it in order to save time (see chapter 7.2).

Note: The correct operation of the control keys may also be checked for activate extinguishing “10” and stop extinguishing “11” (see chapter 2.1.2.) of the control panel. These control keys must be activated instead of the stop and triggering devices (enter in access level 2, select relay and press the activate extinguishing or stop extinguishing control key).

- 1) Disconnect the wires of the extinguishing relay (R2) at the input of the extinguishing mechanism to avoid triggering when the output of the control panel is activated.

Note: VERY IMPORTANT !!!

As we are in test mode, it will be prevent that the activation of the extinguishing output (R2) trigger the extinguishing mechanism of the flooding zone.

- 2) Activate the extinguishing trigger device, verifying that:
 - a. The buzzer of the control panel is active.
 - b. The alarm output is active.
 - c. The indication led of the “A” zone in alarm activate, and triggering of the relay R1 and R2 “S” (see chapter 2.1.1).
 - d. Advanced Warning Extinguishing output (R1) activates.
 - e. The sounder output activates.
 - f. The extinguishing output (R2) activates.
- 3) Check that the equipment connected to the sounder outputs and advanced warning extinguishing output (R1) is operating correctly.

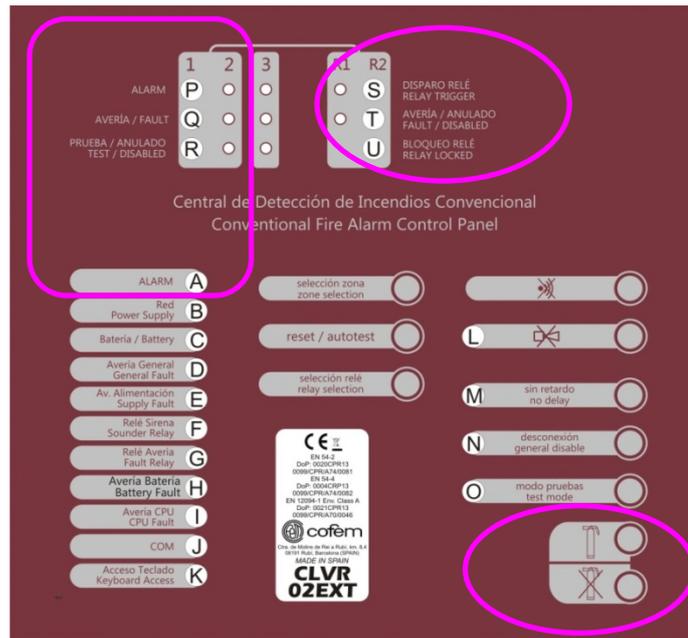


Figure 14: Keys and indicators used for testing extinguishing stop and triggering devices.

- 4) Check that this voltage reaches the end of the wires that are connected at the input of the extinguishing mechanism.
- 5) Reset of control panel. All the indicator leds must be disabled with the exception of “B” power supply (see chapter 2.1.1).
- 6) An alarm will be caused in one of the two zones, verifying that:
 - a. The buzzer of the control panel is active.
 - b. The “P” zone leds will be activate, general alarm “A” and triggering of the relay R1 “S” (see chapter 2.1.1).

Note: The indicator led “P” activates fixe or flashes depending on whether or not the alarm is triggered by a manual call point or a detector respectively.

 - c. Advanced Warning Extinguishing output (R1) activates.
 - d. The sounder output will be activated, and the "F" indicator led in compliance with the configured delay.
- 7) The extinguishing stop device is active, verifying that:
 - a. Relay lock indicator led “U” activates (see chapter 2.1.1).
- 8) An alarm will be caused in in the other zone, verifying that:
 - a. The indicator led “S” of extinguishing relay (R2) does not flash.
 - b. Once the configured delay time is passed for the extinguishing output (R2), no other indicator led will light.
 - c. The extinguishing output voltage (R2) will remain with a negative value.
- 9) The extinguishing trigger device is active, verifying that:
 - a. No other indicator led activates.
 - b. The extinguishing output voltage (R2) will remain with a negative value.
- 10) Reset of control panel. All the indicator leds must be disabled with the exception of “B” power supply (see chapter 2.1.1).
- 11) Check that the extinguishing relay output (R2) is in standby producing 14 Vdc.
- 12) Connect the extinguishing relay (R2) wires at the input of the extinguishing mechanism.



9.1.2.3. Fault test

In order to test that the fault function is working properly, the following operations must be carried out:

Note: Any connection or movement of the control panel must be carried out with the panel disconnected, both from the power supply, and from the batteries.

- 1) Disconnect the wires of the extinguishing relay (R2) at the input of the extinguishing mechanism to avoid triggering when the output of this switchboard is activated.

Note: VERY IMPORTANT !!!

Given that we are in test mode, activation of the extinguishing output (R2) of the switchboard must be prevented from triggering the extinguishing mechanism of the floor room.

- 2) Check that Common-Normally Open (NO) Fault contacts are electrically open.
- 3) An open line or crossed line fault occurs in one of the zones, verifying that:
 - a. The general fault indication led "D", and fault "Q" of this zone is activated whenever a maximum time of 10 seconds has passed (see chapter 2.1.1).

Note: The indicator led "Q" activates fixe or flashes according to the open or crossed line fault respectively.

- b. Common-Normally Open (NO) Fault contacts are shorted and the fault relay indicator led "G" illuminates once the configured delay time is passed.
- 4) Resetting control panel. All the indicator leds must be disabled with the exception of "B" power supply (see chapter 2.1.1).
 - 5) Check that Common-Normally Open (NO) Fault contacts are electrically open.
 - 6) Repeat operations 2 to 4 with all active zones.
 - 7) Cause an open line or crossed line fault at the sounder output, verifying that:
 - a. The general fault indication leds "D" is activated, and sounder relay "F" flashes whenever a maximum time of 10 seconds has passed (see chapter 2.1.1).
 - b. Common-Normally Open (NO) Fault contacts are shorted and the fault relay indicator led "G" illuminates once the configured delay time is passed.
 - 8) Repeat operation 7 with the other sounder output.
 - 9) Reset of control panel. All the indicator leds must be disabled with the exception of "B" power supply (see chapter 2.1.1).
 - 10) Check that Common-Normally Open (NO) Fault contacts are electrically open.
 - 11) Cause an open line or crossed line fault at the advanced warning extinguishing output (R1), verifying that:
 - a. The fault indication led "D" activates, and fault/disable "T" of R1 relay flashes whenever a maximum time of 10 seconds has passed (see chapter 2.1.1).
 - b. Common-Normally Open (NO) Fault contacts are shorted and the fault relay indicator led "G" illuminates once the configured delay time is passed.
 - 12) Resetting control panel. All the indicator leds must be disabled with the exception of "B" power supply (see chapter 2.1.1).

- 13) Check that Common-Normally Open (NO) Fault contacts are electrically open.

- 14) Cause an open line or crossed line fault at the extinguishing output (R2), verifying that:
 - a. The fault indication led "D" activates, and fault/disable "T" of R2 relay flashes whenever a maximum time of 10 seconds has passed (see chapter 2.1.1).
 - b. Common-Normally Open (NO) Fault contacts are shorted and the fault relay indicator led "G" illuminates once the configured delay time is passed.
- 15) Resetting control panel. All the indicator leds must be disabled with the exception of "B" power supply (see chapter 2.1.1).
- 16) Check that Common-Normally Open (NO) Fault contacts are electrically open.
- 17) Check that the extinguishing relay output (R2) is in standby producing -14 Vdc.
- 18) Connect the extinguishing relay (R2) wires at the input of the extinguishing mechanism.
- 19) Carry out the "Battery Test" operations of section 9.1.2.4 to check the fault function on them.

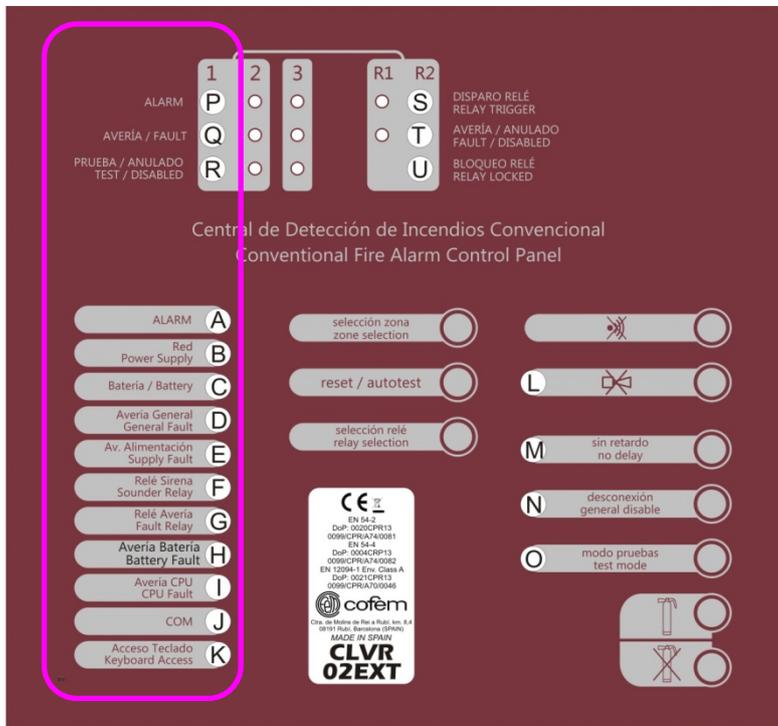


Figure 15: Indicator leds used for fault and batteries tests



9.1.2.4. Batteries test

In order to test that the batteries are working properly, the following operations must be carried out:

- 1) Disconnect the batteries and check that:
 - a. The general fault indication led "D" is activated, the "E" power supply fault led and the battery fault "H" in a maximum time of 10 seconds.
 - b. Common-Normally Open (NO) Fault contacts are shorted and the fault relay "G" is activated after the configured time delay.
- 2) Check that the batteries have a voltage of 27 +/- 1 Vdc.
- 3) Connect the batteries and check that the previous indicators are disabled in a maximum time of 10 seconds, and Common-Normally Open (NO) Fault contacts are electrically open.
- 4) Disconnect the power supply input to the control panel and check that:
 - a. The power supply indicator led "B" is off and that the "C" battery led is activated, the general fault "D" and the power supply fault "E".
 - b. Common-Normally Open (NO) Fault contacts are shorted and the fault relay "G" is activated after the configured time delay.
- 5) Re-connect the power supply input to the control panel checking that the power supply indication led "B" is on, the remaining leds turn off, and Common-Normally Open (NO) Fault contacts are electrically open.

9.1.2.5. Test of the 30 V auxiliary output

In order to check that the 30 Vdc auxiliary output function is working properly, it is only necessary to check that its output has 30 Vdc.

9.2. Testing of the detection elements

9.2.1. Testing Mode of the detection elements

The control panel has a mode of operation that allows the detectors and manual call points in a zone to be checked easily, given that the zone is reset automatically 20 seconds after the alarm triggers.

In this test mode, all the control panel relays are disabled, therefore no signal of any kind will be sent outside the control panel.

Note: If the detector or call point alarm persists after the automatic reset time, the control panel will enter in fault mode activating the buzzer and the leds "D" and "G".

In order to gain access to or exit from this Test Mode the following must be done:

- 4) Activate access level 2 (press the control keys once in the following order: *Zone Selection, Reset/Autotest, Zone Selection, Reset/Autotest*).
- 5) Select the zone required for testing using the control key *Select Zone*.
- 6) Press the *Test Mode* control key.

Note: Enabling/disabling of the Test Mode of the zone is indicated on the control panel through the flashing/disabling of the test/disable "R" indicator led (see chapter 2.1.1).

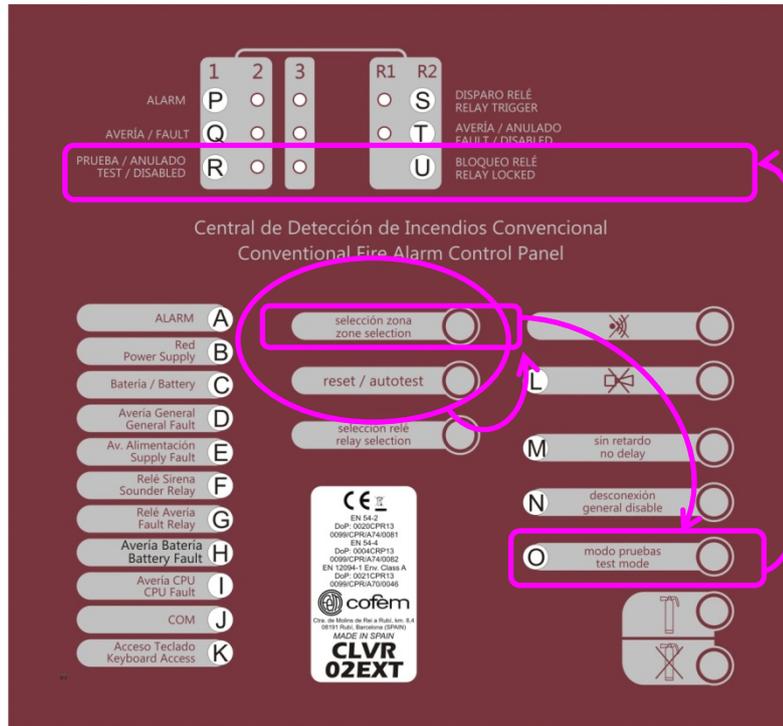


Figure 16: Keys and indications used for testing of the detection elements

9.2.2. Test of detectors and manual call points in the system

In order to test that the detectors and manual call points of the system are working properly, the following operations must be carried out:

- 1) Place the zone in test mode (see chapter 9.2.1).
- 2) Test the detector/manual call point. The control panel must go into alarm mode activating indication leds "A" and "P" of the zone.

Note: The general sounder indicator led "F" will activate when its configured delay time has passed.

Note: The indicator led "P" activates fixe or flashes depending on whether or not the alarm is triggered by a manual call point or a detector respectively.

- 3) After some 20 seconds, the control panel will restart automatically to continue with the following test.
- 4) Repeat operations 2 and 3 until all the necessary detectors and manual call points have been tested.
- 5) Disable the test mode for that zone.
- 6) Repeat operations 1 to 5 for all the zones that may need it.



10. Reference of software version and configuration version of delays in the control panel

The CLVR control panel has references for the CPU software version as well as the delay configuration version. The CPU software version is inserted by the manufacturer.

For its part, the delay configuration version counts the number of times that the delays are configured on the control panel. This function allows control to be taken by the installer/maintainer for handling the control panel.

To consult these versions, follow the procedure below:

- 1) Activate access level 2 (press the control keys once in the following order: Zone Selection, Reset/Autotest, Zone Selection, Reset/Autotest).
- 2) Activate access level 3 (press the control keys once in the following order: Test mode, Disable, Test mode, Disable).
- 3) Select the control key *reset/autotest*

Initially, the control panel will respond by illuminating all the LEDs and the buzzer.

Afterwards all the LEDs will go out, and using the same indication leds used for configuring the time delay (see figure 8) used in binary code, the software version will be indicated.

Subsequently they will switch off, and the delay configuration version with the same mode as the software version will be shown.

Finally, all these indicators will go out, and the control panel will go into standby.

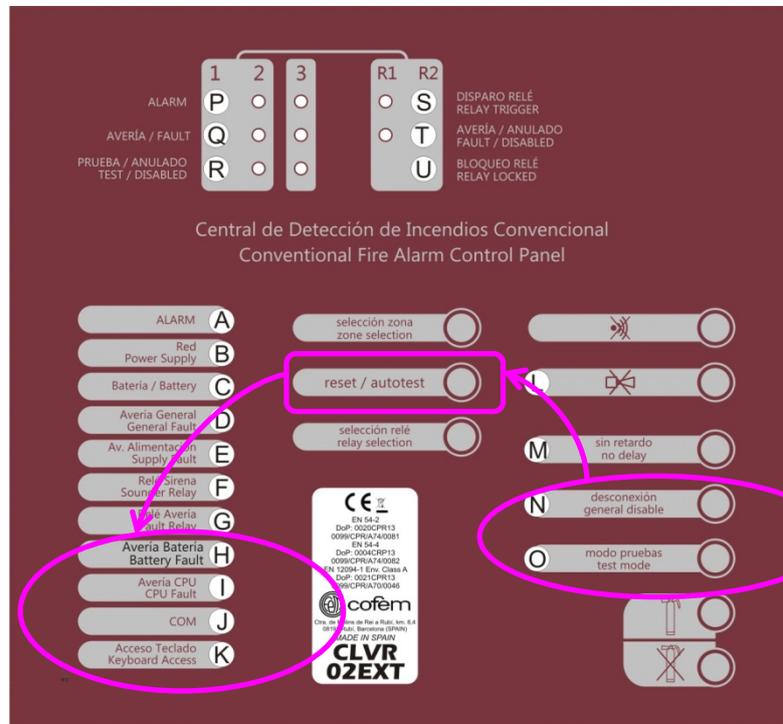


Figure 17: Keys and indicators used to reference the version of software and the delay configuration software version



11. Start up and Maintenance of the Control panel

All the test listed in this manual (see chapter 9) must be carried out in order to start up and maintain the control panel, always keeping in mind the current legislation or competent authority in each case.

12. Additional information

This chapter continues in page 74.