



FIRE INDICATOR PANEL
TYPE 4020

OPERATING MANUAL
VERSION 2.0 FIRMWARE

GLOSSARY OF STANDARD TERMS

The following abbreviations are used throughout this manual:

ACF:	Ancillary control facility.
"Ackd":	Display abbreviation for acknowledged condition.
AVF:	Alarm Verification Facility.
ALM:	Display abbreviation for alarm condition.
AS1668:	Australian Standard AS1668 specifying the use of mechanical ventilation and air-conditioning in buildings.
FIP:	Fire Indicator Panel.
"Isol":	Display abbreviation for Isolated condition.
LCD:	Liquid Crystal Display.
LED:	Light Emitting Diode.

MANUFACTURERS DETAILS

APPROVALS: AUSTRALIAN STANDARDS AS1603.4
SSL CERTIFICATE OF COMPLIANCE NUMBER: **197**

The 4020 Fire Indicator Panel is manufactured by:

Simplex International Pty Ltd
ACN: 008 435 443
140 Old Pittwater Road
Brookvale N.S.W. 2100 Australia

Phone: (02) 9466-2333

Notice: The contents of this document are subject to change without notice.

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PANEL DETAILS

panel sticker

4020 Panel supplied by	
Installation location	
Contract/Job Number	
As installed FIP System drawing number	
Panel Installation date	
Panel Commissioned date	
Maintenance Company	
Telephone	
Service Contact	

1 COMPATIBLE ACTUATING DEVICES

The following detectors have been approved as compatible devices for use with the 4020 FIP.

1.1 SIMPLEX RANGE:

4098-9413	Heat detector Type A
4098-9414	Heat detector Type B
4098-9415	Heat detector Type C
4098-9416	Heat detector Type D
2098-9201	Photoelectric smoke detector
2098-9576	Ionisation smoke detector
2098-9211	Universal base.

1.2 HOCHIKI RANGE:

DCA-B-60R MK V	Type A heat detector
DFE-60B	Type B heat detector
DCA-B-90R MK 1	Type C heat detector
DFE-90D	Type D heat detector
DFG-60BLKJ	Type B sealed heat detector
SPA-AB	Beam type smoke detector
SIH-AM	Ionisation smoke detector
SLK-A	Photoelectric smoke detector
SLG-AM MK 1	Photoelectric smoke detector
HF-24A MK 1	Ultraviolet smoke detector
YBC-R/3A	Plain - non indicating base
YBF-RL/4AH4	LED Indicating base

1.3 OLSEN RANGE:

B111B	Beam type smoke detector
C24B	Ionisation smoke detector
C29B	Ionisation smoke detector
FW81B	Heat detector cable
P24B	Photoelectric smoke detector
P29B	Photoelectric smoke detector
R24B	Dual spectrum infrared flame detector
T54B	Probe type heat detector type E
T56B	Heat detector types A,B,C,D with Z55B base
T56B	Heat detector types A,B,C,D with Z54B base
V41B/V42B	Ultraviolet flame detector

1.4 APOLLO

Heat detector Type A

Heat detector Type B

Heat detector Type C

Heat detector Type D

Series 20

Series 30

Photoelectric smoke detector

Ionisation smoke detector

1.5 PANELECT/PANASONIC

PFS-A

PFS-B

PFS-C

PFS-D

PFS-P

PFS-I

Heat detector Type A

Heat detector Type B

Heat detector Type C

Heat detector Type D

Photoelectric smoke detector

Ionisation smoke detector

2 COMPATIBLE BATTERIES

The following series of batteries are compatible with the 4020 FIP:

- (1) Power-Sonic PS12 series
- (2) Sonnenschien A200 series
- (3) Sonnenschien A300 series
- (4) Yuasa NP series

3 SPECIFICATION

3.1 GENERAL

System Capacity	Minimum 8 Alarm Zone Circuits Maximum 48 Alarm Zone Circuits
Cabinet Size(mm)	Up to 24 Zones : 440H x 500W x 140D 24 - 48 Zones : 400H x 535W x 180D
Cabinet Material	1.5mm Mild grade steel
Cabinet Finish	Powder coated
Cabinet Colour	Magnolia Ripple
Mounting	Wall mount
Shipping Weight	14Kg (without batteries)
Mains Input	240V AC, +6%,-10%,50Hz
Internal Power Supply	24V DC @ 1.5A, or 24V DC @ 4.5A
Standby Battery	24V sealed lead acid 7Ah or 12Ah
Battery Charger	27.6V DC (nominal) @ 0.6A,
PSU Supervision	Charger high/low,Battery low/fail
Temperature	-5°C to 45°C
Humidity	10% to 90% rh non-condensing.

3.2 INPUTS

Detector Circuits	Standard 20V detectors
Maximum detector quiescent current	2.4mA
Door Switch	Bell Isolate, ACF Isolate
Other	Supervised door mounted Manual Call Point

3.3 OUTPUTS

Bell	Supervised 24V DC @ 1.5A
Brigade(2)	Voltage free relay contacts (2A @ 30V dc) N.O. or N.C. Power Fail(Fault), Master Alarm
Ancillary(2)	Voltage free relay contacts (2A @ 30V dc) N.O. or N.C.

3.4 INDICATORS and DISPLAY

Zone Status	2 line by 40 character backlight Liquid Crystal Display with adjustable contrast control
LED Status Indicators	Common Alarm, Fault and Isolate Bell Isolated, ACF Isolated, Mains Power ON
Audible Buzzer	Alarm And Fault Indications Keypress feedback

SPECIFICATION (CONTINUED)**3.5 KEYPAD CONTROLS**

Fire Fighters Keypad	NEXT, ACKNOWLEDGE, RESET, ISOLATE, BRIGADE TEST
Service Technician Keypad	20 keys including:- Alarm Test, Fault Test, Isolate, Battery Test and Lamp test

3.6 PROGRAMMING FUNCTIONS

Input Zone Type	Normal, Alarm Verification, AS1668 - 30sec or 60 sec Latching/non-latching
Zone Labels	Maximum 27 characters
Output Control	Input list conditions, delay time, Door Isolate

3.7 COMMUNICATIONS PORT (optional)

Type:	Serial, 1 x 2120 DC Comms and 1x RS232 Printer port OR Serial , 1x Mimic and 1 x RS232 Printer port
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3.8 EXPANSION CARDS

8 Input Monitor Card	8 alarm zone circuits
4 Point Control Card	4 x N.O. Voltage free relay contacts (2A @ 30V dc) supervised or unsupervised.

4 AMENDMENTS TO 4020 OPERATOR MANUAL

ISSUE	SECTION/PAGES AMENDED	DATE AMENDED	COMMENTS	ECN No.
1	NIL	16-09-91	Original	
1.1		25-10-91		
2.0	Various	1-02-97	Revised for Version 2.0 Firmware File: 4020M010.wp1	

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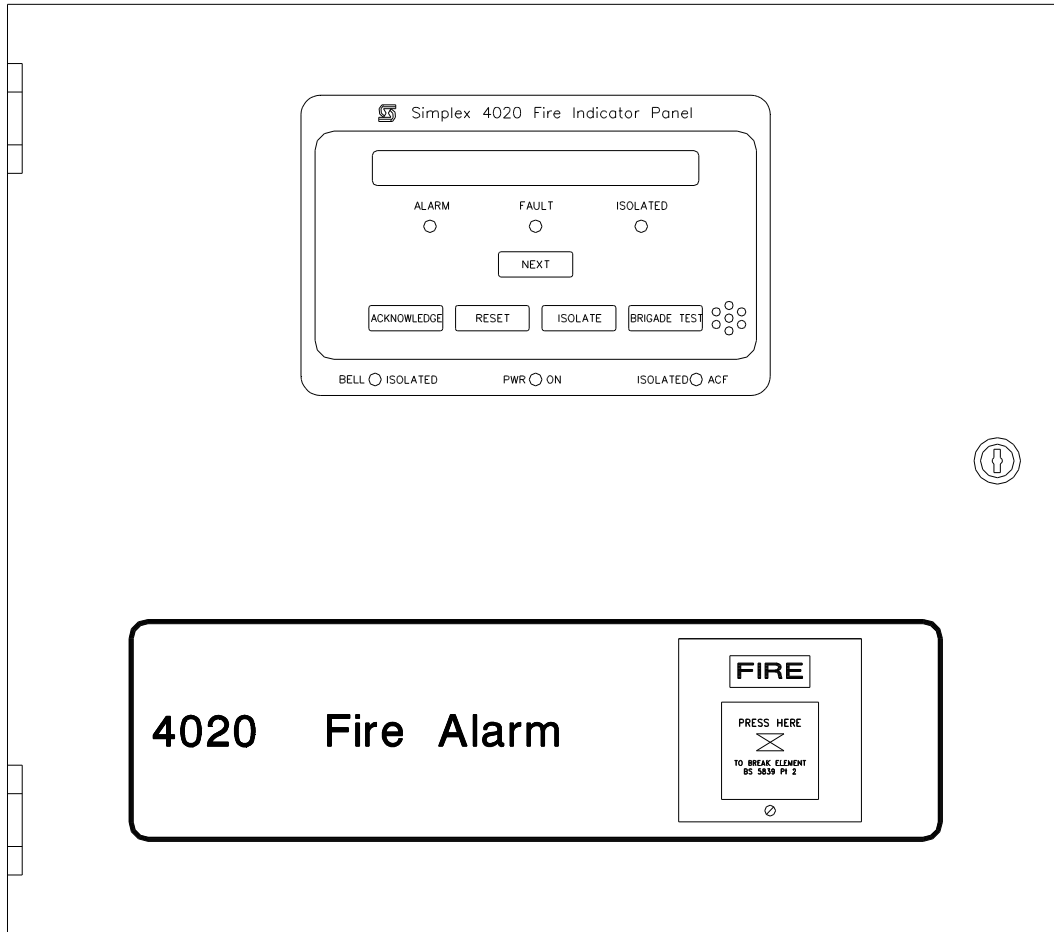


Figure 1 4020 FIP

5 INTRODUCTION

The Simplex 4020 fire indicator panel is a conventional programmable, microprocessor-controlled unit designed to meet the requirements of AS1603.4. The 4020 FIP can monitor from eight to forty eight fire detection zones and is permanently connected to the Fire Brigade alarm system. The fire detection zones can comprise of conventional thermal or smoke detectors, manual call points, flowswitches ,valve monitor devices etc

The operator interface is provided via a 2 line by 40 character LCD display and a membrane type keyboard. LED indicators are provide for indicating common alarm, common fault and common isolate status. The unit is protected against power loss by emergency standby batteries. Figure 1 shows the external view of the 4020 FIP.

The alarm, fault and isolate conditions are stored in separate buffer lists. Each list can be called up on the LCD display and scrolled through to view current status.

During an alarm, the 4020 panel will initiate a Brigade alarm, operate connected building alarms eg: airconditioning shutdowns, magnetic door release and display a description of the alarm zone, the type of alarm circuit, the number of alarms in the order they were activated, and the time of the first alarm.

The unit is self regulatory as it will locate and indicate faults in the system. The fault information displayed includes the zone or circuit, its location, the state of the circuit, the number of faults, and the time the first fault occurred.

This unit has been programmed on installation and the alphanumeric display describes the fire detection zones, and warning indicators as installed in this building.

 Simplex 4020 Fire Indicator Panel

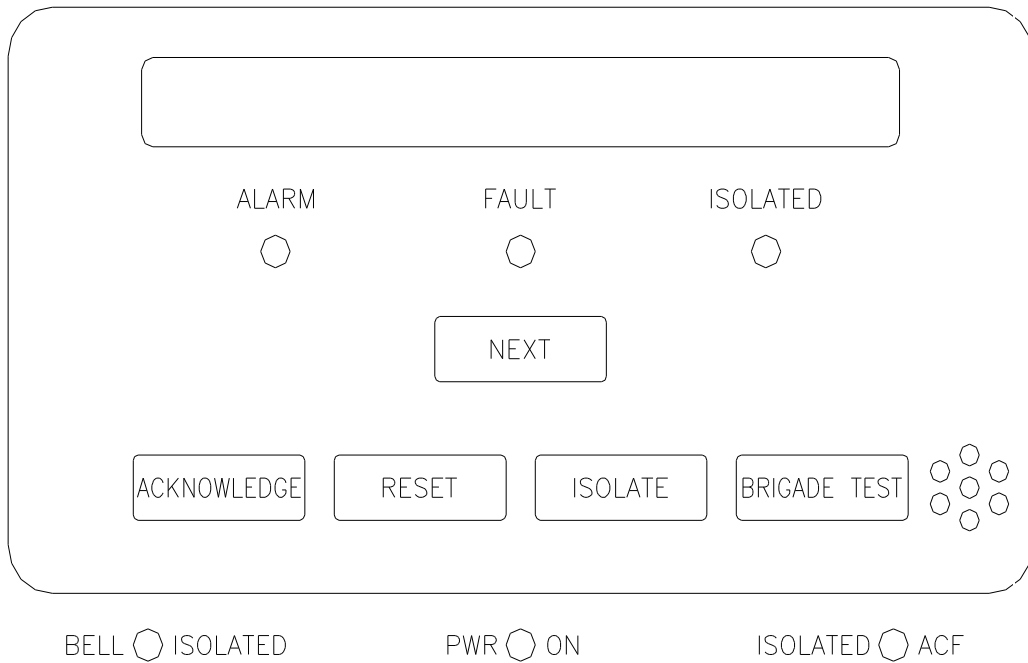


FIGURE 1.2 OPERATOR FRONT PANEL

5.1 OPERATOR FRONT PANEL

Figure 1.2 shows the layout of the front panel operator controls. These are described as follows:

The Panel buzzer will sound under alarm and fault conditions until silenced during the response procedure.

The Audible Positive Feedback Device sounds when any key on the panel is pressed as an indication that the keystroke has been registered.

The Alarm light will illuminate when there is an alarm in any one of the zones protected by the system.

The Fault light will illuminate when there is a fault in the system at any stage.

The Isolated light will only illuminate when the Isolate button is pressed to isolate zones. When any zone is isolated, it will not send any alarm to the master alarm facility and the isolated light will illuminate.

The Bell Isolated light will illuminate when the panel door is opened. This isolates the building alarm bell.

The Power On light indicates that the 240 V supply is available. If the 240 V supply fails, the system switches to battery supply, the Power On light turns off and the fault light illuminates.

The Isolated ACF light (Ancillary Control Facility). The Isolated ACF light will only illuminate if the panel door is opened and there is no alarm present on the panel. The building ancillaries include the air conditioning shut downs, magnetic fire door holders, alarm buzzers, lights, and other outputs. The light indicates that all the ancillary circuits programmed to be isolated via the door switch are isolated when the panel door is opened and there are no alarms present on the panel.

The Text Window consists of two lines of text which describe the status of the system in four modes.

Normal mode is the normal operational state of the panel. It shows:

SIMPLEX AUSTRALIA - Time of day - Bat: OK Alarms: 0 Faults: 00 Isolated : 00

Alarm mode shows the alarm details. For example:

Zn6	Level 4 East	V-Smoke
Ackd Alarm # 1 of 3		11:27:00

- The top line shows the zone number, a description of the location, and the type of device on the circuit.
- The bottom line shows the status of the alarm at that time, the number of the displayed alarm and the total number of alarms, and the time the alarm was activated.

The status of the alarm may be "Alarm" or "Normal". Detectors once activated will remain in the "Alarm" state but devices such as flow switches may indicate "Normal" when they are not actually operating.

Fault mode shows the fault details. For example:

Zn8	Level 5 West	V-Smoke
Ackd Fault # 2 of 2		14:38:00

- The top line shows the Zone Number and the fault location description. For output control circuit faults it would also show "On" or "Off" on the right, indicating the state of the relay before the fault.
- The bottom line shows the status of the fault at that time, the number of the displayed fault and the total number of faults, and the time the fault occurred.

Isolated mode shows the details of isolated circuits or zones. For example:

Zn4	Level 7 Board Room	V-Smoke
Isol Ackd Alarm # 1 of 2		12:27:00

- The top line shows the Zone Number for input circuits or the Control Point number for output circuits, the location description, and, for output circuits, the status of the circuit before being isolated.
- The bottom line shows the status of the circuit/zone at that time, the number of the displayed isolated circuit/zone, the total number of isolated circuits/zones, and the time the circuit/zone was isolated.

ACKNOWLEDGE

The Acknowledge button is used to acknowledge each new alarm/fault condition on a zone or circuit on the panel. When pressed an ACK message is displayed in the text message describing the alarm/fault condition.

NEXT

The Next button changes the text message in the display to the next alarm/fault/isolated zone or circuit. By repeatedly pressing Next button, it scrolls through the list of alarms/faults/isolated zones or circuits in the display.

RESET

The Reset button is used to reset zones in alarm in the system after the area has been secured.

ISOLATE

The Isolate button is used to isolate any zone that cannot be reset. Non-resetable zones will continue to be registered on the display as an alarm until rectified. For example:

SIMPLEX AUSTRALIA - Time of day - Bat: OK Alarms: 02 Faults: 00 Isolated : 02
--

NOTE:

Once a zone has been isolated it cannot be reset using the main reset button. You must use the system reset key, KEY 5 (RST) located on the keypad on the right of the panel.

BRIGADE TEST

The Brigade Test button is used to test the alarm call circuit to the fire Brigade.

6 ALARM CONDITIONS

Under alarm conditions the panel is operated from the buttons located on the main section of the panel. These can be seen through the inspection window.

When a detector zone is in alarm, the red alarm LED will be flashing and the panel buzzer will be sounding. To silence the local buzzer the alarm needs to be acknowledged.

6.1 ACKNOWLEDGING ALARMS

To acknowledge alarms use the following procedure:

STEP 1 Open the panel door. The bell isolated light illuminates because the door switch has operated which has silenced the alarm bell outside the building.

While the door is opened the alarm light continues flashing and the buzzer still sounds until all alarms are acknowledged.

CAUTION

Do not touch the keypad on the right of the panel as this is for the use of technical staff only.

STEP 2 Read the displayed alarm message.

- The top line of the display is showing location and details of the first alarm which operated.

Zn6 Level 4 East	V-Smoke
Alarm # 1 of 3	11:27:00

- The left of the bottom line is showing the present state of the zone or circuit. In the centre, it may be showing 1 of 1 which means there is only one alarm, or it could be showing 1 of 2, or 1 of 3 depending on how many alarms there are. The time the alarm was activated is displayed on the right.

STEP 3 Acknowledge the first alarm by pressing the **ACKNOWLEDGE** button which means, "I have read the alarm message and I understand it".

ACKNOWLEDGE

An acknowledged indication (Ackd) is displayed on the left of the bottom line.

In the case of one zone in alarm (1 of 1), the alarm light goes steady and the panel buzzer silences.

If there are two zones in alarm, it is the initial zone(1 of 2) that is indicated and acknowledged.

STEP 4 Press the **NEXT** button to display the location and details of the second (2 of 2) alarm zone.

NEXT

The alarm light will be still flashing and the buzzer still sounding because the second alarm message has not been acknowledged.

ACKNOWLEDGE

Press the **ACKNOWLEDGE** button to acknowledge the second alarm message (2 of 2).

The buzzer will silence and the red alarm light will go steady which means you have seen and acknowledged all of the alarms in the system. If not continue pressing the **NEXT** and **ACKNOWLEDGE** buttons to scroll through the alarm messages.

6.2 RESETTING ZONES IN ALARM

After the zones have been checked, the fire extinguished, or the problem rectified, the area is secure and the system needs to be reset.

A rectangular button with rounded corners and a black shadow, containing the word "RESET" in bold, uppercase letters.

To put the panel back on line press the RESET button which sends a reset signal to the zones in the alarm list. If all the zone circuits are operating correctly the system resets.

It takes ten seconds for the reset to take place. During the reset period, the alarm light will be extinguished, and the following message will be displayed:

*** DETECTOR RESET IN PROGRESS ***
Alarms: 00 Faults: 00 Isolated: 00

If a zone does not reset after the ten second reset period it means that the zone is still in alarm and the panel is still putting a call through to the Brigade.

What is now needed is to isolate the zones that are still in alarm.

6.3 ISOLATING ZONES IN ALARM

To isolate zones that are still in alarm, press the *ISOLATE* button. This will have the following effect:

A rectangular button with rounded corners and a black shadow, containing the word "ISOLATE" in bold, uppercase letters.

Isolates all circuits that are still in alarm with one press of the key

Resets the Brigade call and the ancillary control functions (ACF) light.
Only the zones in alarm are isolated. The rest of the building is still protected.

An isolated indication (Isol) comes up in the display on the left of the bottom line.

After isolating non-resetting zones, press the BRIGADE TEST button to test the alarm call circuit to the fire Brigade.

CAUTION

Before leaving the panel, ensure that the panel door is closed and locked. If this is not done and a fire occurs the Brigade will be called but the ancillary controls will not shut down and the fire alarm bell connected to the panel will not ring.

The service company needs to be called to check why the zone circuits cannot be reset.

This is done by the fire Brigade who have a register of every panel and the name of the service company.

- NOTE:**
1. You cannot use the main RESET button to reset zones once they have been isolated. Instead you need to use the system reset facility, KEY 5(RST) button on the keypad. This should only be used by service company.
 2. You cannot reset an alarm on a zone that has gone into fault. You must first clear the fault on the zone before the alarm can be reset.

7 FAULT CONDITIONS

When a fault condition occurs, the fault light will be flashing and the panel buzzer sounds.

The power on light may or may not be illuminated depending on the fault.

The bottom line of the display will indicate the number of faults.

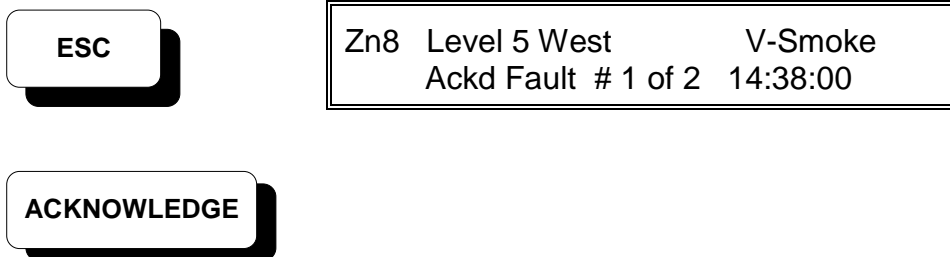
7.1 ACKNOWLEDGING FAULTS

STEP 1 Open the door and the bell isolated light and the ACF isolated light will illuminate.

CAUTION

Do not touch the keypad on the right of the panel as this is for the use of technical staff only.

STEP 2 Press the ESCape key and then the ACKNOWLEDGE button to display the fault message. The acknowledge (Ackd) indication is shown on the left of the bottom line of the display.eg:



- The top line of the display shows the location and details of the first fault which operated.
- The left of the bottom line shows the present state of the zone or circuit. In the centre, it may show 1 of 1, which means there is only one fault, or it could show 1 of 2, or 1 of 3 depending on how many faults there are. The time the fault was activated is displayed on the right.

If there is only one fault (1 of 1), the fault light will go steady and the buzzer will silence.

If there are two faulty zones, it is the initial fault (1 of 2) that is indicated and acknowledged.

STEP 3 If the fault light is still flashing and the buzzer is still sounding, press the NEXT button to show the location and details of the second (2 of 2) fault.

A rectangular button with rounded corners, containing the word "NEXT" in bold, uppercase letters. The button is white with a black border and a black shadow effect.A rectangular button with rounded corners, containing the word "ACKNOWLEDGE" in bold, uppercase letters. The button is white with a black border and a black shadow effect.

Press the ACKNOWLEDGE button to acknowledge the second fault message (2 of 2).

The buzzer will silence and the fault light will go steady which means you have seen and acknowledged all of the faults in the system. If not, continue pressing the NEXT and ACKNOWLEDGE buttons to scroll through and acknowledge the fault messages.

CAUTION

Before leaving the panel ensure that the panel door is closed and locked. When the door is closed ensure that the BELL ISOLATED and ACF ISOLATED indicators are not ON. If this is not done and a fire occurs, the Brigade will be called but the ancillary controls will not shut down and the building fire bell will not ring.

Refer to list off fault messages in the appendix and ring the service company to have the fault rectified.

It is an advantage to take a note of the faults so the service company can be given an idea of the type of problems before they arrive to rectify the fault

The fault light will stay on until the fault is rectified but the remainder of the system will still operate normally.

NOTES

- (1) Alarms always have priority over fault conditions.
- (2) If a fault condition occurs while viewing alarms, the fault light will be flashing but the panel buzzer will not sound.
- (3) If you exit the alarm list after acknowledging all alarms and unacknowledged faults exist then the buzzer will continue sounding.

To silence the buzzer you must access the fault list by pressing the ESC key and acknowledge each fault. When all faults are acknowledged, the buzzer will silence and the fault light will be ON steady.

- (4) If you receive an alarm while acknowledging faults, you immediately exit the fault list, the alarm will be displayed, the buzzer will be sounding and the alarm LED will be flashing. The fault LED will still be flashing.

7.2 BUZZER MUTE FACILITY

Use the following procedure to mute the panel buzzer.

- STEP 1** Press the ADD key on the keypad.
The following “buzzer mute” message will continually cycle ON and OFF on the LCD display.



**** WARNING - PANEL BUZZER IS DISABLED ****
Use ADD key to switch ON or OFF

To restore panel buzzer operation, press the ADD key to remove the buzzer mute function.

- NOTE:** The panel buzzer cannot be muted for alarm conditions. In the event of a fire alarm, the buzzer mute function is reset immediately and the panel buzzer will sound.

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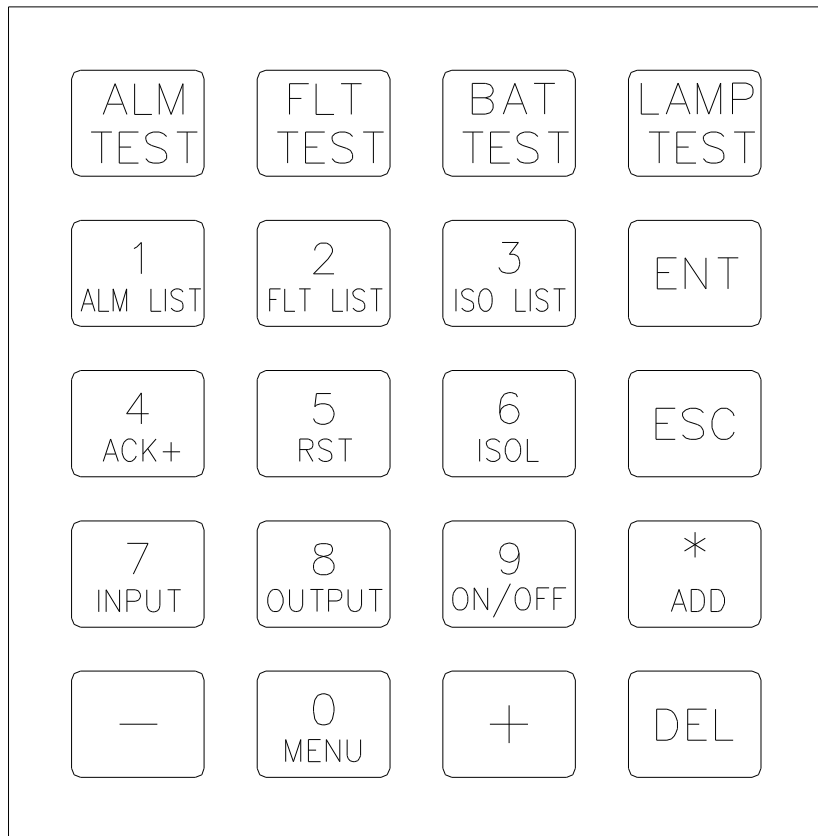


Figure 1.3 Keypad function keys

8 COMMISSIONING AND SERVICING

8.1 KEYPAD FUNCTION KEYS

The commissioning or testing technician needs to know the function of the following 16 keys (refer fig 1.3):

- The 1 to 9 keys
- The Plus and Minus keys
- The Escape key
- The four test keys across the top of the keypad

The following information lists the keypad functions for use during commissioning or testing.

1
ALM LIST

Key 1 is alarm list (ALM LIST) key. It is used to display the alarms present in the system.

Presume the main display menu is in normal mode ie:

```
SIMPLEX AUSTRALIA - Time of day - Bat: OK
Alarms: 05  Faults: 05  Isolated : 05
```

To look at the alarms, press ALM LIST (1) and it will give access to that list of five alarms. Then use the plus and minus keys to either scroll forward or backwards through that list. This makes it easier when working on the panel. To exit the list press the escape (ESC) key.

2
FLT LIST

Key 2 is fault list (FLT LIST) key. It allows access to the list of faults in the system.

The list can be scrolled using the plus and minus keys. To exit the list press the escape (ESC) key.

Using the example above, pressing the FLT LIST (2) allows access to the list of five faults.



Key 3 is isolated list (ISO LIST) key. It allows access to the list of isolated circuits.

The list can be scrolled using the plus and minus keys. To exit the list press the escape (ESC) key.

Using the example above, pressing the ISO LIST (3) allows access to the list of five isolated alarms.

CAUTION

When working on the system and displaying lists or functions, if an alarm activates, it has priority and will be displayed automatically.

NOTE:

Keys 1, 2, and 3

These lists will only register if there is a quantity for that category in the display. ie: If the alarm list is pressed and nothing happens there are no alarms to list.



Key 4 is acknowledge plus (ACK+) key

This combines the functions of the acknowledge and next buttons of the main operating panel. When in the alarm or fault lists, it is a quick means of acknowledging faults or alarms when working on the system.



Key 5 is System reset (RST) key

This provides a global reset function and *will reset all zones including isolated zones*. This reset is for use by the technician after an isolated circuit has been repaired.

The RST (5) function can only be used when the display is in NORMAL mode. Press the escape (ESC) key to return to normal display mode.

NOTE:

Using the main reset button, only acknowledged alarms can be reset. If they are isolated they cannot be reset except by using KEY 5 (RST).

ZONE TYPE	DESCRIPTION	LATCHING
Noalm	Non-alarm point	YES
V-Smoke	Smoke detector zone with alarm verification	YES
Smoke	Smoke detector zone	YES
N/L30	Non-latch AS1668 zone with 30 sec cycle	NO
N/L60	Non-latch AS1668 zone with 60 sec cycle	NO
V-Heat	Thermal detector zone with alarm verification	YES
Heat	Thermal heat detector zone	YES
FSW	Flow switch zone	YES
MCP	Manual call point zone	YES
Valve	Valve monitor zone	YES
PSW	Pressure switch zone	YES
SPKLR	Sprinkler alarm zone	YES
V+MCP	Combination Zone of Verified Smoke Detectors and Manual Call Points. Manual Call Points in Alarm will bypass alarm verification cycle.	YES
NL ALM	None latching Alarm Zone. Alarm will appear in the Alarm list as long as the alarm condition is present	NO

Table 1.1 INPUT ZONE DEVICE TYPES

6
ISOL

Key 6 is isolate (ISOL) Key

It is used to isolate or de-isolate zones/circuits through the keyboard when in the function lists controlled by keys 1, 3, 7, and 8, eg:

To very quickly de-isolate the 5 zones that are in the isolated condition, press ISO LIST (3) which gives access into the list, then press the Isol (6) key which de-isolates, press it again which de-isolates the next one. It will automatically scroll through and de-isolate at the same time as displaying the next item.

7
INPUT

Key 7 is input zone list key

This function lists the zones present in the system. As each system can have between 8 and 48 zones. To list the zones press *Key 7*. This takes you to the beginning of the list. Press plus or minus keys to scroll through the list to look at the devices or to relate zones to floor levels etc. The display shows the zone number, a description of the location, the type of device and its number, and its condition ie. normal/isolated. To get out of the list press the escape (ESC) key. Table 1.1 lists the various device types:

8
OUTPUT

Key 8 is output list key

The output key has the same function as the input key except it is for the output circuits. To access the list of output controls, press OUTPUT(8) and scroll through using the plus and minus keys and look at the output control devices. To exit the list press the escape (ESC) key.

9
ON/OFF

Key 9 is On/Off

The On/Off (9) key has no function on this panel.

+**Plus (+) and Minus (-) keys**

Having selected a function, the plus(+) and minus(-) keys are used to scroll forward and backward through the list.

-ESC**Escape (ESC) key**

The escape key is used to return to the normal display from any of the functions which may have been selected.

ALM
TEST**Alarm Test key**

This key is used to carryout an alarm test on ALL zones and will activate the Brigade relay while the test is in progress. The zones are tested in sequential order and each zone alarm is displayed and must be acknowledged .

Isolated zones and AS1668 zones will also be tested ,but their outputs will not operate.

FLT
TEST**Fault Test key**

Pressing the fault test simulates a fault going onto every zone. The zones are tested in sequential order and each zone fault is displayed and must be acknowledged . For example, if there are 8 alarm zones and the fault test key is pressed the display should list 8 faults.

BAT
TEST**Battery Test key**

In accordance with AS1603, this key puts a load on the batteries for 60 seconds to test the battery condition.

During battery test, the BAT indication on the display will indicate LO. If battery condition is okay at the end of the test, then the LO indication will be cleared within the next minute.

LAMP
TEST**Lamp Test key**

This tests all the lights, the display, and the panel buzzer. Holding the button in illuminates all the lights, illuminates all the dots on the display, and rings the panel buzzer.

8.2 ALARM TEST

The 4020 provides two Alarm test modes:

- 1) Global Alarm Test mode: Simulates an alarm on all detector zones
- 2) Individual zone alarm test mode: Simulates an alarm on a selected detector zone

The following section describes the operation of the two modes.

8.2.1 Global Alarm Test

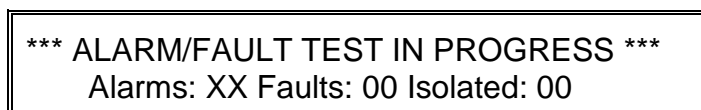
To perform a global alarm test carryout the following procedure:

CAUTION

When carrying out an alarm test, it may be necessary to inform the local fire Brigade (this varies according to the Brigade). When the Alarm Test button is pressed the Brigade alarm relay will be activated and the Brigade may be called depending on how the panel has been programmed.

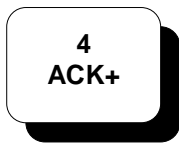
STEP 1 Ensure there are no active alarms and open the panel door. The bell isolate and the ACF isolate lights should illuminate (if programmed to be isolated via the door switch).

STEP 2 Press the alarm test key (ALM TEST). This will put an alarm on every zone in the panel. Because the ACFs are isolated, none of the building functions will operate but the Brigade relay will operate. The following will be displayed:



If you need to check the alarm bell or all mechanical outputs push the door switch to close the contacts. This will simulate the door being closed and de-isolates the bell and the ACFs.

STEP 3 Press the ACK+ (4) key to acknowledge each displayed alarm.



If ACFs are not isolated, check that all the building controls work, the bell rings, the air conditioning will shut down, the magnetic door holders will close fire doors, etc.

STEP 4 Reset the circuits by pressing the ESC key to exit the alarm list and then press the RST (5) key or by using the main acknowledge/next/reset buttons. The following will be displayed:



*** DETECTOR RESET IN PROGRESS ***
 Alarms: 00 Faults: 00 Isolated: 00

8.2.2 Individual Zone Alarm Test

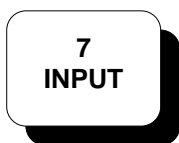
To perform an individual zone alarm test carryout the following procedure:

CAUTION

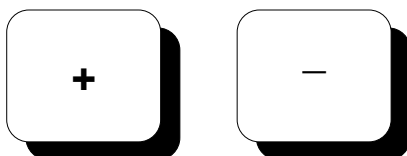
When carrying out an alarm test, it may be necessary to inform the local fire Brigade (this varies according to the Brigade). When the Alarm Test button is pressed the Brigade alarm relay will be activated and the Brigade may be called dependant upon how the system has been programmed.

STEP 1 Ensure there are no active alarms and open the panel door. The bell isolate and the ACF isolate lights should illuminate.

STEP 2 Select the required alarm zone by pressing the zone input key 7.



STEP 3 Use the + / - keys to display the required zone



STEP 4 Press the alarm test key (ALM TEST).

**ALM
TEST**

This will simulate an alarm on the displayed zone. The panel buzzer will sound and the alarm LED will be flashing. Because the ACFs are isolated, none of the building functions will operate but the Brigade relay will still operate .

If you need to check the alarm bell or all mechanical outputs push the door switch to close the contacts. This will simulate the door being closed and de-isolates the bell and the ACFs.

STEP 5 Press the ACK+ (4) key to acknowledge the displayed alarm.

**4
ACK+**

If ACFs are not isolated, check that all the building controls work, the bell rings, the air conditioning will shut down, the magnetic door holders will close fire doors, etc.

STEP 6 Reset the circuits by pressing the ESC key to exit the alarm list and then press the RST (5) key or by using the main acknowledge/next/reset buttons. The following will be displayed:

**5
RST**

*** DETECTOR RESET IN PROGRESS ***
Alarms: 00 Faults: 00 Isolated: 00

8.3 FAULT TEST

STEP 1 Open the panel door and press FLT TEST. A fault condition will be simulated on every zone and the following message displayed:

**FLT
TEST**

*** ALARM/FAULT TEST IN PROGRESS ***
Alarms: 00 Faults: XX Isolated: 00

STEP 2 To acknowledge each fault, press FLT LIST(2) key) to access the fault list and then press the ACK+ key (4) to acknowledge each fault. The panel buzzer will stop once all faults are acknowledged.

**2
FLT LIST**

**4
ACK+**

STEP 3 To remove the simulated faults, press the ESC key to exit the fault list and then press the RST(5) key to reset the system.

**5
RST**

*** DETECTOR RESET IN PROGRESS ***
Alarms: 00 Faults: 00 Isolated: 00

8.4 ISOLATING / DE-ISOLATING CIRCUITS

If work is planned near detectors (sanding etc.) they need to be isolated otherwise the dust and grit may cause an alarm. Also output ACF zones may need to be isolated when servicing the panel. When a zone is isolated it will still register an alarm and indicate on the panel but will be prevented from activating the Brigade relay or any associated control outputs.

Zones can be isolated/de-isolated using the following procedure:

STEP 1 If the display is not in normal mode, press the ESC key on the right-hand keypad to return the panel the normal display mode.

STEP 2 Press the ISOLATE key on the main keypad.

ISOLATE

STEP 3 Using the NEXT key , or + or - keys, cycle through the alarm zones until the selected zone is displayed.



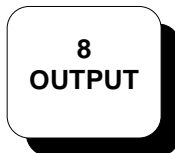
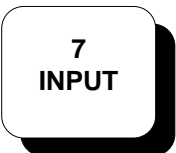
STEP 4 When the selected zone is displayed, press the ISOLATE key in the main keypad to isolate the zone.



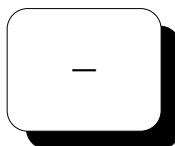
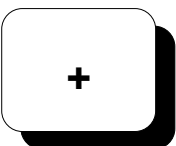
If the zone is already isolated, this will de-isolate the zone and return it to normal operation.

Alternatively zones can be isolated/de-isolated as follows.

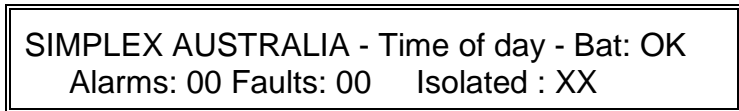
STEP 1 Press the INPUT(7) key to access the zone input list or OUTPUT(8) key to access the output control list



STEP 2 Scroll through the list using the PLUS(+) or MINUS(-) key and press the ISOL(6) key when the selected zone or output is displayed. If the zone is already isolated, pressing the ISOLate key will de-isolate it.



STEP 3 To return to the normal display press escape (ESC). The display will now indicate the number of zones isolated.



8.5 OPERATION OF NON-LATCH AS1668 ZONES

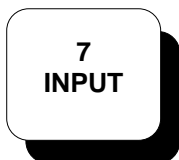
Zones programmed as non-latching AS1668 zones must be in continual alarm before they operate their associated outputs. When operated, the outputs will track the alarm input and will be de-activated when the monitoring zone has been in a non-alarm condition for a period of either 30 or 60 seconds. Refer to the appendix for more detailed description of AS 1668 zone operation.

8.5.1 Displaying the Status of AS1668 Zones

Zones configured with AS1668 delays will not bring-up an alarm condition nor will they be entered into the alarm list when they are in alarm.

To display the status of a AS1668 zone use the following steps:

STEP 1 Press the INPUT(7) key to display the zone input list and use the +/- keys to scroll through the list until the zone is displayed.



Zn6	Level 4 East - Supply Air	N/L30
	Normal # 1 of 3	11:27:00

If an alarm is present on the zone the displayed status will alternate between ALARM and NORMAL condition, tracking the state of the detector zone as it is continually being reset and then checked for an alarm condition.

8.6 BRIGADE TEST



BRIGADE TEST

To test the alarm call circuit to the fire Brigade, press the BRIGADE TEST key. This will operate the ACF relay outputs ACF2(Ct2) to ACF4(Ct4) in accordance with the type of programmed Brigade test.

To view the programmed of Brigade test type use the following procedure:


STEP 1 From the normal display, press the MENU(0) key, the display shows the following:



0
MENU

0-Edit Point, 1-Program ACF, 2-Time/Date 3-Brigade, 4-Prog Mimic, 5-Next Menu
--

STEP 2 Press KEY 3 to select option 3-Brigade, the following is displayed:



3
ISO LIST

Current Brigade Type -> 1 Enter Brigade Test Type 0 to 7

STEP 3 Press escape (ESC) key twice to exit and return to the normal display mode

Table 1.2 lists the available types of Brigade test options.

BRIGADE	DESCRIPTION
0	No test facility
1	Alarm relay ACF2 (Ct2) operates for 10 seconds
2	Alarm relay ACF2 (Ct2) operates for 15 seconds
3	Alarm relay ACF2 (Ct2) operates for 20 seconds
4	Alarm relay ACF2 (Ct2) operates for 25 seconds
5	Alarm relay ACF2 (Ct2) operates for 30 seconds
6	Alarm 1 relay ACF2 (Ct2) operates for 20 seconds Delay for 20 seconds . Alarm 2 relay ACF3 (Ct3) operates for 20 seconds
7	Alarm 1 relay ACF2 (Ct2) operates for 20 seconds Delay for 20 seconds. Alarm 2 relay ACF3 (Ct3) operates for 20 seconds Delay for 20 seconds Alarm 3 relay ACF4 (Ct4) operates for 20 seconds

Table 1.2 - Available Brigade Test Options

8.7 WALKTEST MODE

The WALKTEST feature allows one person to perform a complete test of the fire detectors connected to the 4020 panel. The WALKTEST incorporates an Auto Acknowledge/Auto Reset feature which allows one person to test the 4020 Fire Alarm System without the need for another person to be stationed at the control panel to acknowledge and reset alarm conditions

STEP 1 From the normal display, press the *MENU(0)* key, the following is displayed:



0-Edit Point, 1-Program ACF, 2-Time/Date
3-Brigade, 4-Prog Mimic, 5-Next Menu

STEP 2 Press *KEY 5* to select option 5-Next Menu, the following is displayed:



0-2120/Printer, 1-Walk Test, 2-Version
3-Set Passcode, 4-Previous Menu

STEP 3 Press the *KEY 1* to enable the Walktest mode Walk Test option and the following is displayed:



Press 0 to activate Walk Test
Test will timeout 30 mins after last Alm

STEP 4 Press the *MENU(0)* key, to activate the Walk Test Mode and the following is displayed:



*** ALARM WALK TEST IN PROGRESS ***
Alarms:00 Faults:00 Isolated : 00

- NOTES:**
- 1 You can press *KEY 5 (RST)* key to abort the walk test at any time before the test timeout expires.
 - 2 All results of the Walk test are stored in the Alarm log and logged to a Serial Printer if connected. The Alarm Log can have up to 99 entries.
 - 3 The Detector reset time is set to 10 seconds and Alarm Verification is bypassed.
 - 4 When a zone is put into alarm during Walktest, any associated ACF circuits **will not operate**.
 - 5 The Brigade alarm output **will not operate** during Walktest Mode. Hence the panel is effectively disconnected from the Brigade during Walktest mode. Therefore ensure you press *KEY 5 (RST)* key to abort the walk test at any time before the test timeout expires.

9 PLACING INTO OPERATION

To place a correctly installed 4020 FIP into operation perform the following steps:

STEP 1 Ensure that the mains isolate switch is OFF and batteries are disconnected.

STEP 2 Ensure that 240V AC supply is connected to the panel from the mains distribution board.

STEP 3 Turn the panel mains isolate switch ON . The panel sounder will start beeping and the Fault LED will be flashing and the following POWER-UP message will be displayed:

** WARNING - CPU RESET HAS OCCURRED **
PRESS ANY KEY TO SILENCE SOUNDER

Press the ACKNOWLEDGE key to silence the sounder and check the status of the following:

- PWR ON LED indicator is illuminated.
- BELL ISOLATED indicator is illuminated.
- ACF ISOLATED indicator is illuminated.
- Display is in normal display mode ie:

SIMPLEX AUSTRALIA - Time of day - Bat: OK
Alarms: 00 Faults: 00 Isolated : 00

STEP 4 Next the fault sounder will start beeping to indicate a battery fault. Press the ACKNOWLEDGE key to silence the buzzer and acknowledge the fault.

Now adjust the battery charger float voltage as per section 9.1

STEP 5 Perform a lamp test by pressing the LAMP TEST key.

STEP 6 Perform an alarm test by pressing the ALARM(ALM) TEST key. Acknowledge each alarm and then press the RESET key to reset the alarm zone circuits.



- STEP 7** Perform a fault test by pressing the FAULT (FLT) TEST key. Acknowledge each fault and then press the RESET key to reset the alarm zone circuits .



- STEP 8** Program the panel in accordance with the instructions contained in the 4020 Programming Manual .

- STEP 9** Install the batteries and press the BAT TEST key to perform a battery test.

NOTE: Ensure that the panel is turned ON and operating from mains power before connecting the batteries.

- STEP 10** Complete the commissioning checklist to ensure that the system is functioning correctly.

9.1 SETTING BATTERY CHARGER OUTPUT VOLTAGE:

To set the battery charger output voltage to the correct level and set the thresholds for battery charger high and low fault conditions, use the following procedure:(Figure 1.4 shows the location of adjustment points).

- STEP 1** Ensure the batteries are disconnected.
- STEP 2** Adjust potentiometer RV2 to set the voltage across the battery charger terminals to 27.6V DC
- STEP 3** Locate potentiometer RV1 on the main PCB and press the CPU RESET switch located on the main PCB to clear the current BATtery fault condition due to battery removal.
- STEP 4** Turn RV1 anti-clockwise until a BATtery HI condition is indicated on the display. If the battery fault condition is brought up before completing this step, press the CPU RESET switch and continue the adjustment.
- STEP 5** Press the CPU RESET switch .Then adjusting RV1 clockwise ,count the number of turns until a BATtery LO condition is indicated on the display.
- NOTE:** If the battery fault condition is brought up before completing this step, press the CPU RESET switch and continue the adjustment.
- STEP 6** Then turn RV1 anti-clockwise by half the number of turns obtained in step 5. The display should now indicate BATtery OK condition.
- NOTE:** If the battery fault condition is brought up before completing this step, press the CPU RESET switch and continue the adjustment.
- STEP 7** Re-connect the batteries and press the CPU RESET switch to reset the system.

CAUTION - POWERING REQUIREMENT

When removing power from the panel, disconnect batteries FIRST and AC power last. When connecting power to the system, connect AC power FIRST and batteries last.

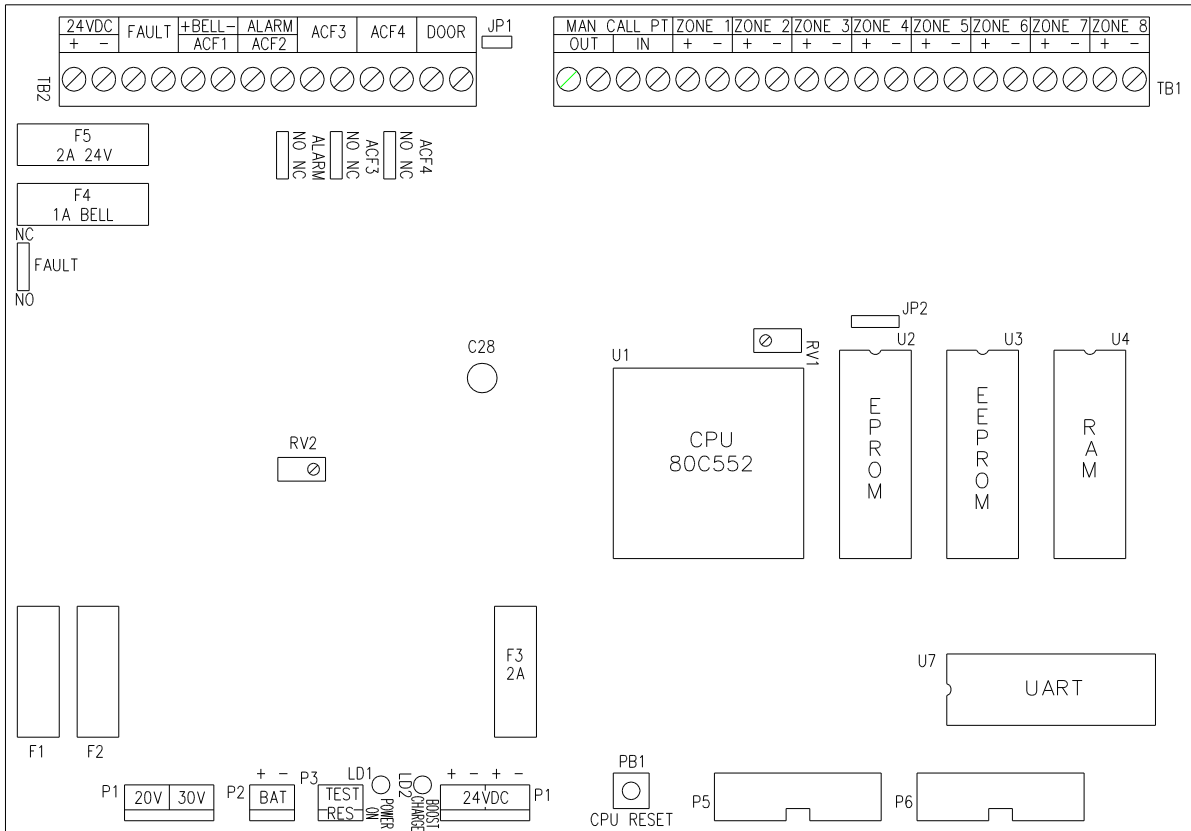


FIGURE 1.4 MAIN PCB - BATTERY CHARGER ADJUSTMENT POINTS

9.2 COMMISSIONING CHECKLIST

Check each item to ensure that system has been installed correctly and is functioning normally.

ITEM	CHECKED
Panel configuration as per specification	
Cabinet undamaged and paintwork clean	
Window undamaged and fitted correctly	
Manual Call Point fitted and wired to alarm zone 1	
Cabinet sealed to dust level.	
Membrane keyboard fitted and aligned correctly	
LCD display fitted and aligned correctly	
LED indicators fitted and aligned correctly	
Keylock type 003 fitted	
"Mains Isolation" switch is labelled	
Mains terminations correct and earth terminations secure	
Internal wiring correct and neatly loomed	
Bell fuse F4 fitted and rated at 1A	
External 24V DC fuse F5 fitted and rated at 2A	
Panel ratings label completed and affixed to panel	
Battery terminals insulated	
System wired to "as installed drawings"	
Log book installed in cabinet	

ITEM	CHECKED
Upon application of mains power, system powers-up correctly	
ALARM test function indicates alarms for all zone inputs	
FAULT test function indicates faults for all zone inputs	
Zone input delays function as programmed	
Panel programming configuration sheets completed	
Ancillary control facilities function as programmed	
Test supervised ACF outputs under open circuit conditions	
Test supervised ACF outputs under short circuit conditions	
Fault, Alarm, Bell and ACF3 and ACF4 Relays operate okay	
Bell and ACF isolate function operate when FIP door open	
Charger output voltage set correctly	
Batteries fitted	
Panel Quiescent current from battery (mains isolated):	___Amps
Battery current with two zones in alarm:	___Amps

10 APPENDIX

10.1 Alarm Verification Zone Processing

Alarm verification (AVF) is a technique to minimise false alarms on detector circuits and operates as follows:

When a zone is detected as being in an alarm condition, the alarm condition is not immediately processed. Rather the zone in alarm is reset for a period of 12 seconds after which it is then checked for an alarm condition. If the detector is still in alarm after the 12 second alarm verification period then the alarm is processed as an alarm condition and will operate programmed output functions.

If the zone is not in alarm after the 12 sec period, a timing window is activated for a period of 150 seconds. Any alarms registered during this 150 second window will be processed as an alarm condition and will operate programmed output functions. If no alarm conditions are detected at the end of the 150 second window then the alarm zone processing reverts back to the start of the AVF sequence.

10.2 AS1668 Zone Processing

This is typically used for an alarm zone circuit associated with supply air duct detectors. These detector zones are non-latching zones. The smoke level must be such that it causes the detector to be in alarm for a minimum period of time. After which any outputs mapped to the AS1668 zone will be activated. To de-activate the mapped outputs, the smoke level must be such that the detector is in a non-alarm condition for a minimum period of time.

AS1668 detector zones are continually reset and checked for an alarm/non alarm conditions.

Two AS1668 zone processing cycles are available:

- (i) AS1668 - 30SEC: Minimum alarm period = 0 seconds
Minimum non-alarm time period = 30 seconds.
- (ii) AS1668 - 60 SEC: Minimum alarm period 0 seconds and a continuous non-alarm period of 65 seconds.

10.3 Fault Conditions

The table below lists the various fault messages displayed by 4020 FIP

FAULT MESSAGE	CAUSE OF FAULT	FAULT RECTIFICATION
Fire Alarm Zone FAULT	Open Circuit on Fire Alarm Zone - Missing End-of-Line resistor. - Break in zone cabling - Detector removed from base	Check Detectors in zone. If all detectors installed Call service company for repair.
Bat :FLT Battery Fault	Batteries disconnected from Charger circuit.	Reconnect batteries to the panel.
Bat: LO	Battery Voltage is Low - Battery charger not working, - Batteries being charged after panel has been operating for extended period on battery supply	Check battery voltage. Check if booster LED is "ON" . If LO condition is indicated for more than 8 Hours call service company.
Bat: HI	Battery charger voltage is set too high.	Remove batteries and check charger voltage, should be 27.6 VDC. Refer section 9.3 for battery adjustment. Check battery charger fuse F2.
Control Circuit Open	Open circuit detected on supervised control circuit output.	Missing End-of-line resistor. - break in cabling - output Fuse blown. Check and replace.
Control Circuit Short	Short circuit detected on supervised control circuit	Blocking diode missing/or wired incorrectly for supervised load. Short on zone cabling
Ground Fault	Short to Earth on external field wiring	Check external field wiring for short to earth connection.

11 PROGRAMMING SHEETS

Complete the programming sheets, which follow, in full. We suggest you use pencil so that future additions or changes may be simply made. Refer to the 4020 Programming Manual for details on how complete the programming sheets.

Once you have programmed the system we suggest that you utilise the INPUT (7) and OUTPUT (8) keys to scroll through the point type and label information to check your program. In addition the system must be comprehensively tested to ensure system functionality.

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ZONE	INPUT ZONE LABEL	ZONE TYPE	OUTPUTS OPERATED
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27	1 2 3 4 5 6 7 8	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

ZONE	INPUT ZONE LABEL	ZONE TYPE	OUTPUTS OPERATED
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			

ZONE	INPUT ZONE LABEL	ZONE TYPE	OUTPUTS OPERATED
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 21 23 24 25 26 27	1 2 3 4 5 6 7 8	

ZONE	INPUT ZONE LABEL	ZONE TYPE	OUTPUTS OPERATED

ZONE	INPUT ZONE LABEL	ZONE TYPE	OUTPUTS OPERATED

ZONE	INPUT ZONE LABEL	ZONE TYPE	OUTPUTS OPERATED
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27	1 2 3 4 5 6 7 8	

ACF	ACF OUTPUT CIRCUIT LABEL	OPERATED BY	DOOR ISOLATE	OUTPUT DELAY
3			YES/NO	sec
4			YES/NO	sec
5			YES/NO	sec
6			YES/NO	sec
7			YES/NO	sec
8			YES/NO	sec
9			YES/NO	sec
10			YES/NO	sec
11			YES/NO	sec
12			YES/NO	sec
13			YES/NO	sec
14			YES/NO	sec
15			YES/NO	sec
16			YES/NO	sec
17			YES/NO	sec
18			YES/NO	sec
19			YES/NO	sec
20			YES/NO	sec
21			YES/NO	sec
22			YES/NO	sec
23			YES/NO	sec
24			YES/NO	sec

ACF	ACF OUTPUT CIRCUIT LABEL	OPERATED BY	DOOR ISOLATE	OUTPUT DELAY
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 21 23 24 25 26 27		YES/NO	sec
			YES/NO	sec

ACF	ACF OUTPUT CIRCUIT LABEL	OPERATED BY	DOOR ISOLATE	OUTPUT DELAY
			YES/NO	sec
			YES/NO	sec
			YES/NO	sec
			YES/NO	sec
			YES/NO	sec
			YES/NO	sec
			YES/NO	sec
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ACF	ACF OUTPUT CIRCUIT LABEL	OPERATED BY	DOOR ISOLATE	OUTPUT DELAY
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27		YES/NO	sec
			YES/NO	sec

ACF	ACF OUTPUT CIRCUIT LABEL	OPERATED BY	DOOR ISOLATE	OUTPUT DELAY
			YES/NO	sec
			YES/NO	sec
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			YES/NO	sec
			YES/NO	sec
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