Ravel

Avani

Analogue Addressable
Fire Alarm Panel

Alarm System Limitations

An automatic fire alarm system–typically made up of smoke detectors, heat detectors, manual Call Points, audible warning devices, and a fire alarm control with remote notification capability–can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire. The Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premise following the recommendations of the current edition of the National Fire Protection Association Standard 72 (NFPA 72), manufacturer's recommendations, State and local codes, and the recommendations contained in the Guide for Proper Use of System Smoke Detectors, which is made available at no charge to all installing dealers. A study by the Federal Emergency Management Agency (an agency of the United States government) indicated that smoke detectors may not go off in as many as 35% of all fires. While fire alarm systems are designed to provide early warning against fire, they do not guarantee warning or protection against fire. A fire alarm system may not provide timely or adequate warning, or simply may not function, for a variety of reasons:

Smoke detectors may not sense fire where smoke cannot reach the detectors such as in chimneys, in or behind walls, on roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second-floor detector, for example, may not sense a first-floor or basement fire.

Particles of combustion or "smoke" from a developing fire may not reach the sensing chambers of smoke detectors because:

- Barriers such as closed or partially closed doors, walls, or chimneys may inhibit particle or smoke flow.
- Smoke particles may become "cold," stratify, and not reach the celing or upper walls where detectors are located.
- Smoke particles may be blown away from detectors by air outlets.
- Smoke particles may be drawn into air returns before reaching the detectors.

The amount of "smoke" present may be insufficient to alarm smoke detectors. Smoke detectors are designed to alarm at various levels of smoke density. If such density levels are not created by a developing fire at the location of detectors, the detectors will not go into alarm.

Smoke detectors, even when working properly, have sensing limitations. Detectors that have photoelectronic sensing chambers tend to detect smoldering fires better than flaming fires, which have little visible smoke. Detectors that have ionizing-type sensing chambers tend to detect fast-flaming fires better than smoldering fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily best and a given type of detector may not provide adequate warning of a fire.

Smoke detectors cannot be expected to provide adequate warning of fires caused by arson, children playing with matches (especially in bedrooms), smoking in bed, and violent explosions (caused by escaping gas, improper storage of flammable materials, etc.).

While a fire alarm system may lower insurance rates, it is not a substitute for fire insurance!

Heat detectors do not sense particles of combustion and alarm only when heat on their sensors increases at a predetermined rate or reaches a predetermined level. Rate-of-rise heat detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist. *Heat detectors are designed to protect property, not life*.

IMPORTANT! ***Smoke detectors*** *must be installed in the same room as the control panel and in rooms used by the system for the connection of alarm transmission wiring, communications, signaling, and/or power.* If detectors are not so located, a developing fire may damage the alarm system, crippling its ability to report a fire.

Audible warning devices such as bells may not alert people if these devices are located on the other side of closed or partly open doors or are located on another floor of a building. Any warning device may fail to alert people with a disability or those who have recently consumed drugs, alcohol or medication.

Please note that:

- Strobes can, under certain circumstances, cause seizures in people with conditions such as epilepsy.
- Studies have shown that certain people, even when they hear a fire alarm signal, do not respond or comprehend the meaning of the signal. It is the property owner's responsibility to conduct fire drills and other training exercise to make people aware of fire alarm signals and instruct them on the proper reaction to alarm signals.
- In rare instances, the sounding of a warning device can cause temporary or permanent hearing loss.

A fire alarm system will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time and only if the batteries have been properly maintained and replaced regularly.

Equipment used in the system may not be technically compatible with the control. It is essential to use only equipment listed for service with your control panel.

The most common cause of fire alarm malfunction is inadequate maintenance. To keep the entire fire alarm system in excellent working order, ongoing maintenance is

required per the manufacturer's recommendations, and UL and NFPA standards. At a minimum, the requirements of NFPA 72 shall be followed. Environments with large amounts of dust, dirt or high air velocity require more frequent maintenance. A maintenance agreement should be arranged through the local manufacturer's representative. Maintenance should be scheduled monthly or as required by National and/or local fire codes and should be performed by authorized professional fire alarm installers only. Adequate written records of all inspections should be kept.

WARNING – Several different sources of power can be connected to the fire alarm control panel. Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and / or inserting cards, modules, or interconnecting cables while the unit is energized. Do not attempt to install, service, or operate this unit this manual is read and under stood.
CAUTION – System Reacceptance Test after software changes. To ensure proper system operation, this product must be tested in accordance with NFPA 72 after any programming operation or change in site-specific software. Re-acceptance testing is required after any change, addition or deletion of the system components or after any modification, repair or adjustment to system hardware or wiring.
All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating device that are not directly affected by the change, upto maximum of 50 devices, must also be tested and proper system operation verified.

This system meets NFPA requirements for indoor dry operation at 0-49° C/32-120° F and at a relative humidity of 93 ±2% RH (non-condensing) at 32 ±2° C/90 ±3° F. However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and all peripherals be installed in an environment with a nominal room temperature of 15-27° C/60-80° F.

Verify that wire sizes are adequate for all initiating and indicating device loops. Refer to manual Specifications section for maximum allowable I.R. drop from the specified device voltage.

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning-induced transients. Although no system is completely immune from lightning transients and interferences,
proper grounding will reduce susceptibility. *Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes.* Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, and printed circuit board location.

Do not tighten screw terminals more than 9 in-lbs.Over-tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

This system contains static-sensitive components.
Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static-suppressive packaging to protect electronic assemblies removed from the unit.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation by authorized personnel.

Cautions and Warnings

READ AND SAVE THESE INSTRUCTIONS. Follow the instructions in this installation manual. These instructions must be followed to avoid damage to this product and associated equipment. Product operation and reliability depends upon proper installation.

DO NOT INSTALL ANY PRODUCT THAT APPEARS DAMAGED. Upon unpacking your equipment, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier.

ELECTRICAL HAZARD - Disconnect electrical field power when making any internal adjustments or repairs. Servicing should be performed by qualified personnel.

STATIC HAZARD - Static electricity can damage components. Therefore, handle as follows:

- Ground yourself before opening or installing components
- Prior to installation, keep components wrapped in anti-static material at all times.

RADIO FREQUENCY ENERGY - This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

SYSTEM REACCEPTANCE TEST AFTER SOFTWARE CHANGES - To ensure proper system operation, this product must be tested in accordance with NFPA72-1996, Chapter 7 after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.

All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

Table of Contents

Chapter 1: Product Description

The AVANI is a compact, cost effective, intelligent addressable control panel has an extensive list of powerful features. The power supply with separate metal cabinet and all other master control and indicating boards housed in a metal cabinet, providing a complete fire control system for most applications. The panel has maximum capable for four loop cards, which are plugged into the main circuit board. It has the ability to detect total number of detectors and modules connected in the each loop. It allows remote and local programming of the control panel using the AVANI-RGS upload/download utility. Any personal computer with windows™ 98 or greater and compatible modem with a speed of 14.4 kbps or faster and Ravel upload/download graphic software kit (AVANI-RGS). This allows download of the entire program or upload of the entire program, history file, walktest data, and current status.

1.1 Features.

- 32 bit processor Arm Cortex M3.
- 160 (40X4) character LCD display.
- Real Time Clock.
- 2000 events log.
- Day / Night Mode.
- Maintenance alert.
- Programmable detector sensitivity.
- Automatic device type verification.
- Max. 4 Number of Loop cards with Class A or B Wiring.
- One Class B Initiating device circuit (IDC) configurable as style B / C.

Network options:

- RS 485 Communication for Network/Repeater.
- Ethernet Module (Optional).
- USB 2.0 Interface for PC Connectivity.
- GSM Module (Optional).
- Printer Interface Module (Optional).
- Operates on 120 to 220V AC, 60/50 Hz.
- Battery Backup 24VDC with built in Charger.
- Three programmable form C relay for Fire & Fault, supervisory.
- Supervised 24V DC Output.
- Extensive, built-in transient protection.

SLC Loop:

- Intelligent Signaling Line Circuit (SLC) Class A, Style 5, 6 or 7 / Class B, Style 4.
- Maximum 198 Devices per (System Sensor) loop and Maximum 254 devices per (Wizmart) loop.
- Device wise configuration facility.
- SLC loop maximum length 10, 000 ft. (3,000 m).

Notification appliance Circuits (NACS):

- Two onboard Class B Style Y NACs.
- Programmable Auto Silence.
- Programmable Silence Inhibit.
- Programmable Synchronized, Temporal, 120 BPM, Steady output.

IDC Loop:

- Conventional Zone Circuit
- Class B Style B or C wiring.
- Upto 16 conventional Detectors.

Programming and Software:

- Auto learn for quick installation.
- Device wise location labeling.
- Programmable trouble reminder.
- Programmable AC loss delay.
- Self test.
- Lamp test and Self loop test.
- Up to 192 grouping with labeling.
- 64 Zone grouping with 40 Zone LED indications.

- 64 Logic input grouping.
- 64 output grouping.
- One Programmable Remote input.

Off Line Programming: Create the entire program in any computer using intelligent ravel software (AVANI-SSP). Upload / download system programming locally.

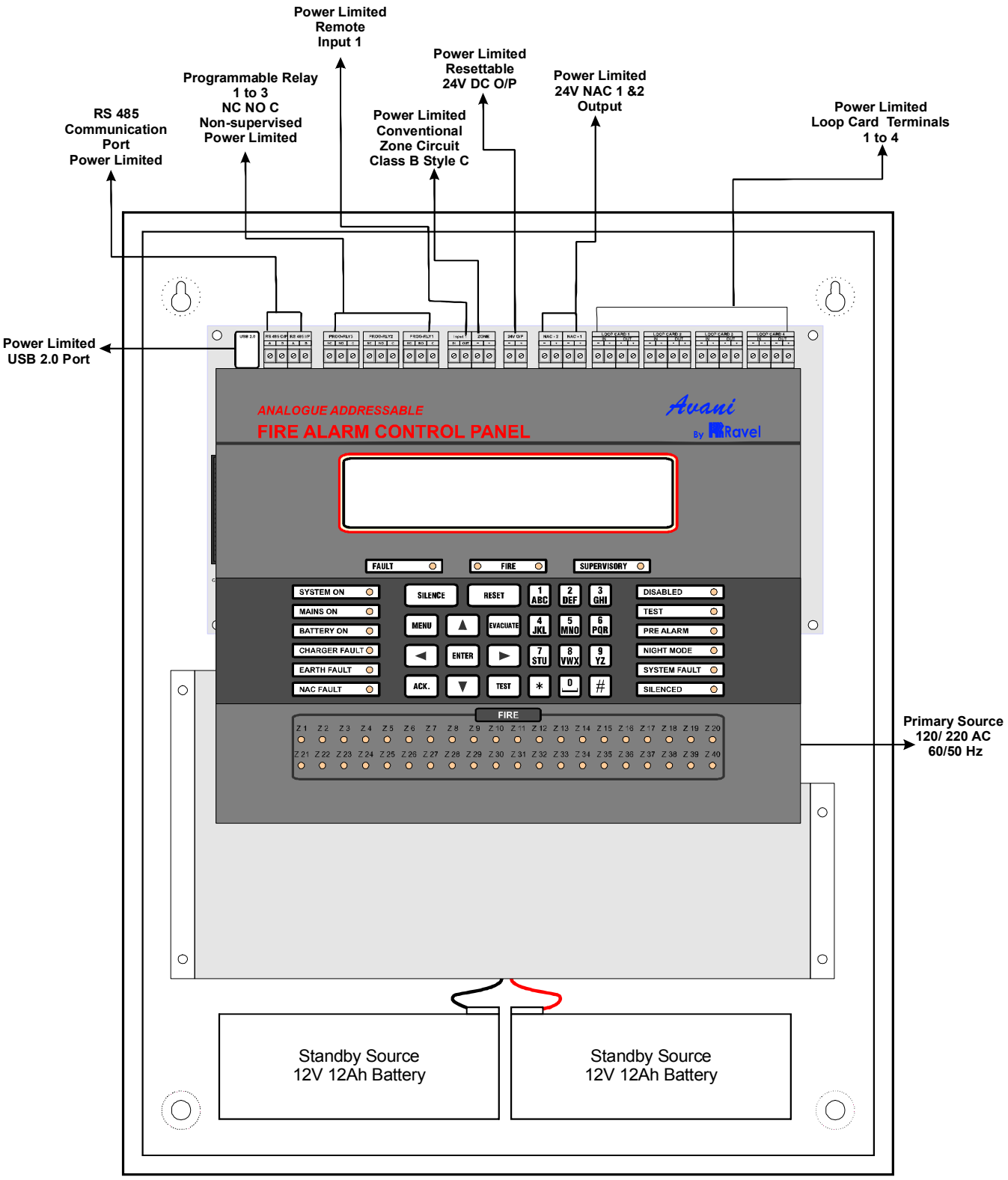

Power Limited
Remote
Input 1
Programmable Relay
1 to 3
NC NO C
Non-supervised
Power Limited
Power Limited
Resettable
24V DC O/P
Power Limited
24V NAC 1 &2
Output
RS 485
Communication
Port
Power Limited
Power Limited
Conventional
Zone Circuit
Class B Style C
Power Limited
Loop Card Terminals
1 to 4
Power Limited
USB 2.0 Port
ANALOGUE ADDRESSABLE
FIRE ALARM CONTROL PANEL
Avani
By Ravel
FAULT
FIRE
SUPERVISORY
SYSTEM ON
MAINS ON
BATTERY ON
CHARGER FAULT
EARTH FAULT
NAC FAULT
SILENCE
RESET
MENU
EVACUATE
ENTER
ACK.
TEST
DISABLED
TEST
PRE ALARM
NIGHT MODE
SYSTEM FAULT
SILENCED
FIRE
Primary Source
120/ 220 AC
60/50 Hz
Standby Source
12V 12Ah Battery
Standby Source
12V 12Ah Battery

Figure - 1

1.2 Specifications.

Primary Power

120 / 220VAC + 10% -15%, 60 / 50 Hz, Amps.

Standby Power

24V D.C (2 Nos of 12v, 26Ah (Max.) & (Built-in for 12Ah) Sealed Lead acid battery)

Operating Condition

Operating Temperature – 0 - 49° C/32-120° F.
Relative Humidity – 93 ± 2% RH (non-condensing) at 32 ±2° C/96 ±3° F.

Charging Circuit

Charging Voltage – 28V, ± 2% Nominal
Charging Current – 1.2A (Max.).

Signaling Line Circuits

Class A or B loop card: 4 Nos. Maximum.
No of Device per loop: 198 (99 Detectors + 99 Modules – System Sensor).
No. of Device per loop: 254 (Wizmart).
Loop resistance: 40 ohms (Max.).
Loop capacitance: 0.6 µf (Max.).
Loop Current: 300mA (Max.).

Initiating Device Circuits

All zones are Class B Style B/C operation (Programmable).
Normal Operating Voltage: 18 - 24 VDC.
Alarm Current: 15 – 30mA.
Short Circuit Current: 45mA Maximum.
Loop resistance: 100 ohms Maximum.
End-Of-Line Resistor: 4K7, 1/2watt
Standby Current: 7mA (2mA for Detectors)

Notification Appliance Circuits – CN5

Class B, Style - Y wiring
Operating Nominal Voltage: 24 VDC Nominal
Current for NACs: 2Amps (1A per circuit)
Line Drop: 2.4V
End-Of-Line Resistor: 4K7, ½ watt

D.C. Output

Supervised 24VDC, 300mA Max.

Common Three Form – C Relays

Relay Contact Rating: 2Amps @ 30 VDC, 2Amps @ 30VAC.
Power Factor: 0.6

Programmable Input circuits

No. of Inputs: 1
Normal Operating Voltage: 4 - 8 VDC.
Short Circuit Current: 3mA Maximum.
Loop resistance: 100 ohms Maximum.
End-Of-Line Resistor: 4K7, 1/2watt
Standby Current: 1.25mA

1.3 Control and Indications

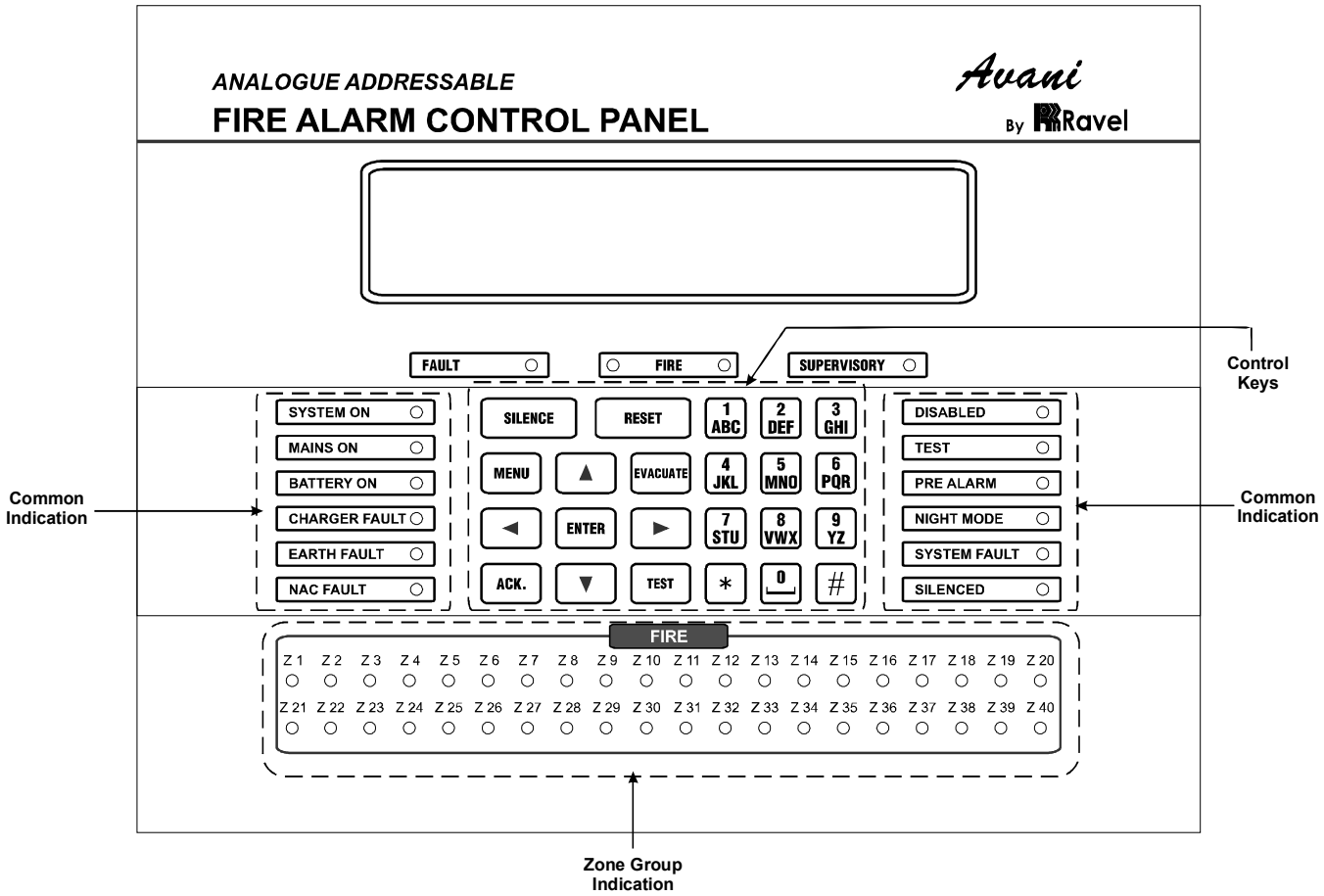


Figure – 2

1.3.1. Controls:

ACK. Key:

- ✓ To mute local buzzer in alarm condition.
- ✓ To mute local buzzer in Supervisory or fault condition.
- ✓ User or Admin password protected.

SILENCE Key:

- ✓ To silence the external NACs in Fire Condition.
- ✓ User or Admin password protected.

RESET Key:

- ✓ To reset the particular zones in Fire alarm or Latched Supervisory condition.
- ✓ User or Admin password protected.
- ✓ Possible to access only after silence in alarm condition.

EVACUATE:

- ✓ To activate External NACs Manually.
- ✓ User or Admin password protected.

CURSOR KEYS:

- ✓ To move the curse point in the LCD as required.

ENTER Key:

- ✓ To accept the programmed or edited menu, mode or value in the LCD.

MENU Key:

- ✓ To enter into the Main Menu in the LCD.

TEST Key:

- ✓ To enter into the Lamp Test mode.
- ✓ To enter into the self test for individual loop.

ALPHANUMERIC KEYS:

- ✓ These keys are used for entering the names etc. and numbers.
- ✓ '*' Key is used to go back the previous screen in programming mode.
- ✓ '#' is used for the Back Space / Delete the content.

1.3.2. Indications:

1.3.2.1 LED indication

System On – Green
Fire – Red
Fault – Yellow
Supervisory – Yellow
Mains On – Green
Battery On – Green
Charger Fault – Yellow
Earth Fault – Yellow
System Fault – Yellow
Silenced – Yellow
Pre Alarm - Red
NAC Fault – Yellow
Test – Yellow
Day / Night – Yellow
Disable – Yellow
Zone Fire – Red

1.3.2.2 LCD Indication

The 40 X 4 Character LCD is mainly used for the programming of the panel. It also indicates all events along with the LED indications except system on and system fault. Programmed zone wise location details can be viewed.

1.3.2.3 Local Buzzer

A piezo buzzer provides separate and distinct sounds for alarm, trouble and supervisory conditions:

- Alarm – Continuous
- Fault – pulse 0.5sec ON and 5sec OFF
- Supervisory – pulse 0.25sec ON and 0.25sec OFF

1.4 Circuits

The main circuit board provides system control and visual indication control and contains the system microcontroller, programming part (USB-2.0), non-volatile memory for system events storages. The main circuit board is used for the critical functions like programmable logic and timing functions and non critical functions, like customer zone and device messages.

The visual display board consists of a series LED's for common indication of power, alarm, fault and supervisory. The display board has 40 X 4 characters LCD, which describes for the system information with real time clock and it helps the user to program the system options easily. It also contains matrix touch key pad, which helps the user friendly access.

1.4.1 Main Circuit Board

The main circuit board controls the display board, SLC loop card, output ports like RS 485 and USB 2.0. The main circuit board contains relay outputs, Remote inputs, NAC outputs etc.,

1.4.2 Input Circuits (SLC)

There are three types of inputs, they are One conventional input, one remote inputs and 4 SLC communication Input. The details described below:

1.4.2.1 IDC input

This is a two wire conventional supervised input for the any openly contact or any conventional detectors. Class A wiring is not possible in this circuit. The EOL resistor 4.7 K ohm is used for supervising and monitoring these circuits.

1.4.2.2 Remote Inputs

There are one supervised remote inputs, which is used for evacuate, reset, silence etc. These inputs are programmable as required by the end user. The EOL resistor 4.7 K ohm is used for supervising and monitoring these circuits.

1.4.2.3 SLC Communication Inputs

There are four SLC loops are provided with standard on the FACP main circuit board. These SLC loops are configurable for class A style 4, 5 or 7 or class B style B or C. It provides communication to addressable detectors, monitor (initiating device) and controls (output device) modules. These loop cards have redundancy, that is it give fire and alarm outputs like a conventional FACP during the CPU is failed condition.

1.4.3 Output Circuit

The following outputs are available with this FACP:

- 24V DC programmable output for steady or re-settable having capacity of 1 Amps.
- 24VDC Battery charger up to 26 Ah max.
- 2 no. of Class B Style Y NACs, 1 Amp each.

1.4.4 Relays

Three programmable Form-C dry contact relays are provided. These three programmable relays are factory default programmed for alarm, fault and supervisory. Contacts are rated 2 amps @ 30 VDC and 2 Amps @ 30 VAC.

1.5 Components

The main circuit board contains the system CPU, other primary components wiring interface terminal outputs and plug in SLC loop cards is mounted in main circuit boards.

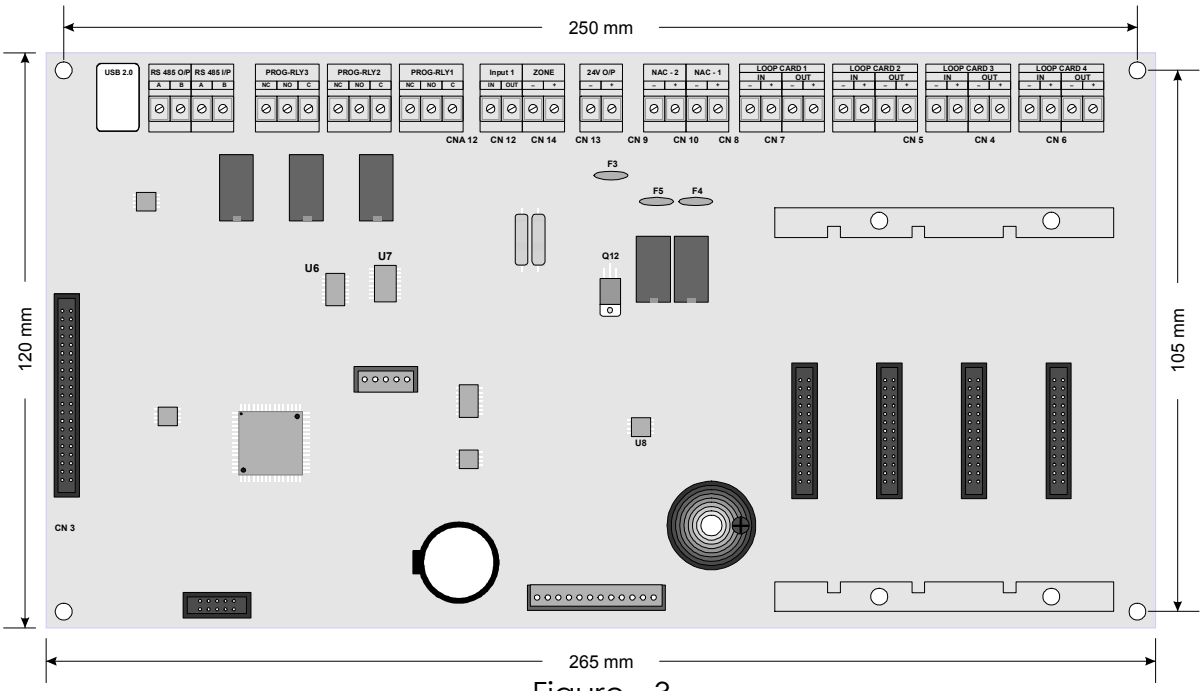


Figure - 3

The display board contains the LED display for common indications, zone group indications and touch key pad.

The power supply gives the power for the main circuit board and for SLC loop cards. It is SMPS type power supply, gives the output for 4 amps max.

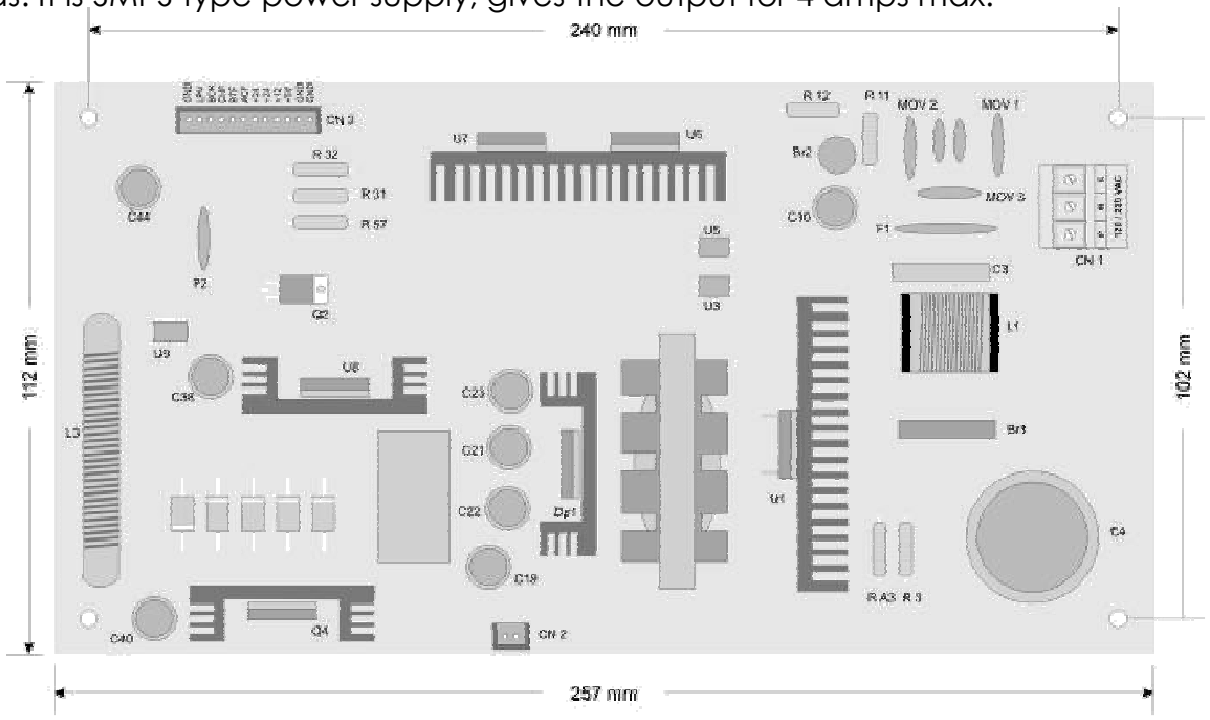


Figure - 4

The SLC Loop Card gets the information's from the detectors and modules and provides it into the control panel. This allows the control panel to monitor and process the information to the determine the status (alarm, fault, maintenance or normal) of each detectors and modules. The maximum 99 detectors and 99 modules may connect in the single loop card (System Sensor) and maximum 254 Devices (Detectors & Modules) in single loop card (Wizmart).

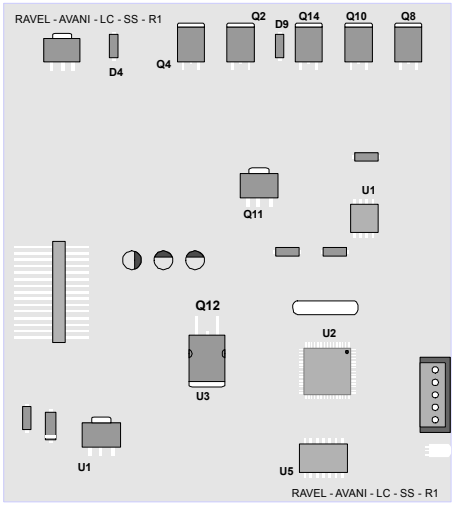


Figure - 5

1.6 Mechanical Construction

The enclosure of the Panel is constructed by 18 gauge (1.22mm) CRCA sheet with powder-coated finish. The ∅22.25mm (∅19mm [11No's] for Indian Std.) 10 no's of knockouts are given for cable entry at the top of the cabinet. The lockable hinged door is provided to access the inside the cabinet. The panel also has sufficient space to accommodate 2 Nos. of 12v, 14Ah batteries.

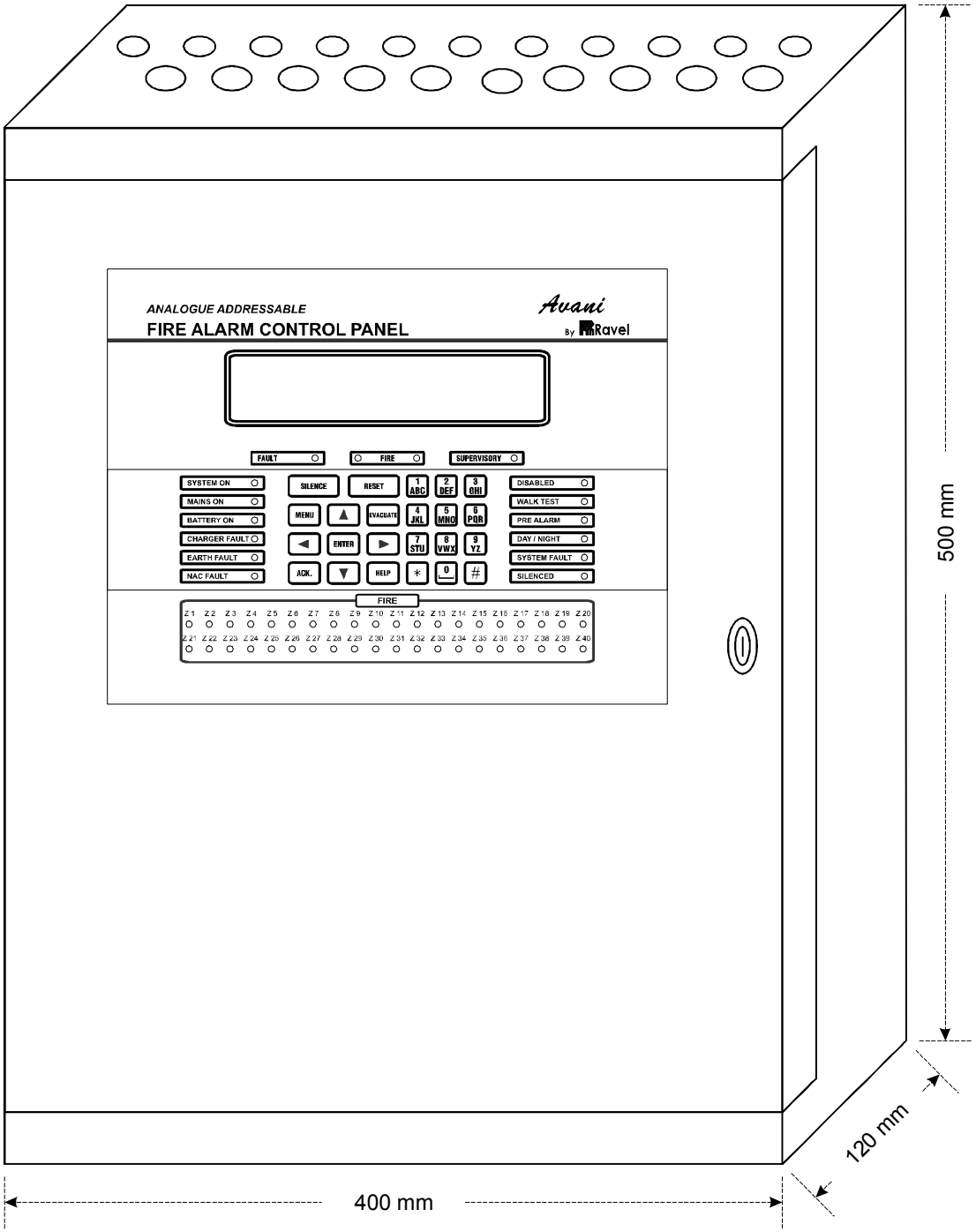


Figure - 6

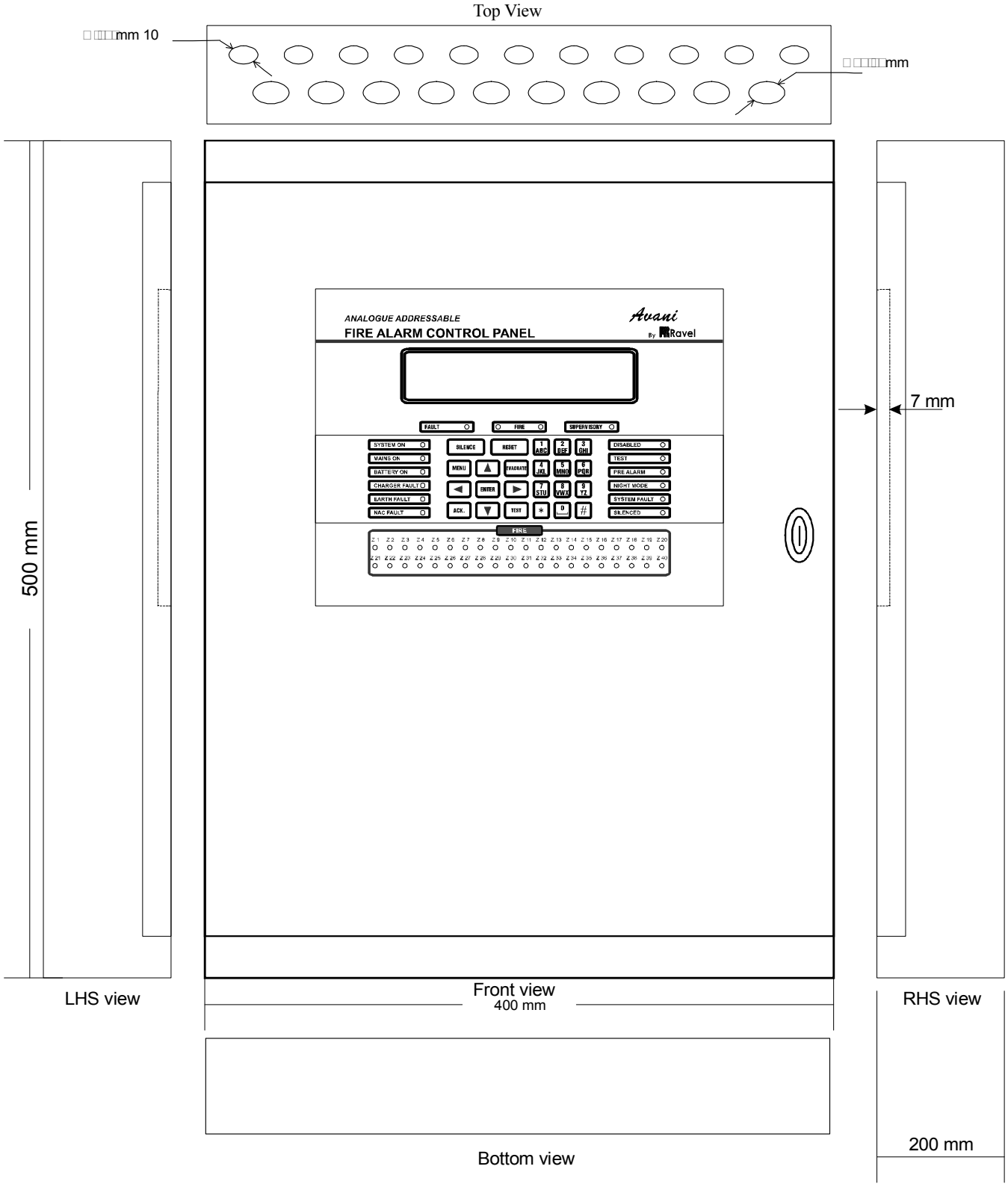

Top View
mm 10
mm
ANALOGUE ADDRESSABLE
FIRE ALARM CONTROL PANEL
Avani
By Ravel
500 mm
7 mm
LHS view
Front view
400 mm
RHS view
200 mm
Bottom view

Figure - 7

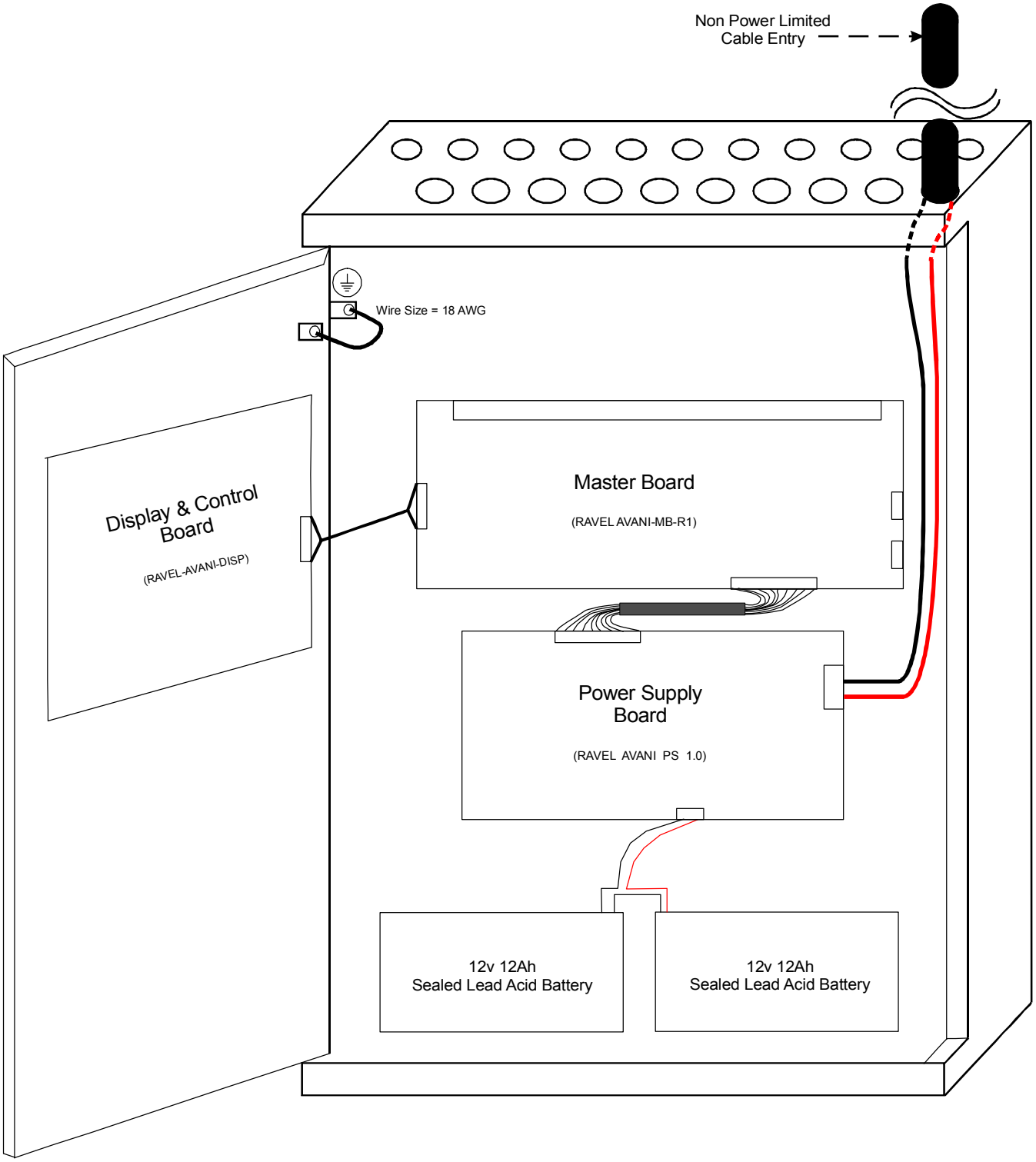

Non Power Limited
Cable Entry
Wire Size = 18 AWG
Display & Control
Board
(RAVEL-AVANI-DISP)
Master Board
(RAVEL AVANI-MB-R1)
Power Supply
Board
(RAVEL AVANI PS 1.0)
12v 12Ah
Sealed Lead Acid Battery
12v 12Ah
Sealed Lead Acid Battery

Figure - 8

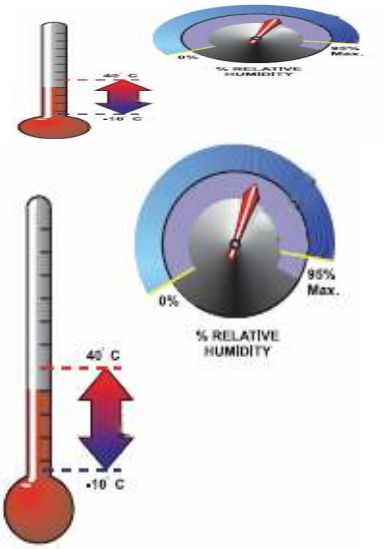
Chapter 2: Installation

2.1 Installation Precaution

Installation Precautions

WARNING - *Several different sources of power can be connected to the fire alarm control panel.* Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energized. Do not attempt to install, service, or operate this unit until this manual is read and understood.

CAUTION - *System Reacceptance Test after Software Changes.* To ensure proper system operation, this product must be tested in accordance with NFPA 72 after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring. All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.



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Verify that wire sizes are adequate for all IDC's loops. Most devices cannot tolerate more than a 10% I.R. drop from the specified device voltage. *Adherence to the following will aid in problem-free installation with long-term reliability:*

Like all solid-state electronic devices, this system may operate erratically or can be damaged when subjected to lightning-induced transients. Although no system is completely immune from lightning transients and interferences, proper grounding will reduce susceptibility. *Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes.* Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, and printed circuit board location.

Do not tighten screw terminals more than 1.0168 N-m. Over-tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

Though designed to last many years, system components can fail at any time. This system contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static-suppressive packaging to protect electronic assemblies removed from the unit.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation by authorized personnel.

2.2 Panel Mounting

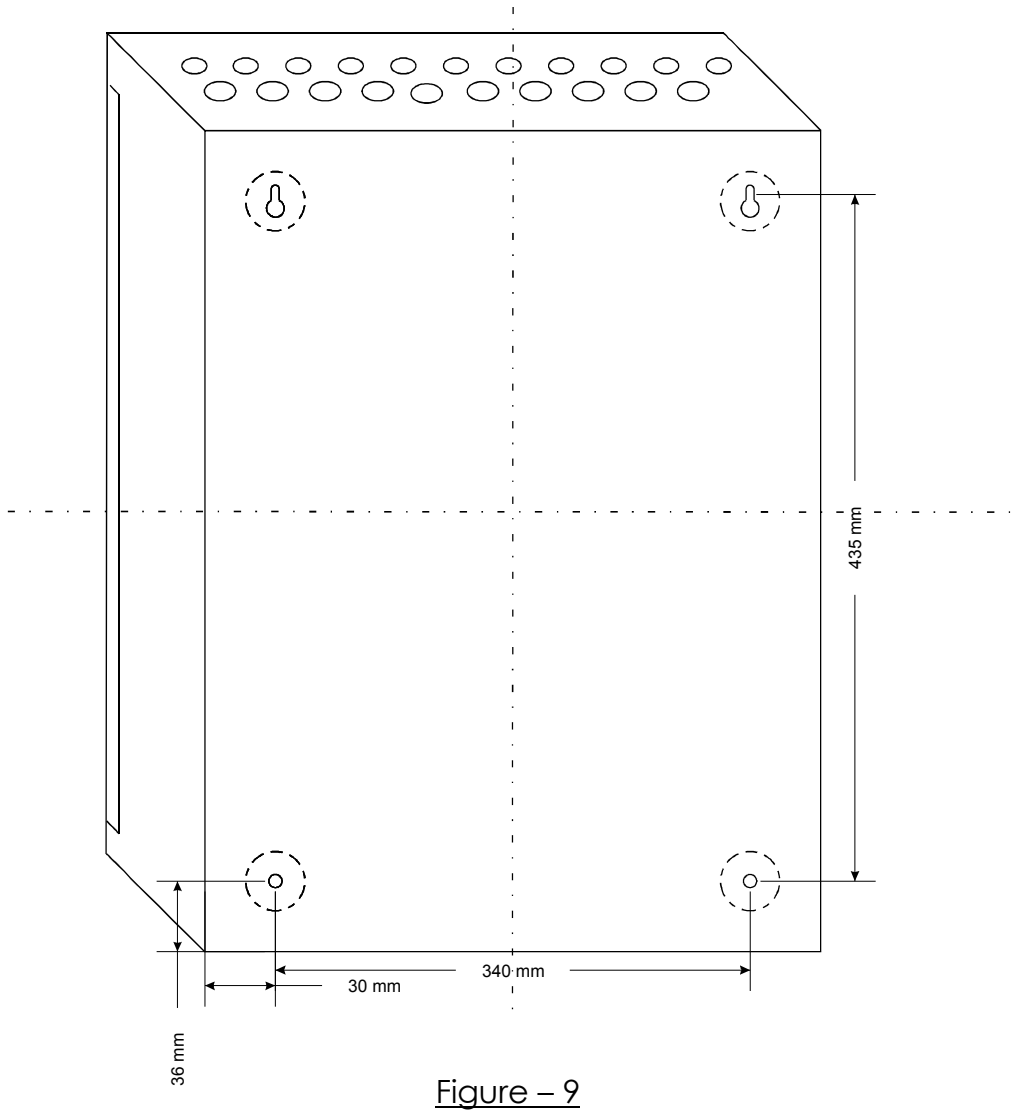


Figure – 9

Remove all the Boards before placing the panel in its mounting position. Place the panel in its mounting position and fix the panel to the wall using the slots of the four screws. Ensure the enclosure and the inner parts of the panel are given sufficient protection during installation. Fix the all boards in its position (Refer Figure 24, 25 & 26). All external cables are to be entered via the 10 numbers of ∅22.25mm and 11 Numbers of ∅19mm preformed knockouts located at top of the panel.

When the installation of all the cables has been completed, clean the interior of the enclosure ensuring all masonry debris and drilling swords are removed.

2.3 Panel Wiring

Warning: *Several different sources of power can be connected to this panel. Disconnect all sources of power before servicing. The panel and associated equipment may be damaged by removing and / or inserting cards, modules or inter connecting while this unit is energized.*

Primary Power source (AC) and Earth Ground Connections

AC Power connections are made inside the control panel cabinet. The Primary source for the AVANI is 120/220 VAC, 60/50Hz, 4 Amps. Run a pair of wires with Earth conductor from the protected premises main breaker box to connector (AC Terminal) of the power supply board. As per National Electrical Code, use 14 AWG (2.00 mm^2, 1.6mm O.D) or heavier gauge wire with 600V insulation. No other equipment may be connected to this circuit. In addition, this circuit must be provided with over current protection and may not contain any power disconnect devices. A separate Earth Ground connection must be made to ensure the proper panel operation and lighting and transient protection. Connect the Earth Ground wire (Min. 14AWG / 2.00 mm^2) to the connector CN1.

Standby Power Source (Batteries)

Observe polarity when connecting the battery. Connect the battery cable to connector CN2 on the Zone board (RAVEL – AVANI – PS – R1) using the connector and cable provided. The battery charger is current – limited and capable of recharging sealed lead acid type batteries up to 26Ah.

During alarm condition, the charger section is disconnected from the battery hence there will not be any charging at that time.

Power Supply Circuit Board (RAVEL – AVANI – PS – 1.0)

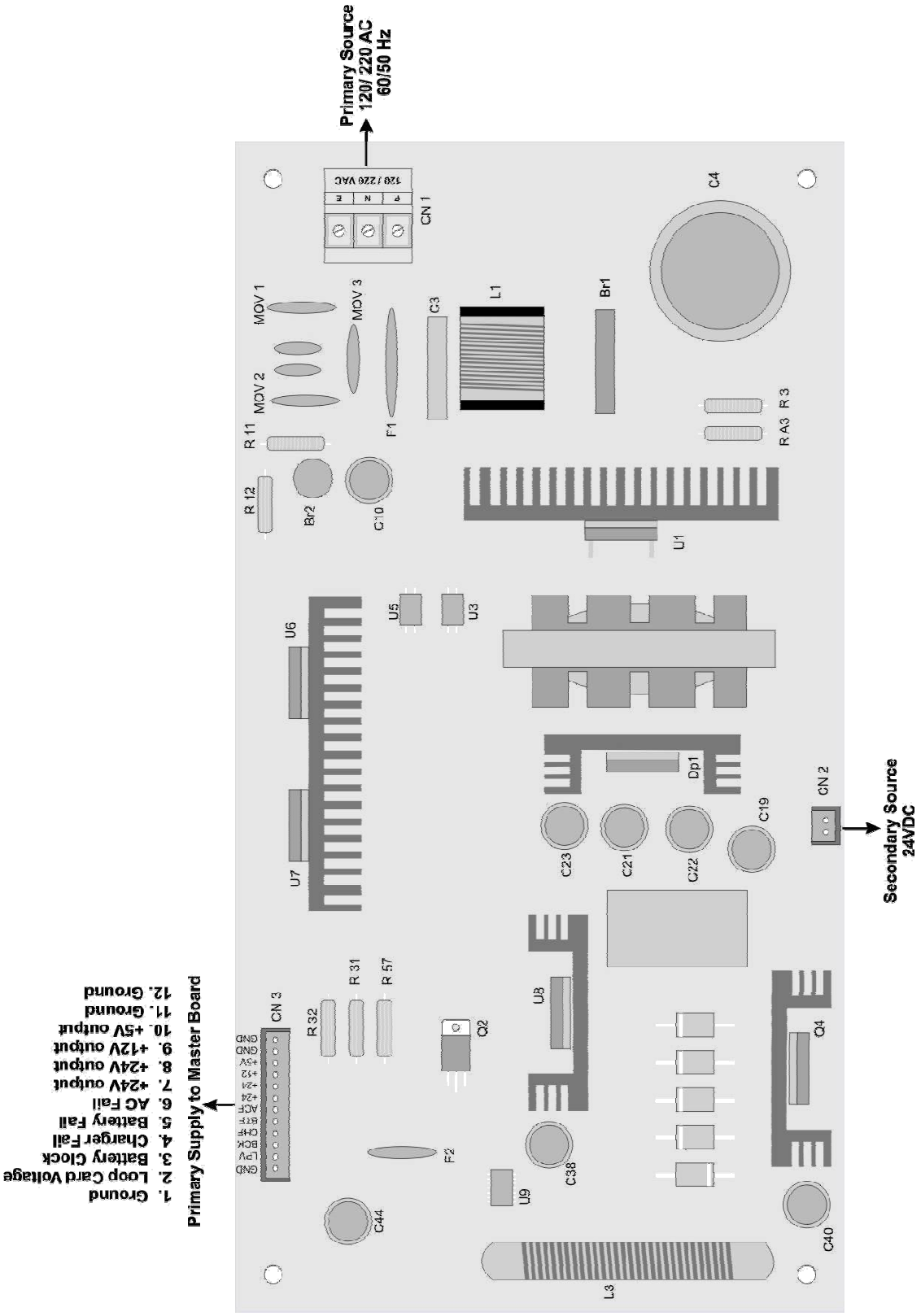


Figure – 10

Master Board (AVANI – MB – R1)

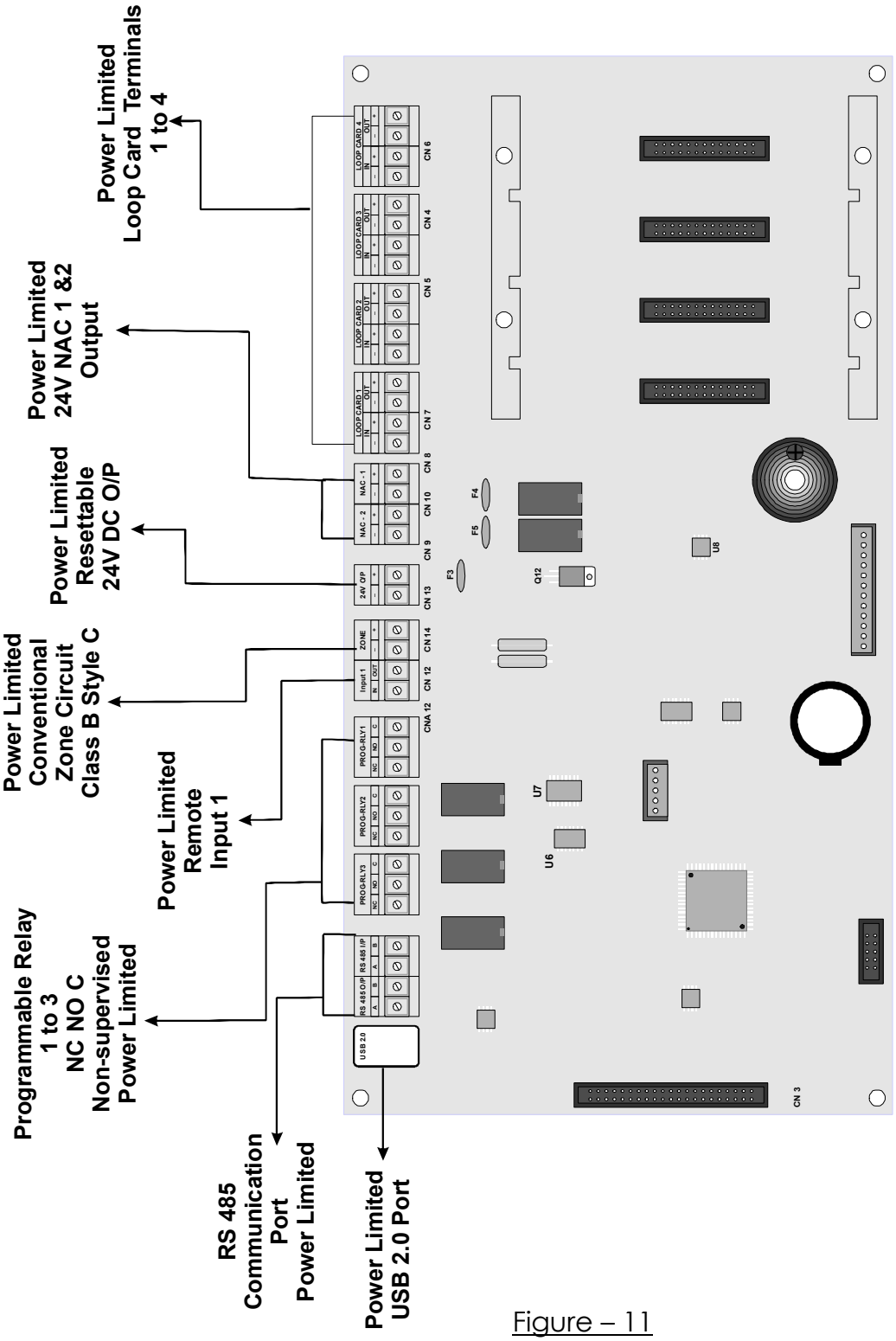


Figure – 11

Field Wiring Diagram

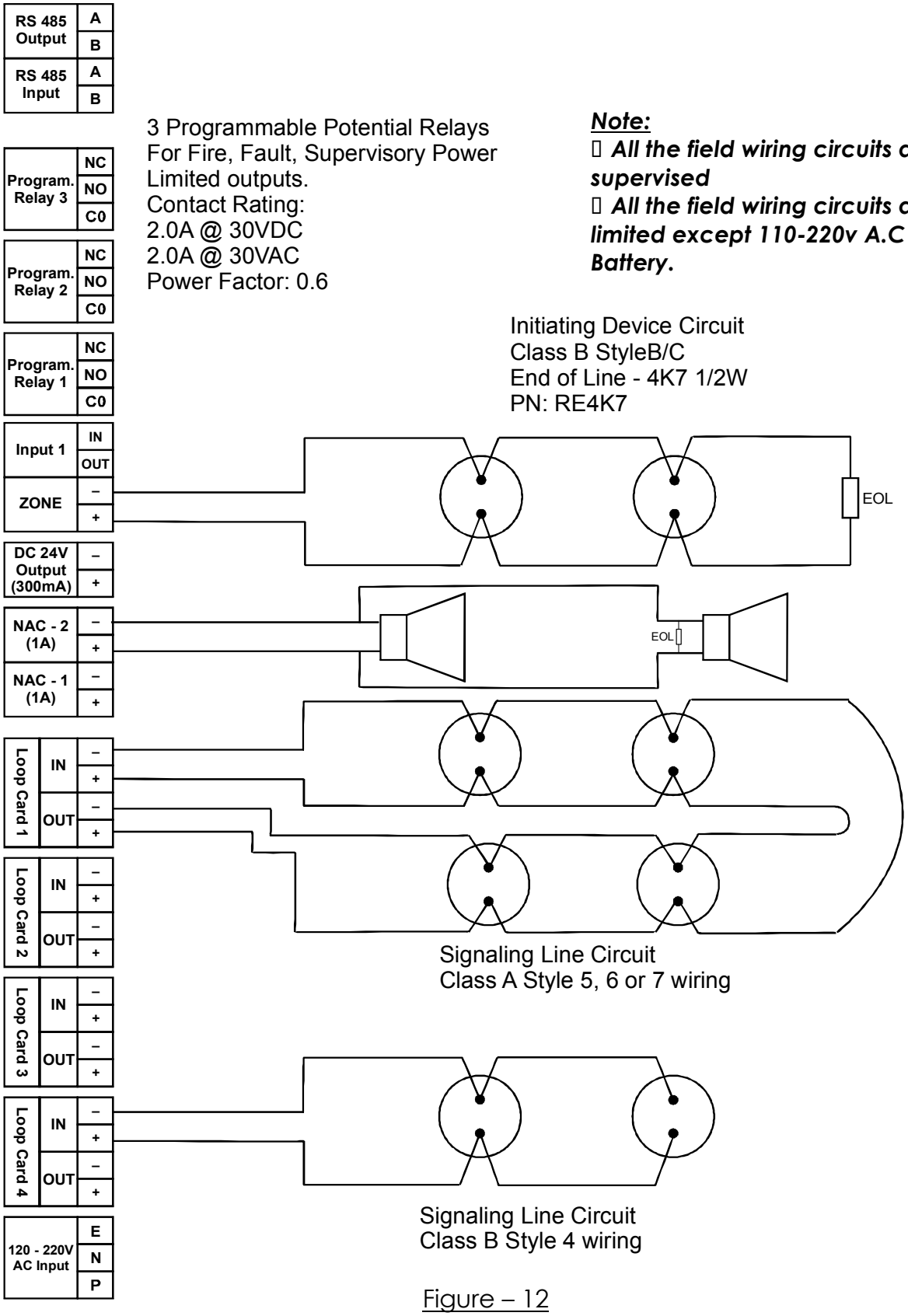


Figure – 12

2.4 Relays

The 3 Form – C programmable relays are provided in this FACP with the contact rating for 2 Amps @ 24 VDC or 1 Amps @ 120 VAC. The default options for the Programmable Relay 1 as Fire, Relay 2 as Fault and Relay 3 as Supervisory.

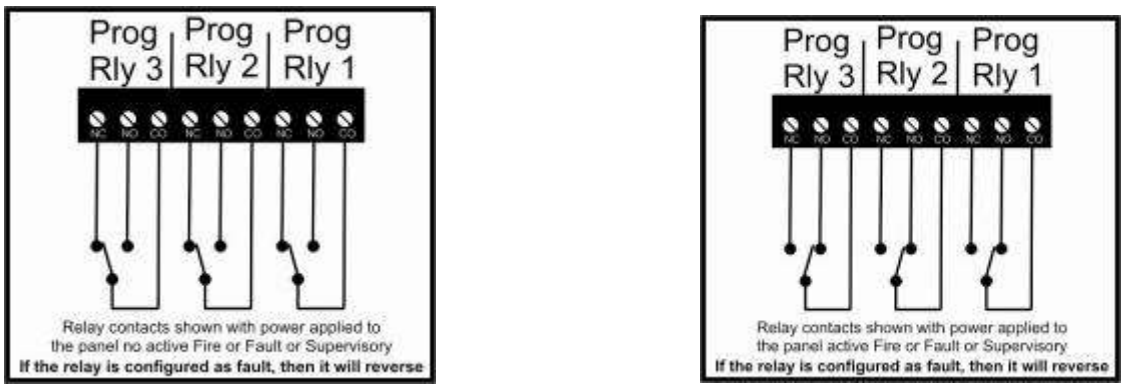


Figure - 13

Note: *The relay connections may be power limited or non – power limited, provided that 0.25" spacing is maintained between conductors of power limited and non – power limited circuits.*

2.5 NACs

The 2 programmable, Class B Style Y, supervised NAC's are provided with the current rating of 1 Amps each. These NACs (Notification Appliance Circuit) is programmable for the following options like Steady, Synchronized, Temporal, 120 BPM.

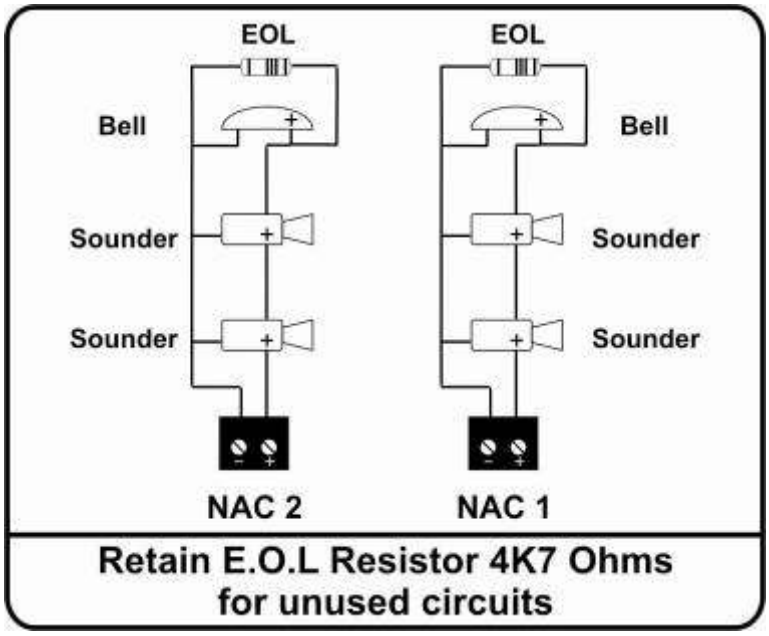


Figure - 14

2.6 Signaling Line Circuit (SLC)

No. of Loop Card	:	4
Type	:	Class A Style 5,6 or 7 Class B Style 4
Wire Size	:	1.5 sq. mm Max.
Terminal	:	CN13, 14, 15,16
Loop Resistance	:	40 Ω Max.
Total No. of Devices	:	99 Detectors, 99 Modules (System Sensor)
		254 Devices (Wizmart Detectors & Modules)
Compatible Devices	:	Refer Chapter 9.

The SLC loop configurable for NFPA class A style 5, 6 or 7 or Class B Style 4, provides with communication to addressable detectors, monitor and control modules.

Class B Style 4 SLC wiring

SLC wiring without Isolator

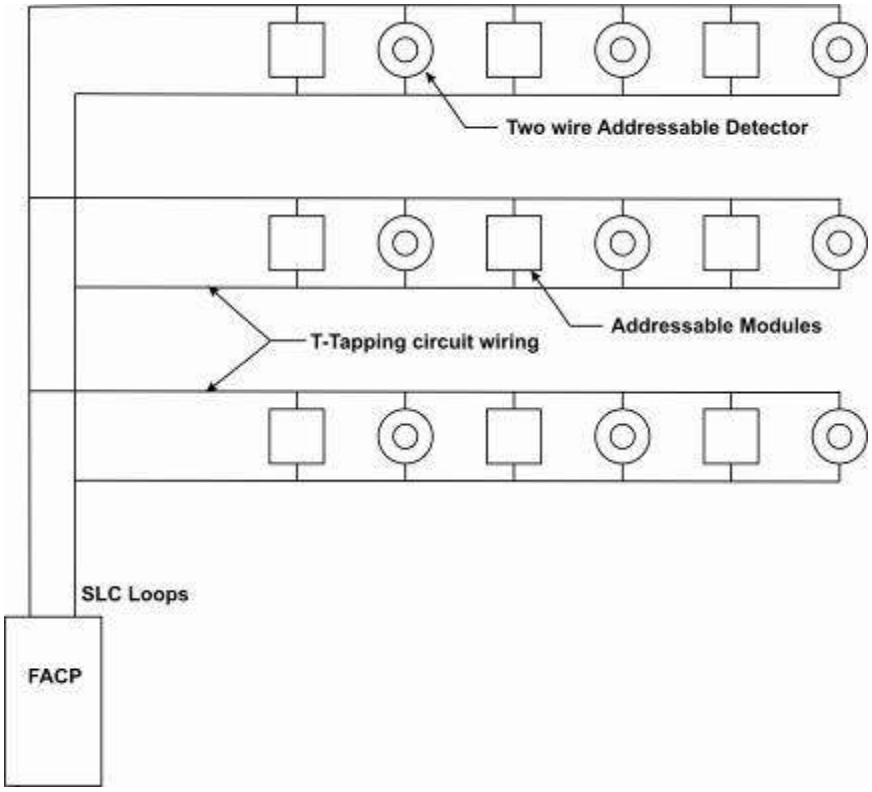


Figure - 15

SLC wiring with Isolator

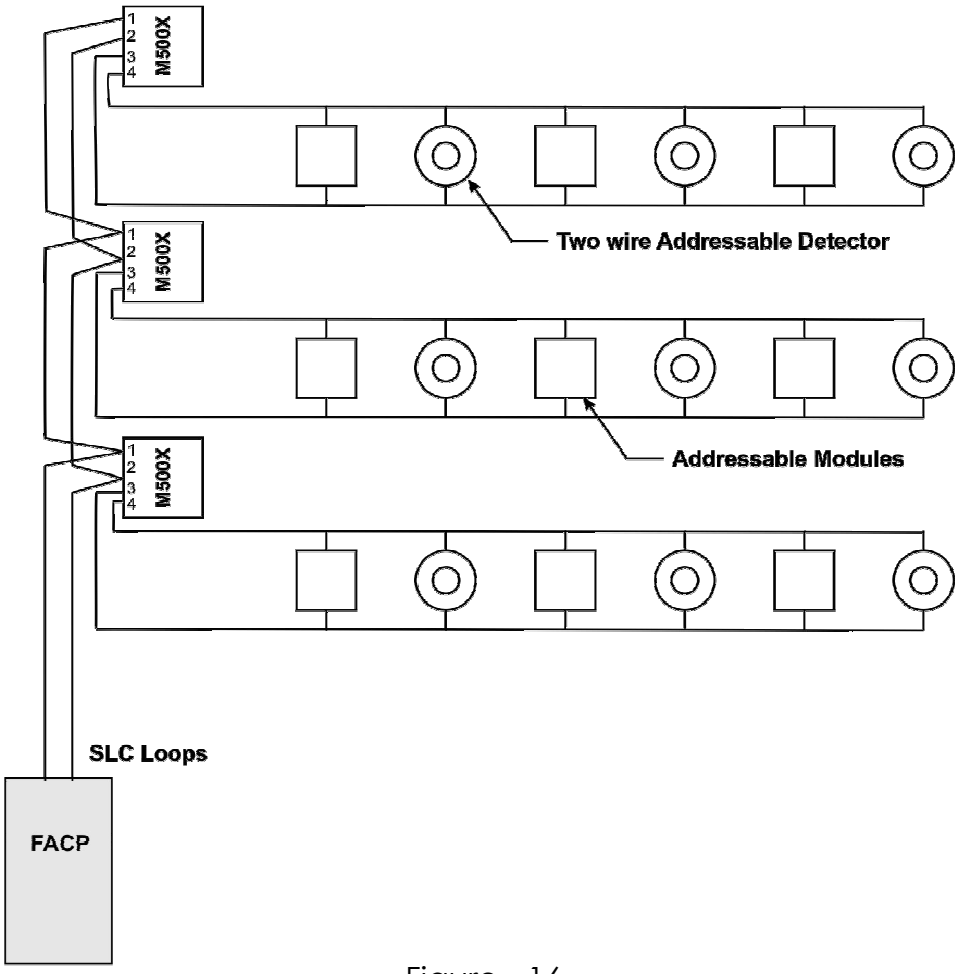


Figure - 16

Class A Style 6 SLC wiring

SLC wiring without Isolator

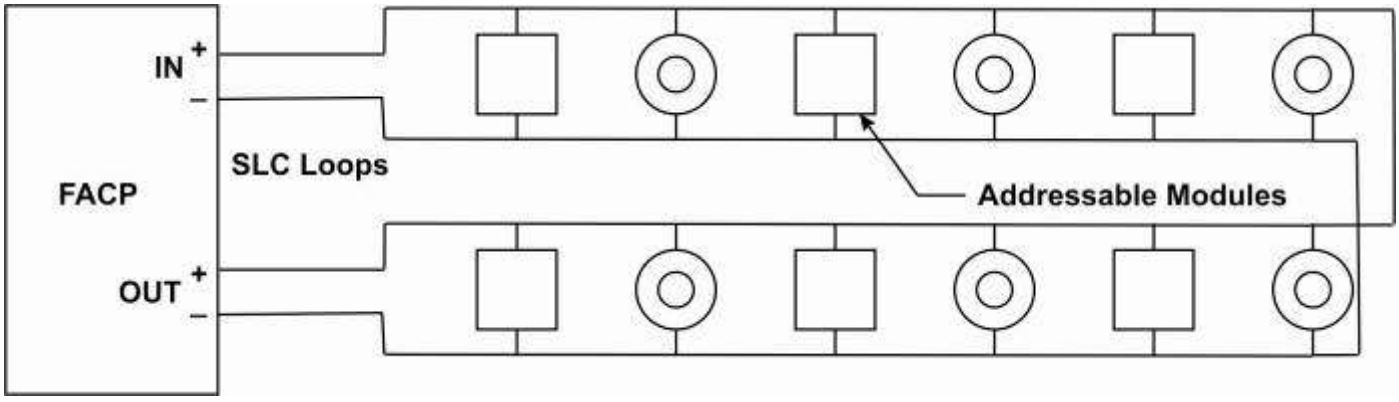


Figure - 17

SLC wiring with Isolator

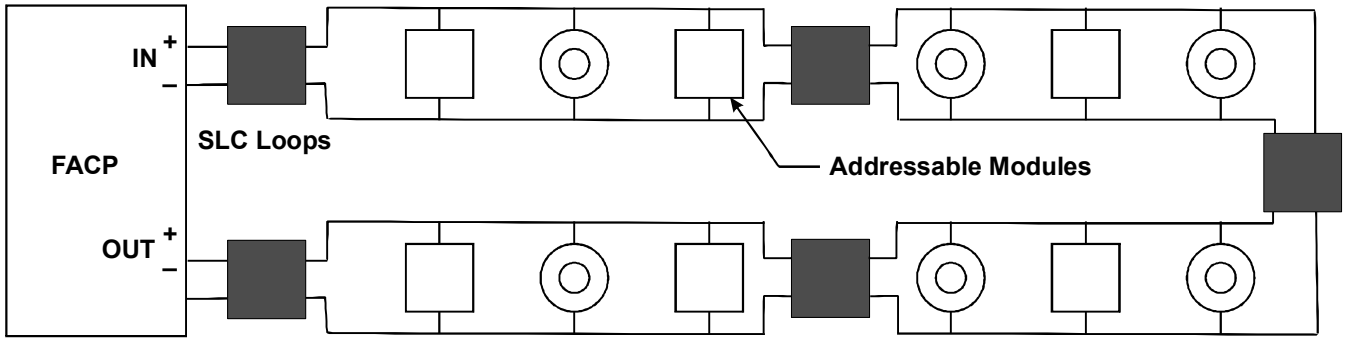
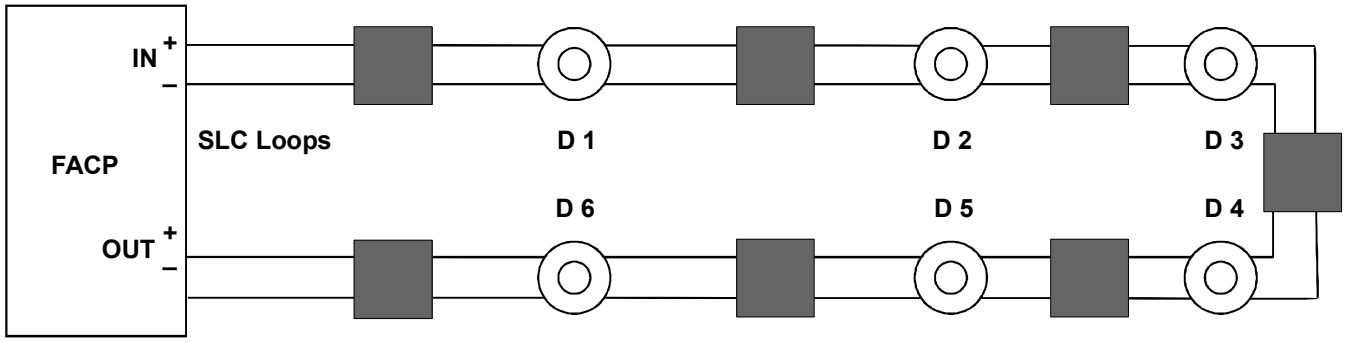


Figure - 18

Class A Style 7 SLC wiring



- **Isolator**

- **Smoke / Heat Detector**

Figure - 19

2.7 UL Power-limited wiring requirements

The power limited and non-power limited circuit wiring must remain separated in the cabinet. All power limited circuit wiring must remain at least 0.25" (6.35mm) away from any other non- power limited circuit wiring and non-power limited circuit wiring must enter and exit the cabinet through different knockouts and/or conduits as shown in the figure - 8.

Chapter 3: Programming

3.1 programming Concept

Warnings: Before Programming

1. All applicable codes and standards should be considered when the programming the control unit.
2. The Control Unit continues to monitor inputs circuits and devices and acts according to the current program settings if and alarm is received wile it is being programmed.
3. Loading a new database erases the current database before loading the new database. If the new database is not loaded after the erase, the panel will not operate.
4. The Database must be completely loaded fro it to be considered valid. The program keeps track if the last database load was valid/complete or not. An invalid database load disables the panel until a valid database load is done.

3.1.1 General Comments

Programming can be accomplished using the AVANI keypad or by connecting an optional standard computer keyboard. The keyboard can be connected to the USB 2.0 connector on the control panel main circuit board. The information presented in this section refers to programming the AVANI via the onboard keypad.

3.1.2 User Programming

The AVANI is completely field programmable and requires no special software skill. While programming the AVANI, the fire protection capabilities of the control panel are enabled.

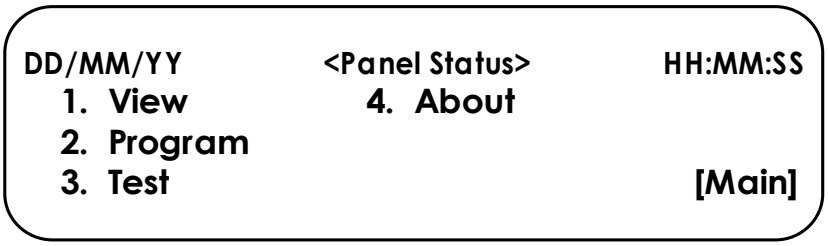
Site specific programming may be accomplished in following ways.

- Autoprogramming Feature – This is a convenient method for the quickly bringing the FACP addressable SLC devices online without the necessity of programming each device individually. Refer to "Auto Learn" on the Page 19 for a detailed description of Auto programming.
- Manual Programming or editing, using the FACP keypad or a PC keypad
- Off line programming and Editing feature allows creation and editing of site specific custom programs using a windows based computer. For programs requiring a large amount of data entry, this method may be preferred. AVANI-

RGS programming kit can be ordered for this purpose.

The system all normal screen will be displayed in a programmed system with no active alarms, troubles or supervisory, as illustrated below.

To access the programming or view the status & history, press menu key, which is shown in LCD as below.



From this menu screen by pressing '1', the panel enters into status/history view mode. It allows user to view the event and program setting of the control panel. The password is not required for this feature.

From this menu screen by pressing '2', the panel enters into programming mode which only can access by the authorized persons. After pressing '2', LCD screen will be in password prompt. After pressing correct password and by pressing enter key, user can select the programming options to change it.

From this menu screen by pressing '3', the panel enters into the loop test mode. In this mode the detectors connected in the loop can check from the panel. It required admin password.

From this menu screen by pressing '4', the panel shows the about the version and revision levels.

Exit from view & Program Mode

The programmer can exit from the view / Program mode by pressing '*'key repeatedly until the "System Healthy" screen.

3.1.3 Initial Power up

Here the initial programming procedure for a new system is described. The same procedure is used for modify the programming settings in existing system.

After completing the wiring of the addressable devices to the SLC, apply power to the control panel. If the addressable devices are not programmed in the Fire Alarm Panel, the following trouble message will be displayed.

3.1.4 Programming Description

By pressing menu key, the view and program options have multiple functions or features which may be chosen. To view all of the choices, it is necessary that the programmer scroll through a number of the additional screen and cursor keys. Refer "Programming Instruction", for additional information of the various screens.

The title of the main option screen will always be displayed at bottom right of the sub-screens. To select the one of the choices in a screen, the programmer presses the keypad numerical key corresponding to the desired choice.

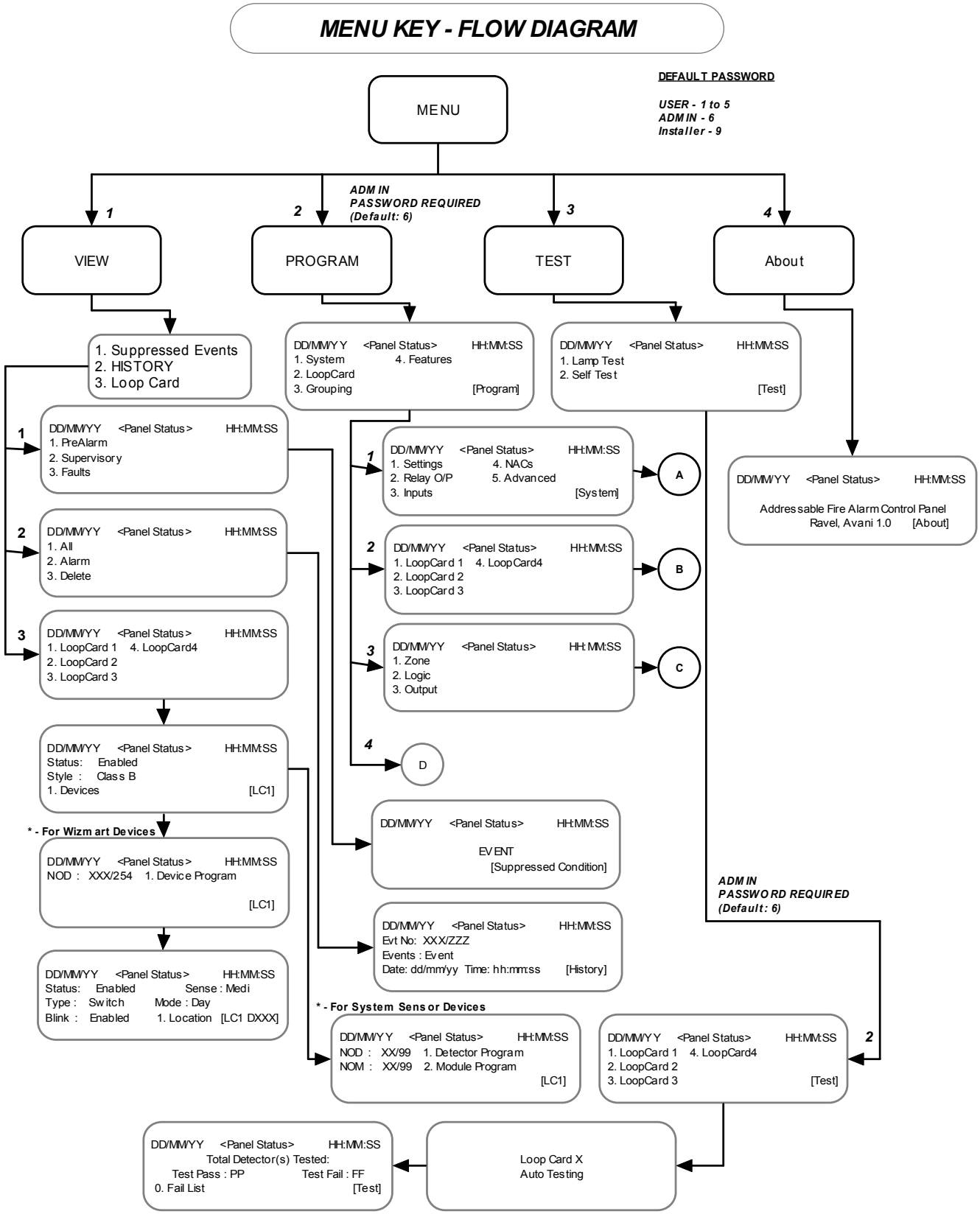
Note: That sub-screen may also have multiple options which require viewing more than one screen. The same process, as detailed in the previous paragraph is followed to view all options.

3.1.5 Programming Password

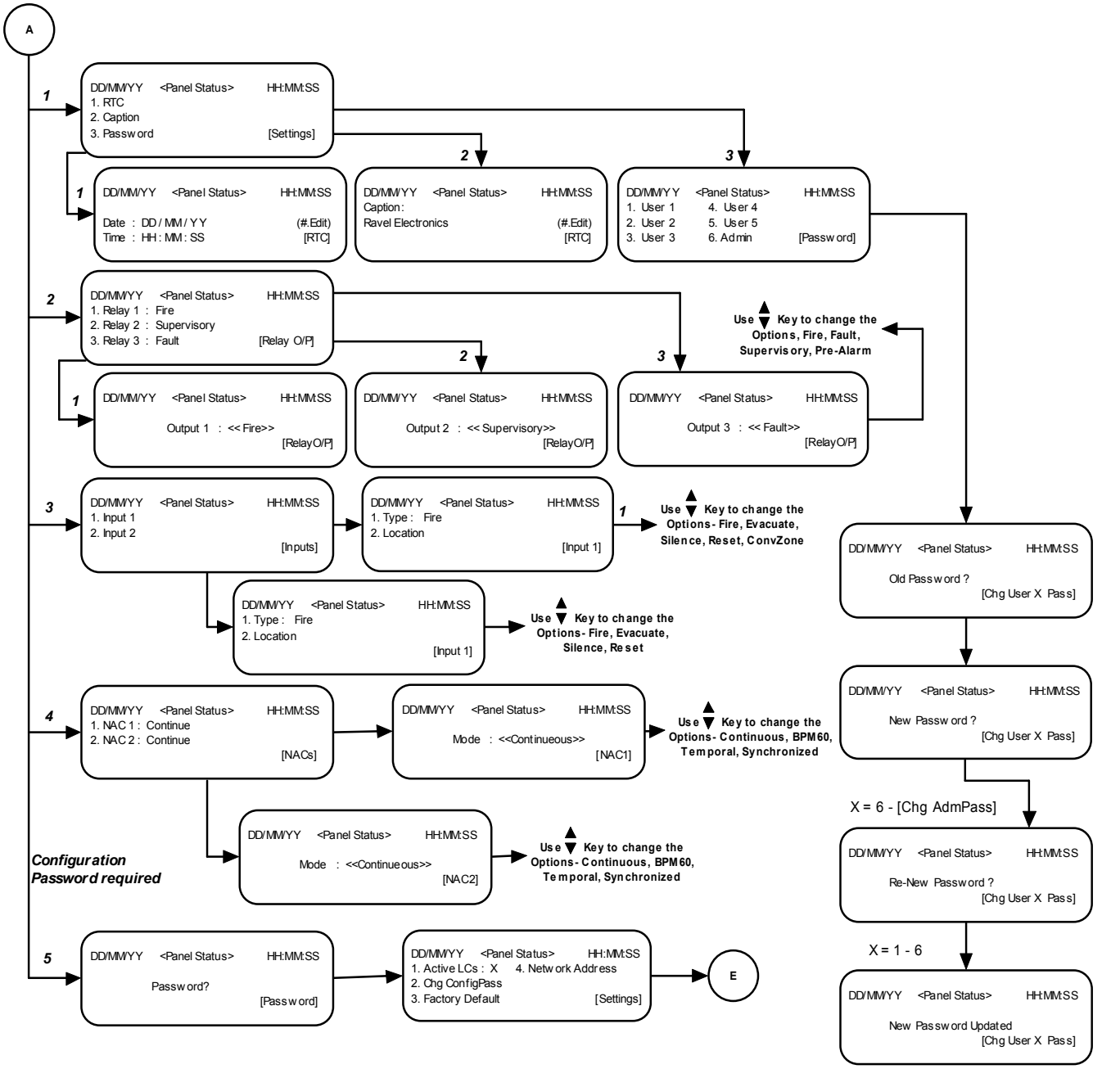
There is a factory set password which will access the programming screens as indicated in the following examples. From either of the screens, access to specific system and device feature or programming may be obtained. All user programming and entries are stored in the nonvolatile memory. The factory set password can be changed by user. Refer "Password Change" for additional information.

3.2 Programming Instruction

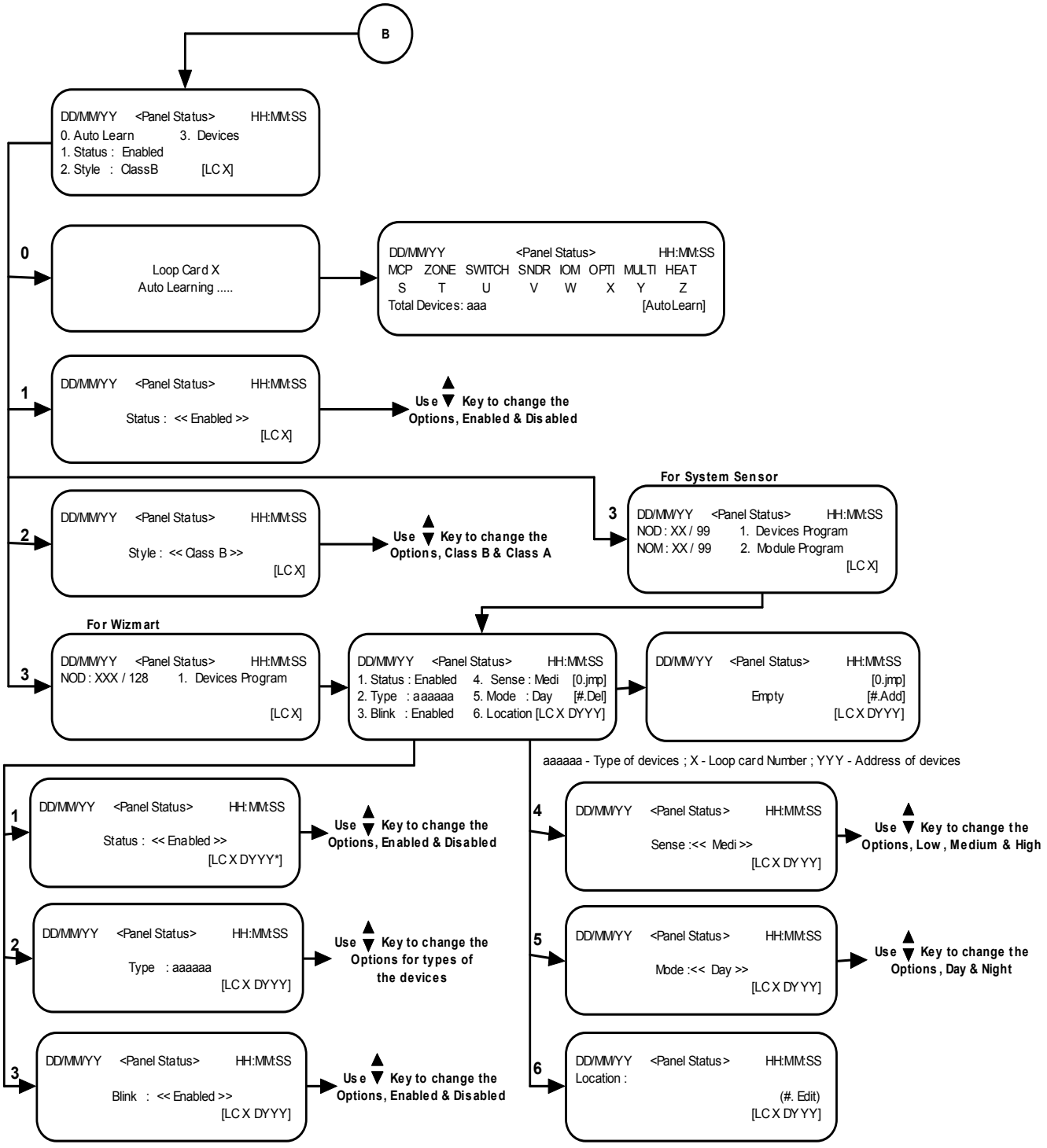
3.2.1 Menu Key Flow Diagram



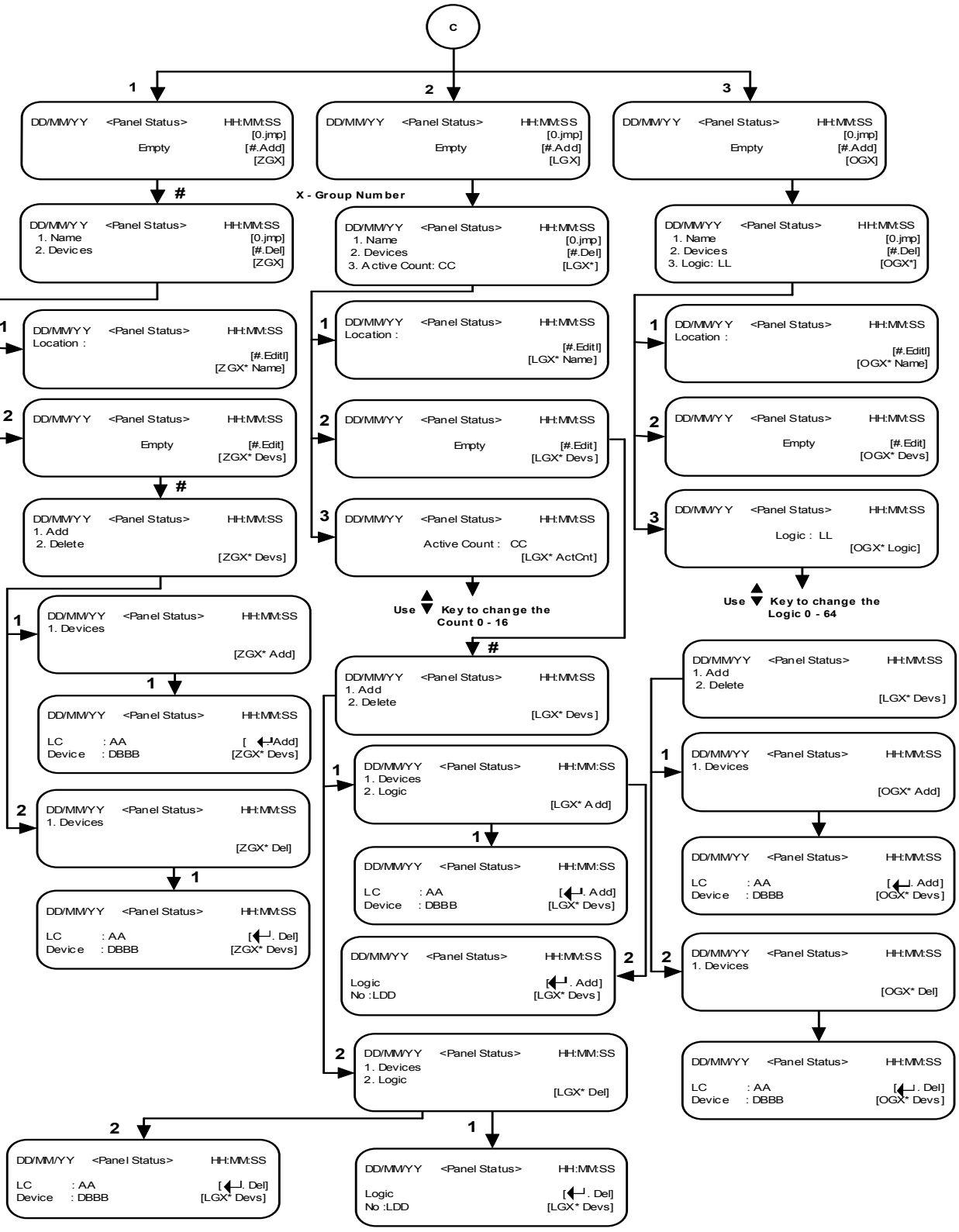
MENU KEY - FLOW DIAGRAM



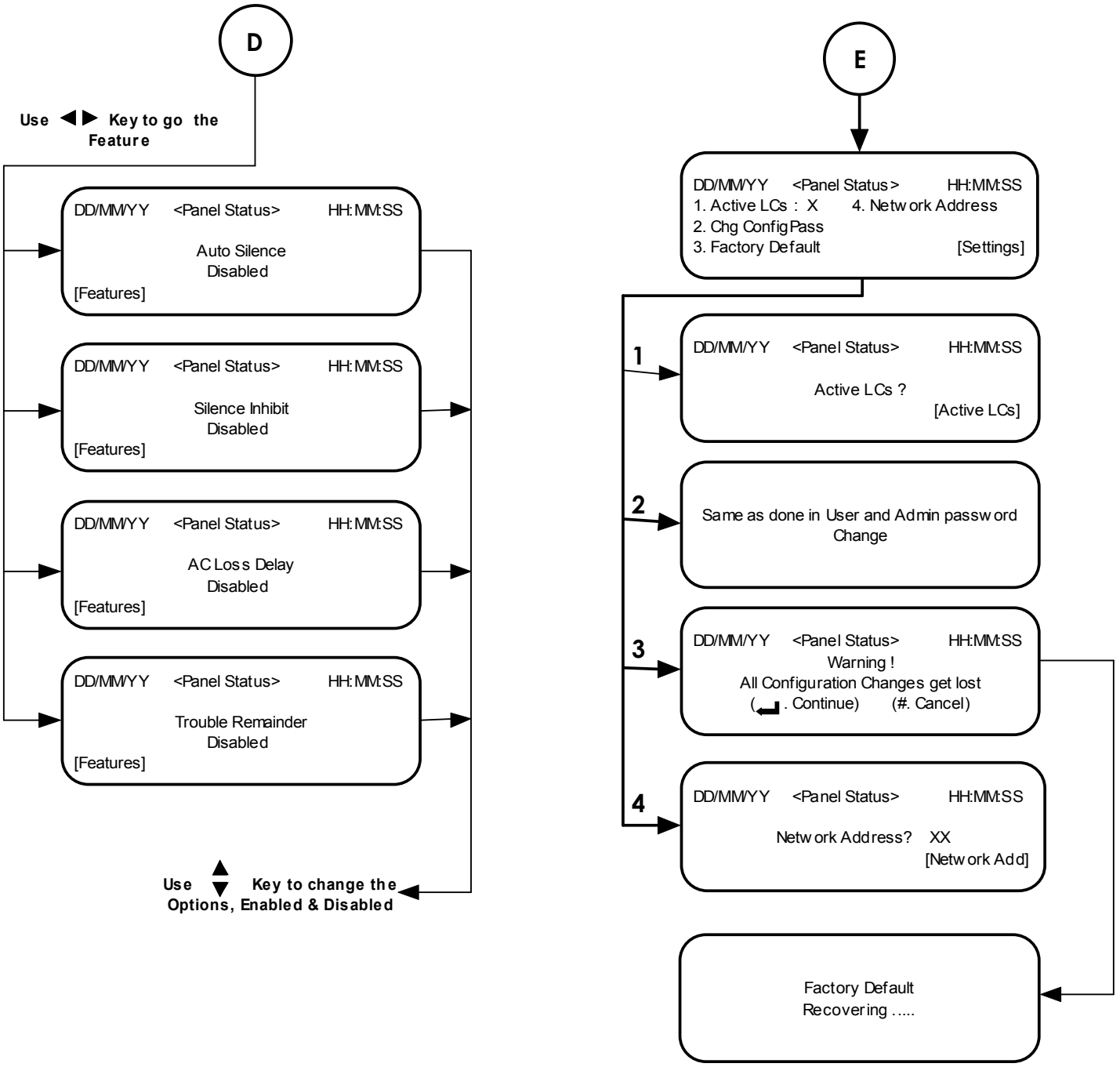
MENU KEY - FLOW DIAGRAM



MENU KEY - FLOW DIAGRAM

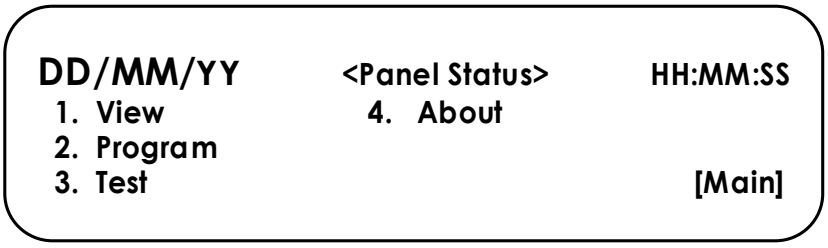


MENU KEY - FLOW DIAGRAM



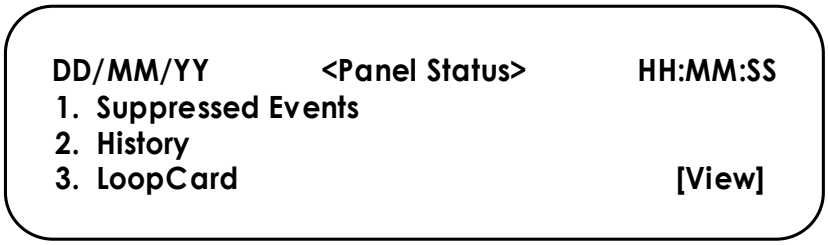
3.2.2 Main Menu

The MENU key navigates the user to view & Edit Loop Card specific settings, Device specific settings, etc. It also possesses help menu for About and Functional details. By Selecting Menu key the display shows the options as like below,



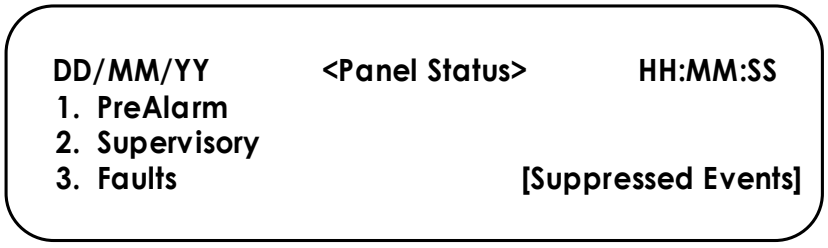
3.2.2.1 View

View Option can be accessible by User. By this option user can view the past history and exiting configuration, however they cannot change preserved settings. By selecting '1' when in Main menu, the system enters into View mode and shows the viewing category options as like below,



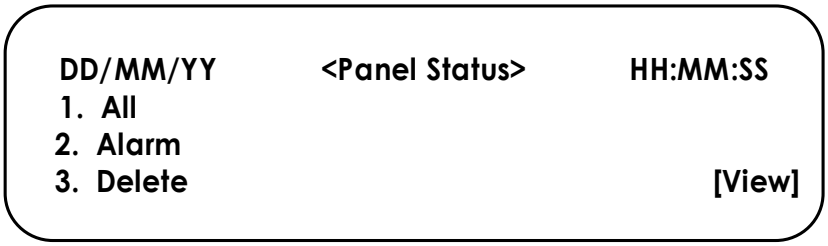
3.2.2.1.1 Suppressed Events

Suppressed Events option is used to view the suppressed events during Fire condition. The suppressed events like Prealarm, Supervisory and faults events can be viewed from this menu using corresponding number keys. By selecting '1' from view menu brings the suppressed events and shows the suppressed events category options as like below.

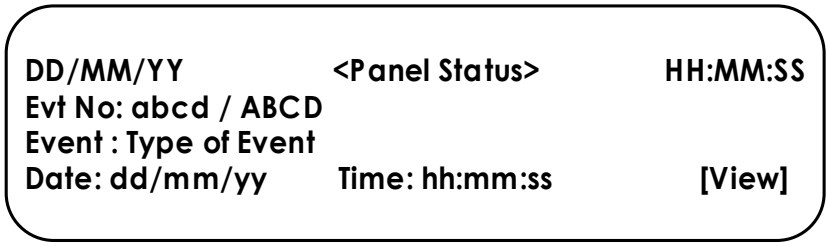


3.2.2.1.2 History

History option is used to view the past panel event logs such as Alarm, Supervisory, Fault, Silence Reset and etc., with Real Time Clock. By pressing the key '2' from View menu brings the History mode. The history mode provides the following event filtering option,

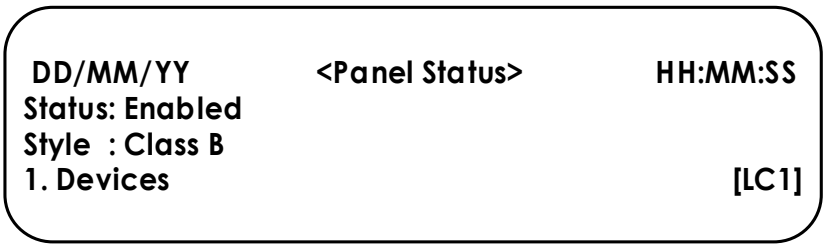


By selecting a number from the list in the the history menu, respected subject relevant logs alone displayed in the screen as like below,



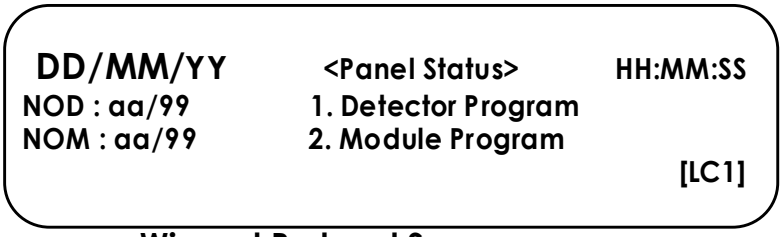
3.2.2.1.3 Loop Card

In order to view the loop card specific settings (such as wiring style, no. of devices, status) the user need to press '3' from the View Menu. The loop card details can be viewed by pressing corresponding loop card number and screen as shown below.

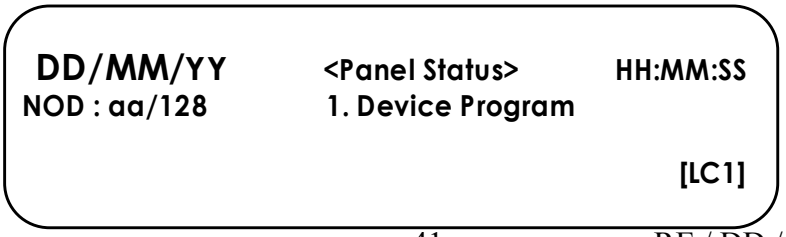


It also possesses the options to view Device Specific Settings and Grouping details. By selecting a number from the list in the Loop card menu, respected subject relevant configuration alone displayed in the screen as like below,

System Sensor Protocol Screen

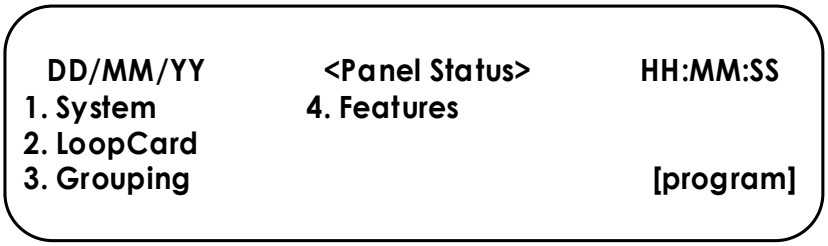


Wizmart Protocol Screen



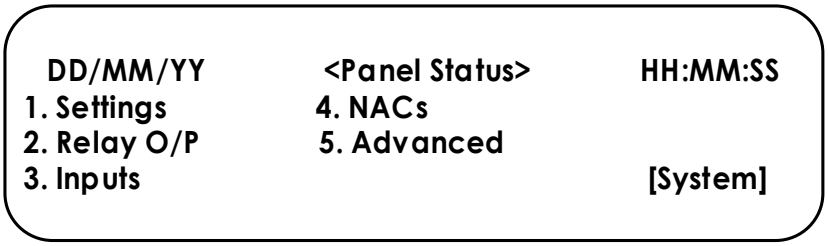
3.2.2.2 Program

By selecting the number 2 from the main menu screen, the system enters into program mode. This mode is protected by password and it requires admin password (Default – 6). In this mode, the panel loop card configuration, RTC & password settings, to alter the optional features and to reset the panel for factory setting. After entering into the view mode, screen will be as below.



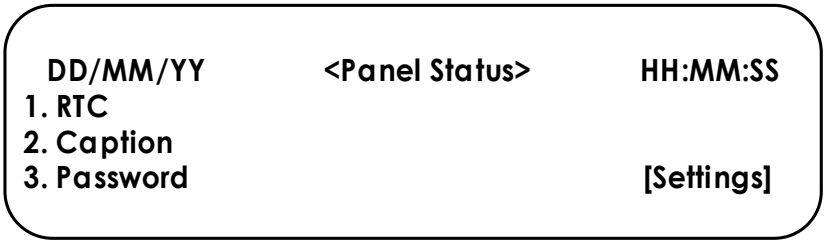
3.2.2.2.1 System

By selecting the number 1 from the program screen, the system enters into panels configuration mode. In this mode, panel settings (RTC, Caption, Password), loop card configuration, Grouping and Feature configuration will be done. After entering into this mode, screen will be as below.



3.2.2.2.1.1 Settings

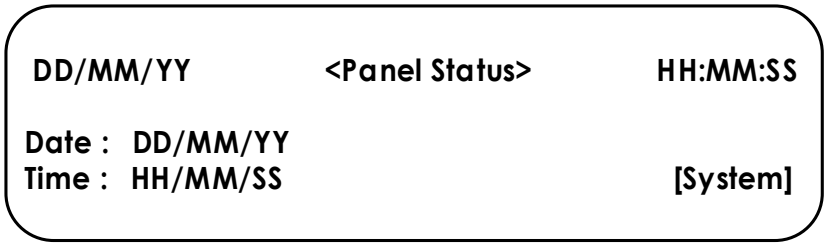
By selecting the number 1 from the System screen, the system enters into panel settings mode. In this mode, RTC, caption and Password are changed by entering into the corresponding menu. After entering into this mode, screen will be as below.



By selecting a number from the list in the system menu, respected subject relevant configuration alone displayed.

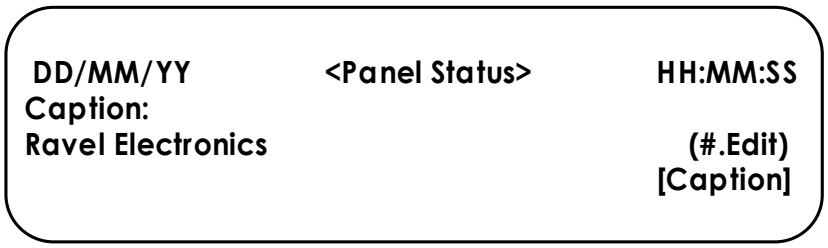
3.2.2.2.1.1.1 RTC

By selecting the number 1 from the setting screen, the system enters into RTC settings mode. In this mode, time and date settings are changed by using '#' key. After entering into this mode, screen will be as below.



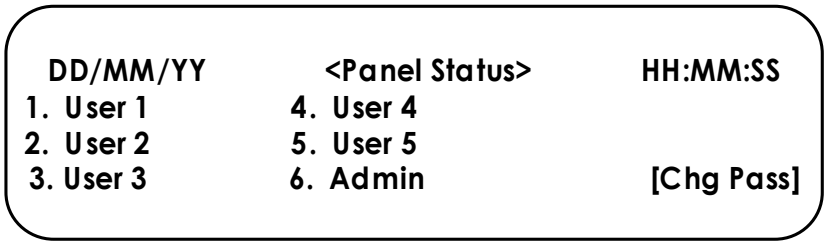
3.2.2.2.1.1.2 Caption

By selecting the number 2 from the system screen, the system enters into Caption editing mode. In this mode, caption is changed by using '#' key, maximum 20 characters can entered which will be display in front screen in system healthy mode. After entering into this mode, screen will be as below.

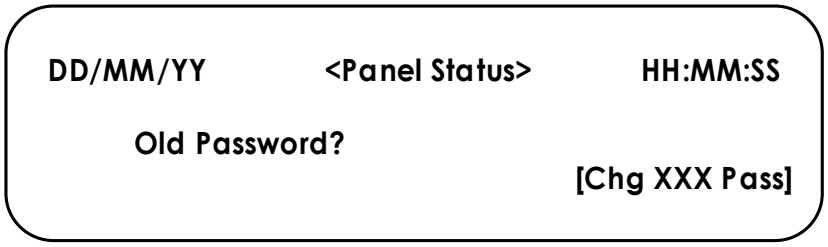


3.2.2.2.1.1.3 Password

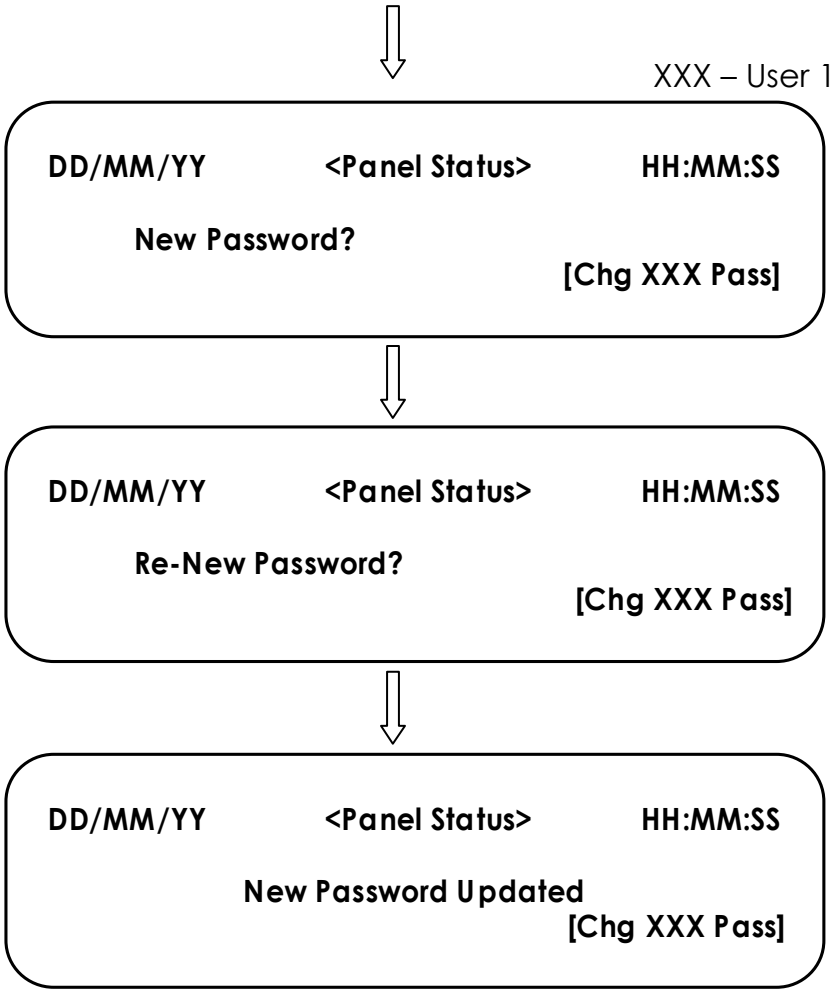
By selecting the number 3 from the system screen, the system enters into password change mode. In this mode, the user 1 to 5 and admin password can be changed by selecting corresponding number, after entering into this mode, screen will be as below.



After selecting corresponding number, password changing screen as follows:

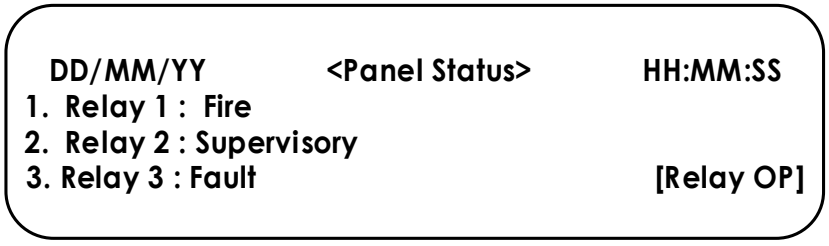


XXX – User 1/2/3/4/5/admin



3.2.2.2.1.2 Relay OP

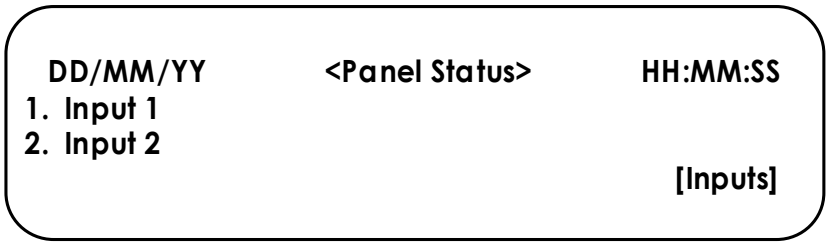
By selecting the number '2' from the system screen, the system enters into the programmable relay output configuration mode. In this mode, by choosing corresponding number to the corresponding relay output can be configured as Fire, PreAlarm, Supervisory and Fault. After entering into this mode, screen will be as below.



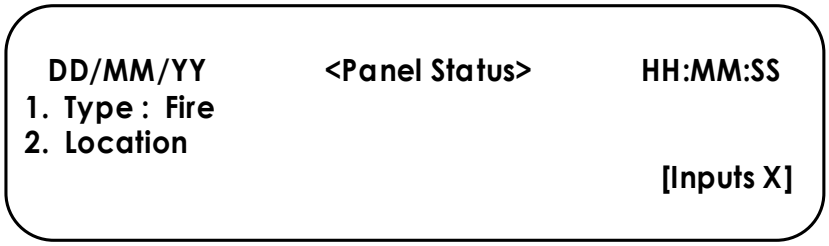
By selecting corresponding number, the relay output options can be changed using the up & down '▲▼' cursor keys.

3.2.2.2.1.3 Inputs

By selecting the number '3' from the system screen, the system enters into Programmable Inputs configuration mode. In this mode, by choosing corresponding number to the corresponding Input type can be configured as Fire, Evacuate, Silence, Reset and ConvZone (Conventional Zone). The Conventions Zone would be configured for only Input 1. Similarly Location of the remote input device / ConvZone shall be program. After entering into this mode, screen will be as below.

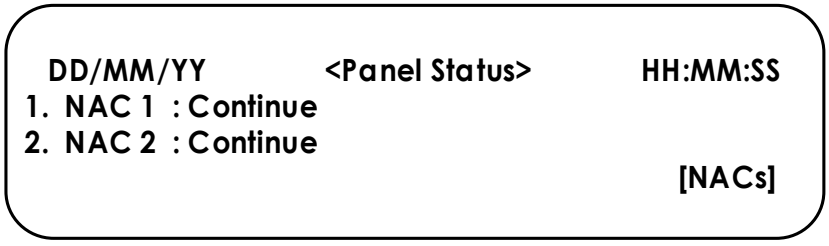


After selecting the required input, the screen will be as below. By selecting the '1' from this menu, the input type shall be changed using the up & down '▲▼' cursor keys. By selecting the number '2' from thi menu, the location of the input device shall be proram.



3.2.2.2.1.4 NACs

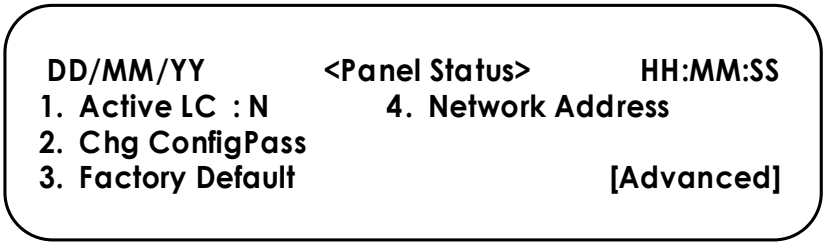
By selecting the number '4' from the system screen, the system enters into Programmable NACs configuration mode. In this mode, by choosing corresponding number to the corresponding NAC tones can be configured as Continuous, BPM60, Temporal and Synchronized tones. After entering into this mode, screen will be as below.



By selecting corresponding number, the relay output options can be changed using the up & down '▲▼' cursor keys.

3.2.2.2.1.5 Advanced

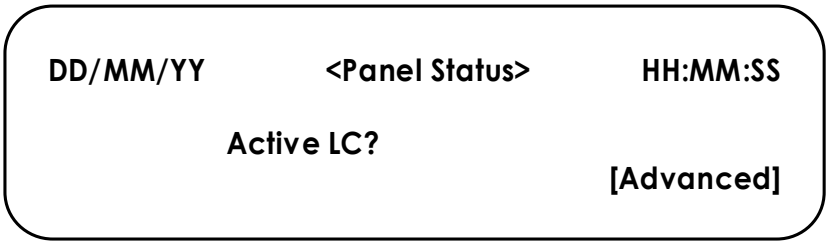
By selecting the number '5' from the system screen, the system enters into advanced settings mode. It required the Configuration password. In this mode, the system up gradation like adding loop cards, changing the configuration password and factory resetting can be done. The default Configuration password is "9". After entering into this mode, screen will be as below.



N – no. loop card.

Active Loop Card:

By selecting the number 1 from the advanced screen, the system enters into loop card change mode. In this mode, using numeric keys the number of loop cards can be entered. After entering into this mode, screen will be as below.

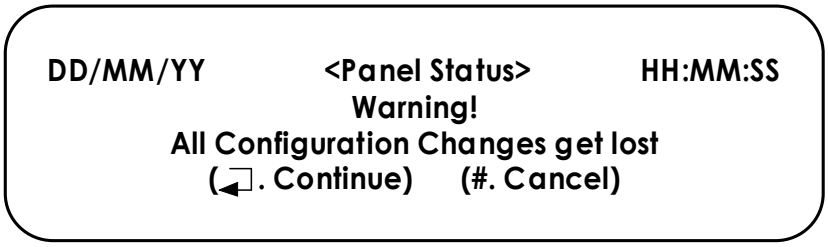


Changing Configuration Password:

By selecting the number 2 from the advanced screen, the system enters into the configuration password change mode. The procedure for changing the password is similar to the user/admin password changing method. After entering into this mode, screen will be as below.

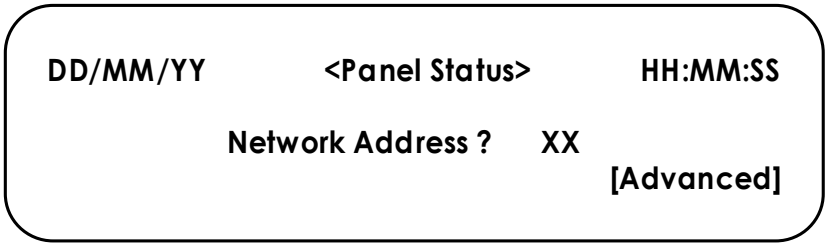
Factory Default:

By selecting the number 3 from the advanced screen, the system enters into the factory default setting mode. In this mode, it gives the warning screen before changing configuration. After entering into this mode, screen will be as below.



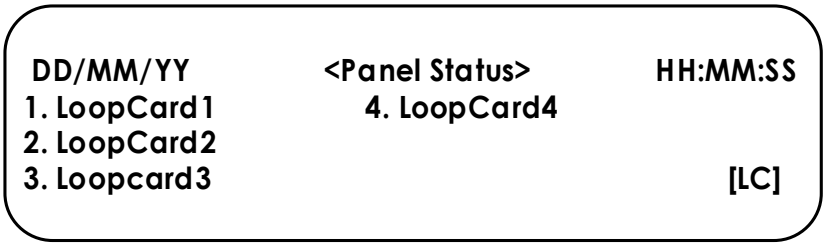
Network Address:

By selecting the number 4 from the advanced screen, the system enters into the network address configuration mode. In this mode using alpha numeric keys the panel address shall be entered. After entering into this mode, screen will be as shown below.

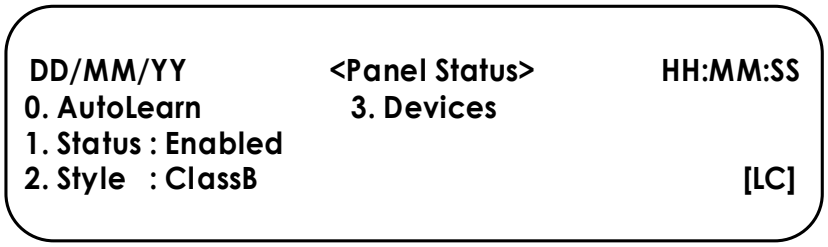


3.2.2.2.2 Loop Card

By selecting the number 2 from the program screen, the system enters into loop card settings mode. In this mode, loop card list may be shown. After entering into this mode, screen will be as below.



To view and change loop card configurations can configured by selecting the number from the list in the loop card menu, respective loop card configuration alone displayed in the screen as shown below. Auto Learning, configuration like style, enabled/disabled and devices is done. After entering into the particular loop card mode through Loop card menu screen will be as below.

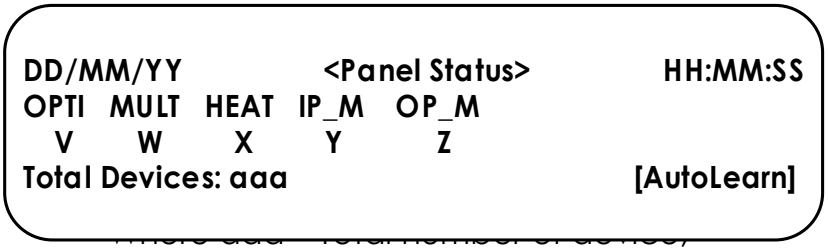


From this menu, required field is configured by pressing corresponding number from the key pad.

3.2.2.2.2.1 Auto Learn

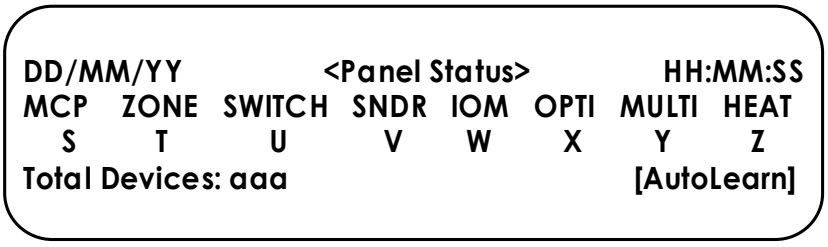
Auto Learning is done pressing the key '0' from the selected loop card screen. Auto learn is used to learn type of all the devices connected in the loop card and gives the details about devices and total number of devices connected in the loop card.

System Sensor Protocol - After scanning the LCD Screen shown as below.



Where aaa – Total number of devices;
V – Total number of Optical Detectors;
W – Total number of Multipoint Detectors;
X – Total number of Heat Detectors;
Y – Total number of Input Modules;
Z – Total number of Output Modules;

Wizmart Protocol - After scanning the LCD Screen shown as below.



Where aaa – Total number of device;
S – Total number of Manual Call Point;
T – Total number of Zone module;
U – Total number of Switch monitor module
V – Total number of Sounder Module;
W – Total number of Input-Output Module;

X – Total number of Optical Detectors;
Y – Total number of Multipoint Detectors;
Z – Total number of Heat Detectors;

3.2.2.2.2.2 Status

The status is nothing but the loop card disabled / enabled. The status of the loop card is change is done by selecting the number '1' from the loop card menu list. After entering into the change mode, up & down cursor key is used to change the options and press the enter key to accept the changes. The 'n' represents n^{th} loop card.

```
DD/MM/YY          <Panel Status>          HH:MM:SS

                Status : << Enabled >>

                                          [LC'n']
```

3.2.2.2.2.3 Style

By selecting the number 2 from the loop card screen, the system enters into loop card style configuration mode. Type of style Class A or Class B can select by using the up & down cursor keys. After selecting the required style press 'enter' key to conform the selection. The 'n' represents n^{th} loop card.

```
DD/MM/YY          <Panel Status>          HH:MM:SS

                Style : << ClassB >>

                                          [LC'n']
```

3.2.2.2.2.4 Device

By selecting the number 3 from the loop card screen, the system shows the number of detectors and modules are connected in the system. Also from this menu detector and module programming can done by pressing corresponding number.

System Sensor Screen:

```
DD/MM/YY          <Panel Status>          HH:MM:SS
NOD : aa/99        1. Detector Program
NOM : aa/99        2. Module Program
                                          [LC1]
```

Wizmart Screen:

```
DD/MM/YY          <Panel Status>          HH:MM:SS
NOD : aa/128        1. Device Program

                                            [LC1]
```

3.2.2.2.2.4.1 Detector Program

From this menu, if the auto learning is not done then, the individual detectors status, type, blink, sense, mode and location can be configured manually by selecting the corresponding number form the numerical keypad. Detector address is shown at right bottom of the screen and detector address is selected by using the left/Right cursor keys. The options are changed by using the up/down cursor keys.

```
DD/MM/YY          <Panel Status>          HH:MM:SS
1. Status : Enabled    4. Sense  : Low
2. Type   : Optical    5. Mode   : Day        [#. Del]
3. Blink  : Enabled    6. Location        [LC1 D001*]
```

Options are:

1. Status : Enabled / Disabled
2. Type : Optical / Multi / Heat
3. Blink : Enabled / Disabled (Device LED)
4. Sense : Low / Medium / High (Detector Sensitivity)
5. Mode : Day / Night
6. Location – Detector Location

3.2.2.2.2.4.2 Module Program

From this menu, if the auto learning is not done then, the individual modules status, type, blink, cat and location can be configured manually by selecting the corresponding number form the numerical keypad. Module address with loop card number is shown at right bottom of the screen and module address is selected by using the left/Right cursor keys. The options are changed by using the up/down cursor keys.

```
DD/MM/YY          <Panel Status>          HH:MM:SS
1. Status : Enabled    4. Cat    : Monitor
2. Type   : IP_M       5. Location          [#. Del]
3. Blink  : Enabled                     [LC1 M001*]
```

Options are:

1. Status : Enabled / Disabled
2. Type : IP_M / OP_M / IO_M
3. Blink : Enabled / Disabled (Device LED)
4. Cat : Control / Relay / Others (Module Category)
5. Location – Module Location

3.2.2.2.2.4.1 Devices Program

For Wizmart protocol

From this menu, if the auto learning is not done then, the individual detectors status, type, blink, sense, mode and location can be configured manually by selecting the corresponding number form the numerical keypad. Detector address is shown at right bottom of the screen and detector address is selected by using the left/Right cursor keys. The options are changed by using the up/down cursor keys.

```
DD/MM/YY          <Panel Status>          HH:MM:SS
1. Status : Enabled     4. Mode  : Day
2. Type   : Optical     5. Location        [#. Del]
3. Blink  : Enabled                        [LC1 D001*]
```

Options are:

1. Status : Enabled / Disabled
2. Type : MCP / ZONE / Switch / IO Module / Optical / Multi / Heat
3. Blink : Enabled / Disabled (Device LED)
4. Sense : Low / Medium / High (Detector Sensitivity)
5. Mode : Day / Night
6. Location – Detector Location

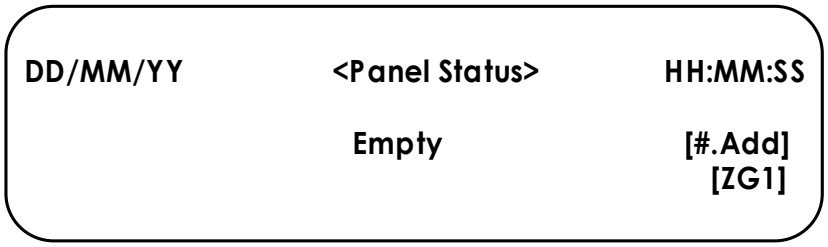
3.2.2.2.3 Grouping

By selecting the number 3 from the program screen, the system enters into Group Setting mode. This mode is used to combine the number of devices as a zone / Logic / Output group. After entering into this mode, screen will be as below.

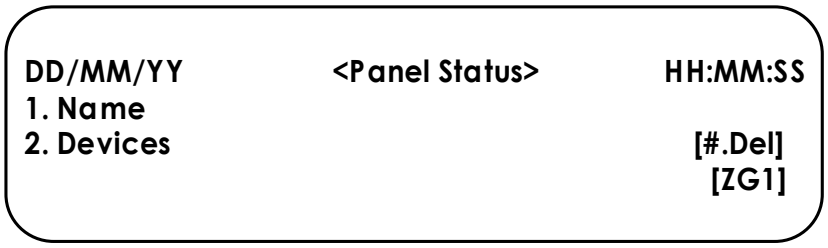
```
DD/MM/YY          <Panel Status>          HH:MM:SS
1. Zone
2. Logic
3. Output                                 [Grouping]
```

Zone Grouping

By selecting the number 1 from the grouping screen, the system enters into the zone grouping mode. In this grouping maximum 64 zone can group with maximum 16 devices can add in each zone group. There are maximum 40 zone indications are provided in front panel display. After entering into this mode, screen will be as below.

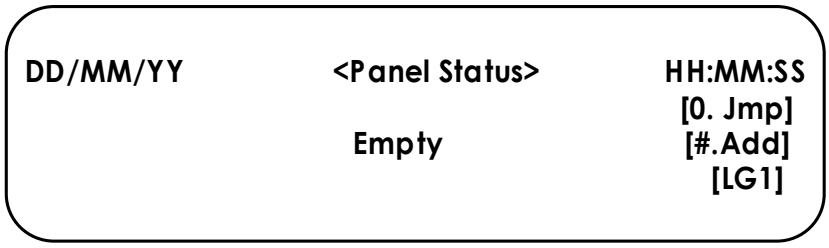


After adding the zone group screen shows as below and group can be named and device can added through the menu 2.

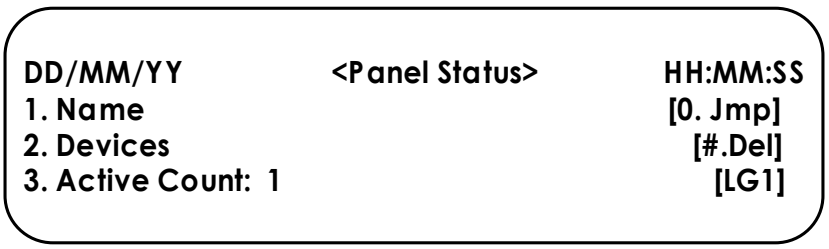


Logic Grouping

By selecting the number 2 from the grouping screen, the system enters into the logic grouping mode. This mode is used to give the output to the output device through the output grouping. After entering into this mode, screen will be as below.



After adding the logic group, screen shows as below and group can be named the sub menu '1'. Devices shall be added using the sub menu '2'. Depending upon the active counter the logic gives the output.



For example, the 10 devices are added in the devices and logic count is entered as '4', then 4 out of 10 devices gets fire the n only the logic gives the output.

```
DD/MM/YY          <Panel Status>          HH:MM:SS

                      Empty                [#.Edit]
                                          [LG1* Devs]
```

By Pressing '#' key it enters into the add / delete menu. In device sub menu, the adding devices and deleting devices shall be done. Device shall add using the sub menu '1' and delete by '2'. After entering into the add/ delete menu devices will be shown in last line by pressing 'Enter' key, the devices shall be add/delete.

```
DD/MM/YY          <Panel Status>          HH:MM:SS
1. Add
2. Delete                                  [#.Del]
                                         [LG1 Devs]
```

If there is no devices in the loop, it shows in display as "No More I/P Device" otherwise as shown below.

```
DD/MM/YY          <Panel Status>          HH:MM:SS
                                           [0. Mdle]
LC       : NN                             [↵.Add]
Devices  : DXX                          [LG1* Devs]
```

NN – Loop card number; DXX – Detector address; MXX – Module Address. Similarly for deleting the devices.

Output Grouping

By selecting the number 3 from the grouping screen, the system enters into the output grouping mode. This mode is used to turn on the output devices with respect to the logic. After entering into this mode, screen will be as below.

```
DD/MM/YY          <Panel Status>          HH:MM:SS
                                           [0. Jmp]
                      Empty                [#.Add]
                                            [OG1]
```

After adding the output group, screen shows as below and group can be named the sub menu '1'. Devices shall be added using the sub menu '2'. Depending upon the Logic number the output devices which are all grouped gets on.

For example, the 10 devices are added in the devices and Logic is entered as '4', then the devices added in the group will turn on for the logic 4 only.

```
DD/MM/YY          <Panel Status>          HH:MM:SS
1. Name                                   [0. Jmp]
2. Devices                                [#.Del]
3. Logic:  0                              [OG1*]
```

By pressing the '2' the screen shown as below.

```
DD/MM/YY          <Panel Status>          HH:MM:SS

                    Empty                 [#.Edit]
                                          [OG1* Devs]
```

By Pressing '#' key it enters into the add / delete menu. In device sub menu, the adding devices and deleting devices shall be done. Device shall add using the sub menu '1' and delete by '2'. After entering into the add/ delete menu devices will be shown in last line by pressing 'Enter' key, the devices shall be add/delete.

```
DD/MM/YY          <Panel Status>          HH:MM:SS
1. Add
2. Delete                                 [#.Del]
                                          [OG1 Devs]
```

If there is no devices in the loop, it shows in display as "No More O/P Device" otherwise as shown below.

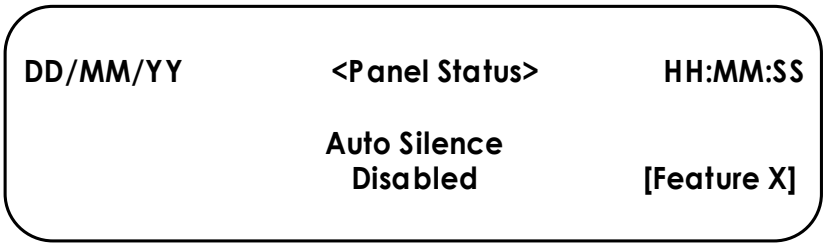
```
DD/MM/YY          <Panel Status>          HH:MM:SS

LC       : NN                             [↵.Add]
Devices  : MXX                            [OG1* Devs]
```

NN – Loop card number; MXX – Module Address.

Similarly to delete the devices (Modules) in group.

3.2.2.2.4 Features

By selecting the number '4' from program menu screen, the system enters into panel feature configuration mode. In this mode, the various options in each feature of this panel shall be configurable. The following table shows the features and their options. After entering into this menu, the screen will be as below



X – represents feature number

The features can be sequentially viewed by using right / left arrow keys and the corresponding available options can be changed by using Up & down arrow key.

Table 1: Feature Programming:

yy	Features	Options		Permitted in UL? [Y/N]
		1	2	
1	AC Loss Delay	Enabled: 1 – 999 Min	Disabled	Y
2	Trouble Reminder	Enabled: 1 – 999 Min	Disabled	Y
3	Auto silence	Disabled	Enabled: 1 - 999Secs	Y
4	Silence Inhibit	Disabled	Enabled: 1 - 999Secs	Y

Note: Option 1 – Default Factory Setting.

AC Loss Delay:

When AC power is lost, the control panel trouble relay will activate. The factory default option for this feature is Enabled, the trouble relay activation on AC loss after the time delay setting. Relay activation may be delayed by selected as shown in LCD screen display. Press up & down keys to toggle between enabled / disabled option. The AC Loss Delay timing can set 001 to 999min. After setting the required time press Enter key to accept the time. When you enter into this mode the screen will be as below.

DD/MM/YY	<Panel Status>	HH:MM:SS
	Auto Silence	[#. Edit]
	Enabled: 120 Min	[Feature 1]

Trouble Reminder:

The Trouble Reminder feature provides an audible reminder that a fire/supervisory/Fault still exists on the panel after the control panel has been silenced. The factory default for this feature is 'Enabled'. When this feature is 'enabled', the control panel buzzer will give a beep tone for every set time during a trouble condition, after the Signal Acknowledge switch is pressed. The buzzer tone will continue to sound at these rates until the trouble condition is cleared. Press up & down keys to toggle between enabled / disabled option. The Trouble Reminder timing can set 1 to 999mins. After setting the required time press Enter key to accept the time. When you enter into this mode the screen will be as below.

DD/MM/YY	<Panel Status>	HH:MM:SS
	Trouble Remainder	[#.Edit]
	Enabled : 720 Min	[Feature 2]

Auto Silence:

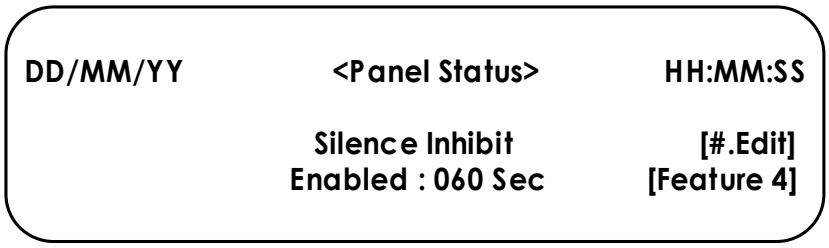
Auto-silence is the program feature that will automatically silence the Notification Appliance Circuits, if they are programmed as silenceable circuits, after a programmed time interval. The factory default setting is auto-silence disabled. Press up & down key to toggle between enabled / disabled option.

The Auto silence timing can be set from 001 to 999 seconds. After setting the required time press Enter key to accept the time. When you enter into this mode the screen will be as below.

DD/MM/YY	<Panel Status>	HH:MM:SS
	Auto Silence	[#.Edit]
	Enabled : 120 Sec	[Feature 3]

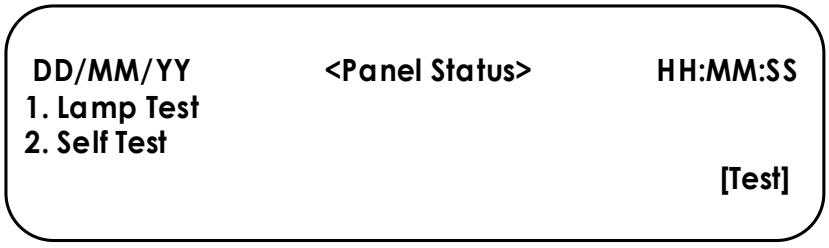
Silence Inhibit:

The Silence Inhibit feature prevents the silencing of Notification Appliance Circuits, using the Silence switch or Reset switch, for the amount of time corresponding to the selected option, after the NAC's are activated. The factory default for this feature is 'disabled'. Press up & down key to toggle between enabled / disabled option. The Silence inhibit timing can set 1 to 999 seconds. After setting the required time press Enter key to accept the time. When you enter into this mode the screen will be as below.



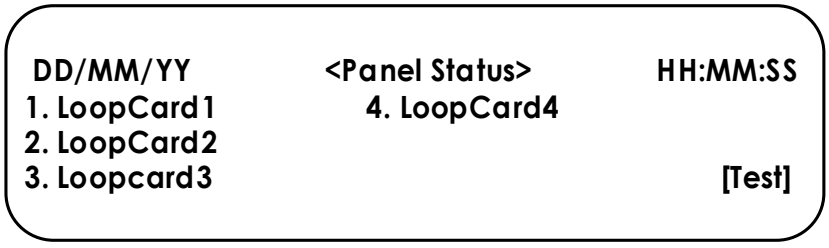
3.2.2.3 Test

By selecting the number 3 from menu screen, the system entered into device testing mode connected in the loop cards and lamp test mode. After entering into this mode, the screen shows as below.

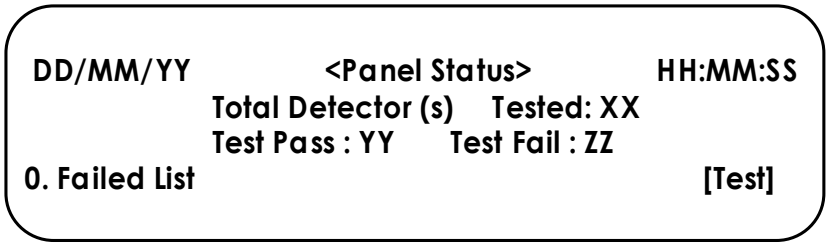


By pressing the '1' from this menu, the lamp test function would be activated to glow all the LED in the panel for 3 seconds.

By selecting the '2' from this menu, it enter into self test mode, system requires the admin password ("Default - 6"). After entering into this mode the screen show the loop cards connected in the panel. By selecting the appropriate number, that particular loop card goes for testing and gives the report.

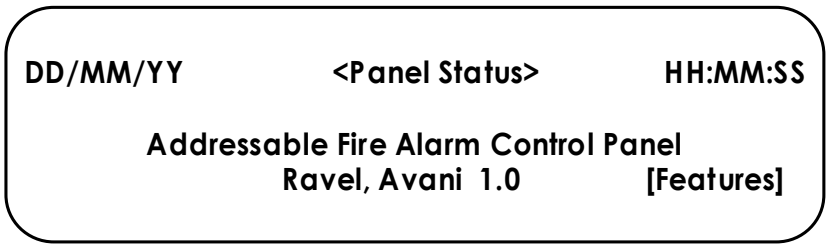


Test Result screen will be as below.



3.2.2.4 About

It shows the details of the panel by pressing number 4 from the menu screen. The LCD will show as below. In this screen the model and software version has shown.



Chapter 4 Operating Instruction

4.1 Panel Operation

The operation of the panel is described in this manual. In this manual the following details are described in detail, like inputs / outputs, indications, control keys, alarm, fault supervisory conditions etc.,

4.2 Initial Power up Condition

When the power is applied to the panel, the LCD will first display "System Initializing" and the panel will not respond to any key presses or to zone activity. Once this step is done the panel will shows "System Healthy" in LCD display and System On, Mains On and Battery On LED will glow.

4.3 Inputs

There are a number of types of inputs that can be used in the system. Each has different used and limitations. They are as follows:

- **SLC Loop Cards:** This type of input is the normal inputs to the system from smoke detectors, heat detectors, Manual Call points, modules etc. They are required to activate the NAC's like bell and or strobes as well as an LED. They can operate the relays and control modules in the network. It display as "ALARM" in the LCD and stores the events in Alarm list.

- **IDC Loop Input:** This type of input is the normal inputs to the system from Conventional smoke and heat detectors, Conventional Manual Call points. They are required to activate the NAC's like bell and or strobes as well as an LED. They can operate the relays and It display as "ALARM" in the LCD and stores the events in Alarm list.

- **Remote Inputs:** This type of input is used to control/monitor the panel from remote. There are two inputs to the system which can be programmed as fire, silence, reset, evacuate and for 24 VDC output sense.

  Remote Input 1 can also program as Conventional IDC including above options. This Input is kept normally open, whenever the input changes to normally close; the corresponding programmed action takes place. It shall accept any normally open devices like MCP to access the FAP.

4.4 Indications

SYSTEM ON: This LED will glow when the panel is energized by primary and standby power. This is the only LED glowing in the normal monitoring condition. The LCD Display as shown below.

MAINS ON: It indicates that panel is operated through the mains supply (120 / 220VAC). Whenever the Main Supply (220v A.C) fails, the Mains ON LED will goes to off condition and it also indicated in LCD with toggle Buzzer tone.

BATTERY ON: It indicates that the battery is connected with the panels and it under charging. Whenever the backup battery fails, the battery fault LED will goes to off condition and it also indicated in LCD with toggle Buzzer tone. Similarly the same LED will blink when the battery voltage goes down below the 21.6v (Battery Low).

CHARGER FAULT: It indicates that the battery is connected with the panels and but the charger circuit is fail / battery is deep discharged. Whenever the backup battery charger fails, the charger fault LED will be illuminated and it also indicated in LCD with toggle Buzzer tone.

EARTH FAULT: Whenever the Signaling Device circuits (SLCs), Notification Alarm Circuits (NACs), Remote Inputs and DC output are gets contact with the Earth or Body of the cabinet, the earth fault LED and common fault LED will be illuminated and it also indicated in LCD earth fault with toggle Buzzer tone. The Earth fault can be created through 0 Ohms resistor.

SYSTEM FAULT: Glowing of this LED indicates the failure of the CPU.

SILENCED: This LED will glow when the silence key is pressed in fire condition only.
NAC FAULT: Whenever there is any fault in Notification Appliances Circuits like NAC loop Open / Short / Earth fault, it will be identified by COMMON NAC FAULT LED.

TEST: The test and zone disable LED will glow whenever the zones are under test mode.

FIRE: This twin fire LED will glow when any one or more of the zones are in fire condition.

SUPERVISORY: This supervisory LED will glow when any one or more of the zones are in supervisory condition.

FAULT: This fault LED will glow when any one or more of the zones are in fault condition.

ZONE FIRE: This fire LED will glow when the zones are fire condition. The first fired zone continuously in blink and other zone fire LED will glow steadily in fire condition. The fired zone is displayed in the LCD, first fire zone and total no. of zone is displayed separately.

DISABLE: This disable LED glows steadily in any input / output is in disabled condition.

NIGHT MODE: This day/night LED glows, panels is in night mode

PRE ALARM: This pre alarm LED glows when the detector value goes near to the alarm level.

4.5 Buzzer

A piezo buzzer provides separate and distinct sounds for alarm, trouble and supervisory conditions:

- Alarm – Continuous
- Fault – pulse 0.5sec ON and 5sec OFF
- Supervisory – pulse 0.25sec ON and 0.25sec OFF

4.6 Operating Keys

The control keys are located at center of the front sticker and these keys are touch pad. They are as follows:

SILENCE Key: When the silence key is pressed, after entering the user or admin password the following will occur:

- The silenceable Notification Appliance Circuits will be turned OFF
- The Silence LED will be turned ON

Upon the occurrence of a subsequent fire event, Signal Silence is overridden and the control panel will respond to the new event.

RESET Key: When the Reset key is pressed, after entering user or admin password, the control panel will:

- Clear the status LED's.
- Bring back the LCD display to the healthy condition.
- Turn off the Notification Appliance Circuits.
- Reset fire zones by temporarily removing power.
- Restore all system relays to normal.
- Temporarily remove power from the resettable power output CN7.

The Reset key is accessible only after silencing in alarm condition.
Any alarm, supervisory or trouble condition that exists after a system reset, will resound the system, reactivating normal system activity.

ACK. Key: This key is used to acknowledge the buzzer tone during the fault and fire condition. This key can be operated with user or admin password.

EVACUATE Key: This key is used to energize the all-external NAC's without actual fire, It will operate at user or admin level. Using the silence key NAC output can be silenced.

ENTER KEY: This key is used to accept the password during silence, reset in Fire Condition And also used for the Evacuate and wherever requires.

CURSOR KEYS: The cursor keys (Right / Left arrows) are used to move the cursor point wherever required.

ALPHANUMERIC KEYS: These keys are used for entering the names etc. and numbers. '*' Key is used to go back the previous screen in programming mode. '#' key is used for the Lamp test in system healthy condition.

MENU KEYS: The menu key is used to get into the program menu to change the required configurations. It requires password to change the configurations.

TEST KEYS: The help key is used to test the lamps and SLC devices in individual loops.

4.7 Normal Monitoring Mode

Normal Mode is the standard mode of operation. In this mode, the panel continuously monitors system status. When no fire or supervisory or trouble conditions exist, all LEDs will be off except the System On, Mains On and Battery On LED. The Notification Appliance Circuits will be off, all relays are in their normal state and the onboard buzzer will be off. When the system is in normal condition the LCD screen will be as "System Healthy".

4.8 Alarm Condition

When the control panel detects Fire via the Detector / MCP, the panel will cause the following:

- ✓ The corresponding ZONE FIRE red LED will blink.
- ✓ The common twin Fire LEDs will glow.
- ✓ Turn on the NAC's.
- ✓ Turn on the panel buzzer with continuous tone.
- ✓ Turn on the fire relay.

In case of multiple zone fire, the origin zone fire LED will be blinking and subsequent zone fire LED will glow steadily.

To change the other indexed fire event zones which are suppressed use right / left arrow keys.

Restoral: Silence the NAC's by appropriate user or admin password. after silencing the panel will perform the following;

- Turn off the Internal Buzzer.
- Turn off the External NAC's.
- Turn on the silenced LED.

When the Fire condition is cleared and Reset key has been pressed after entering the user or admin password. The Reset is accessed only after silencing the panel in alarm condition. The panel will perform the following after clearing fire and resetting:

- Turn off the common twin Fire LEDs.
- Turn off the zone fire LED.
- Turn off the Fire relay.

The LCD screen will be as below.

4.9 Supervisory Condition

When the control panel detects supervisory signal via the any normally open contact devices, the panel will cause the following:

- ✓ The corresponding zone supervisory LED will blink.
- ✓ The common supervisory LED will glow.
- ✓ Turn on the panel buzzer with intermittent buzzer tone (pulse 0.25sec ON and 0.25sec OFF).
- ✓ Turn on the supervisory relay.

In case of multiple zone supervisory, the origin zone and recent zone supervisory LED will be viewed in LCD screen.

To change the other indexed supervisory event zones which are suppressed use right / left arrow keys.

Restoral: When the supervisory condition is cleared and Reset key has been pressed after entering the user or admin password if the zones are programmed for latching, the panel will perform the following:

- Turn off the supervisory LEDs.
- Turn off the zone supervisory LED.
- Turn off the supervisory relay.

The LCD screen will be as below.

Note:

If the supervisory mode is selected as resettable, the resetting the zone is not required. The zone is retrieved automatically after clearing the supervisory condition.

4.10 Fault Condition

The fault may any one of the following Zone fault / disable / earth fault, NAC fault and power section fault. When there is one or more fault condition, the fire alarm control panel performs the following:

- Turn on the common fault LED.
- Turn on the zone fault / NAC fault / power fault LED.
- Turn on the panel buzzer tone with intermittent buzzer tone (pulse 0.5ec ON and 5sec OFF).
- Activate the fault relay.

Restoral: When the fault condition is cleared, the panel will perform the following automatically:

- Turn off the fault LEDs.
- Turn off the zone fault LED/ NAC fault / power fault LED.
- Turns off the buzzer tone.
- Deactivate the fault relay.

The LCD screen will be as below.

Note: The Fault occurred will not affect the other normal functions of the panel

4.11 Test Condition

The panel LED's and devices connected with the panel can be tested through the menu from the Test key. By pressing the 'Test key', the system enters into the test mode and in this there are two test modes like lamp test and self test. After entering into this mode, the LCD screen will as shown below.

4.11.1 Lamp Test

By entering into this menu using the number '1' key, the LED in the panel will turn on. The LED status shall be checked by using this menu.

4.11.2 Self Test

By pressing the number '2' from the key pad, the system enters into the test mode. The devices connected in the each loops can be tested individually by selecting corresponding number. Test LED is illuminates continuously identifies the SLC/System, which is under test. The test mode helps the user to test each device in that particular SLC loop by automatically from the panel. During test mode, the outputs like NAC's and relays will not be activated. After test, the panel indicates the status of the individual device in LCD.

4.12 Disable Condition

Disable: The any device/loop card can be Disabled / Enabled through the programming. The ON status of disabled LED and common fault LED indicates, the Device/loop card is disabled and the OFF status of the LED indicates the enabled.

Chapter 5: Networking:

The AVANI can be incorporated into a network including other AVANI panels and AVANI RP annunciators. Though up to 8 panels and 8 annunciators (Repeater) can be supported by the network. The network can be setup for single building or multiple building operations.

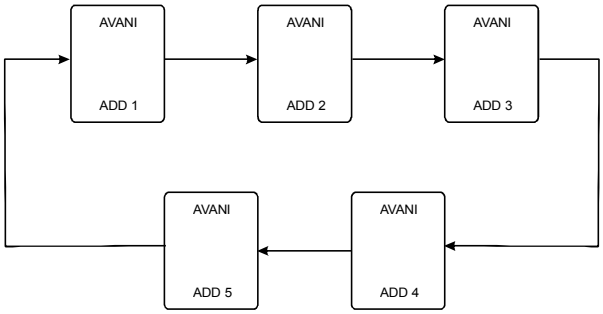


Figure – 20

The basic layout of the network is a single loop (see figure 20). Each panel and annunciator has a unique ID. The panels work in a peer to peer fashion using token pass method. This means panel having a lower address takes the token first and it is broadcast its status. Then token is passed to next addressed panel and so on. The Information is exchanged over the network by two basic means: a - specific frames (token pass) which are from one panel to another and 2 – broadcast frame, which are from one panel to all other.

Note:

1. For correct operation of the network, all panels and annunciators need to be loaded with same version.
2. When the panels and annunciators are first installed, the panel ID should not repeat.

Network communication

Information is sent across the network in frames.There are two types of frames: specific and broadcast. Specific frames are sent from one unit to another. Broadcast frames are sent from one unit all other.
Specific Frames: Specific frames deal with information generated at one panel and required at another. It is passed from panel to panel until reaches its destination. Each panel has a list as to which port to send frames from to reach all other panels through the fewest number of panels. Since networks will generally have all communications links running at the same baud rate, this is generally the shortest time as well.

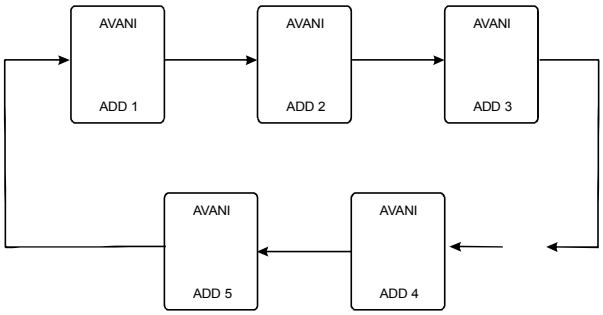


Figure – 21

If there is a break in the communication (see Figure 21), the panel that can not back the way it came. If there is single open as shown in the figure 21, the network would not affect the intended application. If there is more than one open will affect the network communication, the panels in between two open will not be in network.

Broadcast Frames

Broadcast frames deal with information that affects the entire network. When a broadcast frame is created by a panel or annunciator, it is sent out both network communications port. Each unit in turn will receive the broadcast in one port, act upon it and pass it on out the other port. Upon reaching the unit that generated the broadcast frame, that unit then disposes of it. This means that under normal circumstances, all units will receive a broadcast twice and act upon it twice.

Network topology:

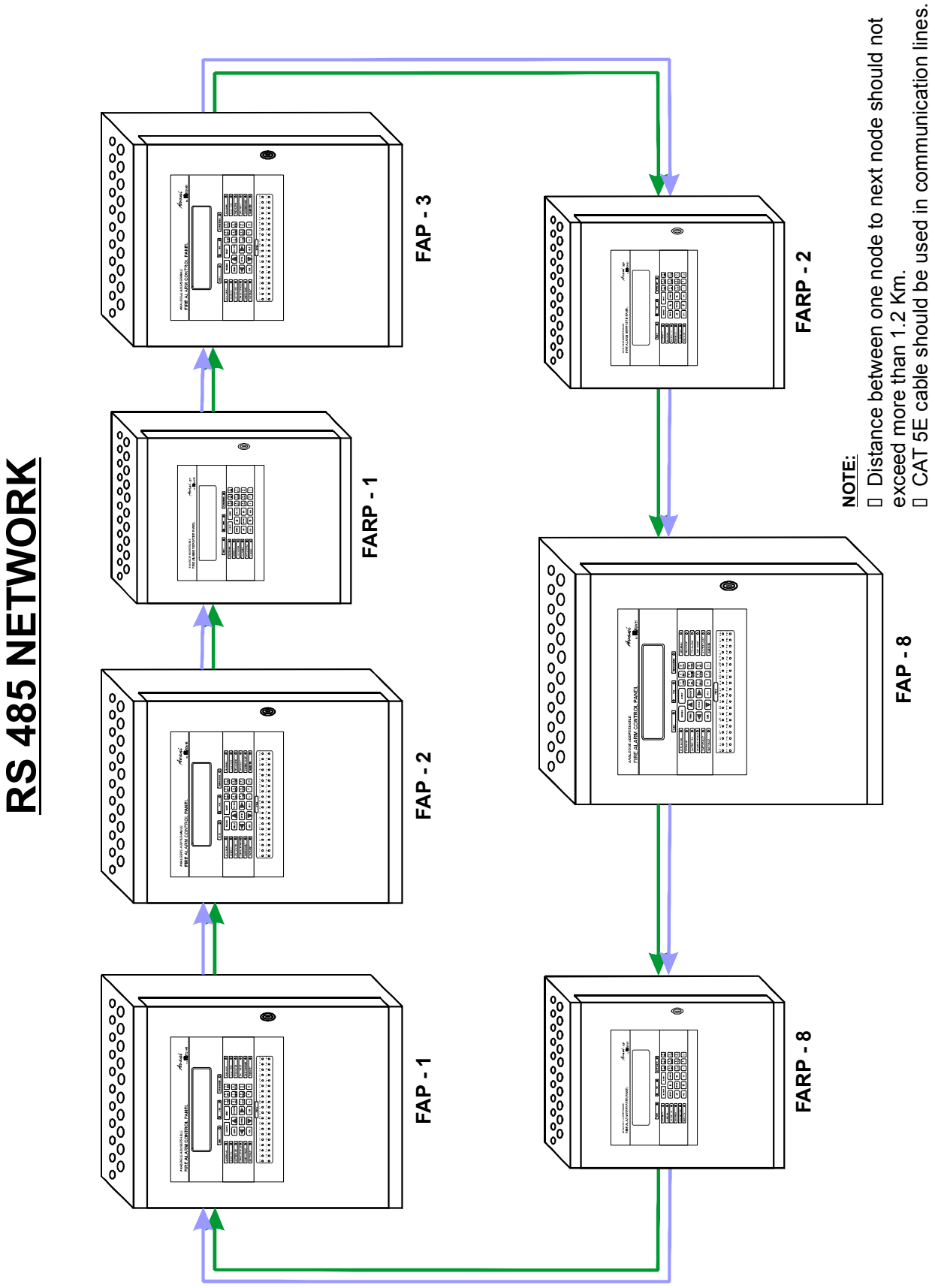


Figure – 23

Chapter 6: Servicing:

6.1 **Installation/Replacement of PCB:**

Remove the screws of PCB, which has to be change and remove the PCB from the mounting position and place the new PCB in that same position as shown below.

Mounting position for Main Circuit board (RE – AVANI – MB – R1):

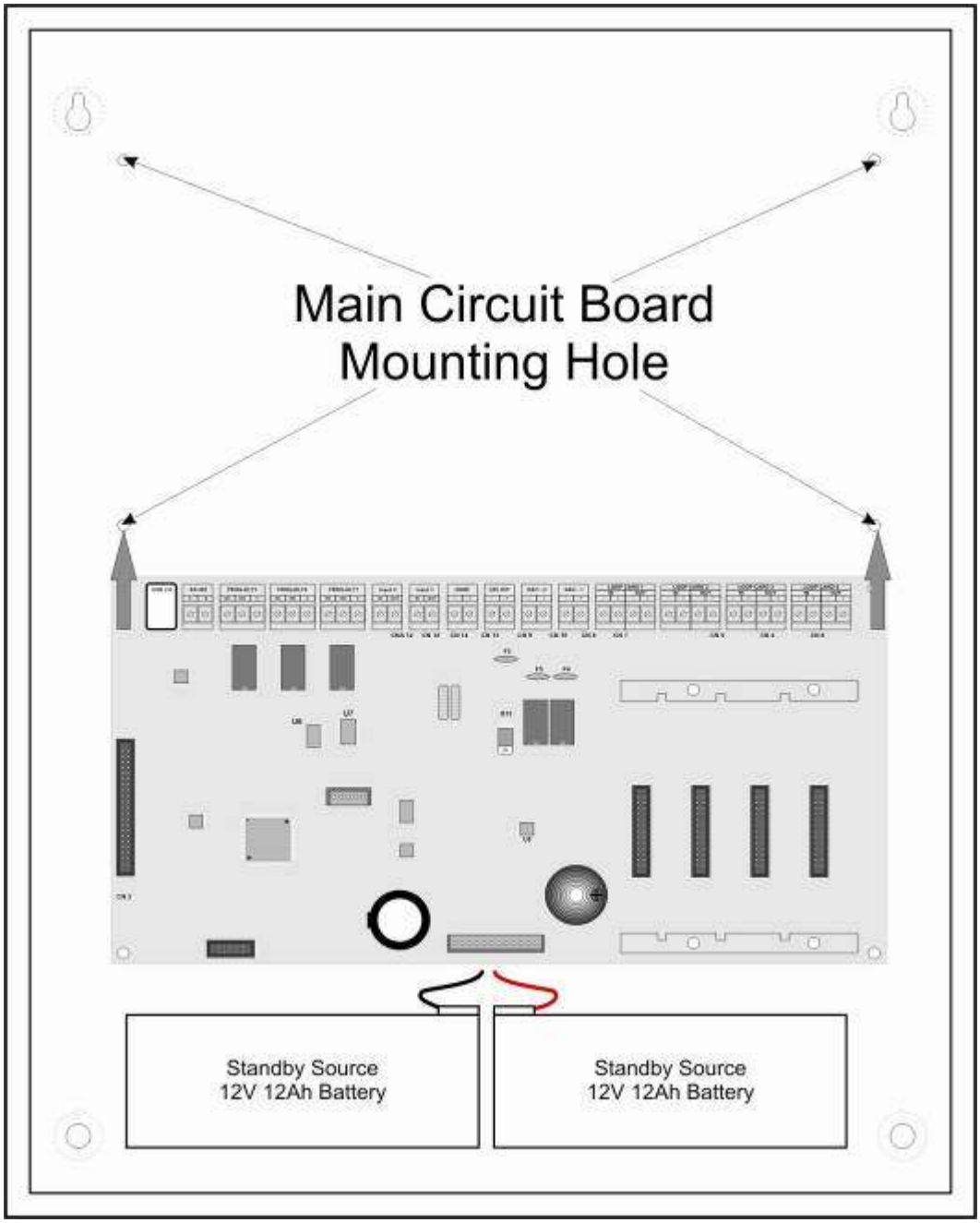


Figure – 24

Mounting position for Display board (RE – AVANI – DISP):

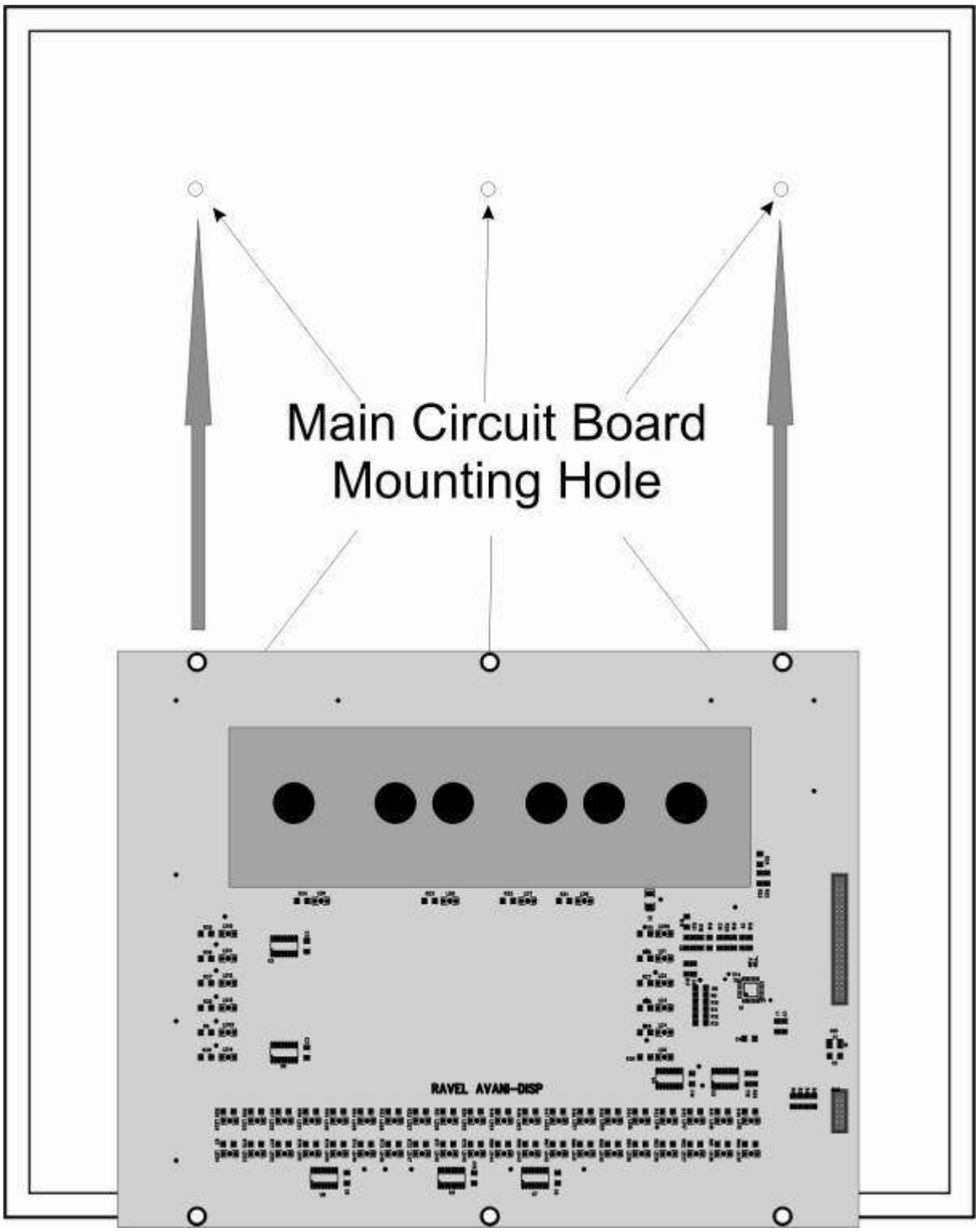


Figure – 25

Mounting position for Power supply unit (RE – AVANI – PS – R1):

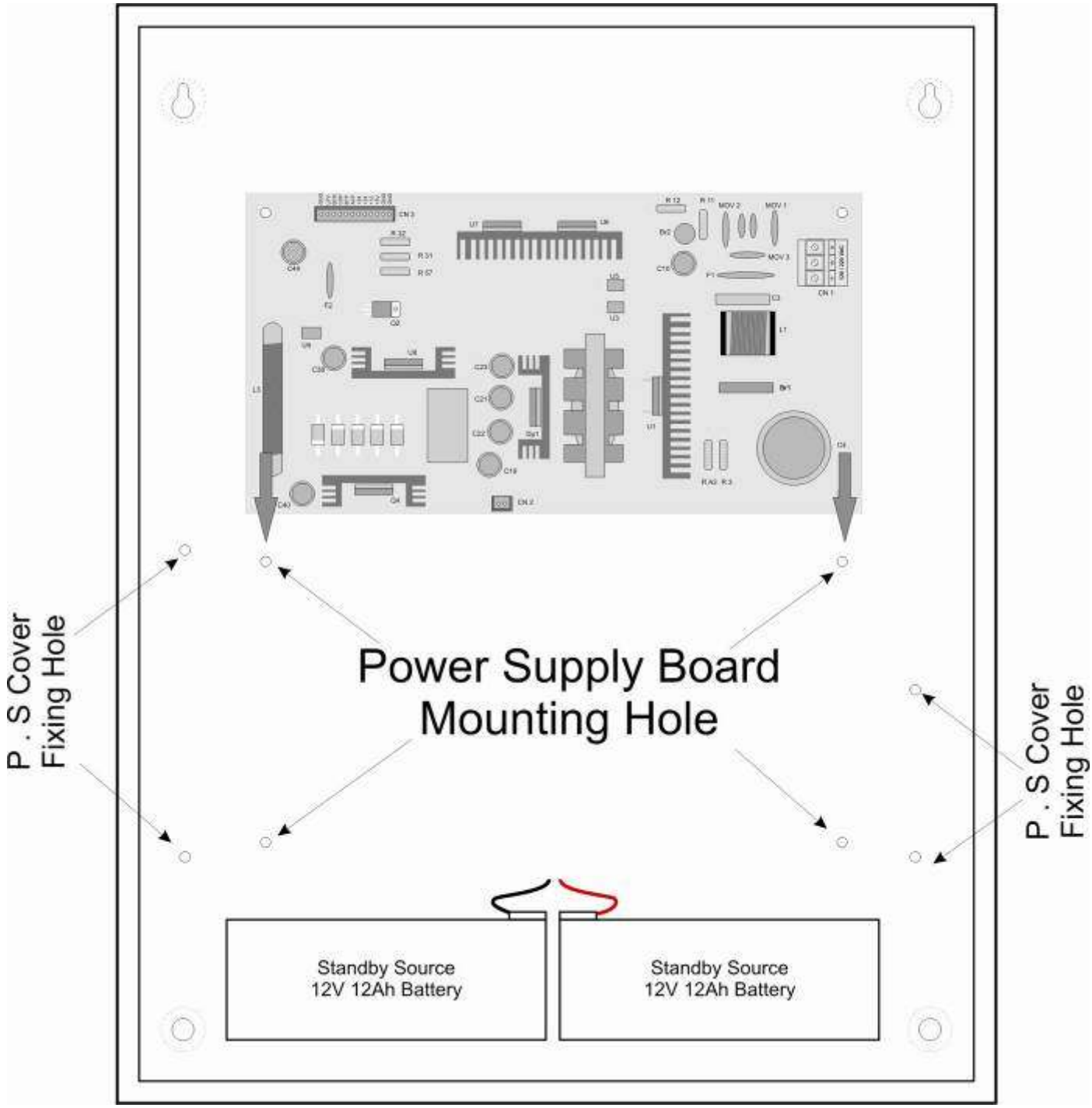


Figure – 26

6.2 Lamp Test

The lamp test function done through the sub menu by pressing 'Test' key, system (Panel) is in normal condition. In this mode, all the LED's are checked for good condition by glowing all LED's.

6.3 System Power

Power	**Current**	**Max. AH Capacity**	**Derating Factor**	**Max. standby current**	**Max. Alarm current**	**Max. standby time**	**Max. alarm duration**
Primary (power supply)	4A	N/A	N/A	0.4A	2A	N/A	15 Min
Secondary (back up)		26Ah	10%	1.0A	3.5A	12 Hrs.	5 Min.

6.4 Trouble Shooting

Condition	**Root Cause**	**Remedy**
There is no indication on The panel	No power to the Panel	Check Primary (AC) power and Standby power.
During Mains fail condition Battery fault LED is glowing	May be battery low (<21.6V) or the battery reaches the de-rated (<19.5V) Voltage.	Check the Battery voltage and charge the battery or replace the battery.
The Battery fault and charger fail shown in LCD.	The Battery connected in reverse.	Connect the battery properly.

Chapter 7: Battery Calculation

Use Table 6-1 to calculate the total standby and alarm load in ampere hours (AH). This total load determines the battery size (in AH), required to support the control panel under the fail of the AC Power Supply. Complete the table 6-1 as follows:

1. Enter the NFPA standby and alarm times (refer to NFPA requirements below).
2. Calculate the ampere-hours fro standby and Alarm, and then sum the standby and alarm ampere-hours.
3. Multiply the sum by the derating factor of 1.2 to calculate the proper battery size (in AH).
4. Write the ampere hour requirements on the protected premises lable located inside the cabinet door.

TABLE 7-1: Total Secondary Power Requirements at 24 VDC

Normal Condition : X = **S** (Amps) x ____ Hrs. (Backup time required)

Alarm Condition : Y = **F** (Amps) x ____ Hrs. (Backup time required)

Battery Ah required : AH = (X + Y) x 1.2 (Derating Factor).

Note: *Refer specification (Page 10) for Quiescent, standby, alarm currents*

System current (**S**) = Quiescent Current + (Standby current X No. of zone)

Fire current (**F**) = (Alarm Current x no. of zones) + (NAC Current x No. of NAC's).

Chapter 8: Wire Requirements

Connecting external system accessories to the AVANI main circuits must be carefully considered to ensure proper operation. It is important to use the correct type of wire, wire gauge and wire run length per each AVANI circuit. Reference the chart below to specify wire requirements and limitations for each AVANI.

TABLE 8-1: Wire Requirements

CIRCUIT TYPE	CIRCUIT FUNCTION	WIRE TYPE AND LIMITATIONS	RECOMMENDED MAX. DISTANCE Feet (meters)	WIRE GUAGE
Initiating Device Circuit	Connects to Initiating Devices	Untwisted, unshielded wire (Do not exceed 100 ohms)	10,000 (3,000 m) 8,000 (2,400 m) 4,875 (1,480 m) 3,225 (975 m)	12 AWG (3.25 mm2) Belden 9583 WPW999 14 AWG (2.00 mm2) Belden 9581 WPW995 16 AWG (1.30 mm2) Belden 9575 WPW991 18 AWG (0.75 mm2) Belden 9574 WPW975
24 VDC resettable, nonresettable	Connects to annunciators and other accessories	No more than 1.2 volt drop allowed from supply source to end of any branch	Distance limitation set by 1.2 volt maximum line drop	12 AWG (3.25 mm2) - 18 AWG (0.75 mm2)

Chapter 9: Compatible Devices (ID: CD 03)

The compatible devices for **System Sensor protocol** which are connected with this panel are given below:

Compatible Addressable Detectors: **99** No's Max.
Compatible Modules: **99** No's Max.

System Sensor Detectors:

2251B : The intelligent Photoelectric Smoke detector.
5251B : The intelligent Thermal detector (135^0F).
5251 RB : The intelligent Thermal detector (Rate of Rise 15^0F/Min).
5251H : The intelligent Thermal detector (190^0F).
2251TB : It is same as 2251B and includes a 135^0F thermal sensor.
2251TMB : Acclimate Detector.
501B : Flangeless Detector mounting Base.

System Sensor Modules:

M501M : Mini Monitor Module.
M500M : Monitor Module, Same as M501M.
M500C : Control Module.
M500S : Control Module, with supervised class B style Y and Class A Style Z.
M500X : Isolator Module.
M502M : Zone Interface Module.

M500K : Addressable Manual Call Point.
M500R : Relay Output Module.
B224BI : Isolator Base.

The compatible devices for **Wizmart Protocol** which are connected with this panel are given below:

Total Compatible Addressable Devices: **127** No's Max.

Wizmart Detectors:
NB768D-S : The intelligent Photoelectric Smoke detector.
NB768D-H : The intelligent Thermal detector.
NB768D-SHL : The intelligent Multi Photoelectric & Thermal detector.

Wizmart Modules:
NB765 : MCP Module.
NB764 : Sounder Control Module.
NB762 : Addressable Input / Output Module.
NB763 : Zone Interface Module.

Compatible (Conventional)IDC Input:

1. Apollo 65A Series – Model: 55000-226 - 16 No's / Zone.
2. System Sensor 100 Series – Model: 2151 - 16 No's / Zone.
3. System Sensor Beam Smoke Detector – Model: BEAM1224(S) - 1No / Zone.

Compatible NAC's:

1. System Sensor Mini Horn – Model: MHR / MHW – 50 No's / Circuit.
2. System Sensor Strobes – Model: MHR / MHW – 15 No's (@15cd setting) / Circuit.

End Of Line Devices:

1. RE4K7 for External Inputs, Zone, and NACs.

Chapter 10: Abbreviations

NFPA	–	National Fire Protection Association
AC	–	Alternate Current
FACP	–	Fire Alarm control Panel
LCD	–	Liquid Crystal Display
SLC	–	Signaling Line Circuit
Evt	–	Event
NOD	–	Number Of Device
NOM	–	Number Of Modules
DD	–	Date
MM	–	Month
YY	–	Year
LC	–	Loop Card
RTC	–	Real Time Clock
OPTI	–	Optical Detector
MULT	–	Multiple Detector
IP_M	–	Input Module
OP_M	–	Output Module
IO_M	–	Input / Output Module
Cat	–	Category
Del	–	Delete

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