HLogic Security Technology



HP-201-4
ADDRESSABLE FIRE ALARM PANEL
USERS AND INSTALLATION MANUAL

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	CODESEC AA504
Operating Voltage	180-240 Vac
Power	100 W
Battery Type	Lead-Acid Sealed Battery
Battery Capacity	2 x 12V/7Ah
Number of Loops	1-4
Active Detectors per Loop	250
Maximum Detectors per Central	1000
Ethernet Connection	Yes
Battery Short Circuit Protection	Yes
Operating Temperature	-10°c +55°c
Humidity	% 95
Siren Output	
Output Type	Normally Open
Contact Rate	1 A @ 30 Vdc
Fuse	400 mA Automatic Reset
Maximum Voltage	32V
End of Line Resistor	4K7 KOhm
Open Collector Outputs (1,2,3)	
Output Type	Open Collector
Output Current	50 mA max
Maximum Voltage	32V
Alarm Relay Output	
Output Type	Normally Open (NO), Normally Closed (NC)
Contact Rate	1 A @ 30 Vdc
Error Relay Output	
Output Type	Normally Open (NO), Normally Closed (NC)
Contact Rate	1 A @ 30 Vdc
24V Output	Yes 400mA max
Loop Power	300mA maximum
Loop Load	120R
Serial Out (RS-485)	
Baud Rate	19200
Data bits	8
Parity	None
Stop Bit	1
Flow Control	None
Case Material	Metal Case 1.2mm
Enviromental Category	IP30 (See Page 5)
Dimensions	34,5 x 36 x10,5 cm
Weight	1.8 kg
Data retention	10 years

1. GENERAL FEATURES

CODESEC AA504 Addressable Fire Alarm Panels are designed by the leading technology and microprocessor based devices. The network connectivity and repeater panel connection are onboard in the panel. By connecting Computer by Ethernet connection the programming and supervision can be carried out simply. The main goal of the device is robust design and simple user-friendly programming.

On main board, there are 4 loop connectors for LK401 loop cards. By installing LK401 loop cards the panel can host up to 4 loops. There can be installed 250 detectors per loop upgradable to 1000 devices per panel.

The user interface has 128x64 graphic lcd display, function buttons and indicator leds. On the device there are seperate indicator leds for 16 different zones; Trouble leds, Sound and Alarm indicators, Power, Ready, By-pass indicator leds as described in EN54-2/4 European Norm. All the system conditions are displayed on the central via seperate indicator leds as well. The central supervises system troubles, conditions and displays to the user. By the Reset, Alarm, Cancel Alarm, Silence, Test and Evacuate buttons, user can perform simply the system functions. The general system indicators: Power, Ready, Prealarm, Fire Alarm, Cancel Alarm, Silence and Evacuate indicator leds are displayed on the lefthand of central and the Trouble indicator leds are Ac Loss, Battery Error and Siren Error are displayed in the righthand on the central.

On the device there are seperate auxiliary power outputs 24V regulated and 24V Unfused. For installation of additional functional devices there is no need a additional power source as they are available onboard.

There are Alarm Relay Output, Trouble Relay Output, Siren Output and 3 Open Collector Outputs onboard.

CODESEC AA504 Addressable Fire Alarm Panel is manufactured in SMD Technolgy and complie with EN 54-2/4 standard. The centrals are compatible with all detectors and devices of Codesec Brand.

There is a serial RS485 onboard output and Ethernet connection for supervision by computer software.

By the electronic filters on every loop, the device does not be affected by the high frequency interferance. There are hardwared and sofwared preventions from electromagnetic interferance, noises on the mains power, short circuits and faulty connection on the cabling.

2. INSTALLATION

2.1. Location and Mounting

While selecting the right place for the cabinet in a protection area, the installer must remember that;

- Select an installation site that is not easily accessible to intruders
- The installation site should be dry and free from humidity
- The panel should be close to AC source, ground connection
- Central power must be sourced from mains power unswitchable
- When mounting, leave at least 10 cm around the panel box to permit adequate ventilation and heat dissipation.

Do not power the system until all the wiring has finished.

CAUTION: The Enviromental Category of the panel is IP30. While connecting cables to the panel if the installation done from the upside or from left/right sides through holes, the insulation must be done properly. If not, the enviromental category will not be IP30, so the manufacturer do not guarantee any fail in the system.

2.2. Grounding

Connect the central ground terminals from the control panel to the metallic enclosure and cold water pipe or grounding rod. The grounding of central and cable screens is for prevention from high voltage noise and interferences. While wiring all cable screens should be connected to Ground.

2.3. AC Power

The required power for the control panel is 100W. Do not use any switch controlled outlets to power the panel. Centrals power source is 220V/50Hz. Do not power the system until all the wiring has finished.

The mains power cable can be 3x2,5 NYM or NYA type. For IEC 61000 requirements use K1-T-40x12,5x27 Toroid by wiring 3 turns power cable

2.4. Battery Connection

In order to provide power during a power loss, connect 24V 7Ah battery pack rechargeable acid/lead or gel type backup battery as shown in Figure 1. CODESEC AA504 Control Central needs two 12V 7Ah batteries connected serially. Connect the backup battery after applying AC power. When installing verify proper polarity.

2.5. Au xiliary Power Terminals

Auxiliary Power Terminals are for additional devices that will added in the system as Telephone Automatic Dialer, Communicator, various sensors, selonoid valfs and etc. There are two outputs 24V regulated and 24V unfused.

24V Regulated output can outsource 400 mA current. When the current consumption exceed the rated value the output will be cut by automatic ressettable fuse. The fuse will be reset automaticaly when the overload condition disappears.

For 24V Unfused Output is the power output of Power Supply directly and typically about 27.6Vdc. When using this output care must be get into consideration. For IEC 61000 requirements use VAC W868-01 Toroid by wiring 2 turns auxiliary power cable

While doing connection to the auxiliary power outputs, care should be taken to polarity.

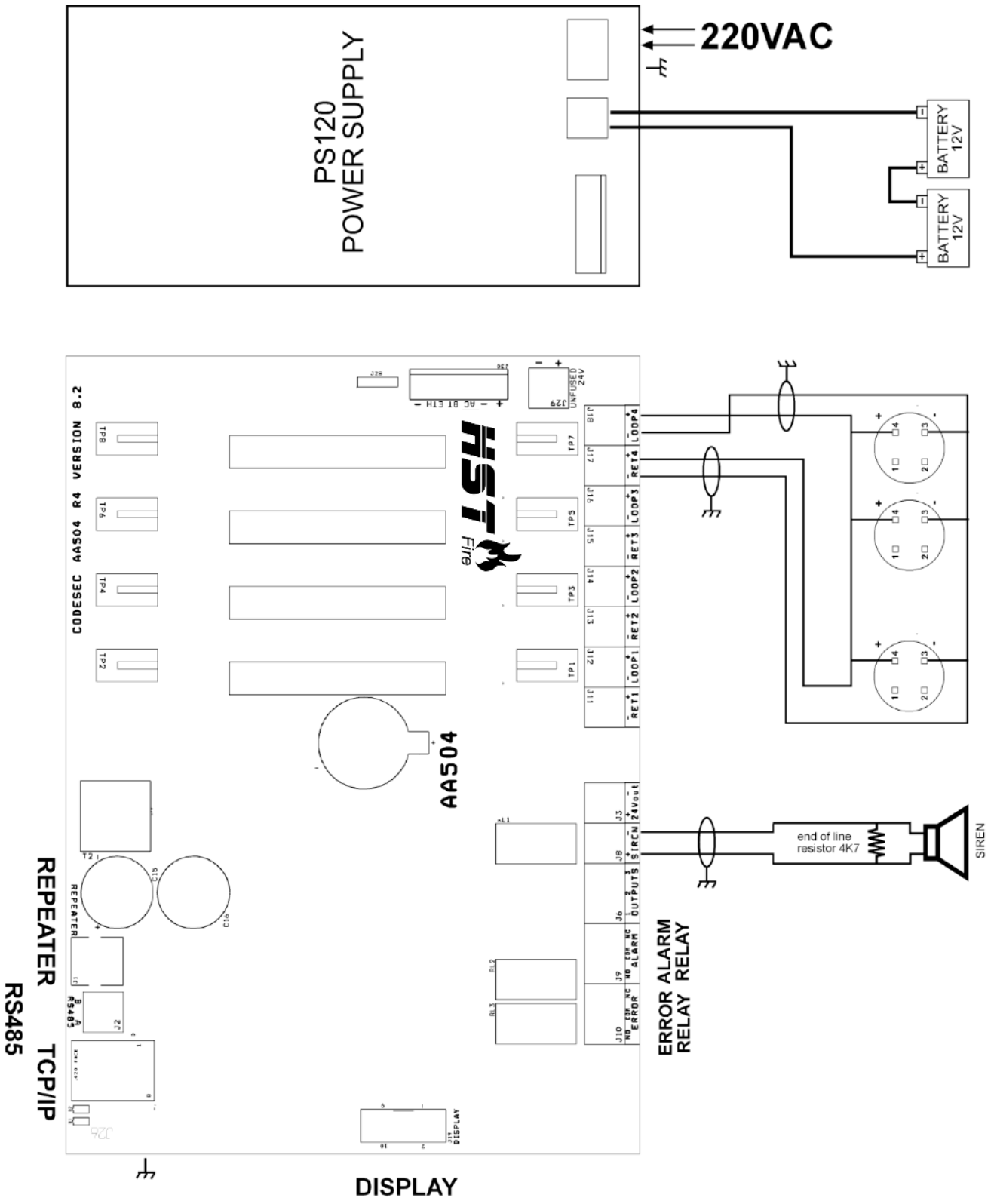


Figure 1- General System Connection Diagram

2.6. Siren Outputs

2.6.1. Siren Output

There is one siren output onboard in the central mainboard. This output activate during fire alarm. Siren output stay activated until Reset or Cancel Alarm buttons pressed. Siren output is 24V output and can drive 400mA current. While connecting siren output care must be taken to polarity. For IEC 61000 requirements use VAC W868-01 Toroid by wiring 2 turns auxiliary power cable

CODESEC AA504 fire alarm central supervises siren output continuously. This output must be ended by a 4.7 KOhm End Of Line resistor. If the central can not detect end of line resistor, a siren trouble is perceived and it will be display as Siren Error indication led on the central.

When connecting Sounders to the Siren output, there must be done calculation of how many sounders can be connected. For example from a 40mA current consumption device can be connected 10 pieces. This restriction is the power capacity of the siren output. If too many devices neded another power source must be used.

The End of Line resistor must be installed at the last sounder at the end of the line.

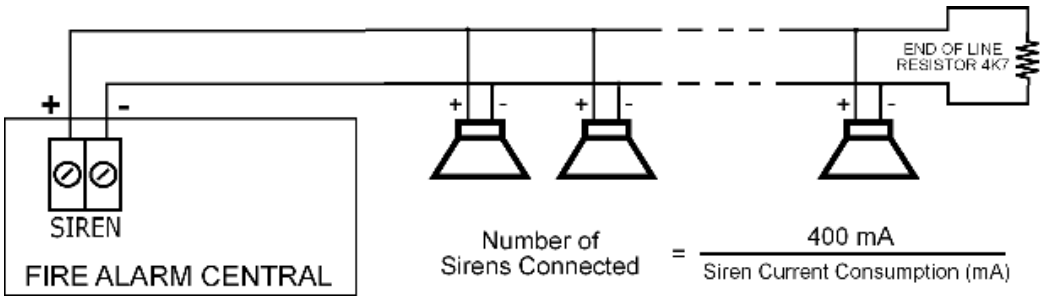


Figure 2- Siren Output Connection Diagram

2.6.2. OC Outputs (Open Collector Outputs)

These output can sink (source) 50 mA, so when using these outputs, an external relay must be used. Open Collector Outputs 1, 2, 3 are mapped to Output channels 1, 2 and 3 respectedly. Read the section about output devices for more information.

For IEC 61000 requirements use VAC W868-01 Toroid by wiring 2 turns auxiliary cable.

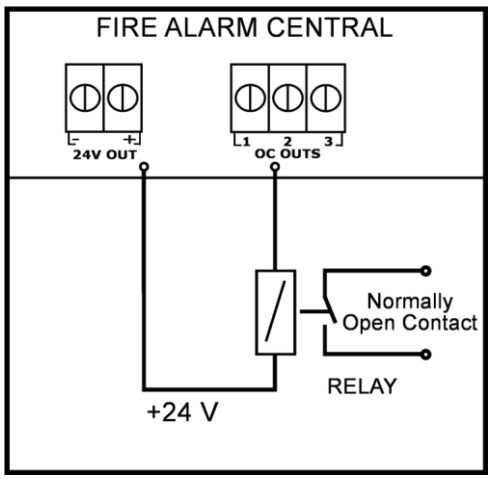


Figure 3- Relay Connection OC Outputs

2.7. Alarm Relay Output

There is an onboard alarm relay output on the CODESEC AA504 Fire Alarm Central. This output is normally unpowered. This means that COM and NC (Normally Closed) contacts are shorted. During fire alarm this relay will be activated and NO (Normally Open) and COM contacts will be shorted. By this output another system or device can be controlled or activated.

In order to activate output an alarm condition must be perceived or Evacuate Buttton must be triggered. To deactivate, the alarm condition must be disappeared and Reset must be performed.

Alarm Relay output is relay contact output and no power driven from the system. Contact capacity is 1 A at 30Vdc. Normally Closed, Common and Normally Open terminals exist on the panel.

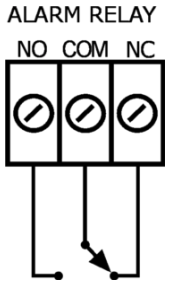


Figure 4- Alarm Relay

2.8. System Error Relay Output

There is an onboard Error Relay Output on the CODESEC AA504 Fire Alarm Central. This output is normally powered. This means that COM and NO (Normally Open) contacts are shorted. Central supervises system troubles continiously and when an AC Loss, Battery Low or Siren Fault perceived the relay is deactivated. If there is an error in the system, this relay will be deactivated and NC (Normally Closed) and COM contacts will be shorted.

System Error relay is normally energized so when the central is not working, the relay will be off. So, from this relay output, the system is working properly can be perceived by another control unit or supervision system.

When there is a system fault in the system, a buzzer sound will be heard every 20 seconds.

System Error Relay output is relay contact outputs and no power driven from the system Contact capacity is 1 A at 30Vdc. Normally Closed, Common and Normally Open terminals exist on the panel.

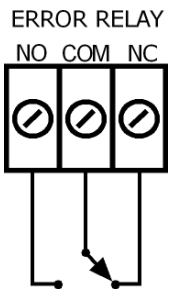


Figure 5- System Error Relay

2.9. Loop Connections

Each loop has "Loop" and "Return" connectors, and each connector has "+" and "-" terminals. This results the use of four wires for each loop. In normal operation, output connectors supply the power and bi-directional data signals to devices on the loop. The purpose of the return connector is checking if the lines are broken or not. When an open-circuit detected, AA504 panel enters the error mode, and warns the user. This configuration requires a pair of return lines from the last detector on the loop.

In Figure 6, simple loop connection is shown.

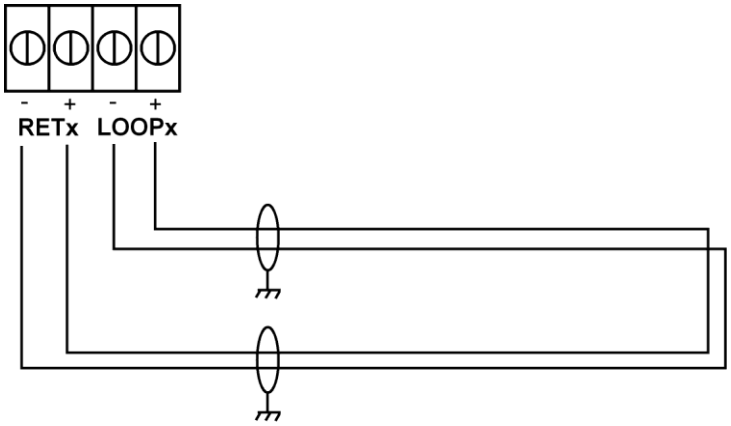


Figure 6- Loop Cabling

For healthy loop cabling, the loop resistance must not exceed 35 ohms. To measure the loop resistance, Go to the last device, short circuit the red and black wires which will be connected to the Panel's Loop output, and be sure that the red and black wires of return line are not connected. At the panel side, while the red and black wires, which will be connected to the loop are disconnected from panel, measure the resistance between that red and black lines, which are short-circuited at the other side, and note as Rs (short circuit resistance). After that, go to the last detector again and seperate the short-circuited wires from each other, than measure the resistance at the panel side, and note as Ro (open circuit resistance).

If Rs is less than 35 ohms, and Ro is open circuit, every thing is OK.

If Rs is more than 35 ohms, but not open circuit, the resistance is out of the standards, and panel may not function properly. You can correct this problem by using a thicker cable, or by shortening the loop.

If Ro is not open circuit, than this condition indicates a short circuit condition in the line, recheck the wires.

Do the same tests for return line.

After the test, connect return line and loop line wires to panel's loop connector. Connect the two black wires at the last device's negative terminal, two red wires to the positive terminal..

With good qualiy cables (pure copper), the loop length is 500 meters for 2 x 0.8 mm cables, and 2100 meters for 2 x 1.5 mm cables.

We recommend that, before installing the cables, the wires must be tested with a multimeter for the conductivity.

2.10. Repeater Panel Connection

On AA504 mainboard there is a 6P4C-RJ45 jack for the repeater panel AR45. The installer can simply plug in the repeater connection on both sides. The panel will automatically detect that there is a repeater panel and begin to work. The installer do nothing to programme or connect any extra pcb etc.

The repeater panel and AA504 Central distance is restricted with RS485 protocol. When connecting devices, a twisted pair cable will give better solutions.

2.11. Connecting Devices

The devices will be connected as shown in Figure 7 after setting the addresses by PP201 programmer.

After setting up, and testing the cables, the devices should be placed on the loop by connecting "+" and "-" terminals to the correct wires, Red wire is "+", and Black line is "-". Before connecting the devices, the devices should be programmed with the PP201 programmer. The device must be removed from the loop and must be connected to PP201. Otherwise, if the device is programmed while connected to the loop, all the devices on the loop will get the same address, this will cause the panel to enter the error mode. And also may damage the programmer.

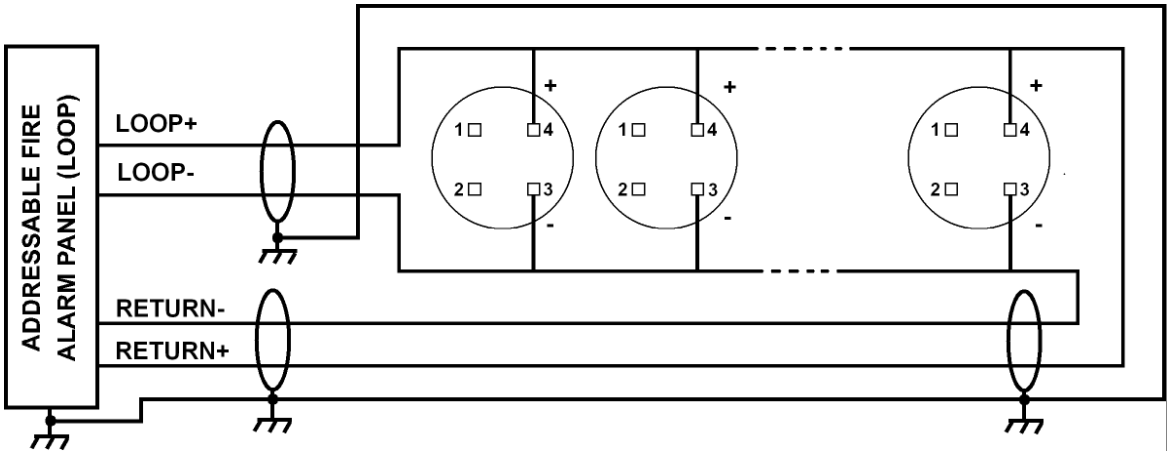


Figure 7- Detector Connections

3. OPERATION

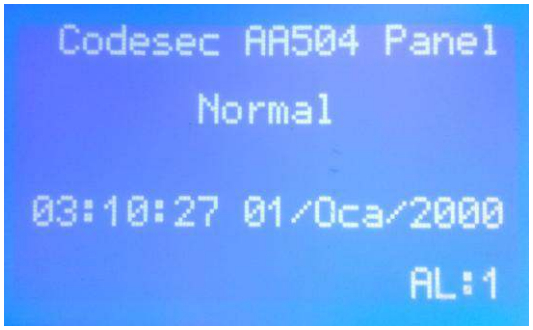
Codesec AA504 Addressable Fire Alarm Panel has 8 rows and 20 characters graphic lcd display in order to explain detailed information to the user. On the left hand side there are system information leds as Power, Ready, Device Disabled, Zone Disabled, Predelay and Fire Alarm indicators. These indicators gives the macro system informations to the user. On the left hand side there are System Trouble Indicators. Ac Loss, Battery Low and Siren faults can be seen from seperate leds. For the other faults there is System trouble led in order to indicate some other faults in the system. On the bottom side on the front panel there are 16 different zone leds. These leds indicate from which zone the fire alarm perceived.

There are five different function buttons on the left hand display; Reset, Test, Cancel/Alarm, Evacuate and Silence. Cancel/Alarm, Evacuate and Silence buttons have their own leds in order to inform they are pressed. There are four buttons on the right hand side of the display. These are menu buttons for functions that will guide by the graphic lcd display. These buttons are Enter, Escape, Up and Down buttons.

On the display the status of the panel, the system date-time and Access Level are shown. If there is a fault in the system the fault explanation will be displayed on the display also. If more than one faults occured in the system, they will be displayed by interval of 2 seconds. If there is no fault in the system, there will be shown System Normal on the display.

When the alarm is perceived from any zone or Evacuate Button has pressed, the indicator for the related zone alarm indicator led lit and prealarm delay has started. The alarm display has higher priority from all other information, so when alarm perceived the display will show the alarm data on the display. If more than one alarm occured, teh alarms will be displayed in two seconds interval rotation.

In order to access menu and functions, there are three Access levels for untrained user, authorized user and service & maintenance engineer. On the right bottom side of the alfanumeric display, the Access level can be seen. AL:2 means Access Level 2.



3.1 Access Levels

The panel operation is protected from inadvertent and erroneous misuse by means of four access levels. These levels are Level 1: Untrained User, Level 2: Authorized User, Level 3: Service and Maintenance Engineer, Access Level 4: Factory Setup and Senior Service Engineers. The functions that the related user can do, are explained below.

3.1.1 Access Level 1

a. Lamp Test

Press this button to illuminate all front panel indicators and validate correct operation.

b. Silence Buzzer

This button will silence the internal buzzer, and will illuminate the Buzzer Silenced panel indicator. No other sounder outputs will be affected by this button operation.

c. Menu Navigation (up / down / left(escape)/ right (enter))

These are used to enter the password for Access level 2 and are also used to navigate the Access 2 Facilities Menu.

3.1.2 Access Level 2

Access level 2 can be reached by pressing the Enter key, followed by a 6 digit Access Level 2 password. If a wrong Access Level 2 password is entered, an informational promt will be displayed. In this case, user may cancel by pressing Escape, or re-enter the correct password. The cursor will automatically move to first character off the password.

The factory default password for Access level 2 is 111111 .

The Access level 2 password can be changed at commissioning to meet customer's requirements.

Access level 2 will be required by the end user to acknowledge alarms and reset the system.

Any persons responsible for the fire alarm system should be aware of the Access level 2 password to enable the panel controls.

Without this password it will not be possible to acknowledge alarms or reset the system so it is most important that the responsible person knows the password.

a. Cancel / Alarm

This button is normally used to mute any fire warning sounders fitted to the panel. These sounders are installed throughout the protected premises and are used to evacuate the premises. In some cases, the fire warning sounders may be delayed; to allow a search time before building evacuation commences. In this case, the predelay on lcd panel indicator will be illuminated. If the Cancel/Alarm button is pressed for 3 seconds during the Delay Active period, the sounders can be permanently muted. If Cancel/Alarm buton pressed while alarm, the related led will lit continuously.

b. Re - sound Alarm

If any fire warning sounders have been muted using the Cancel/Alarm button, then pressing Cancel/Alarm Button again will re-energise all muted sounders. In order to indicate it is pressed for resound, the Cancel/Alarm led will flash.

c. Reset

This button is used to reset any activation that is defined as a latching input type. These will include fire and pre-alarm events. In general, fault events are non-latching and cannot be cleared by operation of the Reset button. These events will clear when the fault input is cleared.

Performing Reset will not change the Access Level.

d. Evacute Buton

Operation on the Evacuate button will cause all sounders on the system that are configured to respond to an evacuate command (default) to sound continuously.

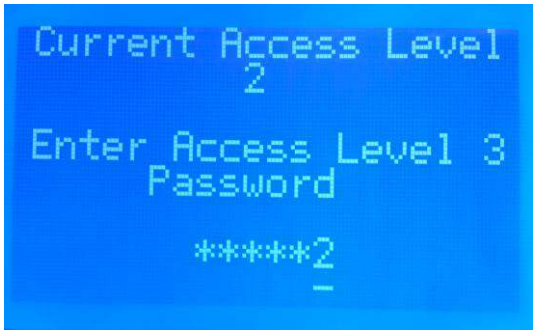
3.1.3 Access Level 3

The alteration of site specific data can only be at Access Level 3 and 4. The alteration of site specific data will not affect the structure of the program. In these levels it is possible to read or interrogate the site specific data on the panel.

Access Level 3 can be reached from the Menu when in Access Level 2. By entering menu and rolling down with up-down buttons, enter Settings Menu / Access Level. In System setup menu the panel will ask for Access Level 3 password.

The factory default pass word for Access level 3 is 222222 .

By Entering Access Level 3 the installer can do all facilities and programming in the Menu.



If one can not enter the correct password, panel will warn the user as wrong password and wait the correct pasword entry.



To change Access Level passwords the Programming Software must be connected to the panel.

3.1. 4 Access Level 4

The manufacturer Access level. Only manufacturer or autorized technical person of distributor can intervene to the panel. If the panel shows Safe Mode (See Section 5. Safe Mode) the panel must maintenance at Access Level 4. Also return to factory defaults can be done only in Access Level 4.

The alteration of site specific data can only be at Access Level 3 and 4. . The alteration of site specific data will not affect the structure of the program.

Program memory can only be changed by a programmer at Access Level 4.

3.2 Panel Operation

3.2.1 Fire Alarm Event

In the event of a fire, the red FIRE lamp and the appropriate Fire Zone indicator will lit. First 16 zones have visual lamp indicators. Other 234 (The panel has total of 250 zones) zones are virtual zones, which has no lamps, but reporting is done by TFT LCD messages. Details of the fire activation (address and location text) will be given in the LCD Status display.

The fire warning sounders will sound throughout the building and the panel fire contact, alarm contact and fire routing outputs will be energised.

The panel buzzer will be pulsing, but can be silenced by pressing the Silence button.

Pressing the Cancel/Alarm button will now silence the sounders. The sounders can be started again if required by pressing the Cancel/Alarm button again. If pressed once more in order to resound , the led will flash in order to indicate re-sound condition.

The system can be reset by pressing the Reset button.

3.2.2 Fault Event

If there is a fault on the system, the yellow System Trouble indicator will be lit and there may be other fault LED indications which identify the nature of the fault.

The Fault Contact will be energised and the panel buzzer will beep every 20 seconds. Details of the fault will be described in the text display.

The panel buzzer can be silenced at any time by pressing the Silence button.

If there are more than one fault event on the system, than, these may be viewed in the text display by rotation for 2 seconds.

3.2.3 Evacuate Event

Operation of the Evacuate button will cause the red FIRE lamp to illuminate and all sounder devices to be operated contuniously.

The panel buzzer will sound continuously and the source of the Evacution event will be shown in the LCD status display. The panel buzzer can be silenced at any time by pressing the Silence button.

Pressing the Cancel/Alarm button will now silence the sounders.

3.2.4 System Troubles

CODESEC AA504 Fire Alarm Central continuously supervises the troubles in the system. If any trouble, just explained below, has been detected, “System Trouble” indicator led will illuminate at the same time with related error indicator.

3.2.4.1 Ac Loss Error

The mains power lost or the mains fuse in the Central blowed. 220V mains power or the mains fuse have to be checked.

3.2.4.2 Battery Error

The control panel performs a dynamic battery test every 10 seconds. If the back up battery is disconnected or the battery voltage is under 20V, Battery Error indicator led will illuminate. This error can be analyzed according to the presence of AC supply. If AC supply is connected, this means that there is no back-up battery connected or the battery fuse is blocked. If AC supply is not connected, this means the back-up battery was feeding the system for a while and battery voltage is going down. If the AC supply doesn't come back, the system will automatically shut down itself under 17V battery voltage. The aim of this auto shut down is to prevent batteries from deep discharge.

3.2.4.3 Siren Error

In the siren ouput there must be a sounder connected and the equivalent resistor value must be above 5kOhms. If the sounder impedance is not above 5kOhm, an end of line resistor 10kOhm must be connected. If the control panel can not see this impedance, it will perceive siren error. The Siren Error indicator led will illuminate until the error condition disappears.

3.2.4.4 Ground Error

If the system detects an improper grounding, (connection to the earth), an earth fault condition is generated. This condition may be suppressed by setting the related option in The Access Level 4 menu. The earth fault lits the system trouble LED and displays the Earth Fault Message on the LCD display.

3.3 Menu

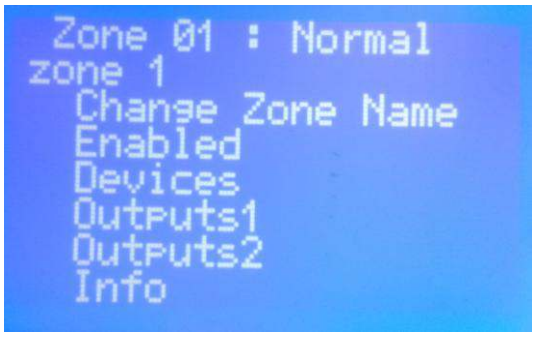
By pressing Enter, one can enter the Menu either in Alarm condition. The Maın Menu items are as follows. In Access Level 2, the autorized User can see parameters but can not see some menu items that need service and maintenance in the system. In Access Level 3 the service engineer can see and change all the parameters of the device.



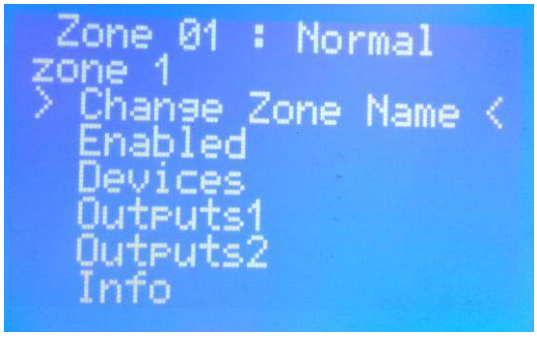
The Arrows are showing the current item. By rolling Up and Down buttons, other menu items can be selected. By pressing Enter one can enter the related menu.

3.3.1 Zones

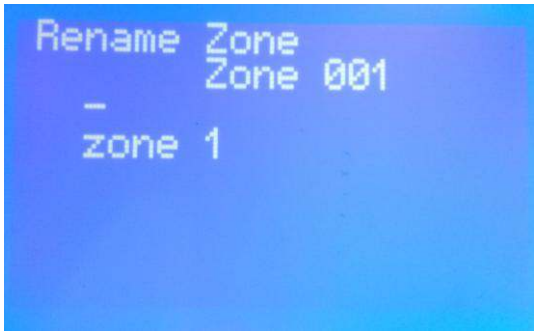
When entered in Zones Menu, the display will show the detailed information of the related zone.



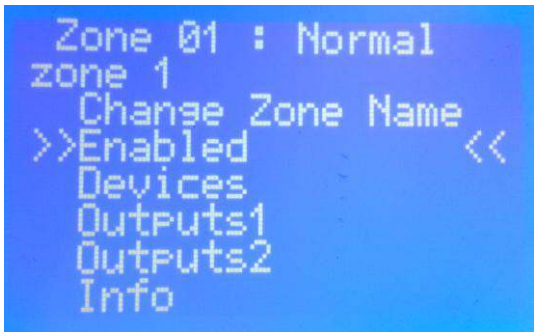
In the first line Zone No x and status of the zone will be shown. In the second line the name of the zone will be displayed. This name can be entered by programming software or by buttons. The up and down keys will display previous or next zone. Pressing Enter key will switch to select mode, and user can select the menu items by navigating with up and down keys. Pressing Enter again will navigate to related menu, and let the user change the settings. In the following picture, the menu is in Select Mode, because the enter key is pressed once, and “Change Zone Name” menu will be selected if the enter key is pressed second time.



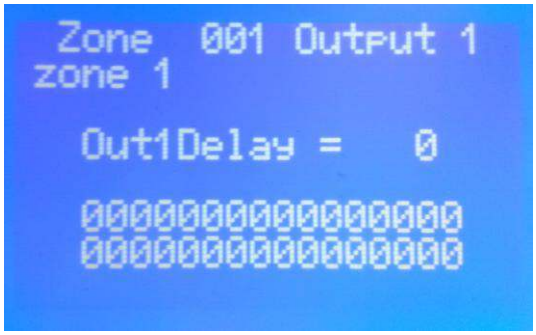
After pressing and selecting the "Change Zone Name" menu, the display will change to edit mode. This mode has an information about the user is changing the zone name at the top line, and the zone number at the second line. The cursor is placet at the 3rd line and , up-down keys change the letter/number under the cursor. Pressing enter will advance the cursor. The zone name has 32 characters in total, and handled in two lines. After the first 16 characters, the cursor will move to 5th line and the last 32 characters are displayed in 6th row of the display. After editing finished, user must press enter key for 5 seconds to save the new zone name. After saving the new name Panel will inform user about the new name is saved.



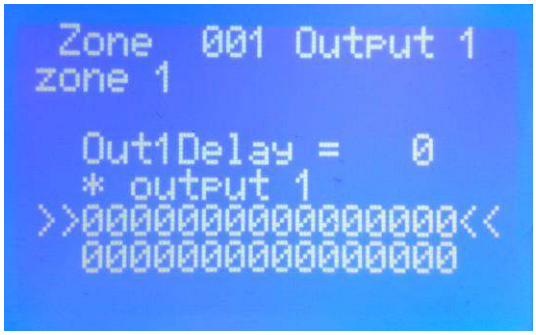
The second menu option of Zones is activating and deactivating zone. When user presses enter key again, while the enabled or disabled prompt selected, the cursor will switch to edit mode (>> ..... <<), and up-down keys will change the enabled status of the zone. To save the status, press escape and return to the select mode again.



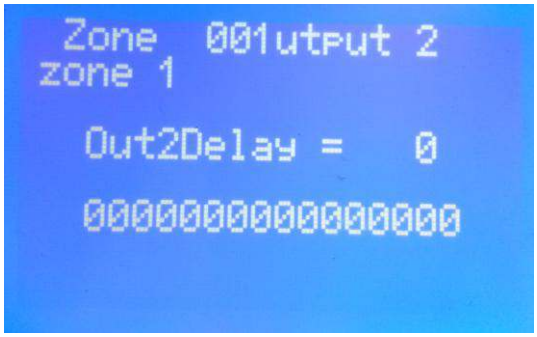
The Outputs1 menu is used for setting the delay and output mapping for the zone, The top most line has the zone info, second line displays the zone name. The Delay is applied to the fire alarms, the value is between 0 and 250 seconds. After selecting the output menu, the LCD will display the Output1 parameters. Again enter key switches to select mode (> ..... <) and up – down keys moves the cursor. Pressing the enter key will begin to edit the selected parameter.



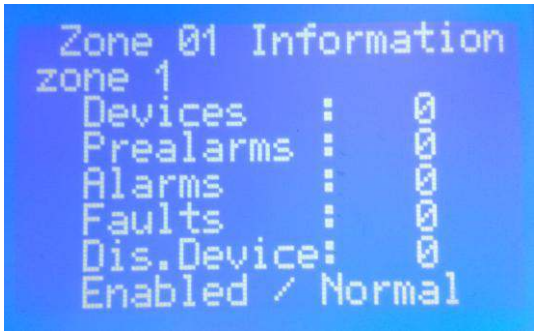
When editing the outputs, the "*" cursor is placed above or below the value setting of the output and, the corresponding output channel text is added to the next of the cursor. Upper line is for output channels 1-16, and the lower line is used for output channels 17-32. The output channels 1, 2 and 3 are also mapped to the Open Collector outputs, placed on the panel PCB.



The Devices menu is not functional, and will be available to the user in the future versions.
The Outputs2 menu is for triggering additional output channels, and only controls output channels 1 to 16. Functions as described for Outputs1. The difference is, the alarm and siren outputs are not activated with Outputs2.



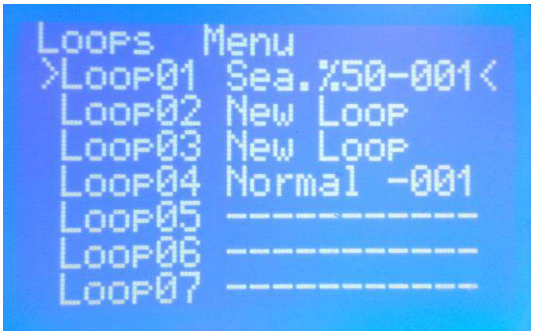
In the Info menu, other information about the selected zones are, how many alarms, prealarms, devices, disabled devices and faults, in the zone, and zone status (Zone Enabled/disabled etc.). The First line has zone number, the second line has zone description.



3.3.2 Loops/Devices

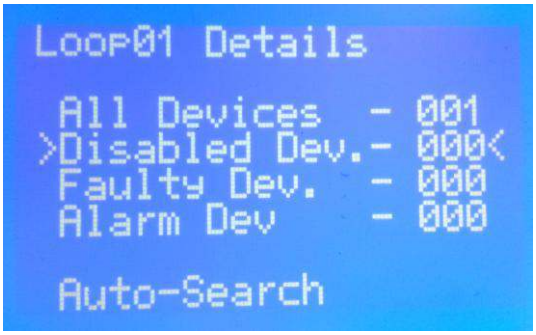
In the Loops Menu, the used or detected loop interfaces are displayed. If there is no interface detected, the loop info is shown with dashes ("----------") . The status of the loop is reported also, Missing, Normal, Short, Open, New Loop, Resetting and Sea%xx are the available states for a loop interface. Up and down keys are used for navigating between the interfaces and enter key is used for further functions of the loops.

Resetting	:	The loop interface is in startup state, and the devices over the loop are not powered up. This state takes approximately 15 seconds.
Short	:	The (+) and (-) outputs of the loop is short circuit, and the loop is in over-current protection mode. No data can be obtained from the loop. Service engineers must discover and solve the problems.
Open	:	The (+) or (-) outputs of the loop and loop return are cut. Some of the devices on the loop may be inaccessible, and those devices are not reported individually.cService engineers must discover and solve the problems.
Missing	:	The loop interface is removed, or the loop interface is in faulty state. The loop is not functional during the missing state. This state needs service engineer to resolve the problems.
Normal	:	The interface is operating normally. Next to "Normal" text, the total number of devices detected over the loop is also displayed.
Sea.%xx-yyy	:	The loop is in search mode, and "xx" is the percentage of the completed operation. "yyy" is the total number of devices detected.
New Loop	:	The loop is new to the panel, and there is no detectors used by the system. In this condition, user must initiate an auto-search to discover the devices on the loop.



When "TEST" key is pressed for 5 seconds in the Loops menu, all the input devices link LEDs are turned on to visually discover any missing input devices. The devices with non-lit LED are inaccessible by the loop controller circuit.

When enter key is pressed, the loop is selected. Listing modes and auto-search command are displayed. Up-down keys will navigate the cursor, and enter will activated the selected option. If a loop is used once and removed from the system, the missing state is reported. In this state, If the Access level is 3, there will be an extra menu option "Set Loop as unused" will appear. When this option is selected, the loop is removed from system. That means, the devices assigned to zones, and outputs are removed.



Selecting Auto-Search will initiate a search over the loop. A new search, also removes all the resources from the system, which are on that loop. Auto-search will not be completed successfully if the loop has a faulty condition, such as open, short etc. A search which is not completed successfully, is terminated by the system, and a log record is added to the system event log. During the search, the number of devices is updated while new devices are detected. The completed part of the total search time is displayed as percentage. The normal duration of a search operation is 80 seconds, and devices detected in the second half of the search operation. If any detectors found before %40, that shows there are two different type of detectors, having the same address. And if some detectors found aftes 50% completed, that shows the wire quality and/or loop signal quality is poor. This causes many problems during the operation, and should be solved by a service engineer. The third problem type is, the situation of some detectors are not detected. Fourth problem type is the devices detected with incorrect device types. Those must be solved by a service engineer too.



If "All Devices" is selected, the list of the detectors sorted by the addresses, and the types of the detectors , followed by status text (if there is some abnormal state) are displayed. The status text placed after the address of the detector. The abnormal status Codes are :

M : Missing
D : Disabled
O : Open
S : Short
P : Prealarm
A : Alarm

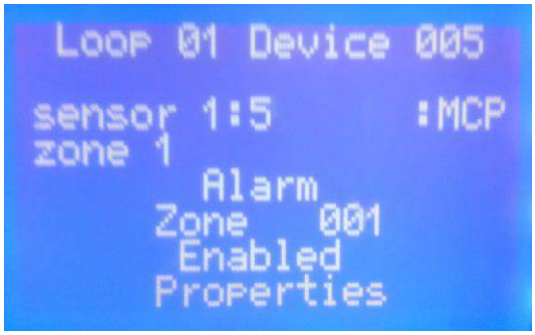
In the following example, Loop 1 has 4 devices, device #160 is missing, and device #5 is in alarm condition, types of the devices are MCP (3 units) and OSD (1 unit)

Possible device types are

type 1	HRD	Heat Detector
type 2	ION	Ionized Smoke Detector
type 3	OSD	Optical Smoke Detector
type 4	COM	Combined Detector
type 5	BEA	Beam Detector
type 6	MCP	Manual Call Point
type 7	SIM	Single Input Module
type 8	SOM	Single Output Module
type 9	GAS	Gas Detector



By pressing enter key, some more details can be accessed about the device, first line shows the loop number and the device address, 3rd line shows the device desription and device type, 4th line shows the zone desription, 5th line shows the status of the device (Normal, Open, Short, Missing, Prealarm, Alarm etc.), 6th line shows the zone number, 7th line shows if the device is enabled or disabled, and at last, 8th line is used for accessing other properties of the device.



Pressing enter once lets the user access the selection mode, to change the zone of the device, to change the enabled/disabled state and to change other properties. In selection mode up and down keys are used for navigation over the options, and enter key activates editing mode.

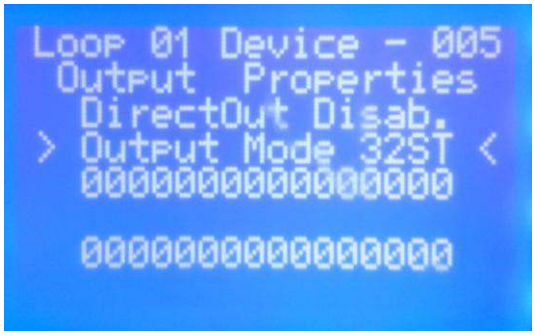
Editing mode lets the user control delay parameters, output controls, sensitivity, device name and diagnose the device connection.



Delay Parameters are duration of the delay, and the affected module. If the Delay mode is Zone, this devices overrides the zone delay, if and only if the device delay is shorter than the zone delay. The zone delay may be between 0 seconds and 250 seconds.



Output Mode may be two different type : 32ST and 16LD. 32ST is used for standard 32 channel outputs, as used in zones. And 16LD is used for output channels 1-16, and an extra device addressed with loop number and device address.



The device name can be changed as described in zone names (Page 19). Refer to Zones section for further information.



If service engineer needs to check the operation parameters of the device, the diagnostic menu displays the communication parameters of the device.



If the device is Output Module, the 5th and 6th lines are showing that which Direct Outs will be triggered. For example, If selected Output Module was programmed as

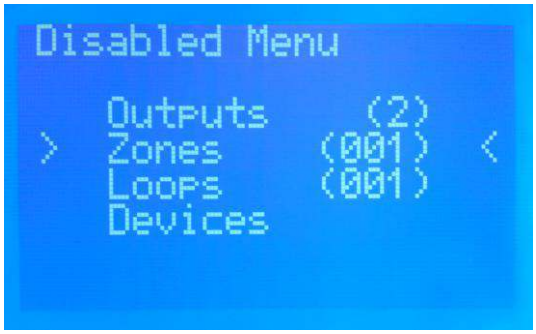
0100000000000000
1000000000000001

means that this Output Module will activate id: 2 or id:17 or id:32 inputs perceived. This property can be used to activate any outputs from detectors and inputs directly. This logic works independently from alarm activation. Alarm activation is done by Zones. If any detector or module input that is defined in a zone and this defined zone can be disabled or programmed as not to give alarm, the Direct Out will work and activate the defined output without alarm the sounders.

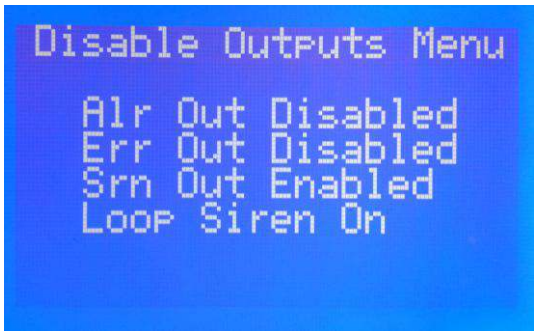
For Output Modules by selecting Output test, the output can be on or off for test. To do it; Enter edit mode. This means the cursors must be seen on the screen. Select Output Test Item. By pressing Enter the user can change the status of the Output Module. When quit by Escape, the state of the output module will be reset. But non quiting from this menu will cause the screen timeout refresh but the output will remain the status. This feature is usefull for exploring in the site. When Reset all the output modules will be reset.

3.3.3 Disabled Menu

In Disable menu the disabled panel relays, zones and devices can be seen. Zones disabled and Devices disabled can be seen as a report also. How many zones or devices are disabled are shown within the brackets. Loops is only shows the detected number of the loops as an information. No setting for loops is possible in this menu. In he following picture, the (2) in paranthesis shows that, total of 2 output controls are disabled. Additionally, (001) zone is disabled. Devices line, shows the number of the disabled devices, and distribution of them to loops. Any enable operation must be done from Loops Menu.



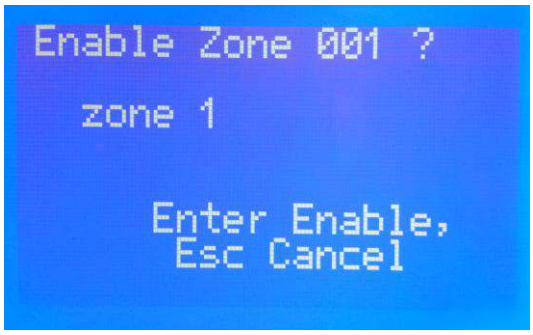
When entered in Outputs sub menu, the display will show the Alarm, Error, Siren Relay controls, and Loop Siren Control. By pressing Enter, navigation mode is selected (> .. <), after navigating, pressing enter again selects edit mode (>> .. <<), then up and down keys can be used to change settings. After changes made, Escape key is used to return previous menus.



When entered in Zone Disabled sub menu, the display will show the list of all disabled zones. Up and down keys will navigate over them. The zone number and the zone name will be displayed interleaving every 3 seconds. When enter key is pressed, you can choose enter key again to enable the zone, or esc key to cancel enable zone menu. In the following example, there is only one zone in the list. This number is shown in the top-most line in paranthesis, and the name of the zone is “Zone 001”.



If you press enter key and select a zone, you will see the display, prompting you to press enter key or escape key to enable that zone or to cancel operation.



If the Devices or Zones sub menu of Disabled Menu selected when there is no disabled items, Panel will prompt that there is no items to display. Following picture shows that there is no disabled devices to display. When there is no disabled zones, and zones sub menu selected, the text "No Disabled Zones" will appear instead.



Note : Any disabled resource will cause the general disabled led illuminate.

3.3.4 Faults

In the Faults menu, all system faults are displayed in categories.

Those categories are :

1. General Faults : This section reports, Secondary Power Source Failure, Primary Power source failure, Siren Failure, Earth connection Failure and RTC (system date/time) Failure. Siren Failure is caused by an unterminated siren connection (in this case, a 4K7 ohm resistor is used for termination) or a short circuit siren output. Secondary Power Source is Faulty when the batteries are dead or not connected. Primary Power Source is faulty when AC supply voltage is insufficient. RTC failure is reported when the RTC is not set after a battery replacement, when the battery is dead or when a battery does not exist.

2. Loop Faults : The possible faults are OPEN, SHORT and MISSING. A missing fault is generated when the physical loop controller circuit is not installed, or installed but faulty. Open error is reported when at least one of the return lines is broken. SHORT error is reported when the loop (+) and loop (-) wires short circuited.

3. Sensor Open : For input modules, the termination resistor is not installed. For Smoke Detectors, the chamber is affected by light, where the detection of the smoke may not be accurate.

4. Sensor Short : For Convantional Input Modules, reports a short circuit in the Zone, For the Input Modules, reports that the termination resistor is detected as 0 ohms.

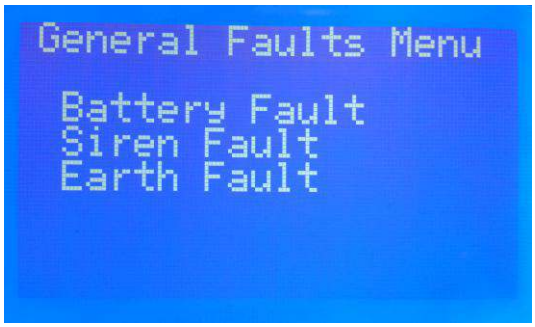
5. Sensor Missing : Any type of sensors (reported in the system log, and loops menu) on the loop can not be accessed by the controller.

6. Total Faults : The sum of all the faults reported above

As it is in other menus, up and down keys are used for navigation, and enter key is used for selecting a sub menu. Also, the number of the faults are listed in the Faults menu. Typical Faults menu display is like in the following picture. For that example, there are 3 general faults, but no other faults.



By pressing Enter in General Faults, the details of the faults are listed, as in the following figure.



For the sensor faults, when 1 of the three types selected a list of loops with faulty detectors is displayed. In each line, total number of the faulty devices in that loop is shown. In the following example Sensor Open item is selected, and in the Loop 1, there is one device reporting open condition.



Selecting that loop will display more details. A list of devices with "Open" condition will be displayed. In the header line, the loop number, total number of open detectors, and type of fault is displayed. Following lines are interleaved, address of the device, type of the device, zone of the device and the description of the faulty device is shown in 2 second intervals.



In Access Level 4, panel may be configured for not to report Earth fault. This is only suppress the Earth Fault, when it is the only fault in the system. If any other faults detected, the Earth Fault will always be reported.

Note : Any faults listed here will cause the system error led to illuminate.

3.3.5 System Log

AA504 Panel has a logging system, which can store up to 1000 events. The log buffer is a circular buffer and base on FIFO policy. When the "System Log" menu is selected by pressing enter key, A list of log messages is shown if any present, otherwise the message "No log events" is displayed in the upper line.

In this menu, the first line describes where the menu system is, and also displays the total number of the log events, and the order of the marked event.

A mark is "*", and used to navigate and select the log events. In the log system, up and down keys are in the auto-repeat mode. After pressing a key, and holding it pressed for 3 seconds, the key repeats every 0.5 seconds until it is released.

The last occured event is the event #1. Smaller event numbers are displayed in the upper lines.

If the events are in the present date, as shown in the next example, the event time is displayed. Otherwise the date of the event is displayed. The Gnd Error is occured in 00:15:19, and the marked "Device Open" event occured 13th of August, 2015.



When enter key is pressed, the details of the selected event is displayed. For example, in the following case, there are total of 88 event records, and the second last of them is being displayed. The date and time data located in 3rd and 4th lines, the type of event is "Device Missing Error" and msg type is 17, detector type is HRD (heat rise detector), device address is 123, loop number is 1.



The following list is a summary of event types

	Short message	Long message	Detail
01	No Loop	Boot No Loop Card	A previously configured loop board is not detected at startup. (Parameter 1 : loop number)
02	New Loop	Boot New Loop Card	A new loop board is detected at startup.(Parameter 1 : loop number)
03	Com. Err.	Loop Checksum error	Checksum mismatch detected while communicating with loop board.(Parameter 1 : loop number)
04	Loop Err.	Loop Card inaccessible	A loop board is not responding to panel. (Parameter 1 : loop number)
05	Loop OK.	Loop Card accessible	A non-repsponding loop board is responding now. (Parameter 1 : loop number)
06	Startup	System Start	User Started the system.
07	Srch Beg.	Search Started	User, initiated an automatic device detection at one of the loop boards.(Parameter 1 : loop number)
08	Srch End	Search End	User initiated detection ended at one of the loop boards.(Parameter 1 : loop number Parameter 2 : devices found)
09	Access L.	Access Level Change	Access Level has been changed by user.
10	AC Power	AC Power Event	AC power is cut or reconnected to the panel.(Parameter 1 = 1 AC loss)
11	Battery	Battery Low Trouble	The battery is removed, battery in fault condition or battery reconnected
12	Siren Err	Siren Fault	The 10K ohm termination resistor is not detected at siren output relay.
13	RTC Fail	RTC Battery Failed	The RTC is reporting the battery is not present, or RTC is not set.
14	Alarm	Fire Alarm	Alarm signal detected in one of the devices. (Parameter 1 : loop parameter 2 : address)
15	Dev.Short	Device Short Circuit	The SIM device input is short circuit, or the OSD is in faulty state. (Parameter 1 : loop , Parameter 2 : address)
16	Dev. Open	Device Open Circuit	The SIM device is not connected to an external device correctly. (Parameter 1: loop , Parameter 2: address, Parameter 3: device type)
17	Dev. Mis.	Device Missing	The device is not responding to the Loop Board. Iress, parameter 3 : device type)
18	Dev. Ok.	Device Missing OK.	A non-responding device started to respond. (Parameter 1 : loop , Parameter 2 : address, parameter 3 : device type)
19	Lp. Short	Loop Short Event	The loop lines are short circuited. (Parameter 1 : loop number)

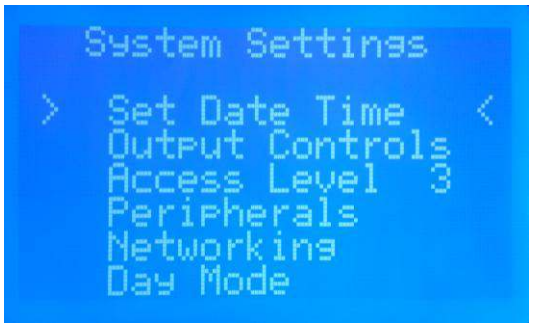
	Short message	Long message	Detail
20	Lp. S.Ok.	Loop Not Short Event	A short circuited Loop line is back in normal operating conditions. (Parameter 1 : loop number)
21	Lp. Open	Loop Open Event	The Loop is open circuit. Some devices may be inaccessible.(Parameter 1 : loop number)
22	Lp. O.Ok.	Loop Not Open Event	A Loop reported in open circuit, is in normal operating conditions.(Parameter 1 : loop number)
23	Dev.NotS	Device Not Short	A device previously reported in short circuit, is operating normally now. (Parameter 1 : loop , Parameter 2 : address)
24	Dev.NotO	Device Not Open	A device previously reported in open circuit, is operating normally now.(Parameter 1 : loop , Parameter 2 : address)
25	Reset	Reset System & Loops	User reseted the system.
26	Alarm Cancelled	Alarm Cancel Event	Alarm Sounders cancelled by user.
27	Resound Alarms	Siren Resound Event	Cancelled alarms resounded by user.
28	Evacuate	Evacuate Event	User initiated evacuation.
29	DirectOut	Direct Out Event	A device configured for direct out, triggered output channel(s). (Parameter 1 : loop , Parameter 2 : address)
41	Alr.Z.Dis	Alarm At Disabled Zone	An alarm signal received from a zone which is disabled. (Parameter 1 : zone)
42	Alr.S.Dis	Alarm from Dis. Sensor	An alarm signal received from a sensor which is disabled. (Parameter 1 : loop , Parameter 2 : address)
43	Download	Download Ethernet	Configuration software downloading the current settings to PC.
44	Upload	Upload via Ethernet	Configuration software uploading the new settings from PC.
45	PC conn. W	PC SN. Write	Serial Number of the Panel is changed by system engineer.
46	PC conn. R	PC SN. Read	PC configuration software established the ethernet connection.
47	Set Pass.	PC New Password	The Password is changed by configuration software. (Parameter 1 : access level)
49	Gnd Error	Earthing Error	The earthing of the panel has not been properly done
50	Gnd Ok	Earthing Err Restored	The earthing Error Restored
51	Z. Disable	Zone Disabled	The user disabled a zone (Parameter 1: Zone number)

	Short message	Long message	Detail
52	Z. Enable	Zone Enabled	The user enabled the zone (Parameter 1: Zone number)
53	D. Disable	Device Disabled	Selected Device disabled by the user (Parameter 1: Loop Number, Parameter 2 : Device ID)
54	D. Enable	Device Enabled	Selected Device enabled by the user (Parameter 1: Loop Number, Parameter 2 : Device ID)
55	Alarm On	Alarm Output On	Alarm Output enabled by the user
56	Alarm Off	Alarm Output Off	Alarm Output disabled by the user
57	Error On	Error Output On	Error Output enabled by the user
58	Error Off	Error Output Off	Error Output disabled by the user
59	Siren On	Siren Output On	Siren Output enabled by the user
60	Siren Off	Siren Output Off	Siren Output disabled by the user
61	Power On	Power On	The system started
62	AC Ok	AC Loss Restored	AC Loss Restored
63	Battery +	Battery Error Restored	Battery Error Restored
70	Cksm err1	Checksum Er	Checksum Error 1 (for service engineer)
71	Cksm err2	Checksum Er	Checksum Error 2 (for service engineer)
97	Looplost	Loop Lost	Loop Lost after start (for service engineer)
99	Log Test	Log Test	Log Test for Network when using CMS

Note : System Log can be resetted in Access Level 4. For more information contact the system supervisor.

3.3.6 Settings

The Settings menu is available for users, in Access Level 2 and 3. The menu is displayed as shown in the picture below.



3.3.6.1 Set Date/Time

To set the date and time, simply press enter key while navigation cursors are on "Set Date Time". Then the following menu will appear and a cursor will be displayed over the hour area. UP and Down keys are used to increase or decrease the values. The time/date setting menu activates the auto-repeat function for keys. When a key is pressed longer than 3 seconds, pressed key sends signal every 0.5 seconds. Enter key advances the cursor.

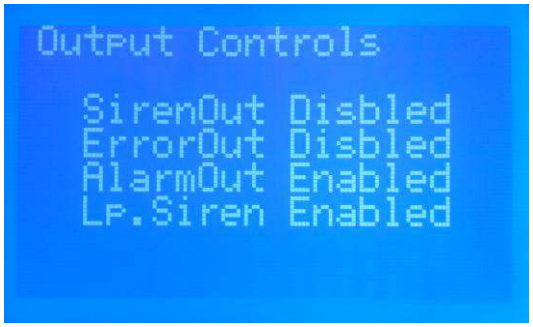


When all the fields are edited, at the year area, a press to enter key prompts for a confirmation of edited values. If the user presses the enter key again, new values are stored. If Escape key is pressed, the new walues are discarded and old settings restored.



3.3.6.2 Output Controls

To control Relays on the panel, user can enable or disable them. When a relay is disabled, the system does not change the state of the relay. Those are Alarm Relay, Siren Relay, and Error Relays. In addition to them a control for loop siren activation is also available. For entering the navigation mode, press enter and then use up-down keys to navigate over the menu items. Enter selects that item, and edit mode is activated. In edit mode, up and down keys changes the settings. When the desired value is selected press Escape key to save and exit. In the following example, Siren and Error outputs are disabled, but Alarm and Loop Sirens are enabled.



3.3.6.3 Access Level

To Change the access levels refer to section 3.1.3. The detailed description is there.

3.3.6.4 Peripherals

This menu is not implemented, and will be used for controlling printer in later versions.

3.3.6.5 Networking

This menu is not implemented, and will be used for networking functions setup in the later versions.

3.3.6.6 Day/Night Mode

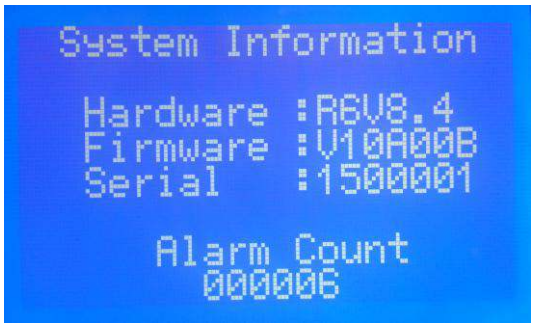
When Day mode is selected, all the delays for alarms are applied to the signals receieved from loop devices. When Night mode is set, delays are cancelled and any alarm signals receieved, processed without any delay.

3.3.7 Outputs

This menu is not implemented and will be used for accesing output devices under a single menu in the later versions.

3.3.8 System Information

System information shows the panel version, serial number and total number of alarm signals. Alarm count and serial number is initialized in the production line, and can not be modified by users.



3.3.8 System Setup

System Setup menu is used for changing the Access Level of the panel. When entered, on the bottom line the current Access Level will be shown. By entering Access Level 3 password, the authorized engineer can enable or disable Access Level 3 functions.

The factory default Access Level 3 password is 222222 .

If the system is in Access Level 3, the authorized engineer can enter the same password in order to downgrade the system Access Level 2.

To downgrade the system to Access Level 1, the autorized engineer or authorized user can enter the Access Level 2 password in order to disable unwanted controls.

The factory default Access Level 2 password is 111111 .

If the system is in Access Level 1, if Access Level 2 password entered, the system will get into Access Level 2, if Access Level 3 password has entered, the system will get into Access Level 3.

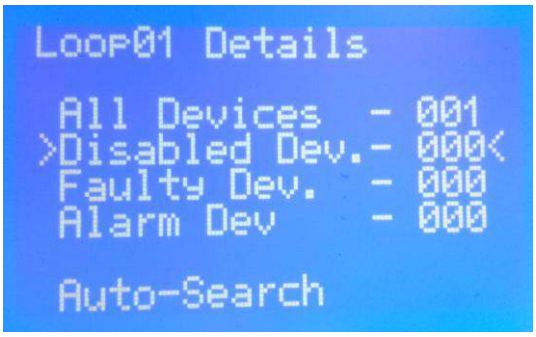
4. PROGRAMMING

4.1. Initial search for loop devices

The installer must ensure the loop connections are done properly. The devices on the loop must be programmed unigue id addresses and connected on the loop.

Before giving name to the zones and the devices, you must first detect the devices and assign them to zones.

When in Access Level 3, from the main menu, simply enter Loops. There will be shown the loops as LK401 Loop Cards installed in the system. For loop cards installed on the panel, the Loops inner menu will be shown as:



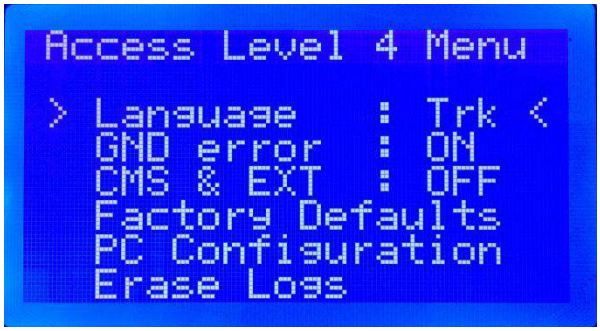
The detail of searching for installed devices is described in section 3.3.2.



While searching the loop devices, system shows the percentage completed and the number of devices detected.

4.2. Connecting to the PC & Running Configuration Software

Some setup functions need to be programmed by software. Because of the ability of the PC software, technicians prefer to set up system from their computers. Although it is possible to control some functions via the panel, configuration software is preferred because it makes users faster and easier programming.
The configuration software requires an RS485 output to be connected to the computer. The output will be used according to 9600 baud, 1 stop bit, no parity, 8 data bit standards.
The + and - ends (A and B) of the RS485 converter will be connected to the same letters at the RS485 output of the panel.
Short the PROG Jumper on the main board while Access Level 3.
When the access level of the panel is Access Level 3 and the PROG jumper on the main board is fitted, the system will switch to access level 4 and the following menus will appear.



When PC Configuration menu is selected, the system can be controlled with the program on the PC. You need to press ESC key to exit this menu.

Before downloading panel data, the installer must search all the loops and all devices must be observed. The installer will download this information to the computer and use it.

Install and run the configuration software on the computer.

After installing the program, the following interface will appear when you run it.

To establish a connection, select the RS485 port you will use from the PORT field in the upper left corner of the interface. When communicating with the panel, the version of the panel will come in the "version" field, the "Load From Panel" and "Send to Panel" buttons will become available. In this case, press the button to download the information from the panel. The process will take approximately 3 to 8 minutes, depending on the number of detectors in the system. Likewise, information can be sent to the panel via the send buton.

It is recommended that the system be remotely monitored during system installation, data backup, data transfer to computer and disc recording after a search is made. This information can then be opened and changed without making a connection to the panel. Particularly, zone names and device names are preferred by users because they can be changed more conveniently using the computer keyboard.

Panel operation language, earth fault reporting, CMS and Printer functions, deleting system event records and restoring factory settings are also possible in the Access Level 4 menu.

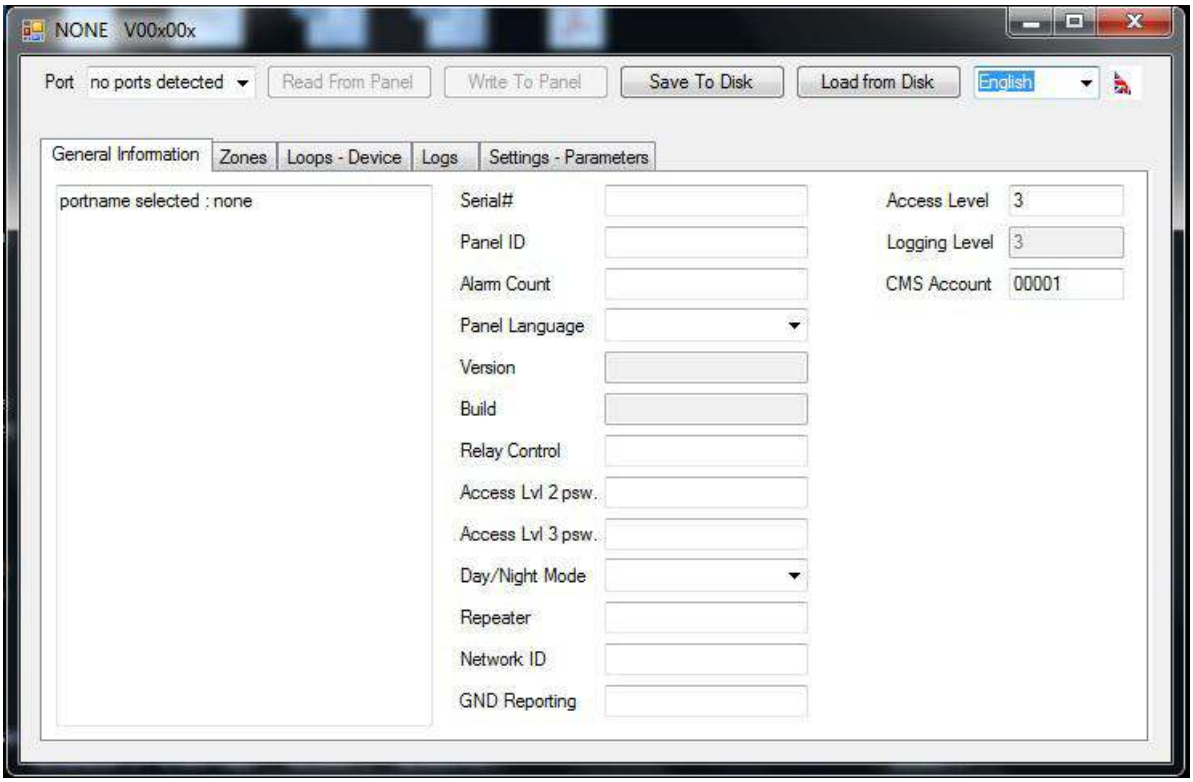


Figure-8 , AA504 Configuration Utility Software System information menu

4.4. Outputs

The panel has 32 output channels, numbered from 1 to 32. First 3 output channels are assigned to the on-board open collector outputs. But also you may use OM301 output modules for those addresses, if any output module with output channels 1, 2 or 3 present on any of the loops, they will output at the same time with on-board open collector outputs.

Each Output module may be assigned to any of the output channels, and it is possible to use more than 1 channel for a single Output Module. For example an output module may be set to activate with output channels 1, 2, 6, 12, 17. In this case, any output request from those channels will activate the module. To define which channels assigned to an output module, just select the devices tab, and double click on the outputs(advanced) column of the SOM device (with device type 8).

The output configuration window will pop-up, and you can check the related output channels and press “save” button. The loop address of the output module is not related which channels OM301 uses.

4.4.1 Manual Set and Reset of output modules

AA504 Panel has a manual modification menu for output devices (SOM). When access level 3 is active, entering the \Devices\loops\ device_address brings up the device configuration menu. This menu is for displaying the device settings, if the user press enter key, enters the modify menu, which is the same, but with visible extra menu cursors. If user selects the Test output end press enter again, the output relay of the selected addres wil be set or reset. Leaving this menu by pressing esc button does not change the output module's state, if the user changes the output

mode, module will keep the output state until a new command is generated by the panel, or the system restarts.

4.5. Programming the ID Addresses of Devices

All devices except OM301 are input devices, they are HR, CD, SD, IM and MCP.

To program the addresses, you need PP201 programmer. The HR, CD, SD devices are mounted with bases, and they have 4 terminals at the back. For those devices, terminal #3 is (+), and terminal #4 is (-). The IM and MCP modules has connectors/terminals marked with (+) and (-) on their PCB's. For all devices, Black terminal of the programmer should be connected (-), and Red terminal should be connected to (+). For more information about programming the devices, refer to "PP201 programmer manual".

Devices has 2 terminals, (+) and (-) and the programmer has 2 terminals (red : +) and (black:-). Connect the same terminals of device and programmer, and press "ON" button of the programmer, in normal operation, programmer automatically reads the address of the device when powered on. In some cases,when the batteries are low, it may fail to read the address of the device. If so, press the "READ" button to read the address. Programmer displays the address and type of the device. By keying in the new address, and pressing "WRITE" button, you can set a new address for the device. Programmer tests the new address and reports "OK" or "ERROR" on the LCD.

Caution: The operating voltage of the devices are about 30 volts, and you should not touch the both terminals of the programmer.

4.6. Resetting Panel

To reset the system you must be sure that the PROG Jumper is installed and access level is 3. then the panel will enter the access level 4. in the access level 4, it is possible to erase logs, reloading factory defauls, connecting to supervisioning software etc. This functions should not be used by user, they are only for trained system engineers.

5. MAINTENANCE

The batteries must be changed every 2 years. Lenght of service life of the batteries will be directly affected by the number of discharge cycles, depth of discharge, ambient temperature and discharging voltage. So the change period of the batteries can be more earlier if these conditions have occured.

Every year a cleaning process has to be done in order to clean from dust if the panel has installed where dust can be inside.

6. SAFE MODE

Any failure in the main operation in the panel or any mulfunction/corruption in the memory or non volatile memory will cause panel to enter Safe Mode. If safe mode the Ready/Fault Indicator will lit off and system error led will lit on and Safe Mode will be written on the LCD in order to indicate there fatal system fault on the panel. The user must call technical service and autorized tecnical maintenance must be operated.

The panel itself always checking the program and non volatile memory itself. Any alteration of site specific data shall not affect the structure of the program. The panel will indicate Safe Mode but continue to operate.

Program memory can only be changed by a programmer at Access Level 4.

There is a software mechanism which prevents the memory being written to during normal operation at access level 1 or 2, such that its contents are protected during a failure in program execution.

There is a monitoring mechanism that have a time base independent of that of the monitored system. The functioning of the monitoring device, and the signalling of a fault warning, are not be prevented by a failure in the execution of the program of the monitored system.

The software verification process is explained in Memory Document. Please refer to MDP-AA504-1115-R5_EN Document for detailed information.