

Fire Alarm Control Panel

**Installation, Commissioning & Operating
Manual**

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Fire 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 IS 2189: 1999 and any other local codes of practice that are applicable. 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 ceiling 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 detector.

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 photo electronic 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, both 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 hooters and 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 maintained properly.

Equipment used in the system may not be technically compatible with the control panel. 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 as per the manufacturer's recommendations. 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.

NOTES:

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Chapter 1: Introduction

This manual is intended as a complete guide to the RE – 120GR model Conventional Fire Alarm Panel with built-in gas release module. User operating Instructions are provided in the first part of this manual. This is followed with sections describing installation and commissioning procedures and full technical details are provided. This microprocessor based Gas Release Module is implemented with wide range of application required in Gas Release Automation. Its Default settings suitable to use CO₂, INERGEN[®] and FM200[™] application

1.1 System Design and Planning

It is assumed that the system, of which this control panel is a part, and has been designed by a competent fire alarm system designer in accordance with IS2189:1999 the requirements and any other local codes of practice that are applicable. The design drawings should clearly show the positions of the field devices and the control equipment.

1.2 General

The panel is self-contained with integral power supply and space provision for two sealed lead-acid standby batteries and comply with the requirements of IS 2189: 1999. The panel functions are controlled by the Micro Controller. The panel can accept, per zone, automatic detectors with a total maximum loading of 2.4mA quiescent current rating (refer to chapter 2.2), and an unlimited number of manual call points.

And the microprocessor based Automatic Gas Release Control module is designed to cross zoning the fire inputs and controls fire in earliest practicable moment with the help 24v Fire Extinguisher Output.

Installation

The panel is easy to install and operate. The panel fascia is retained by tamper-proof screws.

1.3 Fire Alarm Procedures

In accordance with IS 2189: 1999, written procedures should be laid down for dealing with alarms of fire, fault warnings, and the isolation of any part of the system. The responsible person should ensure that users of the system are instructed in its proper use and are familiar with the procedures.

On hearing the fire alarm:

CARRY OUT THE PRESCRIBED PROCEDURE Subsequent actions will depend on the circumstances, and may include silencing the audible alarms and resetting the system, as described later.

Fault Indication:

If the control panel indicates a Fault condition, make a note of all illuminated indicators, refer to the **Chapter - 7**, and call the service engineer.

1.4 User Responsibility

In addition to the routine testing described on routine test, the user has a responsibility for ensuring certain actions are taken following a fire or fault, and for implementing remedial action following a specified incidence of false alarms. As a minimum, the user shall record any incident and inform the service organization, who may be required to retest the system. The user's responsibilities are described fully in IS 2189: 1999.

1.5 Routine Testing

In order to ensure that the system is operational, and to comply with the requirements of IS 2189: 1999, the following routine attention is recommended:

Daily - Check the panel to ascertain that it indicates normal operation. If any fault is indicated check that it has been recorded and that the appropriate actions have been taken, e.g. informing the maintaining company.

Weekly - Test at least one detector or call point to confirm the operation of the panel and the audible alarms. Test a different zone each week and, if possible, a different device. Keep a record of the device and zone tested each week. Record and report any malfunction.

Quarterly - The responsible person should ensure that every three months the system is checked by a competent person. Check the standby batteries and the charger voltage Test at least one device in each zone to check the panel functions. Check the operation of the audible alarms and any link to a remote manned centre, Central Station, etc. Carry out a visual inspection of the installation to check for alterations or obstructions and issue a certificate of testing.

Annually - The responsible person should ensure that, in addition to the quarterly checks, each device on the system is tested and that a visual inspection is made of the cable fittings and equipment.

Note: The control panel case should be cleaned periodically by wiping with a soft, damp cloth. **Do not** use any solvents.

Chapter 2: Product Description

The RE – 120GR is a 2 zone Dedicated microprocessor based conventional Fire Alarm Gas Release Panel. The Panel accepts water flow devices, conventional input devices like 2 wire and 4 wire smoke detectors, pull stations and other normally open contact devices in Fire Zone inputs. The Outputs include three numbers of Notification Appliance Circuits (sounders)(2No's for gas release functions and 1No. for Fire Alarm, Four Form – C relays for fire (2No's), fault (1 No.) and 1 No. for timer. It supervises all wiring, AC voltage and Battery level.

2.1 Product Features

- Rugged CRCA sheet with powder coated finish.
- Modular construction.
- Operates on 220V, A.C supply.
- Battery backup with built in charging.
- Error free Fire / Fault status in unambiguous colored LED indication.
- Low battery visual warning with audible tone.
- System on, AC on , Battery on indications.
- Relay output for actuators.
- Remote fire indication with Audible Tone.
- Lamp test facility.
- Compatible to all types of conventional detectors.
- Twin RED LED indication for fire.
- Zone Disable (Isolation) facility with loop voltage cut off.
- Resettable 24v DC output for 4 wire detectors.
- 24 VDC output for External notification devices (Sounder, Bell, etc.).
- Hooter loop monitoring facility.
- Hooter (Evacuate) test facility.
- Programmable Cross zoning facility.
- Programmable timer to ON & OFF the solenoid valve.
- Key pad Enable / Disable facility.

2.2 Specification

AC Power

220 VAC (+10%, -15%), 50 Hz.

Wire size: 1.5 Sq. mm with 600V insulation

Battery (Lead Acid only)

Charging Voltage: 27.9 VDC.

Charging Capacity: 7 Amp Hour Battery Max.

System Quiescent Current: 70mA

Initiating Device Circuits (Zone Circuit)

All zones are Class B wiring

Normal Operating Voltage: Nominal 24 VDC

Alarm Current: 9 – 32mA threshold

Short Circuit Current: 40mA Maximum

Loop resistance: 100 ohms Maximum

End-Of-Line Resistor: 4.7K, 1/4watt

Standby Current: 6.8mA (2.4mA for Detectors)

Notification Appliance Circuits (Sounder/Hooter Circuit)

Class – B wiring

Operating Nominal Voltage: 24 VDC

Hooter (NACs) output: 0.5A

End-Of-Line Resistor: 4.7K, 1/4watt

Remote Outputs

Fire Contact (C, NO, NC): 220v AC/30v DC@ 1A

Fault Contact (C, NO, NC): 220v AC/30v DC@ 1A

Timer Contact (C, NO, NC): 220v AC/30v DC@ 1A

RS 24 VDC Power – For Four Wire devices

Operating Voltage: 24VDC, 300mA Max.

2.3 Controls and Indication

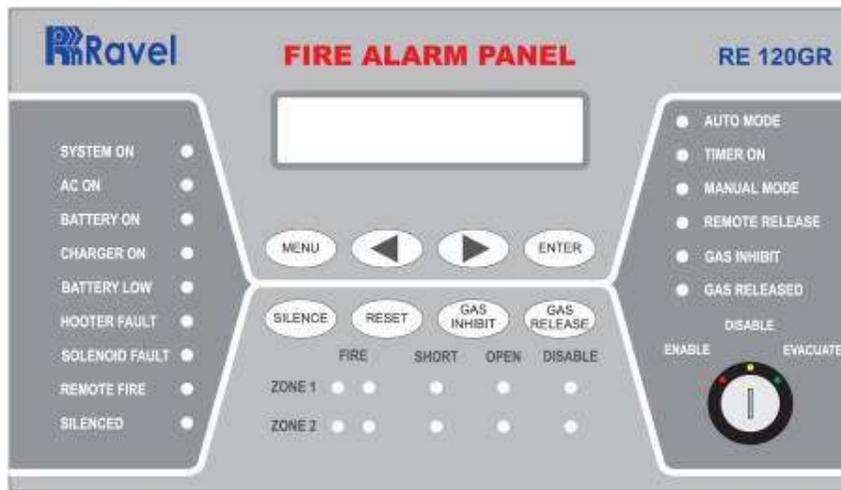


Figure – 1

2.3.1 LED Indication

System On – Green
AC On – Green
Battery On – Green
Charger On – Green
Battery Low – Yellow
Hooter Fault – Yellow
Solenoid Fault – Yellow
Zone Fire – Red
Zone Open Fault – Yellow
Zone Short Fault – Yellow
Zone Disable – Yellow
Remote Fire – Red
Silenced – Yellow
Auto Mode – Green
Timer On – Green
Manual Mode – Green
Remote Release – Red
Gas Inhibit – Yellow
Gas Released – Red

Local Buzzer

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

- Alarm, Timer on, Remote Fire, Evacuate,
Gas Released – Continuous tone.
- Fault – pulse 1sec ON and 0.5sec OFF

2.3.2 Controls

SILENCE Key:

During fire/fault condition, silence key is used to silence the external NAC (Sounders) and the internal buzzer tone.

RESET Key:

This key is pressed to reset the entire system and while on reset condition, zone loop will not reset in normal condition.

Gas Inhibit Key:

This key is used to activate and deactivate the Gas Inhibit. This selection can identify by the gas inhibit LED.

GAS RELEASE Key:

To release gas instantly bypassing the timer delay. This key can be used only in timer on condition.

MENU Key:

To enter into the Main Menu in the LCD. This key is used to change or view the program the inputs and outputs of the panel configuration.

ENTER Key:

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

CURSOR Key:

The cursor keys (Right / Left) are used to move the menu list and to toggle between the options of the selected menu list.

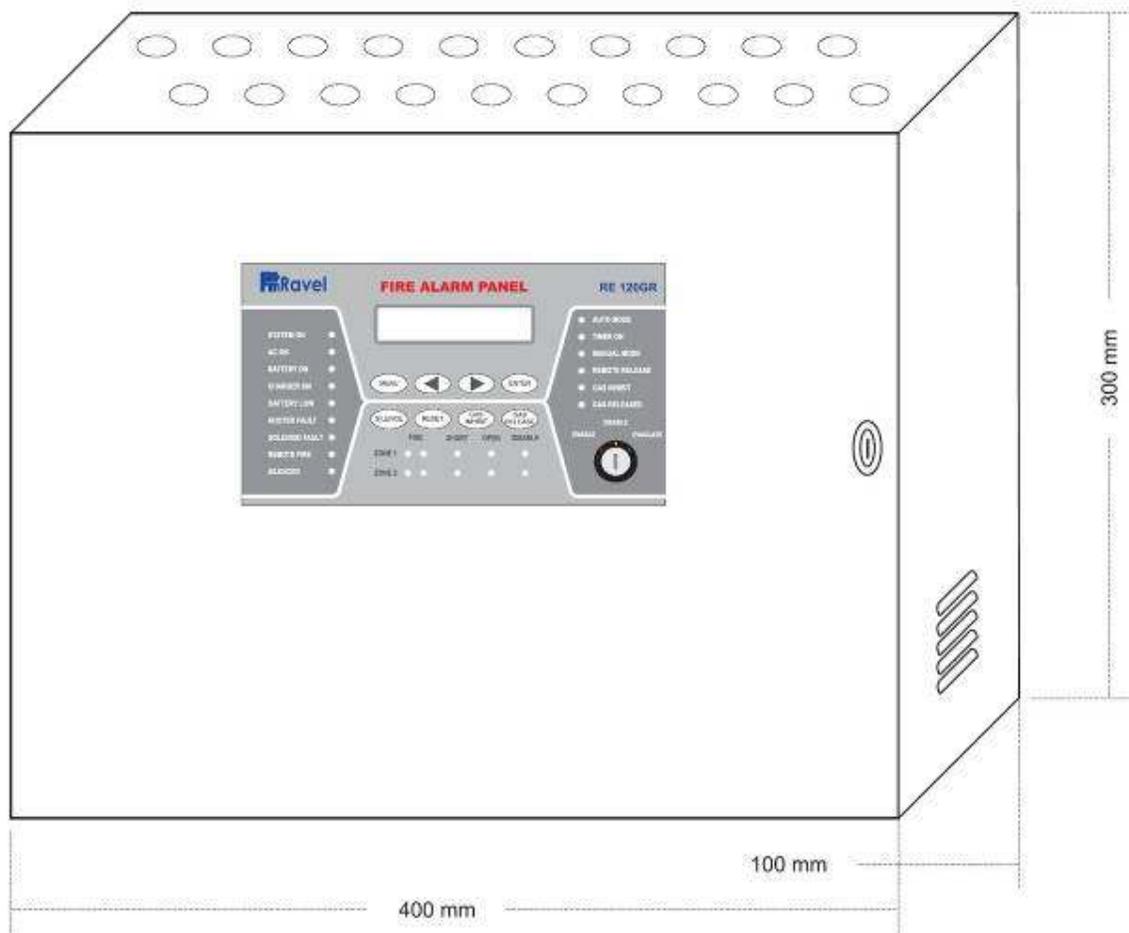
2.4 Mechanical Construction

The enclosure of the Panel is constructed by CRCA sheet with powder coated finish and it's designed to afford the degree of protection as per IP-50. The $\varnothing 19\text{mm}$ knock outs are given for cable entry at the top of the cabinet.

The panel also has a built in battery provision to accommodate 2 Nos. of 12v, 7Ah batteries.

The front side of the panel consists of the following,

- a. Tactile key pad.
- b. LED indications.
- c. Key pad lock.



Chapter 3: Installation

3.1 Installation Precaution

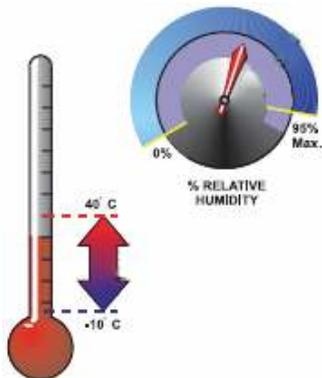


Installation Precautions

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.



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 are to be installed in an environment with a nominal room temperature of 0-50° C/32-120° F.

Verify that wire sizes are adequate for all initiating and Indicating device 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 9 in-lbs.

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.

3.2 Mounting Details

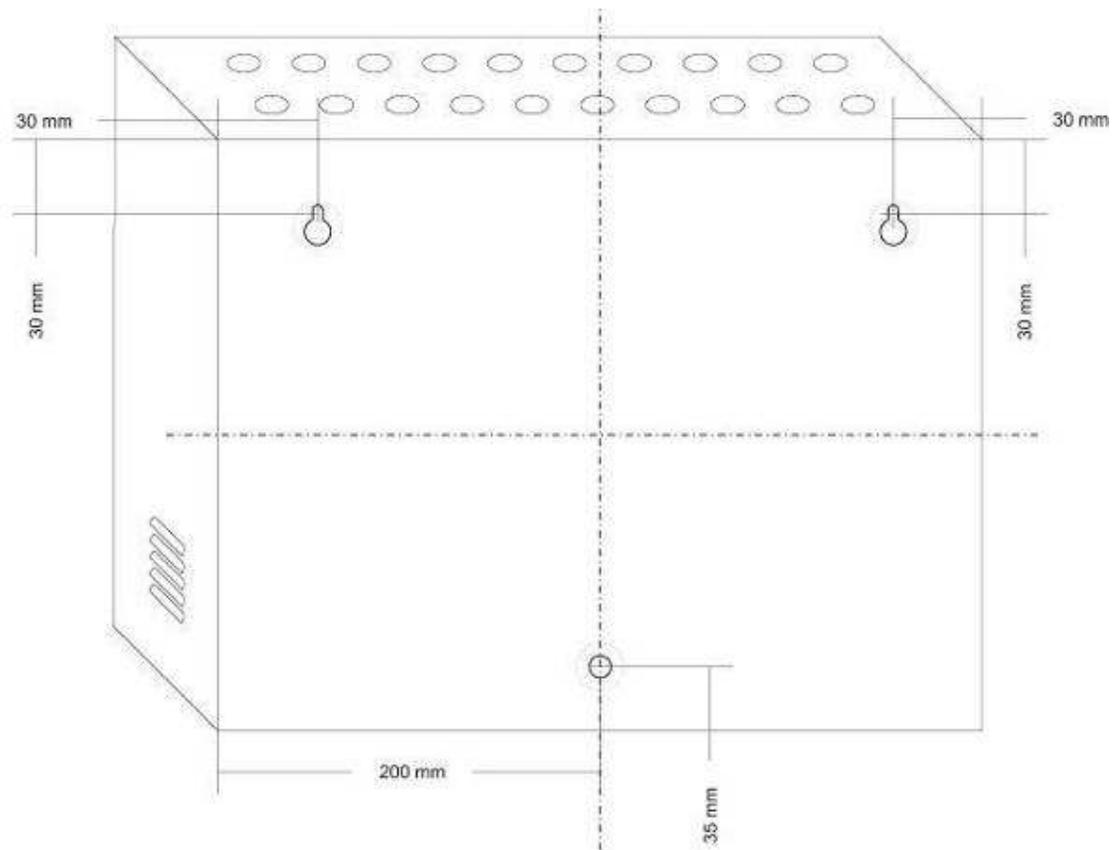


Figure - 3

Place the panel in its mounting position and fix the panel to the wall using the slots of the three screws. Ensure the enclosure and the inner parts of the panel are given sufficient protection during installation. All external cables are to be entered via the $\varnothing 19\text{mm}$ preformed knockouts located at the 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.

3.3 Input Circuits

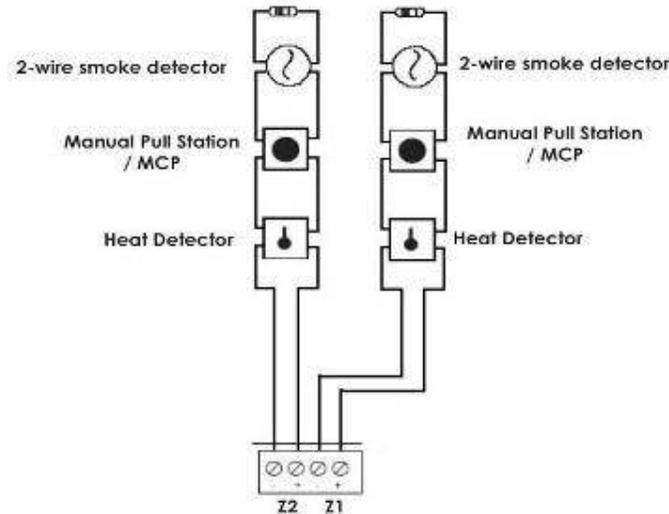
3.3.1 Zone Circuit:

The control panel has 2 zone input circuits. The maximum loop resistance limit for each input circuit is 100 ohms. All field wiring of each zone is supervised for open and short faults. Both conditions are visually and audibly (toggle tone) annunciated.

Each zone is a Class B Initiating Device Circuit (IDC – Zones) designed to accept any normally open contact devices and conventional 2-wire, 24 volt smoke detectors.

It is allowable to mix an assortment of device types (i.e. smoke detectors, heat detectors, pull stations, etc.) on any zone.

Maximum 20 No's of detectors (2.4mA Max) can connect for each zone loop.



Zone Circuit – Class B

Figure – 4

3.3.2 Remote Fire:

This Input is used to give alarm due to the emergency alert given by the other control panels or some other device using the contacts of that panel or devices. This Input is kept normally open, whenever the input changes to normally close; the FAP gives the Remote fire Indication with continuous buzzer tone and external sounders.

3.3.3 Manual Release:

The External Release switch (MCP or pull station) is connected with this terminal. This switch is kept in the field wherever required. It causes Manual Mode Gas Release. It will energize the Solenoid Output.

3.3.4 Manual Inhibit:

The External Gas Inhibit switch (MCP or pull station) is connected with this terminal. This switch is kept in the field wherever required. It causes Manual Mode Gas Inhibition. It will bypass Timer and Solenoid Output.

3.3.5 Actuator Pressure Low Switch:

This input terminal is used to identify the Actuator Pressure status of the cylinder. If Actuator Pressure Low found, Actuator Pressure Low LED will glow until it becomes normal.

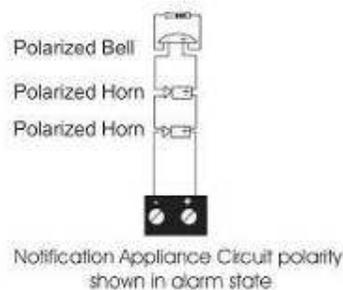
3.3.6 Pressure Switch:

The pressure switch present in the cylinder is connected with this terminal. When the gas is discharged due to over pressure or gets triggered by the Gas release panel the switch is position is changed. This change is sensed in the gas release module and gas discharged LED will glow with relay contact and continuous buzzer tone.

3.4 Output Circuits

Hooter Circuits: The RE – 120GR provides 3 Notification Appliance Circuits (Sounder Circuit) standard as Class B. The total load capacity of each circuit is 0.5A.

Class B Notification Appliance Circuit (Supervised) 4.7K ohms, 1/4 watt



E. O. L. RESISTOR 4.7K OHMS FOR UNUSED
NAC(Sounder) LOOPS

Sounder Circuit – Class B

Figure – 5

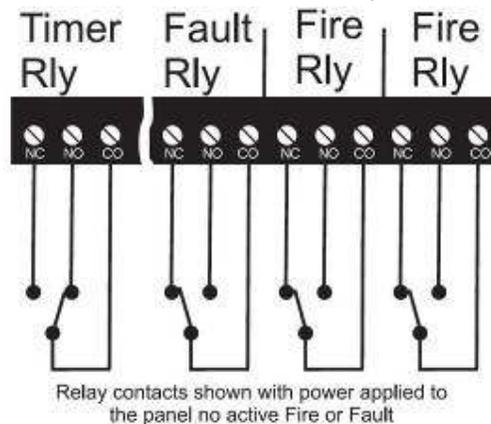
Note: If the non polarized devices are used, connect the device as mentioned in Chapter - 7.

Hooter 1 – Fire Condition.

Hooter 2 – Cross Zone Condition (Timer ON).

Hooter 3 – Solenoid Released.

Standard Relay: The Fire Alarm control panel provides two Form-C relays rated 2.0 amps @ 30 VDC and 2.0 amps @ 30 VAC for fire, one relay for fault and one relay for timer on.



Relay contacts shown with power applied to the panel no active Fire or Fault

Figure – 6

Solenoid Output:

Whenever the cross zone is occurred or manual release switch is activated, the solenoid output (24v D.C) will be activate after the set time delay. Time delay can be changed by using the programming menu.

Note: Ensure the solenoid loop is terminated with 4K7 EOL like as below,

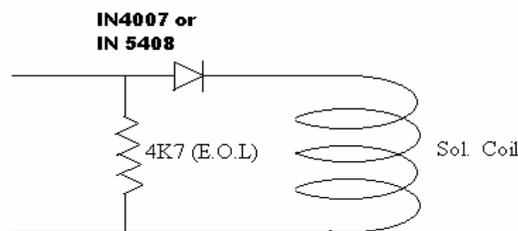


Figure - 7

Chapter 4: Operating Instruction

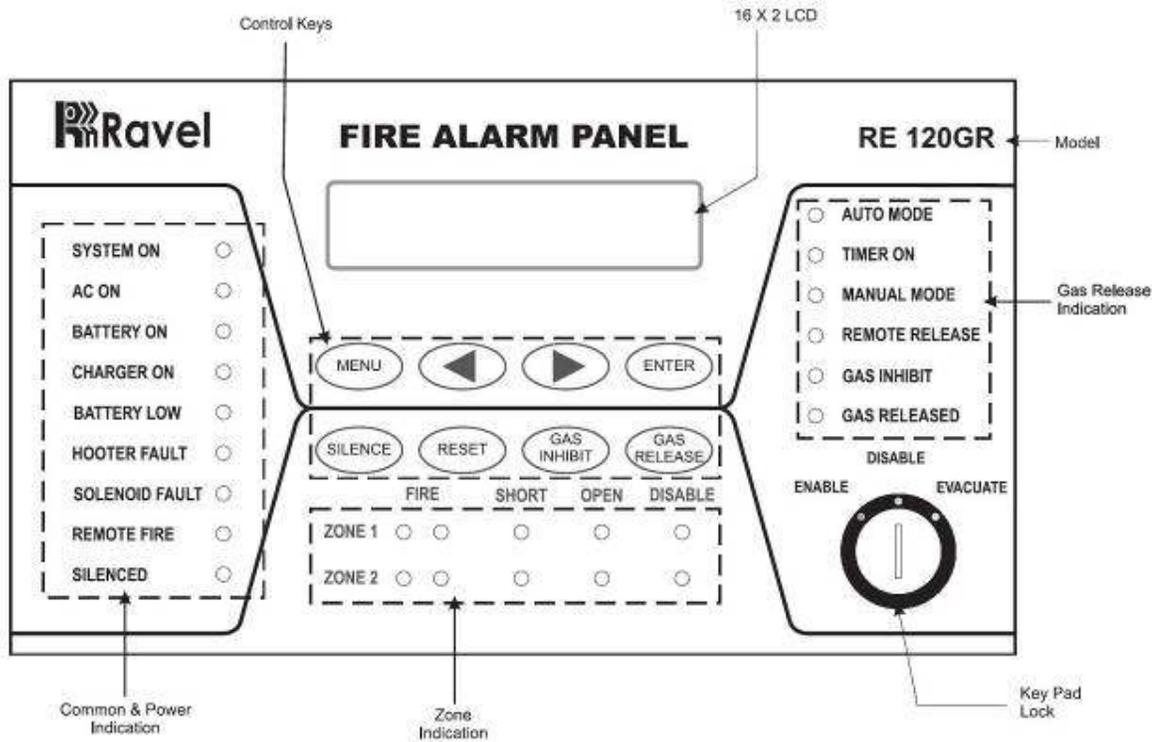


Figure – 8

4.1 Switch Functions

SILENCE Key: This key is used in Fire / Fault Condition, to acknowledge the external sounder / internal buzzer.

RESET Key: This key is used to reset the panel, the zone loop will not reset in normal condition. The zone loop will reset only if the fire in the zone loop. The panel is reset by pressing this key and during condition, all the detector input voltages are cut off up to 3 seconds for Detectors and MCPs, Then voltages are put on to the loop.

ENTER Key: To accept the programmed or edited menu, mode or value in the LCD. This key is also used as lamp test (Except in menu screen).

CURSOR KEYS: The cursor keys (Right / Left arrows) are used to move the menu list.

MENU Key: This key is used to enter into the program menu.

GAS RELEASE: The key is used to bypass the timer and it causes solenoid output on immediately. This key can be used only in cross zone condition or whenever the timer on LED is glowing.

GAS INHIBIT: This key is used to activate Gas Inhibition. This selection can identify by the Gas Inhibit LED. The same key is used to bring back to normal condition.

4.2 Status LED:

Normal: In the Normal Condition, **SYSTEM ON, AC ON, BATTERY ON, CHARGER ON** and **AUTO MODE** green LED will be illuminated. There should be **no other amber / red LED visual indication or audible tone**.

A.C ON: This LED indicates the presence of main supply. Whenever the Main Supply (220v A.C) is present this LED will glow. Whenever the Main Supply (220v A.C) fails / fuse blown, the AC ON LED goes off.

BATTERY ON: This LED indicates the presence of standby power supply. If the standby battery Supply fails / fuse blown, the BATTERY ON LED goes off. Whenever the backup battery voltage goes below the 21v, the BATTERY ON LED will blink (Indicates the Battery Low).

CHARGER ON: This LED indicates the condition of charging circuit.

HOOTER FAULT: Whenever there is any fault in Notification Appliances Circuits like Hooter (Sounder) loop open / short, it will be identified by COMMON HOOTER FAULT LED.

REMOTE FIRE: When the Remote fire input senses the signal from other devices this LED will glow with Continuous buzzer tone.

SILENCED: Whenever the external hooters or sounders (NAC) is silenced using the silence key during fire condition this LED will glow.

SYSTEM MODE: The selected mode can be identified by either the AUTO / MANUAL LED (Default – AUTO MODE).

GAS INHIBIT: One of the features of this module is the 24V Solenoid output can be isolate via internal / External GAS INHIBT switch. This External / Internal isolation can identify by separate YELLOW LED.

TIMER ON: After the Cross zoning the timer activation can be identified by this LED. This “Pre-Intimation of the Solenoid output” LED remains ON condition until the set time value is expired or GAS Inhibit is activated. This Solenoid ON timer period can be alterable by programming menu.

REMOTE RELEASED: Whenever the Manual release switch (Remote Switch) is activated, it is indicated by the Remote Release LED.

SOLENOID FAULT: Whenever there is any fault in Solenoid loop open / short, it will be identified by Solenoid Loop Fault LED.

4.3 Operation

4.3.1 ZONE FAULT RESPONSE:

When faults like Open/ Short occurred in the loop, the corresponding ZONE FAULT LED would identify it.

Note: *During the above fault conditions, apart from the specific fault identification LED, Local buzzer with intermittent tone and fault relay will be activated. During this time, if ‘SILENCE.’ is activated, intermittent tone will be silenced, but the fault relay remains active until the fault is cleared.*

4.3.2 ZONE FAULT RESTORAL:

When the faults condition of the FAP is **restored**, then the corresponding fault LED goes off and also intermittent buzzer tone is deactivated.

4.3.3 ZONE FIRE RESPONSE:

When the control panel detects Fire via the Detector / MCP, the corresponding ZONE FIRE red LED will be illuminated. At the same time hooter, potential free contact (Fire Relay) and local buzzer (continuous tone) will be activated.

The External hooter (NAC / Sounder) and buzzer will be silenced by using the **Silence** Key.

Always the recent fired zone FIRE LED will blink continuously until it acknowledged rest of the fired zone FIRE LED's will glow constantly till it goes to RESET. **The FIRE LED indication will remain ON condition till the panel is RESET.**

4.3.4 ZONE FIRE RESTORAL:

The control panel returns to normal after all alarms have been cleared and a system reset key has been pressed. The control panel will perform the following upon restoral of all active alarms, The Zone Fire LED, Hooters, buzzer and fire relay are turn off.

Note:

- 1. The Fire relay will be in ON condition till the fire LEDs go OFF.*
- 2. By silencing, sounders are switched off and Fire relay output for actuators will remains in ON Condition until reset.*

4.3.5 ZONE DISABLEMENT:

The Zone Disablement is done by through the programming menu. When the menu key is pressed the screen shows that first screen as " 1. Zone 1 Enabled". To change the status press enter key and then change the option by using the curser key, and press the enter to conform the changes.

Restoral:

To bring back the Disabled zone to the normal monitoring condition perform the same steps as for disablement.

4.3.6 Evacuate Test:

The External Hooters or Sounder (NAC) can be activated without the actual fire by keeping the key pad enable key in evacuate position. The LCD display shows that Evacuate Hooter ON as shown below. The evacuate can bring back to normal condition by bring back the key pad enable key to disable position or external hooter are silenced by using the silence key.

4.3.7 Lamp Test:

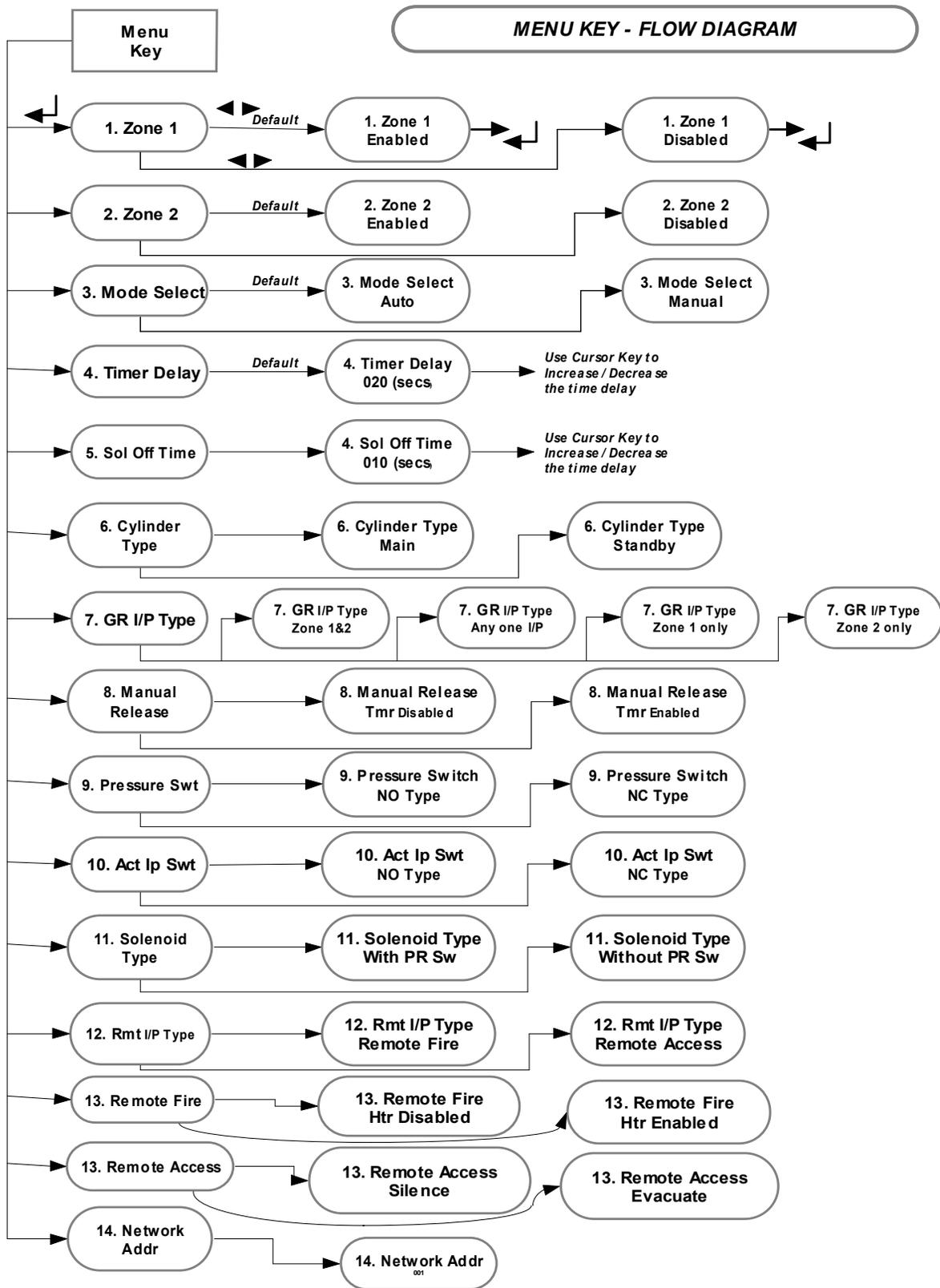
The Enter key is used as lamp test key. The all LED's of the panel can be checked using Enter key except inside the menu. When the lamp test key is pressed, all the LED will glow continuously for 4 seconds with continuous buzzer tone.

4.4 Programming menu

The fire alarm panel RE 120GR is programmable for gas release timer, mode, Input type, remote fire etc., When entered into the menu first shows the screen " Zone 1 Enable". Use left right cursor key for next menu. The programming menu list as given below.

1. Zone 1 (Default – Enable)
2. Zone 2 (Default – Enable)
3. Mode Selection (Default – Auto)
4. Timer Delay (Default – 20Sec.)
5. Solenoid off time (Default – 10Sec.)
6. Cylinder Type (Default – Main)
7. Gas Release Input type (Default – Zone 1&2)
8. Manual Release (Default – Timer Disabled)
9. Pressure Switch (Default – NO type)
10. Actuator Pressure Switch (Default – No Type)
11. Solenoid Type (Default – With Pressure Switch)
12. Remote Input Type (Default – Remote Fire)
13. Remote Fire (Default – Hooter Disabled)
14. Network Address (Default – 001)

The programming menu flow chart is as follows:



Note:

1. Use Cursor key (← →) to move the menu list and to interchange the status of the menu.
2. Use Enter Key (↵) to select the menu list and conform the change of the status.

Program Functions

4.4.1 Zone 1

When entered into the menu first shows the screen "Zone 1 Enable". To change the condition, press enter key and then use cursor to choose the option. After selecting the option press enter key to conform the selection. If the zone one disabled, that particular zone disable LED glows.

The LCD screen is as shown below.

A rounded rectangular box containing the text "1. Zone 1" on the top line and "<Enabled>" on the bottom line, representing the LCD display for Zone 1.

**1. Zone 1
<Enabled>**

4.4.2 Zone 2

To Enable (Isolate) / Disable the Zone 2, press menu key and use cursor key to choose second option (Zone 2). To change the condition, press enter key and then use cursor to choose the option. After selecting the option press enter key to conform the selection. If the zone one disabled, that particular zone disable LED glows.

The LCD screen is as shown below.

A rounded rectangular box containing the text "2. Zone 2" on the top line and "<Enabled>" on the bottom line, representing the LCD display for Zone 2.

**2. Zone 2
<Enabled>**

4.4.3 Mode Selection

The gas release mode can select as Auto or Manual using this menu. Mode selection is selected by using the cursor key, the press enter key and choose Auto or Manual. The Default mode is "Auto" Mode. The display shows as follows.

A rounded rectangular box containing the text "3. Mode Select" on the top line and "<Auto>" on the bottom line, representing the LCD display for Mode Selection.

**3. Mode Select
<Auto>**

4.4.4 Timer Delay

The time delay to give the 24V output to release the gas can be programmed. The time delay range is 1 to 999 Seconds. The time delay can be changed by holding the cursor key to increase or decrease the time after entering into the change mode. The LCD Display shows as follows.

**4. Timer Delay
<20 (Sec)>**

4.4.5 Solenoid Off Time

Similar to the timer delay, the Solenoid 24V Output off time also programmable. The time delay range is 1 to 999 Seconds. The time delay can be changed by holding the cursor key to increase or decrease the time after entering into the change mode. The LCD Display shows as follows.

**5. Sol Off Time
<10 (Sec)>**

4.4.6 Cylinder Type

The Cylinder type specifies that Main Cylinder or Standby Cylinder. From this selection which cylinder has release gas first is selected (Default – Main Cylinder). LCD Display as shows as follows.

**6. Cylinder T type
<Main>**

4.4.7 Gas Release Input Type

From this menu the gas release input type is selected to activate the gas release function. The various gas release input types are Zone 1&2, Any one Zone I/P, Zone 1 only and zone 2 only. In this menu the LCD Display shows as follows.

**7. GR I/P Type
<Zone 1&2>**

4.4.8 Manual Release

From this menu, timer is enabled or disabled for manual mode operations. In this menu the LCD Display shows as follows.

8. Manual Release
<TMR Disabled>

4.4.9 Pressure Switch

From this menu, pressure switch type is selected which going to connect with cylinder. . In this menu the LCD Display shows as follows.

9. Pressure Switch
<NO Type>

4.4.10 Actuator Pressure Switch

From this menu, Actuator pressure switch type is selected which going to connect with cylinder. In this menu the LCD Display shows as follows.

10. Act I/P Swt
<NO Type>

4.4.11 Solenoid Type

From this menu Solenoid output sense is selected as with or without pressure switch. In this menu the LCD Display shows as follows.

11. Solenoid Type
<With PR Sw>

4.4.12 Remote Input Type

From this menu remote input terminal is configured as remote fire or Remote Access. In this menu LCD Display shows as follows.

12. Rmt I/P Type

<remote Fire>

4.4.13 Remote Fire / Access

Remote Fire: If the remote input selected as remote fire, from this menu the common hooter is 'enabled' or 'disable' for remote fire. In this menu LCD Display is as shown as below.

13. Remote Fire

<Htr Disabled>

Remote Access: If the remote input is selected as remote access then from this menu remote input is configured remote silence or evacuate. In this menu default mode is shown as follows.

13. Remote Access

<Silence>

By using this option we can access this panel for silencing or to evacuate the panel output.

4.4.14 Network Address

This menu is used to set the address for networking.

Note:

This facility is not available at present.

Chapter 5: Servicing

5.1 Installation/Replacement of PCB:

Remove the screws of PCB, which has to be changed and remove the PCB from the mounting position and place the new PCB in the same position with the screws tightened properly.

5.2 Lamp Test:

The Enter key is used as lamp test key. The all LED's of the panel can be checked using Enter key except inside the menu. When the lamp test key is pressed, all the LED will glow continuously for 4 seconds with continuous buzzer tone.

Chapter 6: Battery Calculation

Normal Condition : $X = \mathbf{S}$ (Amps) x ____ Hrs. (Backup time required)

Alarm Condition : $Y = \mathbf{F}$ (Amps) x ____ Hrs. (Backup time required)

Battery Ah required : $AH = (X + Y) \times 1.2$ (Derating Factor).

Note: Refer specification (Page 11) 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) +
(Hooter Current x No. of Hooter)
+ System Current (**S**).

Example: (2 Zone with 48 Hrs in normal condition & 1 Hr in Alarm condition)

$$S = 0.030A + (0.0068A \times 2) = 0.0436A$$

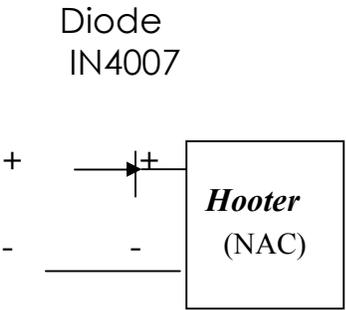
$$F = (0.035A \times 2) + [0.2 \times 2(\text{no. of hooter})] + 0.0436 = 0.5136A$$

$$X = S (0.0436A) \times 48 \text{ Hrs.} = 2.0928$$

$$Y = F (0.5136A) \times 1 \text{ Hrs.} = 0.5136$$

$$AH = (X + Y) \times 1.2 = (2.0928 + 0.5136) \times 1.2 = 3.12768Ah$$

Chapter 7: Trouble Shooting

Indication	Root Cause	Remedy
There is no indication on the panel	No power to the Panel	Check AC power and Standby power.
If there is any false alarm from the detector	May be the detector is faulty or check EOL resistor	Ensure the AC supply within 220v+10%, -15% (or) Change the faulty detector
Detector OPEN is not detected by the panel	Total zone loop current exceed the rated value	Check number of detectors connected in the loop. Total detectors current should not go above 3mA
Hooter fault indication	There is no proper connection in the hooter Or loop Fault.	If there is no hooter connected to the output, check if EOL resistor connected there or not.
<p><u>Connection Details for Non Polarized Hooter</u></p> <p>Diode 1N4007</p> 		<p>Check loop wiring for short / open using a meter.</p> <p>If hooter is non-polarized, then ensure each hooter's +ve loop is connected to 1N 4007 diode's cathode and the hooter -ve loop connected to the anode of 1N 4007.</p>

Chapter 8: Wire Requirements

Connecting external system accessories to the RE – 120 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 RE – 120 circuits. Reference the chart below to specify wire requirements and limitations for each RE – 120.

TABLE 8-1: Wire Requirements

CIRCUIT TYPE	CIRCUIT FUNCTION	WIRE TYPE AND LIMITATIONS	RECOMMENDED MAX. DISTANCE Feet (meters)	WIRE GAUGE
Initiating Device Circuit	Connects to Initiating Devices	Untwisted, unshielded wire (Do not exceed 50 ohms)	10,000 (3,000 m) 8,000 (2,400 m) 4,875 (1,480 m) 3,225 (975 m)	12 AWG (3.25 mm ²) Belden 9583 WPW999 14 AWG (2.00 mm ²) Belden 9581 WPW995 16 AWG (1.30 mm ²) Belden 9575 WPW991 18 AWG (0.75 mm ²) Belden 9574 WPW975
24 VDC resettable, nonresettable	Connects to annunciator 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 mm ²) - 18 AWG (0.75 mm ²)

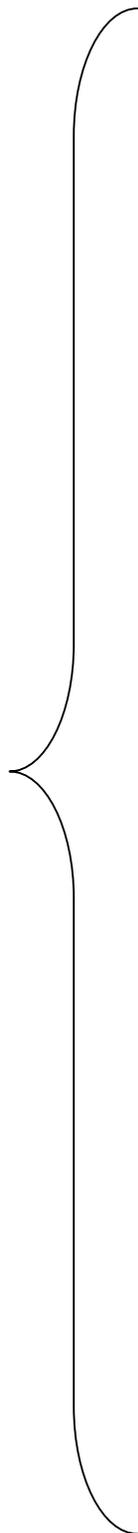
Chapter 9: Abbreviation

The short forms, which are given in this manual, are abbreviated below,

RE	-	Ravel Electronics Pvt Ltd.,
IS	-	Indian Standard.
AC	-	Alternating Current
DC	-	Direct Current
CRCA	-	Cold Rolled Carbon Alloy
LED	-	Light Emitting Diode
O/P	-	Output
mm	-	millimeter
no(s).	-	number(s)
v	-	volt(s)
Ah	-	Ampere hour
IEE	-	Institute of Electrical Engineering
EOL	-	End Of Line
PCB	-	Printed Circuit Board
CPU	-	Central Processing Unit
MCP	-	Manual Call Point
S.Nos	-	Serial Numbers
mA	-	milli Ampere
Kgs	-	killo grams
CO,NO,NC-	-	Common, Normally Open, Normally Closed

11. Terminal Details:

RE 120GR



I	STD BY Pressure Switch
+	
I	STD By ACT. PR. Low
+	
I	STD BY Cylinder 24V O/P
+	
I	Main Cylinder 24V O/P
+	
I	Main Pressure Switch
+	
I	Main ACT. Pressure Low
+	
I	24VDC Sounder 3
+	
I	Manual Inhibit
+	
I	Manual Release
+	
NC	Timer Relay
NO	
C	
I	24VDC Sounder 2
+	
I	Remote Input
+	
I	24VDC Reset Output
+	
I	Zone 2
+	
I	Zone 1
+	
I	24VDC Sounder 1
+	
NC	Fault Relay
NO	
C	
NC	Fire Relay 2
NO	
C	
NC	Fire Relay 1
NO	
C	
P	220 V AC I/P
N	
E	



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Web: www.ravelfirepanels.com



Certificate Of Conformity

Certificate No.:

Date:

Customer Name:

We hereby certify that the items detailed hereon have been manufactured, inspected and electrically tested to ensure compliance with Ravel Product and process specification.

Model No.:

Model Description

Serial No.

No. of Zone

Invoice No.:

Purchase Order No.:

Date of Shipment:

For Ravel Electronics Pvt Ltd.,

Quality Control Incharge



RAVEL ELECTRONICS PVT. LTD

No. 150-A, Elec. Indsl. Estate, Perungudi, Chennai – 600 096. India

Tel.: 24961004 / 24960825 Fax: 044-4204 9599

Email: marketing@ravelfirepanels.com

Web: www.ravelfirepanels.com



WARRANTY CERTIFICATE

Model No.: RE 120GR

Serial No.:

Ravel Electronics warrants each product to be free from defects in material and workmanship. This obligation is limited to servicing or part returned to the company for that purpose and making good any parts thereof which shall be within warranty period, returned to the company under a written intimation and which to the company's satisfaction to be found defective. The company reserves the right to decide the workplace for the repair work. The freight for defective material will have to be borne by the purchaser, and the transit risk for such material will rest with the purchaser.

This warranty will last for a period of **12 months** from the date of Invoice of the product from the factory. The warranty is applicable only if the product is used within its specifications. The warranty for the replaced components will lapse along with that of the main product.

THIS WARRANTY IS VALID UP TO: 12 months from the date of invoice

Authorized Signatory