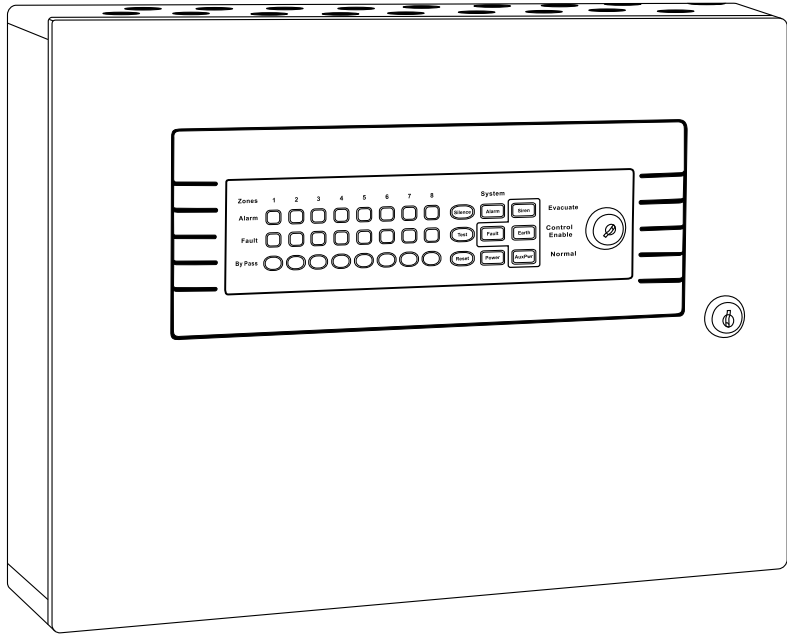


# *Matrix2000*



User Guide - CPD

**Advanced Analog Fire Alarm Control Panel**

**4 – 24 Zones**

Version: **2.0**

Revision: **1**

## IMPORTANT INFORMATION

### Limitation of liability

It is mandatory, *Matrix2000* panel to be installed in accordance with this manual, applicable codes, and the instructions of the Authority Having Jurisdiction. The manufacturer shall not under any circumstances be liable for any incidental or consequential damages arising from loss of property or other damages or losses owing to the failure of products beyond the cost of repair or replacement of any defective products. The manufacturer reserves the right to make product improvements and change product specifications at any time.

The manufacturer assumes no responsibility for errors or omissions, while every precaution has been taken during the preparation of this manual to ensure the accuracy of its contents.

### Warranty

Paradox Hellas warrants its products to be free from defects in materials and workmanship under normal use for a period of two (2) years (the "Warranty Period") from the production-delivery date, identified by date code(s) indicated on the products. Because Paradox Hellas does not install or connect the products and because the products may be used in conjunction with products not manufactured by Paradox Hellas, Paradox Hellas cannot guarantee the performance of the fire alarm system and shall not be responsible in any way whatsoever for faulty installation or connection.



### RoHS directive compliance

The EC RoHS guideline has been released in order to reduce the heavy metal load in electrical and electronic products caused by e.g. lead and mercury. All manufacturers are obligated to provide only RoHS-compliant products to the European market, effective from July 1st, 2006.

PARADOX FIRE hereby states that *Matrix2000* panel is fully compliant with RoHS 2002/95/EC directive.



### Disposal of your old appliance

1. When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2002/96/EC.
2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.
3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health.
4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.

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# 1. General Description

The *Matrix2000* advanced analog fire alarm control panels have been designed to provide full fire detection coverage to buildings or installations that require fire detection systems of 4 to 24 zones.

There are six (6) basic models for the *Matrix2000* panel:

Model	Zones	Common Relays
M2004	4	2
M2008	8	2
M2012	12	2
M2016	16	2
M2020	20	2
M2024	24	2

**Table 1.** *Matrix2000* panel models

Operating Voltage 220-240 VAC / 50-60Hz or 110-120 VAC / 50-60Hz.

*Matrix2000* panel has the following optional components:

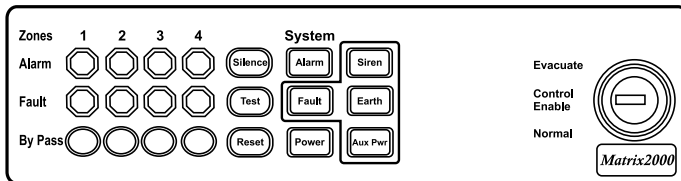
- Expansion Zone Board
- Expansion Relay Board
- Remote Zone Annunciator

The analytic indications and the simple controls of the *Matrix2000* panel ensure the easy handling and controlling of the system by the operator.

## 2. Keyboard Indications and Controls

Operating, monitoring and programming of the panel is performed in three different access levels. In access level 1 the panel controls are locked.

Access to level 2 is achieved by the keyswitch on the face of the panel (Figure 1). Operations at access level 2 are performed with the keypad. Access level 3 operations are accomplished with the micro switches on the main circuit board of the panel.



**Figure 1.** *Matrix2000* keyboard

### 2.1 POWER Indication

The **POWER** indication is permanently ON if the main power is present and batteries are healthy. This condition signifies normal system operation.

**POWER** indicator OFF signifies a total power failure of the system. This can be due to a number of reasons. Some of them are:

- Main power failure for an extended period of time during which the batteries have been depleted.
- Blown main board fuse.
- Other malfunction of the power supply, main board disconnected from PSU (power supply unit) etc.

Blinking power indicator signifies one of the following:

- (a) Removal or power loss of the batteries.
- (b) Main power loss.
- (c) Blown main power fuse or PSU fuse.

In the above cases, **SYSTEM FAULT** indicator turns ON and the on board buzzer sounds continuously.

### 2.1.1 Battery faults

The *Matrix2000* panel uses a battery fault detection system that will generate a battery fault indication in the following cases:

- Battery missing.
- Battery wiring open circuit.
- Battery not able to charge (low voltage).
- Battery wear (increased internal resistance of batteries).

When the battery power is the only available source the supplied voltage is constantly checked. In the case that this voltage drops below the 21.7 VDC  $\pm 5\%$  the panel enters a fault state with all zone fault indications activated. At the same time the power to the zone circuits is removed. This state is automatically reset once the mains power is restored.

This mechanism ensures that the low voltage from depleted batteries will not cause the zone detection circuits giving false alarms.

## 2.2 System FAULT indication (General Fault)

**GENERAL FAULT**, indicates a problem in the system. It turns ON in case of:

- Zone wiring connection problems.
- Signalling devices output wiring problems.
- Relays outputs wiring problems (auxiliary relays MER4 or MER8).
- Auxiliary power faults.
- Earth fault condition.

The above mentioned problems could be open circuits, shorts between wires or shorts between wires and earth.

Consequently the Fault relay output is activated. At the same time there will be a continuous audible notification from the on board Buzzer.

It is possible to silence the Buzzer by pressing the **SILENCE** key, with the keyswitch in position Control Enable.

When the problems causing the indication are restored all the above indications will turn off automatically.

## 2.3 Additional system fault indications

In this group three distinct fault conditions are indicated:

### 2.3.1 SIGNALING DEVICE fault

When active, this indicator signifies a fault condition of the signaling device output. The fault can be one of the following:

- Short circuit of the two output wires
- Open circuit in the connecting cable between the block connector and the signaling device. The signaling device must be terminated with a 4.7K Ohm resistor (EOL).
- Blown fuse that protects the system from shorts while the signalling device is in operation.

### 2.3.2 EARTH fault

When active, this indicator signifies a short circuit between any of the panel's wiring (zones, relays, outputs etc.) and the building's earth is detected.

The signaling device output wires are also monitored for the earth short condition.

### 2.3.3 AUX POWER Fault

When active, this indicator signifies that an overcurrent condition at the auxiliary power output is detected. The maximum allowed current is 1 Amp. The device is capable of continuous operation even at full short circuit of this output; though any device powered from this output will stop functioning.

If more than 1 Amp is required, a compatible EN 54-4 approved fire alarm power supply must be used. When such a power supply is used, the negative output of the extra power supply must be connected to the negative terminal of the AUX terminal (-AUX).

## 2.4 Zone Fault indications

The **Zone Fault** indications will blink, in a different pattern, (Figure 2, page 7) depending on the type of the problem that occurs.

In detail:

**(a)** If a short-circuit or an opening of a zone is detected (See Table 2), **System FAULT** indication will turn ON, the corresponding **Zones FAULT** indication will blink as in Pattern A, (Figure 2, page 7) and at the same time there will be an audible notification from the on board Buzzer.

Possible causes of a zone problem are:

- (a1)** Disconnection or interruption of wiring of the zone.
- (a2)** Short-circuit in the wiring of the zone.
- (a3)** Removal of sensor from its base.
- (a4)** Removal of the terminating resistor (EOL).

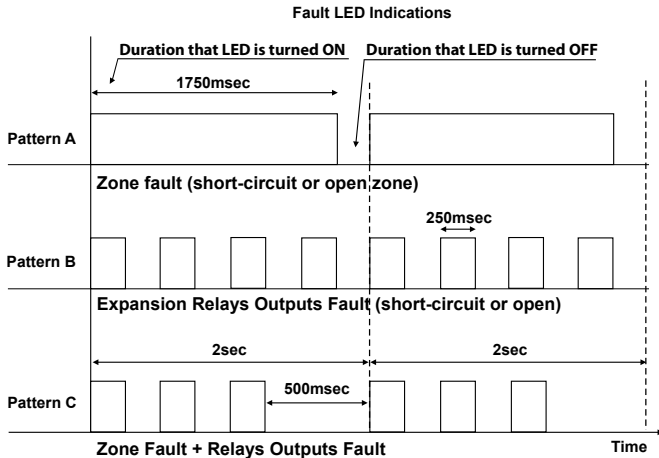
**(b)** When a Relay expansion module is used the **Zones FAULT** indication is also triggered by:

- A short-circuit or opening of the wiring in the corresponding zone relay output (See Table 2).

- Removal of the output terminating resistor (EOL).

In case (b) as listed above the **System FAULT** indication will turn ON and the **Zones FAULT** indication of the corresponding zone will blink (Figure 2, Pattern b). At the same time there is also an audible notification from the on board Buzzer.

(c) In the case that both of the above cases occurs, the LED indication starts blinking (Figure 2, Pattern c), while at the same time there is an audible notification from the on board Buzzer.



**Figure 2.** Zones Fault indications

To silence the Buzzer, press the **SILENCE** button, with the keyswitch in position **Control Enable**. The **System FAULT** indication remains ON in order to show that a problem exists in the installation. The Buzzer sounds in regular time intervals, in order to remind the user the existence of the problem. All the indications will turn OFF automatically after all problems are restored.



See page 11, “RESPONDING TO TROUBLE SIGNALS”.

## 2.5 System ALARM indication

When the system detects a condition of fire (smoke, high temperature etc), the panel turns in Alarm Mode and the **System ALARM** indication turns ON. At the same time there is a continuous audible alarm from the sounder or sounders that are connected on the main board.

**System ALARM** indication also turns ON when the evacuation of a protected area is required. It can be accomplished by turning the keyswitch in the **Evacuate** position.

In both cases the indication is blinking when a **Zones ALARM** has occurred (Figure 3).

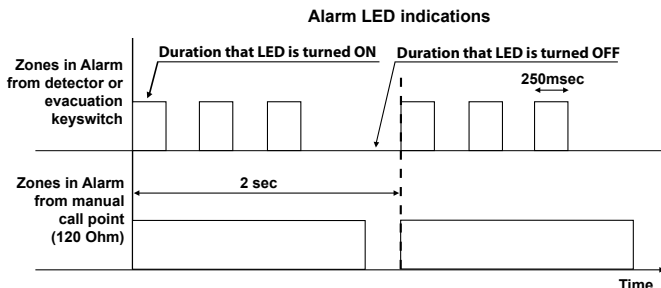
In the above cases the on board buzzer will also sound.

## 2.6 Zones ALARM indications

**Zones ALARM** indicators blink (Figure 3) each time a detector or a manual call point from the corresponding zone is triggered.

When the call point and all smoke detectors are restored, the system will continue in Alarm Mode. To silence the Buzzer, press the **SILENCE** button, with the keyswitch in the **Control Enable** position. All indications will remain ON until the **system RESET** button is pressed. Keypad buttons are active only when the keyswitch is turned to the **Control Enable** position.

Figure 3 shows the alarm LED indications when activated by detectors, manual call points and evacuation keyswitch.



**Figure 3.** Zones Alarm indications



**Alarm LED indication will blink according to the main signalling device alarm output pattern.**

See page 11, “RESPONDING TO ALARM SIGNALS”.

### 3. Central Electric Keyswitch

The electrical keyswitch allows the operation of the panel in access level 2 as well as the activation of the immediate evacuation (an access level 2 action).

The central electric Keyswitch has three positions:

1<sup>st</sup> position (Access Level 1) **Normal**: This is the Normal operation mode. The panel waits for alarm events or any faults that may develop in the installation. All buttons on the keypad are **disabled**.

2<sup>nd</sup> position (Access Level 2) **Control Enable**: Alarm events and possible faults are detected, all buttons on the keypad are **active** and the system is controllable.



**For Normal operation the keyswitch must be in the 1<sup>st</sup> position.**

3<sup>rd</sup> position (Access Level 2) **Evacuate**: After a small delay of approximately 2 seconds all the system zones turn into Alarm Evacuation Mode resulting in the activation of all signaling devices in the protected area. The sounder connected on the main board produces the selected Alarm sound. In case that MER relay module(s) is used, the extra relays are activated and connected sounders produce the selected Alarm sound. The system returns to standby mode by turning the key to the **Control Enable** position and pressing the system **RESET** button.

The key from the Keyswitch can be removed only when the keyswitch is in the **Normal** position.



## 4. Controls Via Keypad



*Keypad buttons, are activated only when the key of the Keyswitch is set in the Control Enable position.*

### 4.1 System SILENCE button

Pressing the **SILENCE** button will cause any existing audible signal to stop. If a new event occurs, the silenced condition will be canceled and the appropriate devices will resound.

### 4.2 System TEST button

By pressing the **System TEST** button all the visual indicators of the keypad turn ON, confirming that none of the LEDs are damaged. The condition is maintained for as long as the **System TEST** button is kept pressed. The buzzer and the main sounders are also active during the test.

### 4.3 System RESET button

The **System RESET** button is used for resetting the system's zones in Standby mode after an alarm.

### 4.4 Zones BYPASS buttons (also called zone disablements)

The **Zones BYPASS** buttons are used to prevent the corresponding zone from causing an alarm. Note that zone disablements must not be a permanent working condition and they must be used only as a temporary action. For example zone bypassing can be used in case of building maintenance or other activities that can trigger false alarms on the detectors.

Bypassing a zone is achieved by positioning the keyswitch in the **Control Enable** position and then pressing the corresponding **Zones BYPASS** button. At the same time the indicator is turned ON. It only returns to normal operation by pressing the same button again (toggle action). If one of the **Zones BYPASS** button indicators is turned ON (yellow color) the corresponding zone is isolated and does not cause alarms. If an error occurs to a bypassed zone, the **General FAULT** indicator is activated but the system stays in silent mode. An alarm condition to a bypassed zone is recognized and indicated but do not activate the sounders.

If any of the zones is in bypass state the buzzer sounds every 1 minute to remind the user of the existing disablement.

# Matrix2000 Fire Alarm Control Panel Operating Instructions

## RESPONDING TO ALARM SIGNALS

1. Evacuate the area.
2. Notify the proper authorities immediately and state the nature and location of the emergency.
3. Be prepared to provide directions to fire-fighters when they arrive.

## TO SILENCE ALARM NOTIFICATION SIGNALS



*Alarm notification signals should not be silenced until after all occupants have been evacuated.*

1. Turn the keyswitch of the keyboard to Control Enable and press the Silence button.

The Silenced button turns ON and all audible notification circuits turn OFF. New alarm events turn the notification circuits back on.

## TO RETURN THE SYSTEM TO NORMAL AFTER AN ALARM

1. Make sure all smoke detectors are free from smoke and all manual pull stations are reset
2. Turn the keyswitch of the keyboard to Control Enable.
3. Press Reset.

## TO PERFORM A LAMP TEST (panel and remote annunciators)

1. Press and hold the Test button.

## RESPONDING TO TROUBLE SIGNALS

1. Turn the keyswitch of the keyboard to Control Enable.
2. Silence the panel buzzer.
3. Investigate the cause of the trouble and notify the authorized service personnel immediately.

## TO SILENCE THE PANEL BUZZER

1. Press Panel Silence.

The buzzer turns OFF. Any new events turn the buzzer back on. Trouble conditions not cleared resound the buzzer after a predetermined time.



*Trouble conditions may affect the panel's ability to provide early detection and indication of a fire. Clear trouble conditions immediately.*

## Installed by

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

## For service contact

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

## Acceptance Inspection by

Date: \_\_\_\_\_

## DEVELOPED BY

**PARADOX HELLAS S.A.**  
fire alarm & security systems

Korinthou 3, Metamorfosi  
144 51 - Athens, Greece



Αριθμός πιστοποίησης: GR11450Q

## Compliance Statement

Matrix2000 panel is designed and manufactured so that it fulfils the requirements of CDP 89/106/EEC directive and are certified to directive **CDP 89/106/EEC** and **EN 54 Part 2 and 4,1998** Standards.

## ZONES DESCRIPTION

Zone 1: \_\_\_\_\_

Zone 2: \_\_\_\_\_

Zone 3: \_\_\_\_\_

Zone 4: \_\_\_\_\_

Zone 5: \_\_\_\_\_

Zone 6: \_\_\_\_\_

Zone 7: \_\_\_\_\_

Zone 8: \_\_\_\_\_

Zone 9: \_\_\_\_\_

Zone 10: \_\_\_\_\_

Zone 11: \_\_\_\_\_

Zone 12: \_\_\_\_\_

Zone 13: \_\_\_\_\_

Zone 14: \_\_\_\_\_

Zone 15: \_\_\_\_\_

Zone 16: \_\_\_\_\_

Zone 17: \_\_\_\_\_

Zone 18: \_\_\_\_\_

Zone 19: \_\_\_\_\_

Zone 20: \_\_\_\_\_

Zone 21: \_\_\_\_\_

Zone 22: \_\_\_\_\_

Zone 23: \_\_\_\_\_

Zone 24: \_\_\_\_\_

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