ViewMatrix

Software for Online Monitoring & Control of *Matrix2000* Conventional Fire Alarm Panels

Version: **2.0**
Revision: **0.1**

CONTENTS

1. Introduction

ViewMatrix provides the end user with an overview of all the incidents that take place while the fire alarm system is in use. It enables control of all the parameters that a fire alarm system consists of, from the state of the sensors which are situated in the installation field to the settings of the microcontroller of the control panel.

Figure 1 presents the main screen that appears when the user runs *ViewMatrix*. This is the main control screen for the system. It is divided into five fields that are related to different actions of control and observation of the system. Besides these fields, there are menus on top of the screen and a toolbar whose role is supportive to the actions the user may undertake, like in every windows based application. At the bottom of the screen there is a Progress bar of the system. It is in motion throughout the operation of the control panel and *ViewMatrix*. Its motion is interrupted when there is a problem in the communication between the PC and the control panel.

At this point, a brief overview of the main program screen is given. The first field, that usually takes up most part of the screen, is a full representation of the actual keyboard of the control panel. Another field, situated on the top right corner of the screen, includes all the information about the client. Under this field, there is another one that gives the installer user the option to have an independent description of each zone for his fire detection installation. A field that contains information about the settings of the microcontroller is placed at the bottom right hand side of the main screen. Last, there is a real time report of the events that take place while *Matrix2000* is in operation.

A more detailed description of the fields that make up the main screen is presented in the following sections.

When *ViewMatrix* starts a list of the currently installed clients is displayed along with the connection type (tcp/ip or serial). Ticking on the check-box beside each client marks it to be monitored. When the **[Connect]** button is clicked then *ViewMatrix* attempts to connect to all the checked clients and starts monitoring on the selected one. *ViewMatrix* can observe multiple clients in the background as well as one live. These clients can be added or removed by the appropriate toolbar buttons in the main program. The user can return to this screen anytime to Connect/Disconnect to other clients, to check on the states of all connected clients and to change the currently monitored one. If any event occurs on the monitored clients then an indication lights up in the main screen denoting the type of the event (Green "All ok", Yellow "Fault", Red "Alarm").
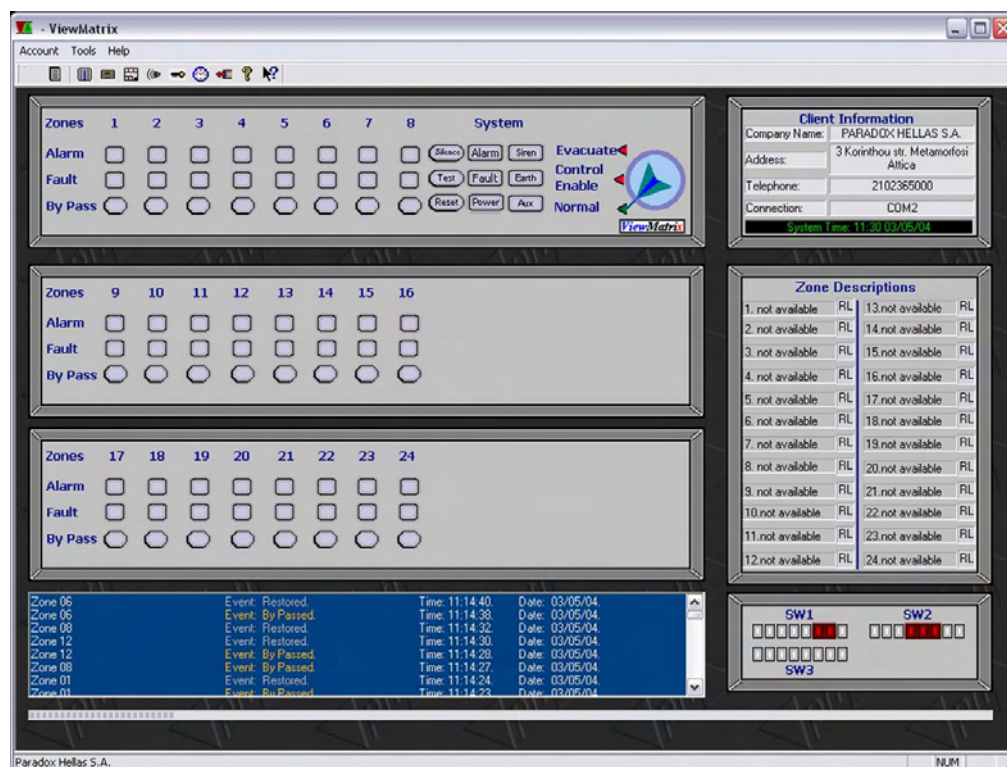
Figure 1: *ViewMatrix* main screen.

2. Keyboard

The first field of *ViewMatrix* main page represents the installed panel's keyboard. The program can represent any of 4 up to 24 zones panel. The size of the panel is automatically adjusted to the size of the actual silicon rubber keyboard. Next, we can see how *ViewMatrix*'s main screen will appear when we have a system of 12 and 24 zones respectively.

The analysis will be based on the 24 zone panel which is presented in Figure 3. The system operates in exactly the same way as the panel's keyboard. The whole process is interactive, including messages from the actual plant to the software and control of the plant (the fire detection system) from the software using buttons that enable control of the system functions and indications of the state of it. The buttons enable the user to change the state of the system, reset it, set it to silent mode (Silence) or Bypass a zone. On the other hand the indications of the state of the system are in the form of LEDs that flash in certain ways. There are indications for the Power, Fault or Alarm conditions etc. Note that all points of the field are active. All LED icons are flashing exactly in the same way and at the same time as the panel's LEDs are, according to the status of the system.
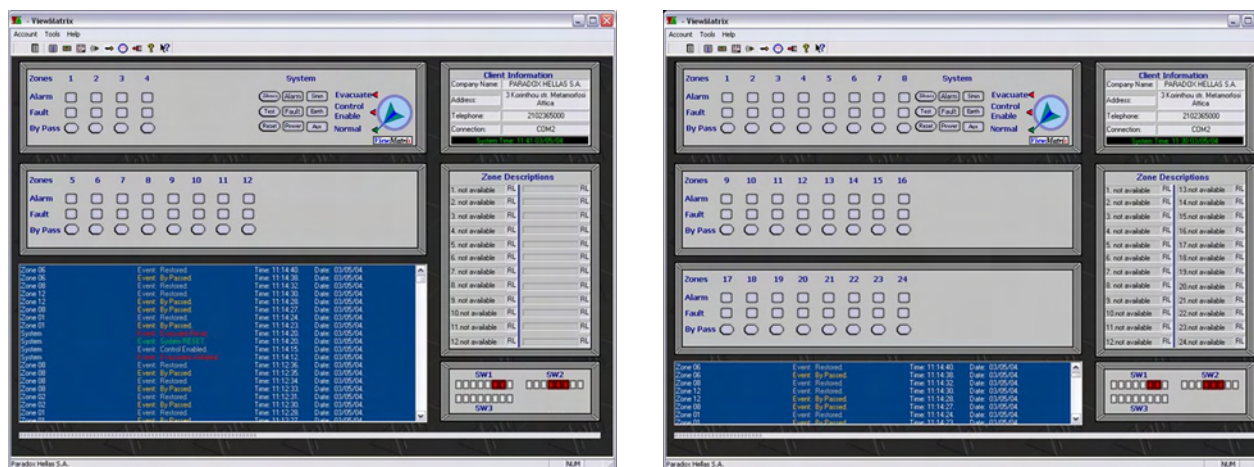

Figure 2: *ViewMatrix* main screen for 12 and 14 zones of surveillance.

2.1 Power indication - Normal Operation

The indication **Power** is turned on constantly on the mimic keyboard when the system is in normal system operation and when voltage of 27,5V is applied from the main or backup (batteries) power supply. It also provides the installing engineer with the information that the software of the panel is "running" without problems. The round blue icon with the arrow on the right hand side represents the key switch of the control panel through which we gain access to the two Access Levels of the system. It has three states: **Normal**, **Control Enable** and **Evacuate**. For standard operation this is turned to **Normal** with the system ready to accept commands of alarm from the zones or recognise any problem that occurs in the installation.
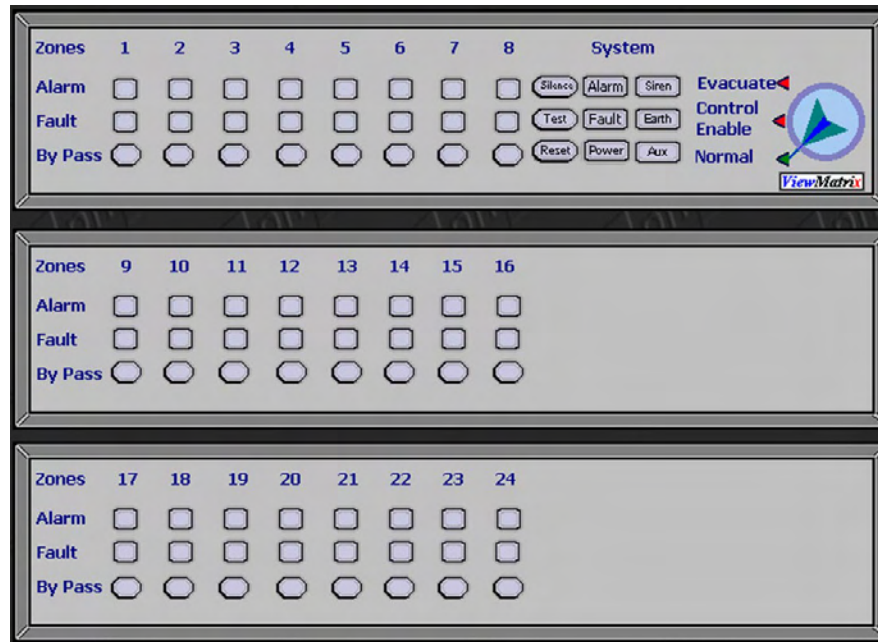
Figure 3: Control panel's keyboard.

2.2 Fault indication - Alarm indication

On top of the **Power** LED there are LEDs for Fault and Alarm situations. On the left hand side there are three rows of LEDs that will flash in case fault situation. Each zone has a corresponding **Zone Alarm** LED and a **Zone Fault** LED underneath it. In case of some faulty situation the **Fault** LED flashes as well as the **Zone Fault** LED that indicates the specific zone with the problem. In case of alarm, the **Alarm** LED is on as well as the **Zone Alarm** LED of the zone that triggered the alarm. The **SIREN Fault** LED when active signifies a fault condition of the Siren output. The **EARTH Fault** LED is activated when a short circuit between panels wirings (zones, relays, outputs etc.) and the building's earth is detected. The **AUX POWER Fault** LED shows that an overcurrent condition at the auxiliary power output is detected. We should bear in mind that Alarm and Fault indications on *ViewMatrix* operate in exactly the same way as on the control panel. If, e.g. we have an alarm from the 4th zone of the panel the LED for **Zone Alarm** of the silicon keyboard of the panel will flash as well as the general **Alarm** LED. At the same time, the corresponding icons on the *ViewMatrix* main page will start flashing in the same way. The sirens start sounding as well. In this case, pressing the **[Silence]** button makes the sirens stop and the **Zones Alarm** indication/s remain turned on continuously. They can be turned off by pressing the **[Reset]** button. All the buttons are active only when the keyswitch is in **Control Enable** position.

2.3 Controls via mimic keyboard

Silence
In order to stop the sounding of the Buzzer in any case (alarm or fault) and the sirens in case of alarm, the operator user simply has to press the **[Silence]** button. The **[Silence]** button, as all the buttons of the mimic keyboard on the screen, is active only when the arrow of the mimic keyswitch is in *Control Enable* position.

Reset
The **[Reset]** button is used for resetting the zones of the system in *Stand By* mode after an alarm. Like all the other buttons of the mimic keyboard, it is active only when the arrow of the mimic key switch is in *Control Enable* position.

Zones By Pass
The **[By Pass]** buttonss are used to isolate a zone in the case that maintance take place in the building that can cause false alarm or when the connected appliances present some problem or give false alarms. With the keyswitch in position *Control Enable*, by pressing the corresponding Zones **[By Pass]** button it turns on, indicating that the area has been isolated. Resetting in normal mode occurs when pressing the same button once again. If one of the buttons Zones **[By Pass]** is turned ON (yellow colour) the corresponding zone is isolated and it does not function. In this case, the Fault indication is constantly **ON** and the buzzer sounds every 30 seconds to remind the user of the existing problem. This sound can be disabled by clicking on the icon 📢 of the toolbar.

Evacuate
In case of an emergency the user of *ViewMatrix* has the option to turn the keyswitch to *Evacuate* position. The actual activation of this operation takes place after entering the correct password (authorization procedure). All zones will go on *Alarm* and Alarm LEDs will start flashing as on the actual control panel. Zones that have been *Bypassed* will not be activated.

2.4 Control of the system - Authorisation

The mimic keyswitch provides access to the 1st and 2nd Access Level of the system in a similar way as the electrical keyswitch of the control panel. The three positions of the keyswitch are:

Normal - 1st position (Access Level 1): The system is in normal mode operation ready to accept commands of alarm from the zones or recognize any problem that occurs in the installation.

Control Enable - 2nd position (Access Level 2): All buttons on the silicon rubber keyboard on the face of the panel are active for panel control.

Evacuate - 3rd position (Access Level 2): By turning the key in this position and after a small delay of 2 seconds all the zones of the system go into alarm evacuating mode resulting in the activation of all sirens of the protected area (interrupted mode). Bypassed zones and even number zones of the zone pairs chosen as CrossZoning (par. 6.4 & 6.5) for extinguishing are omitted, in order to avoid useless triggering of the extinguishing systems. The system returns to standby mode turning the mimic keyswitch to *Control*

Figure 4: Password change window

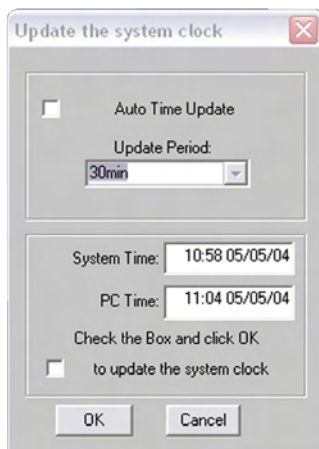**Figure 5:** Client information field

Figure 6: System time configuration

Enable position and pressing the **[Reset]** button.

In order to perform some action the user needs to be authorized. In *Matrix2000* the person who holds the key of the electric keyswitch has authorisation to perform changes to the system. In *ViewMatrix* authorisation check is actually done with the round button on the right hand side with the three states, **Normal**, **Control Enable** and **Evacuate**. Standard operation is in **Normal** mode. When the user wants to activate the keyboard commands (Zone/s ByPass, Silence, Reset) he just has to click on the **[Control Enable]** button as he would turn the key on the actual keyboard. A window appears on the screen that asks the user for a password. This happens so as to avoid accidental actions and be fully compliant with the requirements of the European standards. The default value for the password is an empty password. It is strongly recommended changing the default password as soon as possible to avoid unintended use of this software's features. This can be done by clicking on the corresponding icon ⇒ on the toolbar and following the instructions as shown in Figure 4.

If the correct password is provided, the keyswitch changes status and grants the authorized user access to level 2. It is only then that the user is granted permission to proceed by activating any button he wants to on the graphical keyboard just as he would on the actual silicon rubber keyboard.

3. Client information field

The second field is placed in the top right corner of the main page of *ViewMatrix*. This is where the installer can input all details that concern information on the installation. These are the name of the owner and his company, address, contact details for the security manager or the port that the program uses to communicate with the PC etc. All fields can be updated with new text or descriptions by clicking on the corresponding icon 📋 of the toolbar. Next there is a graphical representation of this field.

As is shown in Figure 5 there is a field that contains the system time and date. *ViewMatrix* provides the user the option of updating the Time Clock at any time by comparing the panels' time with the PC's time and proceeding with any correction after user's approval. This can be done by clicking on the clock icon 🕓 on the toolbar. A new window like the one in Figure 6 appears on screen. The user compares the system's time with the computer's time and adjusts it to it by checking the appropriate box ☐ to update the system clock.

There is also the option of updating the Time Clock periodically according to the computer's time ☐ Auto Time Update.

4. Zone description field

The third field gives the installer the option of describing each zone in the system independently. It is situated on the right hand side under the Client Information field. It consists of up to 24 positions that correspond to the zones of the installation. There is a field named RL next to each zone for the case that the zone has an extra relay output connected on the panel. Note that all descriptions are active fields. In case that a zone of the panel (Figure 7) is activated the corresponding position in the zone description field flashes. The RL field, referring to the extra relay output of the zone, lights out. When the description of the zone is flashing the user by clicking on it, can have another window with the floor plan of the specific zone with all detectors, manual call points and sirens connected to this zone appearing on the screen (Figure 11). All the fire protection components on this screen (detectors, sirens etc.) should also flash, reminding the user that they have been activated.

In Figure 7 is shown how this field should look like on an actual installation.

4.1 Zone Assignment

In order the user to enter a new description for a zone he does it by clicking on the icon ▓ on the toolbar or by following the Tools Zone Descriptions procedure and the schematic of Figure 8 will appear on screen. Descriptive names for the zones can be entered in these fields e.g. level 1, basement etc. leaving the zones that are not used without names.

ViewMatrix gives the installer/user the option of having a schematic view of the area where the fire alarm system is installed. That means having diagrams for each area of the building where the system is applied, with detailed information where the sensors and other system components are placed, the *ViewMatrix* gives the capability of absolute locating of the point of incident. The user has the ability to import up to 24 different floor plans from any drawing software (SmartDraw, AutoCAD, CorelDraw etc.).
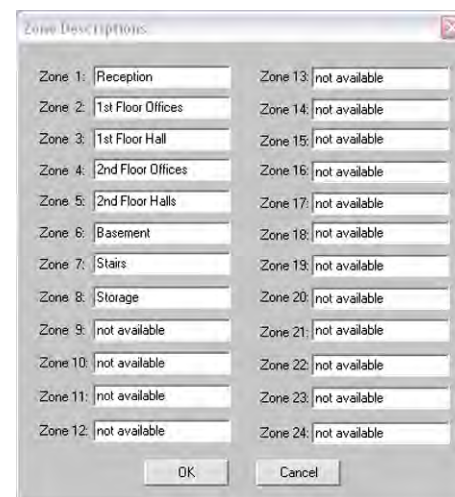
In order to import a floor plan it can be done throught the Tools Plan Settings or by clicking on the icon ▓ on the toolbar. A window will appear on screen as shown in Figure 9.

When clicking on a plan that corresponds to a zone whose floor plan has not been entered, e.g. Plan 5 a message that no floor plan has been imported for this zone is shown.

Figure 7: Zone description field

Figure 8: Zone data window

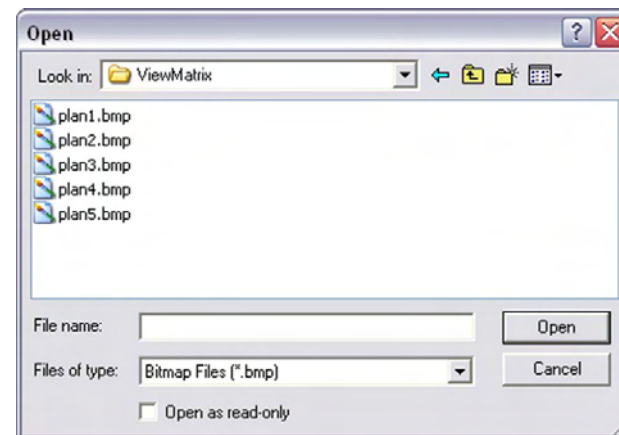**Figure 9:** Zone Assigment window

Figure 10: File open window

The next step in order to import a floor plan is to click on the **[Import]** button of the Zone Assignment window, the window of Figure 10 appears on screen, where we can find the *.bmp image we wish to import. All those *.bmp files must have been created by the user installer in advance and saved in bitmap format.

The selected floor plan is then inserted into Zone Assignment window as shown in Figure 11.

At the bottom of the window there are buttons that correspond to the zones of the installation. The user can view the floor plan that has been entered for the selected zone by clicking on the specific button. For example, if the user wants zone 2 to be called level 2 and wishes to see the floor plan all he has to do is click on Plan 2. *ViewMatrix* gives the option to insert detectors, sirens and other components of the system on the floor plan. There are icons that represent photo detectors, thermal detectors, break glass switches, sirens etc. The user can click on the icon that represents for example a photo detector and then place it on the floor plan. There is also a **[Plan label]** button that allows the installer/user to enter some text on the floor plan (max. 60 characters).

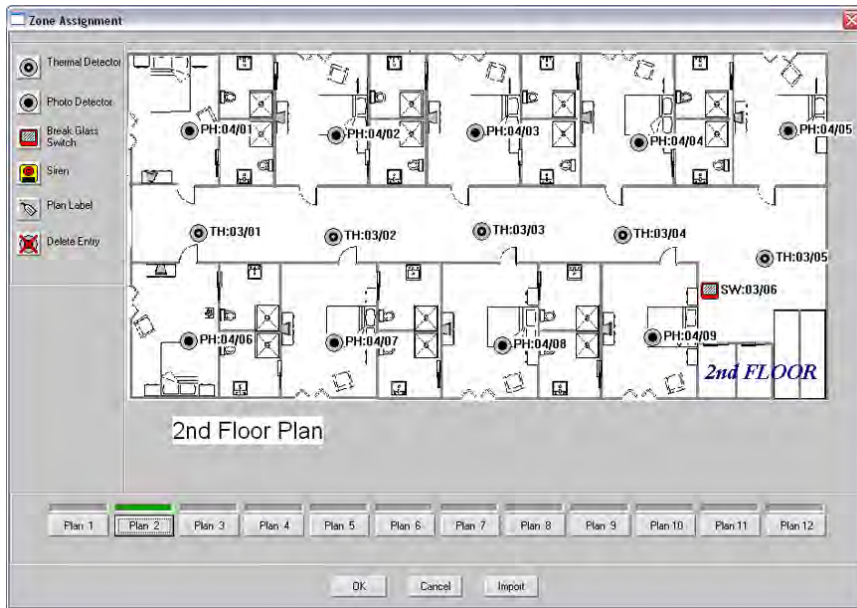Next a floor plan including all the components of the fire protection system is shown.

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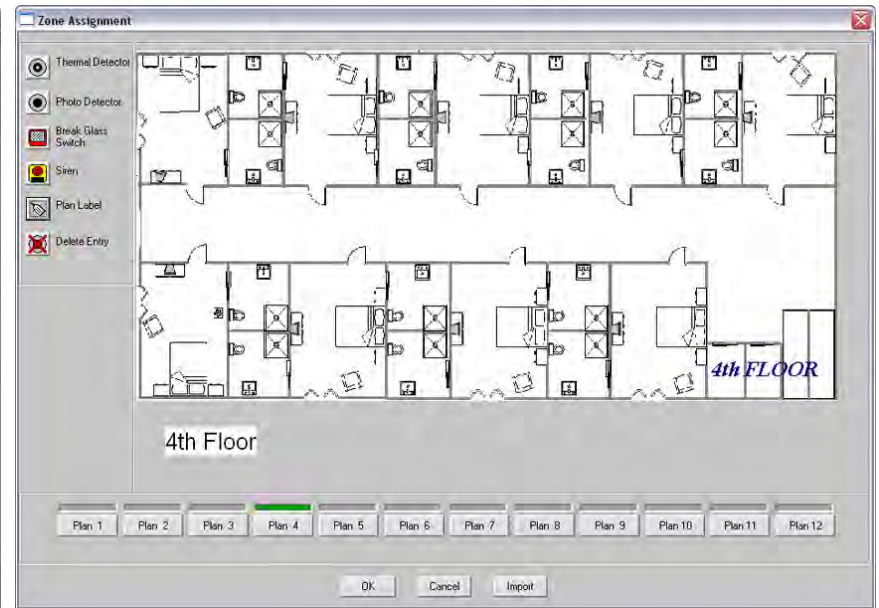**Figure 11:** Floor plan

Figure 12: Full floor plan

5. System setup representation

The fourth field is where the overall setup of the system is graphically repre-
sented. It represents the three dipswitches that are placed on the main board
of the control panel. This way the user knows which dipswitches are enabled
and which are not. As a result the user knows which features of the panel are
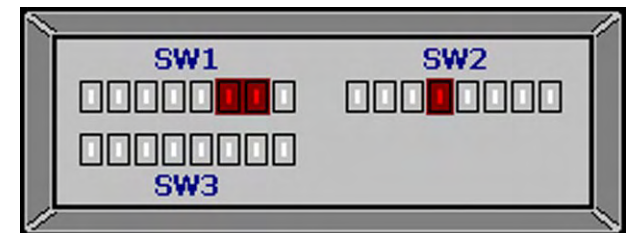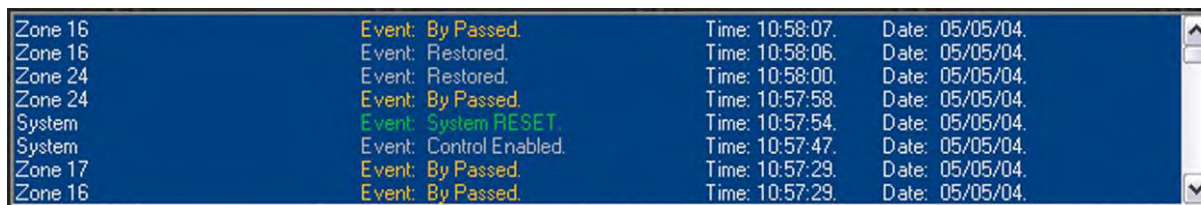enabled. Figure 13 provides us with a view of this field on *ViewMatrix* main
page.

Figure 13: System Settings

6. System events log

ViewMatrix has a feature that provides the user with information on the communication between the *Matrix2000* control panel and *ViewMatrix*. It is the fifth field of the main page located under the first one (keyboard). The program displays all the events that take place during system's operation, for example a Zone Isolation or a System Reset. All events are logged in time sequence fully described by the place where the event occurred, description of the event, time and date. An example of this is shown in Figure 14.

Figure 14: *ViewMatrix* log area

The number of events that are currently shown on the PC screen and the colours of the log area can be adjusted by clicking on the corresponding icon 📧 on the toolbar as shown in Figure 15. It is advisable the events not to exceed 200.

All events are recorded on the hard disk drive (HDD) of the monitoring PC. In case there is no PC connected to the panel (loss of connection, PC reset etc) for some time, *Matrix2000* can store up to 1024 events in its internal memory. These events can be re-trieved by uploading them to a PC with the *ViewMatrix* software as soon as connection is established. On running *ViewMatrix* the PC will check for any NEW events that are not recorded in its HDD. If it finds any new events it uploads them and stores them into the HDD. The user can also upload the events using the corresponding icon 📧 on the toolbar in case he wants to check something on system's operation.

For any additional information, clarification or suggestion that concerns the *ViewMatrix* manual or the *Matrix2000* series fire alarm panels, please contact our sales department at tel. No. +302102855000 or email us at sales@paradox.gr.
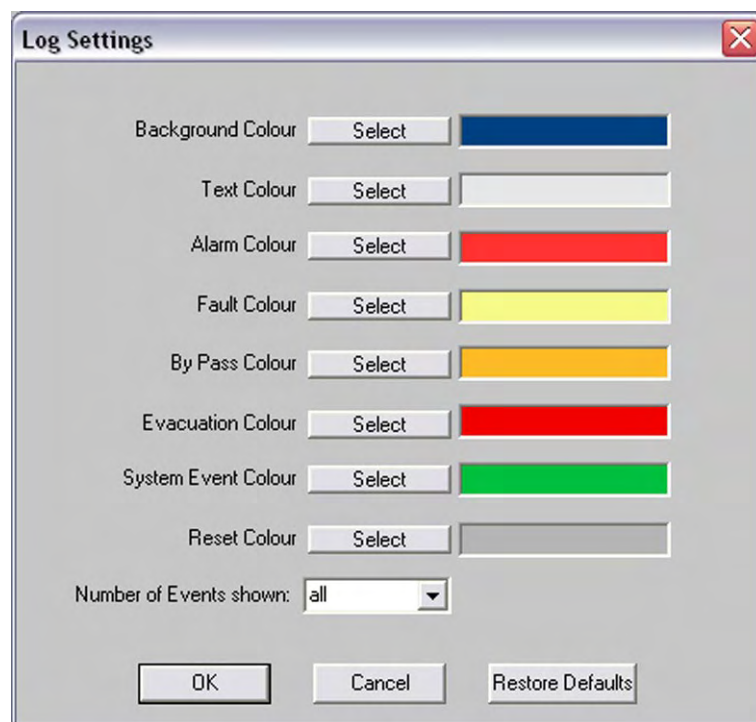
Figure 15: Log area settings