



SITE MANUAL

Issue 4

ALARM 2000

Residential Fire System





DOCUMENT HISTORY

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Table of contents

1	INTRODUCTION.....	6
2	SYSTEM OVERVIEW	7
3	SYSTEM COMPONENTS	8
3.1	SMOKE / HEAT ALARMS	8
3.1.1	Basic Information about your Smoke / Heat Alarm	8
3.1.2	Technology Available	8
3.1.3	Ionisation Model.....	8
3.1.4	Photoelectric model.....	8
3.1.5	Heat Model.....	9
3.2	RESIDENTIAL FIRE INDICATOR PANEL - ALARM 2000	10
3.2.1	General.....	10
3.2.2	Options:.....	10
3.2.3	Power Supply:	10
3.2.3.1	Primary Power Supply:	10
3.2.3.2	Standby Supply:	10
3.2.4	Field Wiring:	11
3.2.4.1	Mains Voltage Input:.....	11
3.2.4.2	Battery Input:	11
3.2.4.3	Smoke / Heat Alarm Field Wiring:.....	11
3.2.5	Transient Suppression:	11
3.3	RESIDENTIAL FIRE INDICATOR MODULES	12
3.3.1	Smoke Alarm Module:	12
3.3.2	Sprinkler Module:.....	14
3.3.3	Manual Override Module:.....	15
3.3.4	Ancillary Control Module:	16
	Air-conditioning	16
3.3.5	Gas Shutdown Module:	18
3.3.6	Power Supply Supervision Module:.....	21
3.3.7	Monitoring Module:	23
4	SYSTEM DESIGN.....	24
4.1	GENERAL.....	24
4.2	ALARM LOCATION.....	24
4.2.1	Smoke Alarms.....	24
4.2.2	Heat Alarms.....	24
4.2.3	Single Storey Dwelling	24
4.2.4	Multi Story Dwelling	25
4.2.5	Maximum Protection.....	25
4.3	POSITIONING YOUR SMOKE / HEAT ALARMS	26
4.3.1	Ceiling Mounting.....	26
4.3.2	On a Sloping Ceiling	27
4.3.3	Wall Mounting.....	27
4.3.4	Locations to Avoid.....	27

4.4	LIMITATIONS OF SMOKE ALARMS	28
4.5	CONTROL PANEL.....	29
4.5.1	Location.....	29
4.5.2	Covering Door.....	29
5	INSTALLATION.....	30
5.1	GENERAL.....	30
5.2	SMOKE/HEAT ALARMS	30
5.2.1	Mounting	30
5.2.2	Wiring.....	31
5.2.3	Additional Precautions for Interconnected Alarms:	33
5.3	RESIDENTIAL FIRE INDICATOR PANEL	34
5.3.1	Surface Mounting Instructions.....	34
5.3.2	Cable Terminations	34
5.4	PLACING INTO OPERATION:	35
5.5	FUNCTIONAL TESTING	36
5.5.1	Smoke/Heat Alarms	36
5.5.2	Checking you can hear your Smoke Alarm.....	36
5.5.3	Residential Fire Indicator Panel (RFIP)	36
5.5.3.1	Alarm Test:	36
5.5.3.2	Fault Test:	37
5.5.3.3	System Off Test:	37
5.5.3.4	Sprinkler Module Testing:.....	37
5.5.3.5	Manual Override Module Testing:	38
5.5.3.6	Ancillary Control Module Testing:.....	38
5.5.3.7	Gas Shutdown Module Testing:	39
5.5.3.8	Power Supply Supervision Module:.....	39
6	INSTALLER'S STATEMENT	40
7	COMMISSIONING TEST REPORT - Alarm 2000.....	46
8	Operator's GUIDE	51
8.1	INDICATORS	51
8.2	CONTROL SWITCHES.....	52
9	Spare Parts.....	53
10	COMPATIBLE DEVICES.....	54
11	GUARANTEE.....	55
12	APPENDICES.....	56
12.1	APPENDIX "A" BATTERY CALCULATION.....	56
12.2	APPENDIX B	57
12.3	APPENDIX "C"	67
12.3.1	Ancillary Control Module:	67

1 INTRODUCTION

Brooks Australia is a specialist company offering 30 years of experience in design, manufacture, installation, service and maintenance of fire detection and alarm systems. These years of experience have, over the last 10 years, been focused on Residential Fire Safety. The Building Code of Australia has set out the fire detection and alarm requirements for residential occupancies, at the same time creating an awareness of the need for such life safety systems within the wider community. Australian Standards have established performance criteria for smoke and heat alarms.

Recognising the unique problems associated with early warning of fire in residential accommodation, Brooks Australia has developed a range of residential fire alarm equipment that enables systems design criteria normally applied to commercial premises to now be adapted to residential occupancies.

In keeping with the philosophy of innovation, flexibility, reliability and quality, Brooks Australia now offers a new residential fire safety system, the “**ALARM 2000**”. The Alarm 2000 is specifically designed for small residential occupancies requiring a Smoke Alarm System under section E2.2 of the Building Code of Australia.

2 SYSTEM OVERVIEW

The System comprises a full range of mains powered Smoke / Heat Alarms, manual call points and supplementary warning devices both audible and visual connected to a Residential Fire Indicator Panel.

The Smoke/Heat Alarms are capable of independent automatic operation, however the Alarm 2000 Residential Fire Indicator Panel provides for the manual activation of the Smoke and Heat Alarms as well as integration with other essential facilities within the building, particularly those requiring control under fire conditions. These are selected as options to the basic system and include Residential Sprinklers, Manual Door Release, Emergency Lighting, Security, Air-conditioning/Heating Shutdown, Gas Supply Shutdown and Power Supply Supervision. Circuitry is either supervised or fail safe to ensure system integrity.

The Alarm 2000 residential panel;

- Supports specific warning devices for the Hearing-Impaired. These provide both visual and tactile responses and can be configured to operate from the common alarm output from the Alarm 2000 panel or as an individual output from a specific Smoke / Heat Alarm.
- Is capable of being remotely monitored via Brooks' single and dual path Alarm Signalling Equipment.
- Employs both solid state and microprocessor based electronic circuit design.
- Is housed in an attractive powder coated steel cabinet providing not only high reliability, ease of installation and aesthetic but is extremely rugged product.

The vast majority of fire fatalities - particularly residential - occur due to the inhalation of smoke and toxic fumes. A correctly designed and installed Residential Smoke Alarm System provides an effective **LIFE SAFETY SYSTEM**, which raises the alarm and maximises your opportunity to escape.

3 SYSTEM COMPONENTS

3.1 SMOKE / HEAT ALARMS

3.1.1 Basic Information about your Smoke / Heat Alarm

A Smoke / Heat Alarm does not prevent fires but correctly located and maintained they will provide the earliest possible warning of fire in order that occupants may exit safely. A Smoke Alarm is an early warning device, Heat Alarms are not therefore are supplementary to Smoke Alarms for those areas where Smoke Alarms would not be suitable. Where heat alarms are used they **MUST** be interconnected to the smoke alarms installed

3.1.2 Technology Available

Brooks Australia offers a full range of detection technologies.

Ionisation Smoke detection

Photoelectric Smoke detection

Heat detection

3.1.3 Ionisation Model

Ionisation Smoke Alarms respond to a sufficiently wide range of fire to be of general use and they are particularly responsive to fast flaming fires where little visible smoke may occur. They are seldom troubled by dust or insect contamination. However, ionisation alarms are vulnerable to irritating nuisance alarms caused by cooking fumes or oil / gas heaters. Furthermore ionisation alarms will be slower to respond to smoke produced by slow smouldering fire. This type, with consideration to the above, can be installed in passageways and areas leading to bedrooms.

Operating Principle

Radioactive source ionises the air molecules within the sensing chamber.

Advantages

- Least expensive
- Dual chamber compensates for changing ambient conditions
- Less prone to false alarms due to dust and steam
- Suitable for general use

Disadvantages

- Contains radioactive material – Americium 241 0.9 microcurries
- Prone to false alarms due to fumes from cooking or gas/oil heaters
- Not sensitive to dark smoke from a slow smouldering fire

3.1.4 Photoelectric model

Photoelectric Smoke Alarms respond to a sufficiently wide range of fires to be of general use, but are particularly responsive to smouldering fires and the dense smoke given off by foam filled furnishings or overheated PVC wiring. They are much less prone to nuisance alarms from cooking, and furthermore, contain no radioactive material. However, all optical smoke alarms are prone to nuisance alarms caused by dust or insect contamination. Mesh screens are effective in reducing insect ingress, but it is impossible to make the alarms dust proof, since they would then be effectively smoke proof! For this reason, it is essential that optical smoke alarms are always kept clean.

This type, with consideration to the above, should be installed within bedrooms and living areas adjacent to kitchens.

Operating Principle

Light scattering - transmitter produces pulses of light which are detected by a receiver when smoke enters the sensing chamber.

Advantages

- No radioactive material
- No legal requirements for disposal
- Particularly responsive to smouldering fires and dense smoke given off from foam filled furnishings, bed linen or over-heated PVC wiring
- Less prone to false alarms due to fumes from cooking or gas/oil heaters
- Ideally suited adjacent to kitchens and bedrooms
- Suitable for general use

Disadvantages

- More expensive to produce
- Prone to false alarms due to dust build up or steam - must be kept clean

3.1.5 Heat Model

Heat Alarms require the least maintenance of any alarm. There are locations where the installation of a Smoke Alarm is not recommended, eg kitchens, laundries etc. Yet these areas are a potential of fires and the need for an alternative method of fire detection is, in the opinion of many fire officers and specifiers, essential in this and other vulnerable locations of residential properties. The heat alarm provides such an alternative. Fixed temperature heat alarms are designed to trigger when the temperature reaches 58 degC. (136 degF.). The heat alarm is not sensitive to smoke, but in a closed room with a vigorous fire they will tend to respond faster than a smoke alarm a distance away in the hallway. A heat alarm **MUST** be interconnected to your smoke alarms so that the alarm can be heard throughout the building. This type, with consideration to the above, can be installed in kitchens, laundry's, garages and boiler houses and other areas where there are normally high levels of fumes, smoke or dust i.e. places where smoke alarms cannot be installed without the risk of excessive nuisance alarms.

Operating Principle

Thermistor sensor - resistance value varies with temperature.

Advantages

- Ideal for those areas where protection is deemed necessary but where the use of smoke alarms will cause constant false/nuisance alarms i.e. kitchens, garages or laundries
- Whilst not sensitive to smoke, in a closed room with a vigorous fire this alarm would tend to 'alarm' faster than a smoke alarm in an adjacent hallway

Disadvantages

- More expensive to produce
- Not an early warning device, **MUST** always be interconnected to other smoke alarms within the residence.

3.2 RESIDENTIAL FIRE INDICATOR PANEL - ALARM 2000

3.2.1 General

The RFIP provides the controls, indicators, monitoring, power and stand-by supplies, termination and distribution point for the system. The RFIP can be configured to specific installation and system requirements by the selection of optional modules.

The basic RFIP comprises a smoke/heat alarm module, power supply and standby batteries. It is designed to interface with the Brooks TL series mains power Smoke/Heat Alarms and provides not only the control functions for the Smoke/Heat Alarms, but also the interface to all other optional modules.

3.2.2 Options:

- Ancillary control module with high current relays
- Residential Sprinkler module
- Manual door override module
- Gas supply shutdown module
- Power supply supervision module
- Power supply 2.2 Amp to 10 Amp.
- Standby batteries 7 to 12 A H for standard enclosures
- 1.6mm zinc annealed steel, powder coated Oyster secured via a 003 key lock.

Enclosures to suit: Small enclosure 400H x 320W x 150D mm (with door) or
 Large enclosure 680H x 320W x 167D mm (with door)

Note: Enclosure size must be considered when selecting the type and number of options to be fitted.

3.2.3 Power Supply:

The primary and standby supplies are calculated to suit system alarm and standby requirements. If the primary power supply fails, the secondary supply will provide sufficient current to maintain the system fully operational for a period determined by the added options to the system. Special consideration must be taken when the Gas Shutdown and Manual Override modules are fitted. This is due to the higher quiescent current these modules require.

3.2.3.1 Primary Power Supply:

The primary power supply is fully regulated 28V DC switch mode power supply featuring:

- Universal AC input 85-264V AC, 47-63Hz
- Output Voltage 28V DC adjustable
- Output Current 2.2 Amp (standard); 5Amp and 10Amp optional.
- Built-in EMI filter, low ripple noise.
- Short circuit, over load and over voltage protection

Note: Power supply voltage output can be adjusted (if required) to the nominal voltage using potentiometer SVR1 on the power supply PCB.

3.2.3.2 Standby Supply:

Battery capacity is calculated to suit systems requirements with sizes up to 12AH suitable for the RFIP enclosure.

3.2.4 Field Wiring:

All field wiring enters the RFIP via knock-outs on either the top or rear of the enclosure. Termination is via compression terminals located on the 'termination' board specific to the module options fitted.

3.2.4.1 Mains Voltage Input:

The 240V AC mains cable terminates at a 3 way junction box located on the inside rear of the cabinet with switched outputs to the switch mode power supply and the Smoke Alarm main termination board.

3.2.4.2 Battery Input:

Colour coded battery leads are provided to connection of the standby batteries to either

- a) Power supply supervision card, where fitted; or
- b) The switch mode power supply through an isolating diode (1N5404-3A) where the power supply supervision option is not fitted. The diode is used to isolate the DC power of the batteries to the DC power of the power supply so the mains on LED will extinguish in case of power fail.

The battery leads are colour coded to ensure correct fitting to the batteries. Connect the black lead to the negative terminal of the first battery, red lead to the positive terminal of the second battery and the blue lead between positive of the first battery to the negative of the second battery.

Note: If the power supply supervision card is not fitted, ensure that the circuit breaker TH1 and link LK1 are fitted to the RFIP main termination board.

3.2.4.3 Smoke / Heat Alarm Field Wiring:

The Smoke/Heat Alarms are wired according to whether the isolate function is incorporated in the system.

(a) Without isolate function - 3 Wire Systems:

If the alarm isolate facility is not required, the Smoke/Heat Alarms will be terminated to TB1 on the main control and termination board mounted on the rear of the enclosure. Connect Active (brown) to "A", Neutral (blue) to "N" and Interconnect (white) to "I" (refer to Drawing No. F363).

Note: The two blue wires must remain linked.

(b) With isolate function - 4 Wire Systems:

If the alarm isolate facility is required, the Smoke/Heat Alarms will be terminated to TB2 on the main control and termination board mounted on the rear of the enclosure. To terminate the Smoke/Heat Alarms in a 4 wire system, the two blue wires (normally used as Neutral) must be separated to a Neutral and Battery negative as shown in the block wiring diagram F563. Connect Active to "A", Battery negative to "N1", Neutral to "N2" and Interconnect to "I".

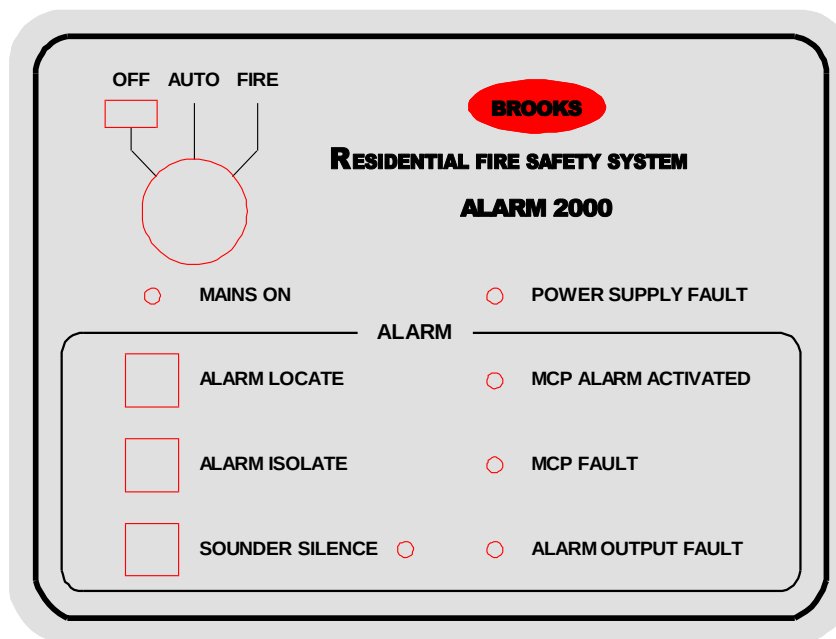
Warning: The battery negative and neutral should not be interchanged.

3.2.5 Transient Suppression:

The RFIP provides transient suppression comprising metal oxide varistors (MOV's) on all inputs and outputs on the main termination board and on all the optional modules.

3.3 RESIDENTIAL FIRE INDICATOR MODULES

3.3.1 Smoke Alarm Module:



The Smoke Alarm Module (SAM) provides the basis building block for the RFIP and consists of the main control and termination board, display board, with the standard Alarm 2000 system being fitted with a 24Vdc/2.2 amp switch mode power supply and stand-by supply of 2x7AH rechargeable sealed lead acid batteries.

The main control and termination board provides the interface and controls for the Smoke/Heat Alarms and Manual Call Points. All the field wiring is terminated on this board. In addition it provides the interface to all other optional modules fitted.

The display board provides the control switches, indicators and fault sounder. This board is mounted on the rear of the faceplate behind the decal.

Inputs:

- **Supervised N/O dry contact for manual activation of system. (MCP).**
- Alarm signal from smoke/heat alarms.
Note: Maximum number of smoke/heat alarms is 20
- Panic – N/O dry contact for remote activation of 'Fire' mode.

Outputs:

- Alarm - supervised 24Volt DC 1 Amp maximum.
- Alarm - set of voltage free contacts.
Note: The alarm outputs are selectable to be activated by MCP only and/or Smoke/Heat Alarms and/or Fire Mode
- 'System switched off' – set of voltage free contacts.
- Common Fault - set of voltage free contacts.
- Auxiliary Supply - 24Volts DC fused to 1Amp.

Controls:

- **Alarm Locate** - silences all Smoke / Heat alarms except the Alarm(s) that have actuated. Used to locate the source of the fire or a faulty or contaminated Smoke / Heat Alarm. Automatically resets after approximately five (5) minutes.
- **Alarm Isolate** - silences all Smoke / Heat Alarms. Used to silence the units while smokes, cooking fumes or steam are cleared from the Smoke / Heat Alarm. Automatically resets after approximately five (5) minutes.
- **Sounder Silence** - mutes the integral RFIP fault sounder. Automatically reset to normal after the fault condition is cleared.

Key Switch:

- **AUTO** - system 'ON', set for automatic alarm response.
- **OFF** - system 'OFF', charger 'on', system off output activated.

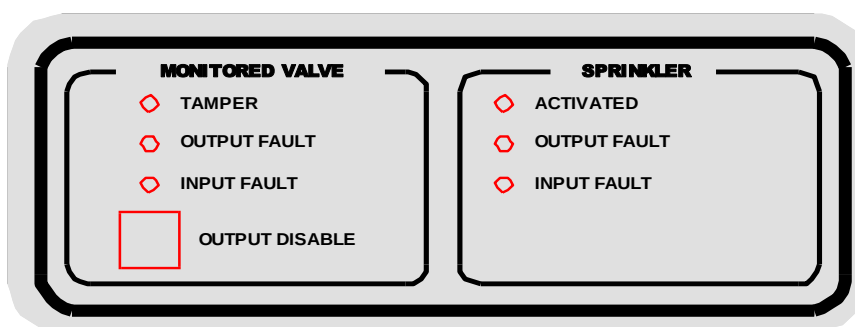
Note: A red indicator on the front panel adjacent the key switch will flash to provide a local warning to the occupants that the system has been turned 'OFF'. A signal output is also provided for remote monitoring of this condition.

- **FIRE** - all Smoke/Heat Alarms sound, alarm outputs selected activate.

Indicators:

- Mains ON, green LED, steady
- System OFF, red LED, flashing
- Alarm Activated, red LED, flashing
- Alarm Output Fault, amber LED, steady
- MCP Input Fault, amber LED, steady
- Alarm Locate selected, amber LED, steady
- Alarm Isolate selected, amber LED, steady
- Sounder Silence selected, amber LED, steady
- Power Supply Fault – optional, amber LED, steady

3.3.2 Sprinkler Module:



This module enables a residential sprinkler system to be connected to and monitored by the RFIP. The module provides an individual supervised input and output for both the flow switch and monitored valve tamper. A facility is provided to disable the tamper alarm output for a period of either 3 or 6 hours to allow for sprinkler system maintenance. (refer to the Sprinkler Module data sheet F565_b)

Inputs:

- Flow/Pressure Switch - supervised normally open dry contact.
- Monitored Valve Tamper - supervised normally open dry contact.

Outputs:

- Sprinkler Alarm - supervised 24Volt DC, 1 Amp.
2 sets of voltage free contacts
- Monitored Valve Tamper - supervised 24Volt DC, 1 Amp.
2 sets of voltage free contacts

Note: Outputs can be set to either independent or common activation.

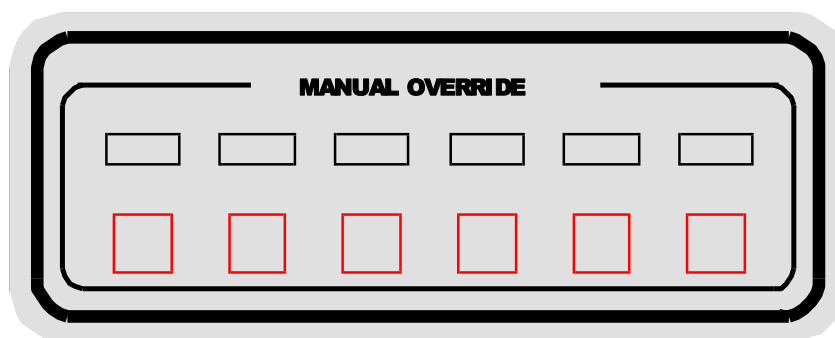
Controls:

- Monitored Valve Tamper Disable - isolates the monitored valve tamper alarm output for selectable 3 or 6 hours then automatically resets. Can be manually reset at any time by pressing the Monitored Valve disable switch for 4-6 second.

Indicators:

- Sprinkler activated, red LED, flashing
- Sprinkler alarm output fault amber LED, steady
- Sprinkler flow/pressure switch input fault, amber LED, steady
- Monitored valve tamper, red LED, flashing
- Monitored valve tamper fault, amber LED, steady
- Monitored valve tamper alarm output fault, amber LED, steady
- Monitored valve output disabled, amber LED, steady

3.3.3 Manual Override Module:



The Manual Override Module is fitted where access and/or smoke doors within the residence are to be secured or held open via electronic locks which require automatic operation under fire alarm conditions but must also allow for manual operation to regulate entry and exit. The module provides six individual manual override switches. Electric locks are configured to be fail safe i.e. removal of power will cause the locks to open.

Under fire alarm operation an output delay is provided to avoid the locks operating from a false alarm due to a transient alarm condition. The delay time can be set to 1-2 Sec, 15 Sec or 30 Sec (refer to Manual Override Module data sheet F565D).

Note: This delay is specific to this module and is in addition to any other selected i.e. locate or isolate

Input:

- Alarm signal from either and/or the Smoke / Heat Alarms, MCP, or Sprinkler system.

Output:

- Six (6) 24Volt DC supplies

Total current permitted for all 6 outputs - 1 Amp maximum.

Controls:

- Six (6) toggle switches for manual override of each supply output.

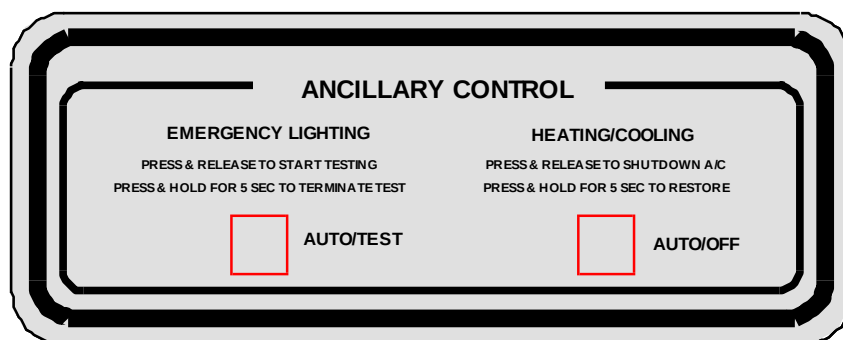
Indicators:

- Amber LED integrated within each switch body for each of the six (6) manual override switches.

Time Delay:

- LK1.1 = 30 sec
- LK1.2 = 15 sec
- LK1.3 = 1-2 sec

3.3.4 Ancillary Control Module:



Note: Older version of Ancillary Control Module is found in Appendix “C”

The new Ancillary Control Module provides similar controls and indications for automatic and manual operation of emergency lighting and Cooling / heating system but in different way and with new added features. The Emergency Lighting design has been updated to achieve the requirements of the Australian Standard AS2293.

A selectable control output delay is provided to avoid Air-Conditioning shutdown and emergency lighting activation from a false alarm due to transient alarm conditions. This delay time can be configured for 0 or 15 seconds.

A new test facility is added to activate the emergency lighting for a selected time depending on a DIP switch setting. The emergency lighting test time may be selected to 30, 60, 90 or 120 minutes.

Emergency Lighting

In the 'AUTO' mode (LED is extinguished), the emergency lighting will be automatically activated if a fire alarm signal is received from a Smoke/Heat Alarm, MCP or Sprinkler alarm dependent upon the configuration selected.

The emergency lighting can be manually tested by pressing and releasing the 'AUTO/TEST' button. In the 'TEST' mode, the amber LED integrated to the switch body will illuminate and the emergency lights will turn “ON”. Depending on the timer setting (S1.3 & S1.4), the lights stay “ON” for the selected time. After the test is completed the emergency lights will turn “OFF” and the amber LED will also extinguish. To restore the auto condition while the emergency lighting test is running, press & hold the “AUTO/TEST” button until the amber LED extinguishes (approximately 5 Seconds).

Air-conditioning

In the AUTO mode (LED is extinguished), the air-conditioning/heating is automatically shut down if a fire alarm signal is received from a Smoke/Heat Alarm, MCP or Sprinkler alarm dependent upon the configuration selected.

The air-conditioning/heating system may be manually switched 'OFF' by pressing and releasing the 'AUTO/OFF' button. In the 'OFF' mode the amber LED integrated to the switch body will illuminate and will remain in this condition until manually de-selected. To restore to the auto condition, press and hold the “AUTO/OFF” button until the amber LED extinguishes (approximately 5 Seconds).

Input:

- Alarm signal from either the Smoke / Heat Alarms, the MCP or Sprinkler Module. The alarm input may be normally open contact that switches negative when closed.

Outputs:

- Air-conditioning / heating
 1. 24V to drive high current relay - rated 240volt AC 10Amps
 2. set of Air-conditioning / heating voltage free contact
- Emergency Lighting –
 1. 24V to drive high current relay - rated 240volt AC 10 Amps
 2. Set of Emergency Lighting voltage free contact

Controls:

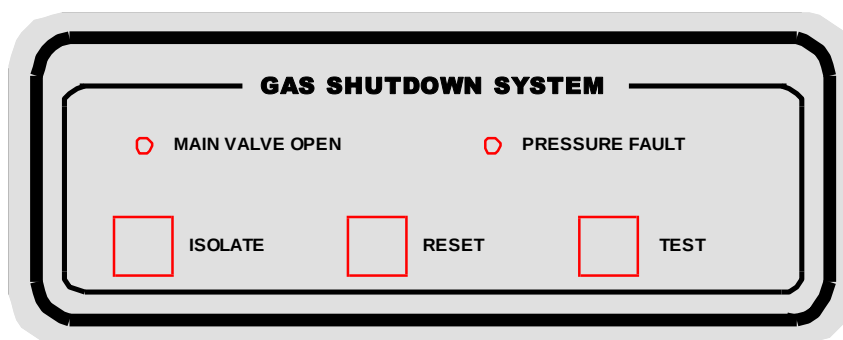
- Heating/Cooling - AUTO/OFF
- Emergency Lighting - AUTO/TEST

Indicators:

- Heating/Cooling - AUTO/OFF, amber LED
- Emergency Lighting - AUTO/TEST, amber LED

Note: The 240V AC for the high current relays of the Air conditioning and the emergency lighting must be wired to a circuit separate to the RFP mains

3.3.5 Gas Shutdown Module:



The Gas Shutdown System is composed of high quality, proven components to ensure safe, reliable protection of a gas pipe-work system that does not have existing safety shut off equipment. For example, open stove burners in kitchens, or gas Bunsen burners in a laboratory. The Gas Shutdown System can also guard against restoring gas if downstream pipe-work is damaged or a gas outlet is open. The system consists of two principle components, the gas shutdown module and Gas Valve/flexible coupling assembly.

The gas shutdown module is designed to be interlocked with sprinkler systems, fire and smoke detection systems, gas detection systems or emergency stop devices, so that in the event of an emergency the gas supply can be automatically shutdown as well as providing outputs for gas valve and occupant warning system actuation.

The Gas Valve Assembly is designed to provide the main gas shut off valve, bypass valve, bypass valve flow adjuster and gas pressure switch as a pre-assembled, pre-tested module. This, together with the flexible coupling provided, ensures both ease and consistency of installation. This modular format also facilitates any servicing or maintenance that may become required. The valve assembly comes standard in 25mm, but can be configured up to 150mm.

To properly configure and size the system, the following need to be considered.

Interlocking systems or emergency device requirements

- Gas Type
- Gas Pressure
- Gas Flow
- Control Voltage

HOW IT WORKS

Where an unsupervised burner may be extinguished by the operation of an emergency stop device, sprinkler system or manual valve, it is essential that the gas cannot be restored unless all of the gas burners are off, and the associated pipe-work remains undamaged.

The gas shutdown system, when properly installed and commissioned, guards against the accidental restoration of gas when gas burners are left on or pipe-work damaged.

The main gas isolating solenoid valve is installed in the gas supply to the unsupervised appliances. When the gas supply needs to be isolated, power to the main gas solenoid

valve is interrupted and the valve closes. Before the main gas solenoid valve can re-opened, the pressure in the downstream gas pipe-work is verified by a pressure switch.

On restoration of the power to the valve assembly, if the pressure switch detects that the downstream pressure is acceptable, i.e. there have been no leaks, the main gas valve is opened and no manual reset is necessary. The main valve open indicator illuminates.

If the pressure in the down-stream pipe-work is not at the correct level, then there is no guarantee that the pipe-work or appliances are pressure tight, the main gas valve will not open and the main valve open indicator remains extinguished. This indicates to the operator that the gas appliances and/or pipe-work requires checking, before the system is now manually reset.

To reset the system, having checked the integrity of the gas appliances and pipe-work, press and hold the reset button. This action opens the bypass gas solenoid valve that passes only enough gas to fill the system IF THERE ARE NO LEAKS.

If the appliances or pipe-work are not gas tight, the gas provided by the bypass valve will not fill the system. The pressure switch will not actuate and therefore will not allow the main gas valve to operate. The main gas supply remains OFF and the Gas Stop Fault indicator is illuminated. If the pipe-work is gas tight, the system will pressurize causing the pressure switch to actuate allowing the main valve to open. The main valve open indicator will illuminate and the gas stop fault indicator will extinguish.

WARNING: It is essential that the gas shutdown system be set up correctly and in accordance with the instructions provided. A "Safety Check" must be carried out to ensure the correct operation of the system. Failure to do this may cause a dangerous situation.

Note: Because of the large range of valve and pressure switch options available, it is essential to check that the gas supply pressure and system operating voltage are correct for the components provided before installation. The Valve Assembly must be installed and commissioned by a licensed plumber.

Input:

- Alarm signal from either and/or the smoke/heat alarms, MCP or sprinkler system.
- Pressure Switch - down stream from main valve

Output:

- Main Shut-off Valve - 24Volt DC 3 Amps.
- By-pass Valve - 24Volt DC 3 Amps.

Controls:

- Main valve isolate - used when testing the sprinkler system to avoid an unnecessary gas shutdown.
- Reset - used to control the bypass valve to manually re-open the main valve after a complete shutdown. Test - manually closes the main valve to test shutdown operation.
- Test – used to simulate sprinkler alarm so, gas shut down can be tested.

Indicators:

- Main Valve Open.
- Pressure Fault.
- Main valve isolated.
- Reset.
- Test.

Standard Valve Assembly

Voltage: 24Volts DC / 36 Watts

Size: 25mm

Components: Main Gas Solenoid valve
Bypass Gas Solenoid Valve
Bypass Gas Flow Rate Adjuster
Gas Pressure Switch

Flexible Coupling

600mm Stainless Steel Corrugated Tube 1 1/4" O.D. x 1" I.D.

3.3.6 Power Supply Supervision Module:

General

The power supply supervision module has been designed to meet the requirements of AS4428.5. The module provides additional power supply supervision not available in the AS1603.4 CIE.

The module constantly monitors the power supply status and upon detection of a fault condition will within one hour signal a power supply fault.

Power Supply Fault

The power supply fault, open collector output (LED indication) and voltage free contact will be activated if one of the following occurs:

- Charger high : charger voltage is higher than 28.2V
- Charger low : charger voltage is less than 26.5V
- 50% Battery capacity : battery voltage less than 23.8V
- Power fail : voltage less than 21V
- Battery disconnected
- Auto battery test fail (latching LED)

Note: once the supply fault is rectified or the power restored, the power supply fault LED will clear unless the fault occurred during the auto battery test.

Power Fail

A set of voltage free contact is available if the mains power is lost and battery voltage becomes less than 21V.

Test Inhibit Facility (Optional)

If an alarm occurred during the one hour auto battery test, the test will terminate to ensure sufficient power to the fire panel and the ancillary equipment in full alarm condition. Two terminals are provided on the power supply supervision board to connect normally open alarm contact as shown in the data sheet.

Battery Present Test

A battery present test is conducted by disconnecting the batteries from the system for approximately 100mSec. On startup, the battery test is carried out once every 15 seconds for the first 250 seconds then once every one hour. If the batteries are missing, the power supply fault is indicated.

Note: A battery present test is not performed if a charger fault exists.

Auto Battery Test

An auto battery test is conducted approx. every 71 Hours where the system quiescent load will be disconnected off the system power supply and placed on the batteries.

The auto battery test will not be conducted and will be terminated if one of the following conditions is exist:

- Battery missing or disconnected
- Battery low (50% capacity) or fail condition
- Charger high or low fault
- If the auto-test inhibit input is activated.

The activation of the auto-test inhibit input will terminate the test immediately, no supply fault will be indicated. An auto-test can be inhibited by voltage free (Normally Open) contact.

During the auto battery test, any supply fault occurs it will terminate the test and latch the supply fault outputs. If the condition that caused the supply fault is rectified, the supply fault outputs will not be reset until the beginning of the next auto-test. Provision for manually resetting a latched fault is provided by means of an onboard switch.

If the Battery is removed during an auto battery test, the power to the system will be lost for approximately 15 - 20mSec.

Normal / Default status of indicators:

LED No.	LED Col.	Description	Normal (default)
LED 1	Green	Mains ON	ON
LED 2	Red	Auto battery test running	OFF
LED 3	Red	Battery isolate i.e. battery removed permanently or during auto test	OFF
LED 4	Red	Auto test inhibited	OFF
LED 5	Green	Power fail	ON
LED 6	Yellow	Supply fault O.C. (open collector)	OFF
LED 7	Green	Supply fault	ON

3.3.7 Monitoring Module:

This module provides a facility for the remote monitoring of a number of system conditions. The standard module has eight (8) inputs but is easily expandable to 40. Standard signals available are:

1. Smoke Alarm activation.
2. Sprinkler activation.
3. Monitored Valve Tamper.
4. System Fault - common signal for all 'fault' conditions.
5. System Fail - system switched off.
6. RFP Enclosure Tamper.
7. Power Supply Fault.
8. Power Supply Fail.

*Inputs from other sources can also be monitored i.e. Security.

Single Path

The module connects to the Public Switched Telephone Network (PSTN) via an existing incoming line to the premises. A Mode 3 connection is made so that a fire alarm signal has priority over a normal connection. For added security dual path Alarm Signalling Equipment is available utilising both GSM/SMS and PSTN technologies.

Dual Path

This module provides for the PSTN connection above but in addition offers an alternate path via GSM/SMS. This module is used in more critical applications.

4 SYSTEM DESIGN

4.1 GENERAL

The Smoke / Heat Alarms should be installed in compliance with the requirements of Building Code of Australia and for guidance Australian Standard AS1670.6, AS1670 part 1 and this manual. Wiring should be installed to AS3000.

All Smoke/Heat Alarms must be interconnected to ensure the warning will be heard throughout the protected area, giving particular attention to sleeping areas.

A properly designed early warning fire system ensures the alarm is given before the escape route becomes blocked with smoke. Therefore Smoke Alarms must be installed along the escape routes, Heat Alarms would not give sufficient warning.

Ideally the Alarm should be installed in the centre of the ceiling at least 300mm from light fittings.

4.2 ALARM LOCATION

4.2.1 Smoke Alarms

Sufficient smoke must enter the Smoke Alarm before it will respond. The Smoke Alarm needs to be within 7.5 metres of the fire to respond quickly. It also needs to be in a position where its alarm can be heard throughout the residence, in order that all occupants will be alerted in time for all to escape. A **single** Smoke Alarm will give some protection if it is properly installed, but most residences will require **two** or more Smoke Alarms. To ensure that a reliable early warning is given, the first Smoke Alarm should be located between the sleeping area and the most likely sources of fire (living room or kitchen for example). But it should not be more than 7.5 metres from the door to any room where a fire might start and block your escape from the house.

4.2.2 Heat Alarms

Heat Alarms are intended to be supplementary to Smoke Alarms and should only be placed where smoke alarms cannot be used. A heat alarm should only be used in a room adjoining an escape route, in conjunction with smoke alarms on the escape routes. The Heat Alarm **must** be interconnected to the other Alarms.

4.2.3 Single Storey Dwelling

If the residence is on one level the first smoke alarm should be placed in a corridor or hallway between the sleeping and living areas. Place it as near to the living area as possible, but make sure you can hear it loudly enough to wake you in the bedroom (ref: figure 1).

If the residence is very large and/or the corridor or hallway is more than say 15 metres long, one Smoke Alarm will not be sufficient. No matter where it is located it will be more than 7.5 metres from potential fires and there is the likelihood that the warning will not be heard throughout the areas requiring protection.

In residences with more than one sleeping area, Smoke Alarms should be placed between each sleeping area and the living area.

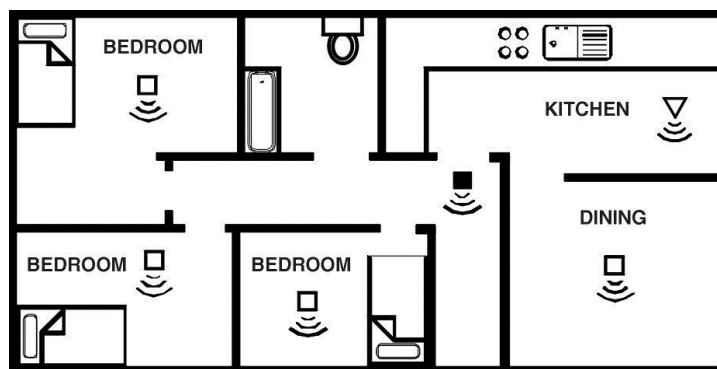


Figure 1 Single story dwelling

4.2.4 Multi Story Dwelling

If the dwelling is on more than one level you will require at least one smoke alarm on each level. The first located in the downstairs hallway near the stairs. (Ref: figure 2). Smoke is likely to be detectable in this hallway before it reaches the upstairs landing and bedrooms.

The second Smoke Alarm should be located upstairs adjacent to the bedrooms. The downstairs Smoke Alarm is unlikely to detect the smoke from a fire in the bedroom area upstairs. Both Smoke Alarms should be interconnected to ensure the earliest possible warning.

4.2.5 Maximum Protection

For maximum protection locate an Alarm in all the rooms where fire is most likely to breakout, selecting smoke or heat as appropriate. The living room is the most likely place for a fire to start at night, followed by the kitchen and then the dining room. You should also consider putting Smoke Alarms in any bedrooms where fires might occur, for instance, where there is an electrical appliance such as an electric blanket or where the occupant is a smoker. You could also consider putting Smoke Alarms in any rooms where the occupant is unable to respond very well to a fire starting in the rooms, such as an elderly or sick person or a very young child.

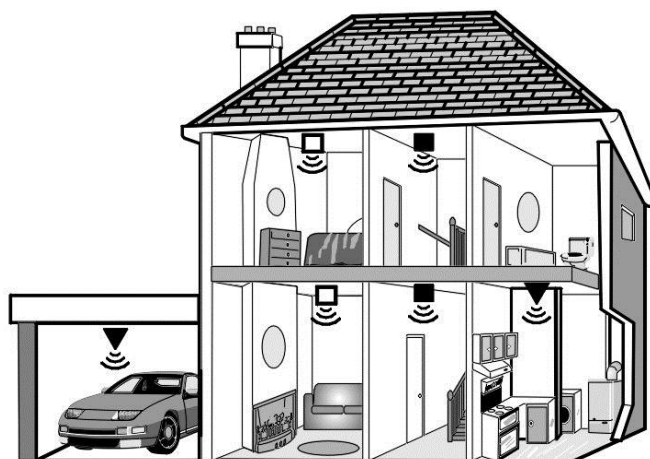


Figure 2 Multi story dwelling

Recommended Protection Figures 1 & 2

Minimum Protection

- Smoke Alarms located on:

- On each storey
- Within 3 metre (10 ft) of all bedroom doors
- Every 7.5 metres (25 ft) or hallways and rooms

Maximum Protection

- Smoke Alarms located as above plus:

- All rooms (except bathroom, shower rooms and kitchen)

In houses with more than one sleeping area, Smoke Alarms should be placed between each sleeping area and the living area (for example, see figure 1).

- ▽ Heat Alarms located in kitchens, garages, boiler rooms etc. within 5.3 metre of potential fire sources

4.3 POSITIONING YOUR SMOKE / HEAT ALARMS

4.3.1 Ceiling Mounting

Hot smoke rises and spreads out, so a central ceiling position is the preferred location. The air is “dead” and does not move in corners, therefore Smoke and Heat Alarms must be mounted away from corners. Place the unit at least 30cm (12 inches) from any light fitting or decorative object which might obstruct smoke / heat entering the Alarm. Keep at least 15cm (6 inches) away from walls and corners. (See figure 3).

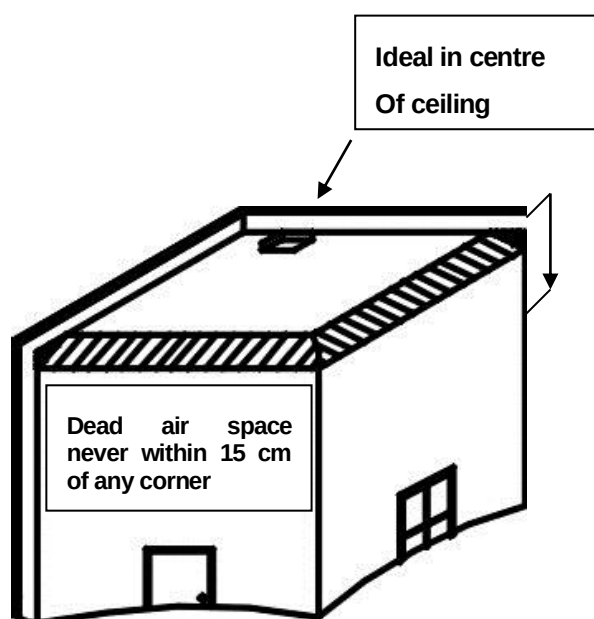


Figure 3 Normal ceiling

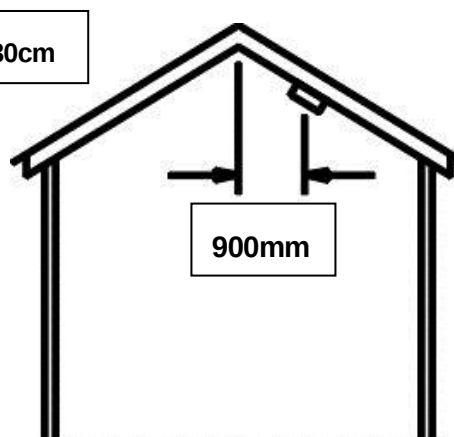


Figure 4 Sloping ceiling

4.3.2 On a Sloping Ceiling

In areas with sloping or peaked ceilings, install your Smoke Alarm 90 cm (3 feet) from the highest point measured horizontally (see figure 4), because “dead air” at the apex may prevent smoke from reaching the unit.

4.3.3 Wall Mounting

When a ceiling position is not practical (for example on a ceiling having exposed beams or joists, or built-in radiant heating) put the top edge of your Smoke Alarm between 15 and 30 cm (6 and 12 inches) below the ceiling. Keep at least 15cm (6 inches) from corners. (see figure 3).

Wall mounting is not recommended for Heat Alarms

4.3.4 Locations to Avoid

Don't place your Smoke Alarm in any of the following areas:

- **Kitchens, Bathrooms, shower rooms, garages** or other rooms where the smoke alarm may be triggered by steam, condensation, normal smoke or fumes.
- **Attics** or other places where extremes of temperature may occur (below 4°C/34°F or above 40°C/104°F).
- Near a **decorative object, door, light fitting, window moulding** etc., that may prevent smoke from entering the Smoke Alarm.
- Surfaces that are normally **warmer** or **colder** than the rest of the room (for example attic hatches, uninsulated exterior walls etc), Temperature differences might stop smoke from reaching the unit.
- Next to or directly above **heaters** or **air conditioning vents, windows, wall vents** etc. that can change the direction of airflow.
- In very high or **awkward areas** where it may be difficult to reach the alarm (for testing, maintenance etc).
- Locate unit at least 1.5m (5 feet) and route wiring at least 1m (3 feet) away from **fluorescent light fittings** as electrical “noise” and/or flickering may affect the unit.
- Locate away from very **dusty** or **dirty areas** as dust build-up in the chamber can make unit too sensitive and prone to alarm. It can also block the insect screen mesh and prevent smoke from entering the chamber.
- Do not locate in **insect infested areas**. Small insects getting in to the chamber can cause intermittent alarms.
- Do not place Heat Alarms in bathroom, shower room or other room where the unit may be triggered by steam or condensation.
- Ionisation Smoke Alarms should be placed away from kitchens or airflows likely to carry cooking fumes.
- Photoelectric smoke alarms should be located away from bathrooms or other potential sources of steam

Note: Electrical noise induced onto the Alarm power circuit can cause intermittent chirping. Avoid power circuits with inductive loads or fluorescent fittings. If unavoidable a line filter may be required.

4.4 LIMITATIONS OF SMOKE ALARMS

Smoke / Heat Alarms have significantly helped to reduce the number of fire fatalities in countries where they are widely installed.

However independent authorities have stated that they may be ineffective in up to 35% of all fires. There are a number of reasons for this:

- The Smoke / Heat Alarms will not work if the mains power is off and the battery is depleted.
- Smoke / Heat Alarms will not detect fire if sufficient smoke or heat does not reach the Alarm. Smoke / heat may be prevented from reaching the alarm if the fire is too far away, for example, if the fire is on another floor, behind a closed door, in a chimney, in a wall cavity, or if the prevailing air draughts carry the smoke away. Installing Smoke / Heat Alarms on both sides of closed doors and installing more than one Smoke / Heat Alarm as recommended in the installer's instructions very significantly improves the probability of early detection.
- Smoke / Heat Alarms which are not maintained or are tampered with may not function reliably.
- The Smoke / Heat Alarm may not be heard.
- A Smoke / Heat Alarm may not wake a person who has taken drugs or alcohol.
- Smoke / Heat Alarms may not detect every type of fire to give sufficient early warning. They are particularly ineffective with fires caused by escaping gas, violent explosions, poor storage of flammable rags and/or liquids, (for example petrol, paint, spirits etc) overloaded electrical circuits, arson, children playing with matches.
- Smoke / Heat Alarms don't last indefinitely. The manufacturer recommends replacement after 10 years as a precaution.
- The battery life expectancy is over 10 years.

4.5 CONTROL PANEL

4.5.1 Location

The Residential Fire Indicator Panel (RFIP) should be located in a secure position and be clearly visible and readily accessible for the authorised person or persons. The RFIP should be installed such that the required visible indicators and controls are not less than 750mm or more than 1850 mm from the floor. The RFIP should be installed in an environment that will not jeopardise its reliable operation.

4.5.2 Covering Door

Where the RFIP is obscured by a door, then that door should be marked in contrasting colour to the general colour scheme with the words 'RESIDENTIAL FIRE INDICATOR PANEL' in letters 50 mm high. No other letters shall be on the door. The door should not be lockable.

5 INSTALLATION

5.1 GENERAL

The 240V mains supply for the RFIP should be derived from the main distribution board in the residence. This supply circuit should be either:

1. A dedicated circuit from the residence's main distribution board. In which case no other electrical equipment should be connected to this circuit (other than a dedicated monitoring device installed to indicate failure of the mains supply to the system), or
2. A separately electrically protected, regularly used local lighting circuit.

The system must be continuously powered, there should be no interposing switch that can be used to turn off the system.

The mains supply to the Smoke / Heat Alarms must be derived from the main termination board of the RFIP.

WARNING: Do not connect the Smoke / Heat Alarms to mains supply derived from an inverter that provides for a square wave output e.g. solar panel conversion. The Alarm must have a sinusoidal 240V AC supply.

WARNING: Do not Meggar the supply circuit to the alarms while the alarms are connected. If the circuit must be megged the alarms and RFIP-2000 **MUST** be removed prior to circuit testing.

Do not install the Alarms or RFIP in new or renovated buildings until all work is completed (including floor coverings) and the building has been fully cleaned.

To avoid contaminating the alarm, after checking operation of the alarm, fit the protective dust cover provided until required for use.

Note: Excessive dust and debris from building work can contaminate the smoke chamber or heat sensor causing nuisance alarms or incorrect operation. Contamination will invalidate the product guarantee.

Disconnect the AC mains supply to the system circuit at the main distribution board prior to installation of the RFIP or Alarms. Do not attempt to open the smoke/heat alarms as they are permanently sealed for safe.

5.2 SMOKE/HEAT ALARMS

5.2.1 Mounting

Mains powered alarms must be installed and interconnected by a licensed electrician in accordance with the regulations for electrical installation AS3000. Failure to install the alarm correctly may expose the user to shock or fire hazards.

The Alarm is designed to be permanently mounted onto a rectangular junction box. and connected to the 240V AC 50Hz mains supply from the RFIP. It requires a current of 40mA.

Select an appropriate location and position for the alarm and Install a junction box. The Alarm must not be exposed to dripping or splashing. There are important markings on the underside of the Alarm. If the mounting plate is going to be screwed directly on to the junction box, ensure the orientation of the box will leave the Smoke / Heat Alarm squarely aligned to the walls.

Remove the mounting plate from the Smoke Alarm by releasing the tamper proofing catch with a small screwdriver as shown in figure 5 and sliding the Smoke Alarm from the plate.

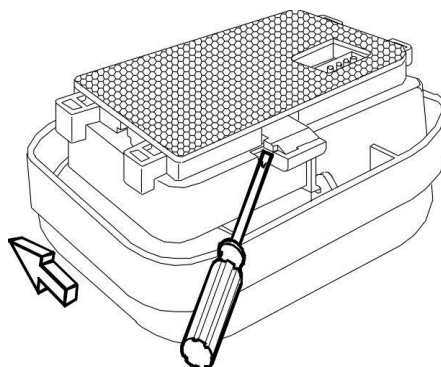


Figure 5 Remove mounting plate from the alarm

5.2.2 Wiring

The alarms are wired in a three core or four core configuration dependent upon whether the isolate function is required. Each alarm is supplied with a lead and plug as shown in figure 6. The wires in the plug supplied are colour coded as follows:

Brown: Active

Blue: Battery negative

White; interconnect

Blue: Neutral

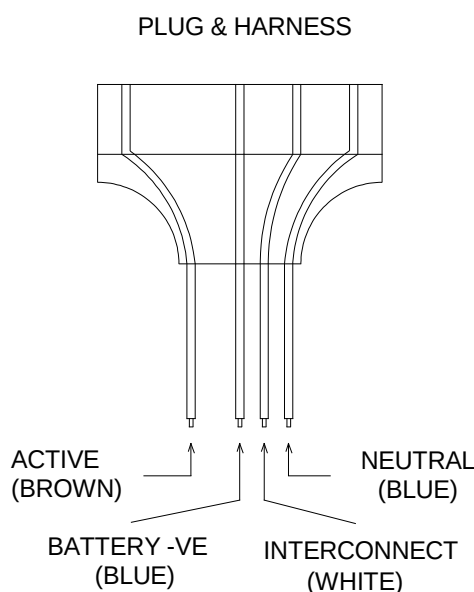


Figure 6 TL Series plug and harness

Note: The alarm is not to be earthed, no connection is to be made to terminals or wires marked with the letter “E” or coloured green or green and yellow.

Active

The Brown wire must be connected to the terminal/wire marked with the letter “L” or coloured red or brown and the appropriate terminal on the RFIP termination board.

Neutral / Battery Negative

The two blue wires are supplied joined, this is to disconnect the battery when the plug is removed. The Smoke/Heat Alarms are wired according to whether the isolate function is incorporated in the system.

Without isolate function - 3 Wire Systems: If the alarm Isolate facility is not required the smoke/heat alarm field wiring is terminated to TB1 on the main control and termination board mounted on the rear of the enclosure. Connect Active (brown) to “A”, Neutral (blue) to “N” and Interconnect (white) to “I” (refer to Drawing No. F563). Note: The two blue wires must remain linked.

With isolate function - 4 Wire Systems: If the alarm Isolate facility is required, the Smoke/Heat Alarms will be terminated to TB2 on the main control and termination board mounted on the rear of the enclosure. To terminate the Smoke/Heat Alarms in a 4 wire system, the two blue wires (normally used as Neutral) must be separated to a Neutral and Battery negative as shown in the block wiring diagram F563. Connect Active to “A”, Battery negative to “N1”, Neutral to “N2” and Interconnect to “I”.

Warning: The battery negative and neutral should not be interchanged.

Interconnection

The white core is for the interconnect line. The extra insulation on the white wire must not be removed unless the Alarms are being interconnected. To interconnect the Alarms, connect all the white wires together as shown in Figure 7

Note: As the battery negative is referenced to the neutral therefore the interconnect line must be treated as LV.

WARNING: Incorrectly wiring the plug will damage the interconnected alarms. Warranty will be voided.

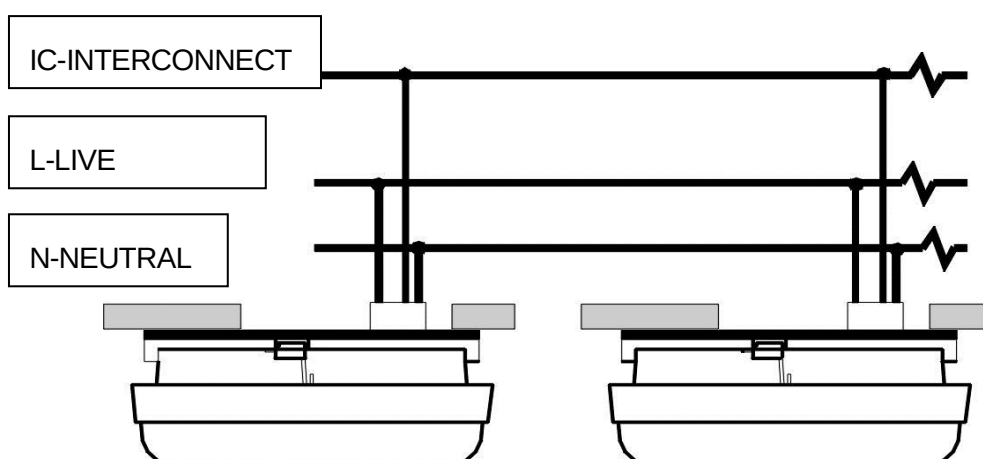


Figure 7

5.2.3 Additional Precautions for Interconnected Alarms:

1. Only interconnect Brooks Smoke or Heat Alarms to the models nominated as compatible for interconnection and do not exceed the maximum number for alarm interconnection. Do not interconnect the Brooks alarms to those of any other manufacturer. Doing this will void warranty and may damage the Alarms and could result in a shock or fire hazard.
2. The interconnect wire (minimum 0.75mm cable) must be treated as if it was an active. It should be insulated and sheathed.
3. A maximum of 250 metres of wire can be used (maximum resistance between detectors 50 Ohms).
4. Smoke / Heat Alarms should be interconnected only within the confines of a single residential building.
5. Do not use an earth wire for the interconnect wire.

5.3 RESIDENTIAL FIRE INDICATOR PANEL

The RFIP is factory pre-wired and fully tested before delivery. After receipt of the panel, the unit should be carefully unpacked and checked for any possible mechanical damage during transportation. Report any damage to your supplier immediately.

5.3.1 Surface Mounting Instructions

1. Locate the position where the panel is to be sited.
2. Mark the position of the two mounting holes (240mm apart) and the cable cut-outs, 5 knockouts are available on the back and 5 on the top of the enclosure.
Note that Power and ELV cables are to be kept segregated.
3. Select the appropriate mounting hardware and prepare the two mounting holes.
4. Fix the top two points, leaving approximately 6 mm of the protrusion from the wall. Mount the Panel and secure all mounting hardware.

5.3.2 Cable Terminations

AC Power

The 240V AC input is terminated on the mains isolate switch and earth stud provided on the rear inside of the enclosure.

The mains isolate switch delivers AC mains to the switch mode power supply and to RFIP main and control termination board which supply mains power to the Smoke / Heat Alarms.

Drawing no. F563 shows the block wiring diagram of the basic Alarm 2000 system.

Field Wiring

All field cabling is to be terminated on the Terminals provided on the main control board and on the termination boards of the optional modules as per drawing no. F563 and F564. The Figures show the Block Wiring Diagram using 3 or 4 core cable to interface the Smoke / Heat Alarms.

Cables should be terminated as required. Ensure all cables are neat and secured using approved plastic ties.

Batteries

Fit Batteries into bottom of the enclosure.

RED Positive

BLACK Negative

BLUE Positive 1 / Negative 2

Using the mounting hardware provided, secure the front panel to the enclosure.

5.4 PLACING INTO OPERATION:

Before commencing to test your Alarm 2000 system, it is important to ensure that the equipment interfaced to the system e.g. Sprinkler system, Gas Supply or Air-conditioning, has been isolated using the suitable isolate facility either in the panel or on the equipment itself. It is also important to notify the occupants and the monitoring centre if the system is monitored. The following check procedures are recommended following each installation.

Initial Check List:

A visual inspection should be performed to the system to ensure no physical damage or loose wires or components inside the enclosure.

- ☐ Cabinet visual check
- ☐ Viewing window clear and firmly secured
- ☐ All boards firmly mounted
- ☐ DIP Switch correctly set
- ☐ Optional modules as per client order
- ☐ Mains Smoke/Heat Alarms wiring correctly terminated
- ☐ All 240V mains cables correctly terminated
- ☐ All ribbon Cables firmly secured
- ☐ EOL resistors & diodes correctly terminated on the field devices
- ☐ Manuals and instructions supplied

Power up Check List:

- ☐ Ensure Key switch in the OFF position
- ☐ Turn ON the mains isolating switch
- ☐ Main on LED illuminates
- ☐ Connect batteries
- ☐ Place the Key switch in the AUTO position
- ☐ Ensure all LED's are 'OFF' except Mains on LED
- ☐ Ensure no Smoke / Heat Alarm is sounding
- ☐ Check charger output voltage 27.3V DC

5.5 FUNCTIONAL TESTING

This section describes the system testing procedures to ensure that the Alarm 2000 is fully functional. The testing depends on the configuration of the system i.e. the optional modules added to the basic system.

Note: Testing of Alarm 2000 system must be performed by a fully licensed and qualified technician.

5.5.1 Smoke/Heat Alarms

Check that the green mains indicator light is 'ON' on all Smoke / Heat Alarms. (If it is off, check circuit breakers, fuses, wiring and RFIP etc.) Check the red light behind the button or on the cover flashes every 40 seconds.

Press the test button for up to 10 seconds on each smoke/heat alarm to ensure the sensor chamber, electronics and sounder are working.

Check the red light behind the test button or on the cover flashes while horn is sounding. The Alarm will stop within a few seconds when the test button is released. Pressing the test button simulates the effect of smoke or heat during a real fire and is the best way to ensure the Alarm is operating properly.

Warning: Do not test with flame. This can damage the Alarm or may set fire to the house. We do not recommend testing with smoke or heat as the results can be misleading unless special apparatus is used.

With the Smoke/heat alarm in normal mode, check that the Test button flashes red once per minute to indicate correct self-check is functional

Check that all interconnected Alarms operate when each test button is pressed for 10 seconds.

Note: Smoke/heat alarms fitted with a Hush facility will beep every 40 seconds for 10 minutes after the power up if the hush button was pressed inadvertently (press test button for five seconds to cancel).

5.5.2 Checking you can hear your Smoke Alarm

With the smoke alarms sounding in its intended locations, check you are able to hear them in each bedroom with the door closed, above the sound of your radio. The radio should be set to a reasonably loud conversation level. If you can't hear it over your radio the chances are that it wouldn't wake you. Re-assess the locations and number chosen.

5.5.3 Residential Fire Indicator Panel (RFIP)

5.5.3.1 Alarm Test:

Ensure the "Mains On" light is on

1. Turn the Key Switch to "FIRE"
 - All Smoke / Heat Alarms connected to the system should sound
 - If DIP switch 1.1 is ON, the 24V monitored output will activate
 - If DIP switch 1.3 is ON, the alarm output relay contact changes over
 - Any other facility connected to the alarm bus will activate

Note: Pressing the Alarm Locate or Alarm Isolate will cause all the Smoke / Heat Alarms to silence for approximately 5 minutes.

2. Simulate activation of the Manual Call Point (if fitted)
 - The "MCP Alarm Activated" LED flashes
 - Monitored 24V alarm output is switched on (Bell ringing if fitted)

- Any other facility connected to the alarm bus will activate
- 3. Activate the "Panic Input", the system activates the Fire Mode as per step 1
- 4. Go to any Smoke Alarm press and hold the test button, all the Smoke or Heat Alarms will sound. With the test button still pressed and the smoke/heat alarm still sounding press the "Alarm Locate" switch. All the Smoke / Heat Alarms should stop sounding except the unit with the test button pressed. The Locate facility should be active for approximately 5 minutes. To cancel the five minutes timer, turn the key switch to "Off" position then press and hold the Locate button until the amber LED in the switch body distinguish.

Repeat step 4 by pressing the "Alarm Isolate" switch (if the Smoke / Heat Alarms are wired as a 4-wire system) instead of "Alarm Locate", all the Smoke or Heat Alarms will be disabled for approximately 5 minutes including the Smoke Alarm that has been activated.

5.5.3.2 Fault Test:

1. Remove EOL Resistor of the MCP
 - "MCP Fault" LED illuminates
 - Fault sounder is sounding
 - Common fault relay is energised

Press "Sounder Silence" button, the fault sounder will mute.

2. Remove EOL Resistor of the monitored alarm output
 - "Alarm Output Fault" LED illuminates
 - Fault sounder is sounding
 - Common fault relay is energised

Press "Sounder Silence" button, the fault sounder will mute.

5.5.3.3 System Off Test:

Turn the key switch to "OFF" position

- System Off red LED (rectangular) will be flashing
- System OFF relay energise

5.5.3.4 Sprinkler Module Testing:

1. Simulate Sprinkler alarm input by bridging sprinkler input terminals (SPK/IN)
 - "Sprinkler Activated" red LED flashes
 - Monitored 24V Sprinkler alarm output is activated
 - Sprinkler alarm relay is energised

Note: If the Sprinkler alarm is required to activate all the Smoke / Heat Alarms, a normally open Sprinkler alarm relay contact must be connected to the Panic input in the main control board.

2. Simulate Monitored Valve alarm input by bridging the Monitored Valve input terminals (MV/IN)
 - "Monitored Valve Tamper" red LED flashes
 - Monitored 24V Monitored Valve alarm output is activated if the output is not disabled
 - Sprinkler alarm relay is energised

Note: Due to the routine and emergency maintenance of the Monitored Valve, the 24V output required to be disabled for a period of time to avoid activating the Monitored Valve alarm bell.

The Monitored Valve disable switch if pressed, it will disable the output for either 3 or 4 hours depending on the position of link LK2 as shown in the Sprinkler Module data sheet.

3. Move link LK1 from position “B” to position “A” and simulate Sprinkler input alarm or Monitored Valve input alarm, all outputs will be activated “COMMON MODE”. Move the link back to the position “A” i.e. “INDEPENDENT MODE”.
4. Remove EOL resistor of the Sprinkler input
 - “Sprinkler Input Fault” yellow LED illuminates
 - Fault sounder activates
 - Common fault relay will be energised
5. Remove EOL resistor of the monitored 24V Sprinkler output
 - “Sprinkler output Fault” yellow LED illuminates
 - Fault sounder activates
 - Common fault relay will be energised
6. Remove EOL resistor of the Monitored Valve input
 - “Monitored Valve Input Fault” yellow LED illuminates
 - Fault sounder activates
 - Common fault relay will be energised
7. Remove EOL resistor of the monitored 24V Monitored Valve output
 - “Monitored Valve Input Fault” yellow LED illuminates
 - Fault sounder activates
 - Common fault relay will be energised

5.5.3.5 Manual Override Module Testing:

1. Check all doors have 24V DC power to the door strikes i.e. door 1 to door 6 are locked.
2. Activate any Smoke or Heat Alarm connected to the system, all doors should be released (switch off 24V power to each door strike, total 6 outputs) after a time delay determined by the position of link LK1
 - LK1 Position 1 = 30 Sec
 - LK2 Position 2 = 16 Sec
 - LK3 Position 3 = 1-2 Sec
3. Place the system back to normal condition and press the first door switch, the first door strike will be released and the LED build in the switch body should illuminate. Note that the switch is toggle action i.e. must be released to supply power to the door strike which allows the door to be locked.
4. Repeat step 2 for door switch 2 to 6

5.5.3.6 Ancillary Control Module Testing:

1. Activate a Smoke or Heat Alarm. After the output delay time has elapsed (selectable 0 or 15 seconds), the relay outputs to control the Heating / Cooling system and the emergency lighting will energise, that causes the Heating / Cooling to shut down and the emergency lights to turn on.
2. Press and release the Emergency Lighting AUTO/TEST button:
 - The amber LED integrated to the switch body illuminates.
 - The testing timer starts
 - The control relay energises and turns off the mains power to the emergency lights, which turns the lights on for the time set by the Dip switch (30, 60, 90 or 120 Minutes).
 - To re-activate the mains power to the emergency lights and terminate the test, press & hold the emergency lighting AUTO/TEST button until the amber LED extinguishes (approximately 5 seconds).
3. Press and release the Heating / Cooling AUTO/OFF button:
 - The amber LED integral to the switch illuminates.
 - The control relays energise and turn off the mains power to the Heating / Cooling system, which shuts down the air conditioning.

- To re-activate the mains power to the Heating / Cooling system. Press & hold the Heating/Cooling AUTO/OFF button until the amber LED extinguishes (approximately 5 seconds).

5.5.3.7 Gas Shutdown Module Testing:

1. Simulate Sprinkler alarm activation (-ve switching) to the alarm input of the gas shutdown module:
 - 24V DC power to main gas valve turns off
 - "Main Valve Open" LED extinguishes
 - "Gas Pressure Fault" LED illuminates

Note: Now the DC supply to the main gas valve remains off even when the sprinkler alarm restores. To re-initialise the system, go to step 2

2. Press and hold the "Reset" button:
 - The 24V DC power will be available to the by-pass valve
 - The by-pass valve opens and pressurise the gas until the main valve opens. Once the main valve be opened i.e. the green main valve open LED illuminates, at this moment release the Reset button
 - Gas pressure fault LED extinguishes
3. Press "Gas Test" button (simulate alarm input):
 - "Gas Test" LED illuminates
 - Repeat as per step 1
 - Restore the switch and repeat as per step 2
4. Press "Gas Isolate" button:
 - "Gas Isolate" LED illuminates
 - 24V DC supply to the main valve is guaranteed even when the sprinkler is activated.

Note: Gas Isolate facility is used so maintenance of the sprinkler system can be performed.

5.5.3.8 Power Supply Supervision Module:

The Power Supply Supervision Module is tested and set up in the factory, no further adjustments or testing required in the field.

LED's Normal Status

- LD1 Mains on – **ON**
- LD2 Auto test Running – **OFF**
- LD3 Battery isolate – **OFF**
- LD4 Auto test inhibited – **OFF**
- LD5 Power fail (relay output) – **ON**
- LD6 Power supply fault open collector (to RFP) – **OFF**
- LD7 Power supply fault (Relay output) - **ON**

Charger and Battery threshold:

- Normal 27.5V
- Charger high 28.2V
- Charger low 26.5V
- Battery low 23.8V
- Battery fail 21.0V

6 INSTALLER'S STATEMENT

SMOKE ALARM SYSTEM – Alarm 2000

1. Name of premises:
2. Site reference (if applicable)
3. Address:

.....
.....

4. I/We have installed in the premises above:

- ☐ New system.
- ☐ Alteration to an existing system.
- ☐ Modification to an existing system

5. Is the system being remotely monitored?

☐ No ☐ Yes

if yes,

Monitoring Centre

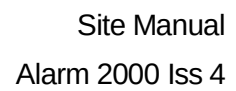
Contact Name

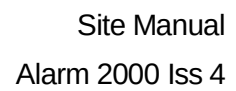
Phone No

Date of Connection

6. Modules fitted to control panel:

- | | |
|---|--|
| ☐ Smoke alarm | ☐ Gas shutdown |
| ☐ Power supply supervision | ☐ Sprinkler |
| ☐ Ancillary control | ☐ Manual override |
| ☐ Monitoring | |
| ☐ Single path | ☐ Dual path |

[illegible]

[illegible]

9. System conditions remotely monitored

- | | |
|--------------------------|-------------------------------------|
| ☐ | Smoke/heat alarm activation |
| ☐ | Sprinkler activation |
| ☐ | Monitored valve tamper |
| ☐ | System fault |
| ☐ | System 'OFF' |
| ☐ | Control panel enclosure tamper |
| ☐ | Power supply fault |
| ☐ | Power supply fail |
| ☐ | Emergency lighting activation |
| ☐ | Heating/cooling shutdown activation |
| ☐ | Other (see attachment) |

10. Are the smoke/heat alarms interconnected?

☐ Yes ☐ No

11. Is the interconnect wire rated for LV and segregated from the 240Volt supply lines?

☐ Yes ☐ No

12. Does the 240 Volt power to the smoke/heat alarms originate from the control panel?

☐ Yes ☐ No

13. Are the smoke/heat alarms wired for the isolate function (4 wires)

☐ Yes ☐ No

14. Does the 240 Volt power to the ancillary equipment originate from the control panel?

☐ Yes ☐ No

15. Are all protective and segregation shrouds fitted correctly?

☐ Yes ☐ No

16. Have all cable terminations been checked against the appropriate wiring diagram to ensure correct location and polarity, giving particular attention to Active/neutral and battery connections?

☐ Yes ☐ No

17. Primary power source

☐ Dedicated circuit ☐ Lighting circuit

18. Is the appropriate circuit breaker marked 'FIRE ALARM SYSTEM'?

☐ Yes ☐ No

19. Power supply capacity

20. Standby batteries - type and capacity

21. Is the power supply and battery capacity the correct size to meet the system standby and alarm time requirements?

☐ Yes ☐ No

22. Has the 'fire' mode been tested for correct operation?

☐ Yes ☐ No

23. Does the 'system OFF' indicator flash with the key switch in the off position?

☐ Yes ☐ No

24. Has the operator's handbook been supplied?

☐ Yes ☐ No

25. Have 'as-installed' drawings been supplied?

☐ Yes ☐ No

NOTE: ANY DEFECTS WITH SYSTEM INSTALLATION MUST BE RECTIFIED PRIOR TO THE COMMISSIONING AND HANDOVER.

I/We hereby certify that the installation has been thoroughly tested;

- from each actuating device; and
- the system functions as required; and
- where the system is remotely monitored, that a test transmission of the alarm signal to the monitoring centre has been satisfactorily carried out; and
- the system complies to the requirements of the Building Code of Australia; and
- is as represented in the 'as-installed' drawings and this installer's statement.

Date:

Name:

Signature:

Installation company:

Address:

Phone:

7 COMMISSIONING TEST REPORT - Alarm 2000

Installed at

Name of premises:

Site reference (if applicable)

Address:

The system being commissioned is:

☐

New system.

☐

Alteration to an existing system.

☐

Modification to an existing system

Date of Commissioning tests:

The purpose of this commissioning test report is to verify the system design and performance at the time of system handover. The commissioning is to be carried out in conjunction with the operators manual, installer's statement and 'as installed' drawings. Should any defects be found, such defects are to be recorded on the commissioning report of the day, shall be rectified prior to the completion of commissioning, with a supplementary report being completed on final commissioning.

Commissioning Company:

Address:

Commissioning Person:

Signature:

NOTE: It is recommended that the commissioning person read the test report in full and be conversant with its requirements prior to commencing the commissioning tests.

Tick the relevant box

INSTRUCTIONS

1. Is this report a supplementary to a previous commissioning report?

☐ Yes ☐ No ☐ Not applicable

2. Is the following documentation available?

(a) Operators manual ☐ Yes ☐ No ☐ Not applicable
 (b) Installer's statement ☐ Yes ☐ No ☐ Not applicable
 (c) 'As installed' drawings ☐ Yes ☐ No ☐ Not applicable
 (d) Previous ☐ Yes ☐ No ☐ Not applicable
 commissioning reports

SYSTEM INFORMATION

Basic Configuration

3. Check that the control panel is suitably located and secured against tampering

☐ Yes ☐ No ☐ Not Applicable

4. Ensure control panel is configured as per the installer's statement

☐ Yes ☐ No ☐ Not Applicable

5. Ensure that all smoke and heat alarms are:

(a) listed in the installer's statement ☐ Yes ☐ No ☐ Not Applicable
 (b) Compatible with the control panel ☐ Yes ☐ No ☐ Not Applicable
 (c) Installed in an environment for ☐ Yes ☐ No ☐ Not Applicable
 which they are suited.

6. Ensure that all ancillary equipment is

(a) Listed in the installer's statement ☐ Yes ☐ No ☐ Not Applicable
 (b) Compatible with the control panel ☐ Yes ☐ No ☐ Not Applicable
 (c) Installed in an environment for ☐ Yes ☐ No ☐ Not Applicable
 which they are suited.

7. Check that the primary power source for the system has been provided in accordance with AS3000 or TS009 as appropriate, and that the isolating switch disconnects the active conductors.

☐ Yes ☐ No ☐ Not Applicable

8. Check that all cable terminations within the control panel are suitably grouped, tidy and secured as appropriate, and that all protective shrouds are in place.

☐ Yes ☐ No ☐ Not Applicable

9. Check that both the primary and secondary power sources are of a suitable type and capacity to meet the systems maximum load requirements, and are capable of meeting the nominated standby and alarm times.

☐ Yes ☐ No ☐ Not Applicable

10. Check the float voltage to ensure the charger setting is correct.

Battery type:

Battery capacity:

Float Voltage (27.5 +/- 0.5%):

11. With primary power supplied check that the control panel 'mains on' indicator and the green power on indicators for all smoke /heat alarms are illuminated.

☐ Yes ☐ No ☐ Not Applicable

12. Where the smoke/heat alarms are interconnected, locate the last unit on the circuit and check that the operation of the test button causes all smoke/heat alarms to sound.

☐ Yes ☐ No ☐ Not Applicable

13. Where the smoke/heat alarms are interconnected and with all smoke/heat alarms sounding, check that the locate function silences all smoke/heat alarms except the unit initiating the alarm, and that the locate control indicator illuminates.

☐ Yes ☐ No ☐ Not Applicable

14. Where the smoke/heat alarms are interconnected and with all smoke/heat alarms sounding, check that the isolate function silences all smoke/heat alarms, and that the isolate control indicator illuminates.

☐ Yes ☐ No ☐ Not Applicable

15. Open circuit and short circuit the end of line device on the manual call point circuit, or conduct other appropriate tests to ensure that fault and alarm conditions are operating correctly, and that the sounder silence facility functions correctly.

☐ Yes ☐ No ☐ Not Applicable

16. Open circuit and short circuit the end of line device on the alarm output circuit to ensure that fault and alarm conditions are operating correctly.

☐ Yes ☐ No ☐ Not Applicable

17. Conduct appropriate tests to ensure that each output functions as required.

☐ Yes ☐ No ☐ Not Applicable

OPTIONS

Where additional modules have been added to the system the following additional tests shall be carried out, as required.

Power supply monitoring

Note: The operating parameters and threshold voltages are factory pre-set the following test is to confirm functionality.

18. Disconnect the standby supply, check that within 1 hour the power supply fault indicator illuminates, and ensure that the PSU fault output functions correctly

☐ Yes ☐ No ☐ Not Applicable

Residential Sprinkler

19. Open circuit and short circuit the end of line device on the sprinkler system flow switch circuit, or conduct other appropriate tests to ensure that fault and alarm conditions are operating correctly, and ensure that each associated output operates as required.

☐ Yes ☐ No ☐ Not Applicable

20. Open circuit and short circuit the end of line device on the monitored valve circuit, or conduct other appropriate tests to ensure that fault and tamper conditions are operating correctly, and ensure that each associated output operates as required.

☐ Yes ☐ No ☐ Not Applicable

Manual Override

21. Operate each override control in turn and check that each output and associated ancillary equipment functions correctly, and ensure each control indicator illuminates.

☐ Yes ☐ No ☐ Not Applicable

Ancillary Control

22. With the emergency lighting controls set to automatic, place the system into an alarm condition, ensure that the emergency lighting is activated whilst the system is in that condition.

☐ Yes ☐ No ☐ Not Applicable

23. With the Heating/Cooling controls set to automatic, place the system into an alarm condition, ensure that the heating/cooling output is activated whilst the system is in that condition.

☐ Yes ☐ No ☐ Not Applicable

24. Ensure that the 'OFF' function for the heating/cooling functions correctly, and the control indicator illuminates.

☐ Yes ☐ No ☐ Not Applicable

Gas Shutdown

25. Check that the main valve operates correctly under the specified alarm conditions.

☐ Yes ☐ No ☐ Not Applicable

26. Check that the main valve cannot be reset with the downstream piping depressurised.

☐ Yes ☐ No ☐ Not Applicable

27. Confirm the reset hold time nominated in the installer's statement

☐ Yes ☐ No ☐ Not Applicable

28. Check that the main valve 'isolate' control functions correctly

☐ Yes ☐ No ☐ Not Applicable

Monitoring

29. Check that the correct alarm signaling equipment has been installed.

☐ Yes ☐ No ☐ Not Applicable

30. Check that the signals requiring remote monitoring are allocated to the correct zone

☐ Yes ☐ No ☐ Not Applicable

31. Conduct appropriate tests between the system and the monitoring centre to verify successful transmission and correct signal identification.

☐ Yes ☐ No ☐ Not Applicable

8 Operator's GUIDE

8.1 INDICATORS

Module	QTY	Name	Colour	Function	Sounder
Main Module	1	Mains On	Green	Illuminates to indicate mains power is on	
	1	Power Supply Fault	Yellow	Illuminates if: Charger high or Low Batteries is less than 50% capacity Auto battery test fail (latching) Battery disconnected or missing	Yes
	1	MCP input Fault	Yellow	Illuminates if MCP input is open circuit	Yes
	1	Alarm Output Fault	Yellow	Illuminates if 24V Output is short or open circuit	Yes
	1	Alarm Activated	Red	Flashes if MCP input is activated	
	1	Alarm Locator	Yellow	Illuminates during locate timer (5 minutes)	
	1	Alarm Isolator	Yellow	Illuminates during isolate timer (5 minutes)	
	1	Sounder Silence	Yellow	Illuminates while the sounder is silenced	
	1	System Off	Red	Flashes if the system is turned off	
Sprinkler	1	Sprinkler Alarm	Red	Flashes if the sprinkler has been activated	
	1	Monitored Valve Alarm	Red	Flashes if the Monitored Valve has been closed	
	1	Sprinkler Input Fault	Yellow	Illuminates if the Sprinkler input is open circuit	Yes
	1	Sprinkler Output Fault	Yellow	Illuminates if the Sprinkler output is open or short circuit	Yes
	1	Mon. Valve Input Fault	Yellow	Illuminates if the Mon. Valve input is open circuit	Yes
	1	Mon. Valve Output Fault		Illuminates if the Mon. Valve output is open or short circuit	Yes
	1	Mon. Valve Disable		Flashes during the Monitored Valve disable timer	
Manual Override	6	Door Isolate	Yellow	Illuminates if the door release switch has been pressed. The LED is built in the switch body.	
Ancillary Control	1	Emer. Lighting Test	Yellow	Illuminates if the AUTO/TEST switch is pressed to indicate that Emergency lighting is in test mode	
	1	A/C Off	Yellow	Illuminates if the AUTO/OFF switch is pressed to indicate that A/C heating/cooling is off	
Gas Shutdown	1	Main Valve Open	Green	Illuminates to indicate that the power is available to the main valve i.e. the valve is opened	
	1	Gas Pressure Fault	Yellow	Illuminates to indicate gas pressure fault due to a gas leakage or faulty pressure switch	
	1	Gas Test	Yellow	Illuminates when the gas test button is pressed to simulate Sprinkler activation	
	1	Gas Isolate	Yellow	Illuminates to indicate that gas has been isolated to maintain the Sprinkler System	

8.2 CONTROL SWITCHES

Module	QTY	Type	Name	Function
Main Control	1	3 Pos. Key Switch	Off/Auto/Fire	OFF - System is switched off, Charger is on and System fail output is activated
				AUTO - System on and normal, automatic alarm response
				FIRE - All Smoke / Heat Alarms sound and alarm outputs are activated if selected
	1	Momentarily Switch	Alarm Locate	Locate the activated Smoke / Heat Alarm (s) for 5 Minutes
	1	Momentarily Switch	Alarm Isolate	Isolate all the Smoke / Heat Alarms for 5 Minutes
	1	Momentarily Switch	Sounder Silence	Mute the Sounder
Sprinkler	1	Momentarily Switch	Monitored Valve output Disable	Isolate the Monitored Valve output for 3 or 6 hours, automatically resets after the timer times out
Manual Override	6	Toggle Switch	Door 1-6 Release	When pressed, it overrides the alarm condition and manually release the doors
Ancillary control	1	Momentarily Switch	Auto/Test	When pressed, it activates the output to the Emergency lighting relay and start testing
	1	Momentarily Switch	Auto/Off	When pressed, it activates the output to the Air conditioning relay and shutdown the A/C
Gas shutdown	1	Toggle Switch	Gas Isolate	supplies 24V to the main valve to ensure testing the Sprinkler System does not stop gas flowing
	1	Momentarily Switch	Reset	Activates the bypass valve output to manually re-open the gas main valve
	1	Momentarily Switch	Test	Simulates Sprinkler activation to enable gas shutdown operation

9 Spare Parts

Description	Stock Code	PCB No.
Optical Smoke Alarm	EIPFSPTL	
Ionisation Smoke Alarm	EIPFSITL	
Thermal Alarm	EIPFSTTL	
Main Termination and Control Board	SUB700	PCB176
Main Display Board	SUB705	PCB175
Sprinkler Termination Board	SUB710	PCB169
Sprinkler Display Board	SUB715	PCB168
Manual Override Termination Board	SUB720	PCB178
Manual Override Display Board	SUB725	PCB177
Ancillary Control Termination Board (obsolete)	SUB740	PCB180
Ancillary Control Termination Board AS2293	SUB741	PCB195
Ancillary Control Display Board (obsolete)	SUB745	PCB179
Ancillary Control Display Board AS2293	SUB746	PCB194
Gas Shutdown Termination Board	SUB750	PCB171
Gas Shutdown Display Board	SUB755	PCB170
Power Supply Supervision Card	SUB760	PCB181
3 Position 003 Key Switch	SK150	
Cam Lock 003 Key	LO100	
10 Way Ribbon Cable Assembly 500mm	CA105	
20 Way Ribbon Cable Assembly 600mm	CA110	
Fuse Fast Blow 1 Amp 1 AG	FU160	
Fuse Fast Blow 1.5 Amp 1 AG	FU155	
Fuse Fast Blow 3 Amp 1 AG	FU170	
Relay Base 2 C/O	RL140	
Plug in Relay 24V DC 2 C/O 10A	RL360	
12V / 7AH Sealed Lead Acid Battery	BBAT12V6.5	
12V / 12AH Sealed Lead Acid Battery	BBAT12V12	
Switch Mode Power Supply 28V / 60W	BAPS28V60W	
Mains Isolate Switch	SW160, SW161 & SW162	
Decal Label Alarm 2000 Main Board	LA775	
Decal Label Alarm 2000 Sprinkler	LA780	
Decal Label Alarm 2000 Manual Override	LA785	
Decal Label Alarm 2000 Ancillary	LA790	
Decal Label Alarm 2000 Gas Shutdown	LA895	
Decal Label Alarm 2000 Blank	LA800	

10 COMPATIBLE DEVICES

Smoke/Heat Alarms:

- EIPFSITL Mains powered Ionisation Smoke Alarm c/w integral rechargeable lithium stand-by battery
- EIPFSPTL Mains powered Photoelectric Smoke Alarm c/w integral rechargeable lithium stand-by battery
- EIPFSTTL Mains powered Heat Alarm c/w integral rechargeable lithium stand-by battery.

Break Glass Alarm:

MRCSRR Red (dry contact) or equivalent.

Alarm Bell:

MFB024CR 155mm 24Volt DC Red or equivalent.

Sounders / Strobes:

All Brooks 24Volt DC electronic sounders, strobes or combinations. (See catalogue).

Hearing Impaired:

BSSTK86K246 Strobe - 24Volt DC 4.2 joule Clear.

BAVIB2000 Vibration Patrice – 24 Volt DC.

BAVISA240 Visalert 240Volt AC c/w rechargeable lead acid battery back-up.

BAVIBA240 Vibration Patrice 240Volt AC c/w rechargeable lead acid battery back-up

Emergency Lighting:

MBMM10 Non-maintained 10 Watt Halogen or equivalent.

Additional Inputs:

Any normally open voltage free dry contact device.

Batteries:

BB Battery: BP12-7 & BP12-12, SSL Listing No. AFP-1228

Vision: CP1270 & CP12120, SSL Report No. XF1810/R2

11 GUARANTEE

If the product has any defect due to faulty workmanship or material it is to be returned to Brooks freight paid. Brooks will, at its sole discretion, repair or replaced the item free of charge.

On returning a component or complete product, proof of purchase will be required. If returning the complete product all accessories and documentation **MUST** be returned.

This guarantee does not cover damage caused to the product or its components as a result of incorrect installation, accident, neglect, misuse, unauthorised dismantling or contamination howsoever caused, careless handling or where repairs have been made or attempted by others. On site warranty repairs will be carried out at the discretion of the manufacturer.

No other guarantees written or verbal are authorised to be made on behalf of Brooks. All other conditions and warranties whether expressed or implied are, to the extent permitted by law, hereby excluded.

As Brooks Australia has no control over the system's design, installation to the relevant Australian Standard or maintenance, the Company and its agents take no responsibility for any damage, consequential loss or injury caused to any equipment, property or persons resulting from the use of the Residential Fire Panels.

Brooks guarantees system components, other than smoke/heat alarms for a period of either fifteen (15) months from the date of purchase or twelve (12) months from the date of operation, whichever is the lesser. Smoke/heat alarms are guaranteed to the original purchaser for a five year period after the original date of purchase.

Remember the PFS-ITL contains a small quantity of radioactive material. You must return unwanted Smoke Alarms to your supplier or your local Department of Health. Transportation of the Smoke Alarm must be by hand, courier or similar means. Disposal via the post is not permitted.

12 APPENDICES

12.1 APPENDIX "A" BATTERY CALCULATION

Alarm 2000 Power Supply & Battery Calculations			
		6-Aug-12	
Project:		Job No.	
RFP			
	QTY	Quiescent (A)	Alarm (A)
Basic Alarm 2000 System, Main Control Module		0.020	0.120
Sprinkler Module	1	0.020	0.150
Ancillary Control Module	1	0.005	0.175
Manual Override Module	1	0.001	0.025
Number of Door Strikes	1	0.060	0.000
Gas Shutdown Module	1	1.667	0.067
Power Supply Supervision Module	1	0.051	0.051
Current Drain of Miscellaneous Ancillaries in Alarm			0.000
Total System Current (A)		1.824	0.588
Back up Time Required in Quiescent (decimal)		4.000	
Back up Time Required in Alarm (decimal)		1.000	
Fire Panel Battery Requirements (Ah)		9.855	
Fire Panel Power Supply Requirements (A)		2.235	
Combined System Battery Requirements (Ah)		12.090	Select
Nearest Standard Battery Size (Ah)		-0.7%	X
Next Largest Standard Battery Size (Ah)		-0.7%	

Use of this form:

Complete the sections highlighted to calculated battery size required. Suggested battery size will be marked 'X' .
Complete quiescent back up time (4-24 Hours) and alarm back up (0.5 Hour)

Battery Calculation

$\{(Total \text{ "Q" Current} \times \text{"Q" Back up Time}) + (Total \text{ "A" Current} \times \text{"A" Back up Time})\} \times 1.25$

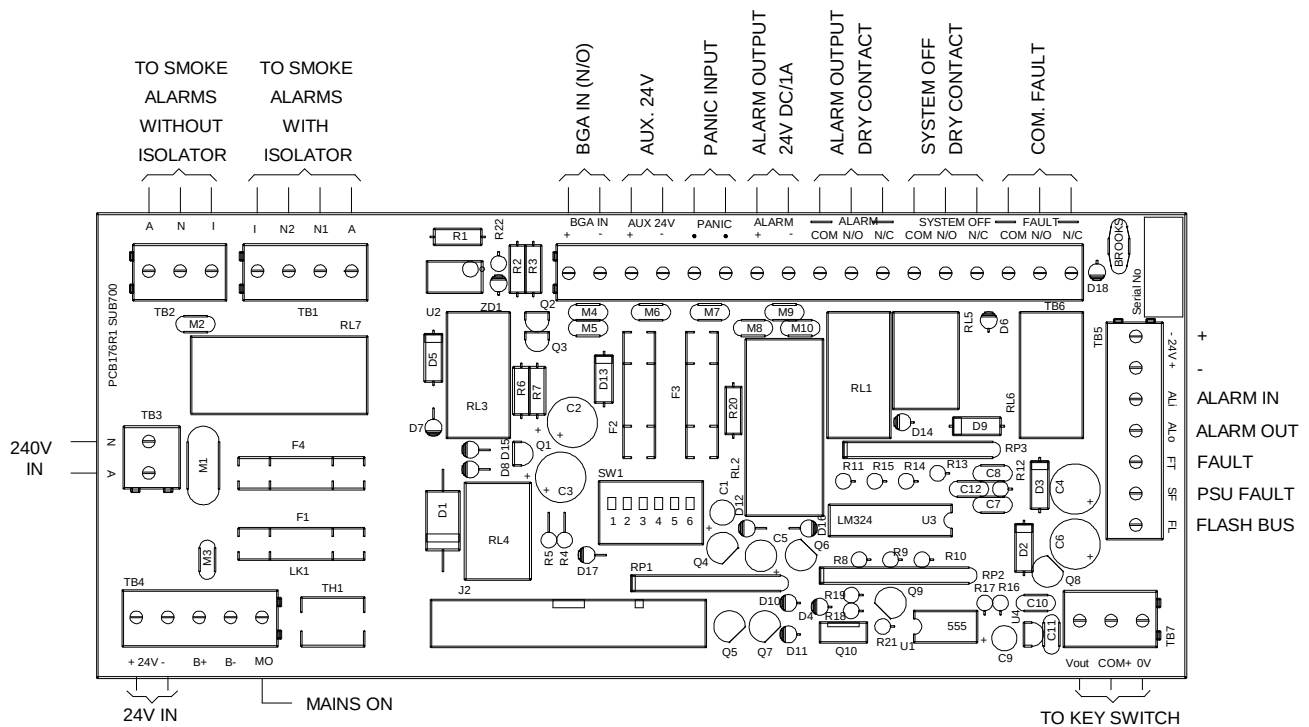
"Q" : Quiescent

"A" : Alarm

12.2 APPENDIX B

DATA SHEETS & WIRING DIAGRAMS

1. Main Control Module Data sheet
2. Sprinkler Module
3. Ancillary Control Module
4. Manual Override Module
5. Gas Shutdown Control Module
6. Power Supply Supervision Module
7. Basic System Block Wiring Diagram (with power supply supervision module)
8. Alarm 2000 Options Block Wiring Diagram



DESCRIPTION : ALARM 2000 Main Control and Termination Board provides the necessary control, monitoring and termination of Mains Smoke / Heat Alarms and Manual Call Points.

SPECIFICATIONS : Operational Voltage : 24V DC
Current Consumption : 20 mA Quiescent
120 mA Maximum alarm current including MCP activation

INPUTS : 240V AC to supply power to Smoke/ Heat Alarms, TB3
Monitored Manual Call Point input, EOL Resistor is 3K3, TB6
Panic input (normally open contact) to activate Smoke/Heat alarms and/or Manual Call Point output, TB6

OUTPUTS : 240V AC to connect Smoke/Heat Alarms with Alarm Isolator, TB1
240V AC to connect Smoke/Heat Alarms without Alarm Isolator, TB2
Monitored 24V DC alarm output, EOL resistor 3K3, TB6
Voltage free contact alarm output, TB6
Voltage free contact fault output, TB6
Voltage free contact System OFF, TB6
Auxillary fused 24V DC @ 1A for other applications, TB6

CONTROLS & INDICATORS (on Display Board) :

Alarm Locator Switch : Locate the activated Smoke/Heat Alarm with built in Amber LED which illuminates during locate timing

Alarm Isolator Switch : To isolate activated Smoke/Heat Alarms for 5 minutes

Fault Sounder Silence Switch : Mute sounder with built in Amber LED

DIP Switch Setting

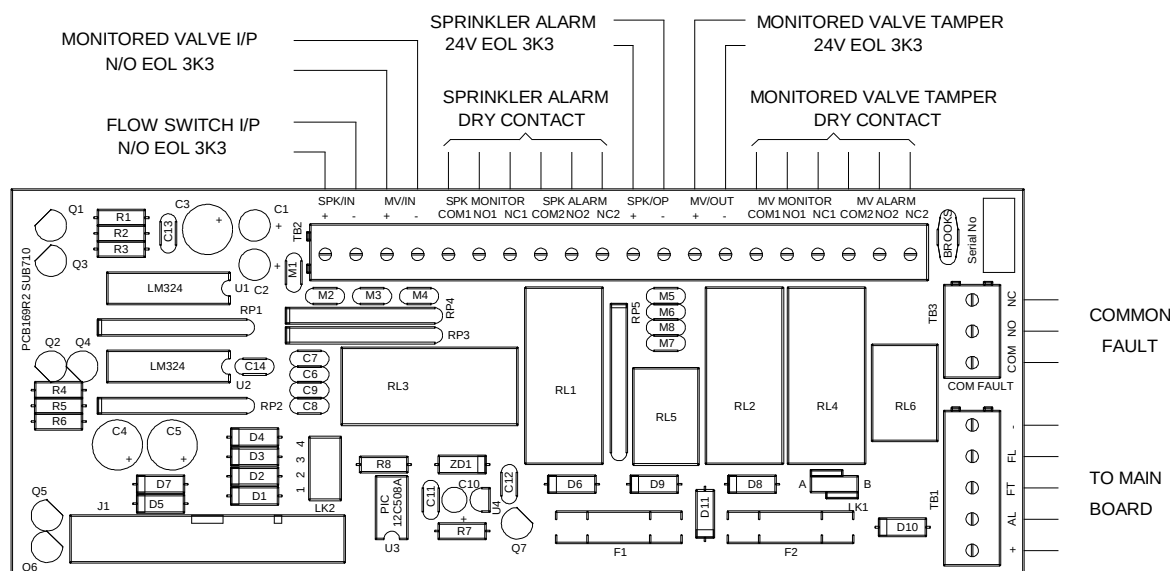
Alarm Activated LED : Flashing Red
System OFF LED : Flashing Red
Alarm Output Fault LED : Steady Amber
MCP Input Fault LED : Steady Amber
Power Supply Fault LED : Steady Amber
Mains ON LED : Green

FUSES : F1 = 3A F2 = 1A
F3 = 1A F4 = 1.5A

ALL FUSES ARE FAST BLOW & 1 AG

S1	S2	S3	S4	S5	S6	
ON						Fire Mone activates 24V DC BGA output
	ON	OFF				Only BGA input activates alarm dry contact output
	OFF	ON				Only Smoke/Heat Alarms activate alarm dry contact output
	ON	ON				Both Smoke/Heat Alarms and BGA input activate alarm dry contact output
			ON	OFF		Only BGA input activate Optional Modules
			OFF	ON		Only Smoke/Heat Alarms activates Optional Modules
			ON	ON		Both Smoke/Heat Alarms and BGA input activate Optional Modules
					ON	BGA input initiate Fire Mode

TITLE					BROOKS AUSTRALIA				
ALARM 2000 RESIDENTIAL PANEL					DRAWN CHECKED PART No. DRAWING No. ISSUE No.				
MAIN CONTROL BOARD					O.P. A.S. SUB700 F565-A SH 1 of 6 2				
DATA SHEET									
20/8/2002	2	ADD FUSE FUNCTION, RATING & TYPE	O.P.	A.S.					
13/3/2002	1	UPDATE TO Vcoid	O.P.	A.S.					
21/11/2000	0	ORIGINAL ISSUE	O.P.	A.S.					
DATE	ISS	REVISION	DRN	CHK					



DESCRIPTION : The Sprinkler Module is used to control and monitor the Residential Sprinkler Systems.

SPECIFICATIONS: Operational Voltage : 27V DC

Current consumption : 30mA Quieccent

96 mA alarm current of either Sprinkler alarm or Monitored Valve tamper

150 mA maximum alarm current of both Sprinkler alarm and Monitored Valve tamper

INPUTS :
Supervised N/O contact for Flow/Pressure switch
Supervised N/O contact for Monitored Valve tamper
Alarm input (-ve switching) from the Main Module activated by Smoke/Heat Alarms or Manual Call Points
Note : The alarm input to the Sprinkler Module can be used as a Sprinkler alarm output to activate Smoke Alarms or Ancillary Control Module.

OUTPUTS :
Supervised 27V DC / 1Amp fused output, Sprinkler alarm
Supervised 27V DC / 1Amp fused output, Monitored Valve tamper
2 sets of voltage free contacts, Sprinkler alarm
2 sets of voltage free contacts, Monitored Valve tamper
Common Fault voltage free contact

EOL Resistor : 3K3 for inputs and outputs

CONTROLS & INDICATORS (on display board) :

Monitored Valve Disable Switch SW1 : Momentary action, when pressed once, it isolates the Monitored Valve output (24V dc) for 3 or 6 hours depending on Link 2 setting and then reset. Pressing the switch for 5 seconds will reset the timer.

Sprinkler Activated LED : flashing red, LD6

Monitored Valve Tamper LED : Flashing red, LD5

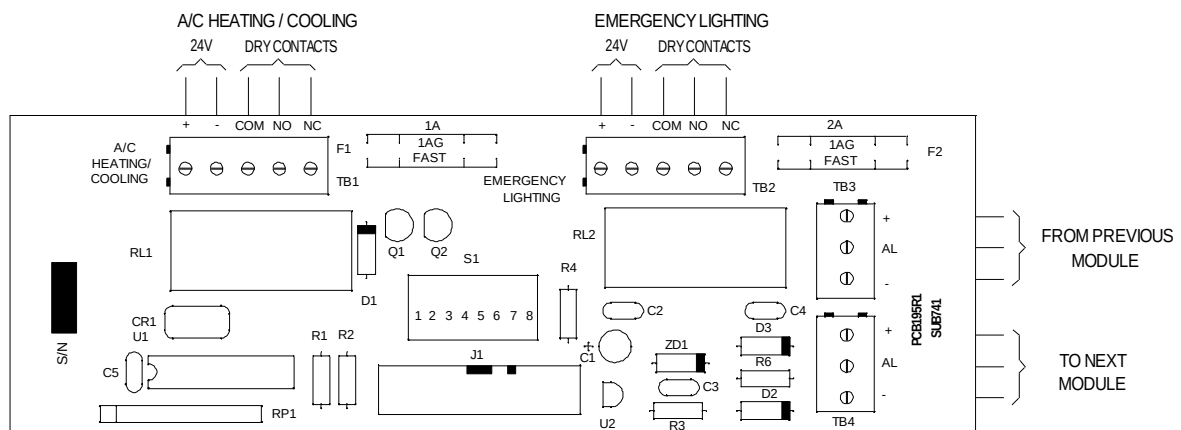
Sprinkler Input & Output Fault LED's : Steady yellow, LD4 & LD2

Monitored Valve Input & Output Fault : Steady Yellow, LD3 & LD2

Link Setting :
LK1.A common output for Sprinkler alarm and Monitored Valve tamper
LK1.B separate output for Sprinkler alarm and for Monitored Valve tamper
LK2.1 Test Mode : Used only during board testing to check timers
LK2.2 Normal Mode : LK2.3 isolate the Monitored Valve output for 3 hours
LK2.4 isolate the Monitored Valve output for 6 hours

Fuses : F1 = 1A & F2 = 1A, FAST Blow, 1AG

						TITLE ALARM 2000 RESIDENTIAL PANEL SPRINKLER MODULE DATA SHEET	BROOKS AUSTRALIA				
20/8/2002	2	ADD FUSE FUNCTION, RATING & TYPE	O.P.	A.S.	DRAWN		CHECKED	PART No.	DRAWING No.	ISSUE No.	
13/3/2002	1	UPDATE TO Vcid	O.P.	A.S.	O.P.		A.S.	SUB710	F565-B SH 2 of 6	2	
21/11/2000	0	ORIGINAL ISSUE	O.P.	A.S.	21/11/2000		21/11/2000				
DATE	ISS	REVISION	DRN	CHK							



- DESCRIPTION :**
- * The Ancillary Control Module provides 2 outputs to control the operation of Air-Conditioning system and Emergency Lighting via 2 external relays.
 - * Both outputs will be automatically activated on the receipt of an alarm.
 - * Response time to alarm either immediately or after 15 second delay depending on S1.2 setting.
 - * To test the Emergency Lighting, press and release the AUTO/TEST button, the LED integrated in the switch body illuminates.
 - * The testing time may be set to 30, 60, 90 & 120 minutes, depending on S1.3 & S1.4 setting.
 - * To override Emergency Lighting test, press and hold the AUTO/TEST button, until the LED extinguish (approximately 5 seconds).
 - * To shutdown the air conditioning system manually, press and release the AUTO/OFF button, the LED illuminates and the air conditioning shuts down.
 - * To return to normal, press and hold the button, until the LED extinguish (approximately 5 sec).

SPECIFICATIONS : Operational Voltage : 24V DC
Current consumption : 5 mA Quiecent
78 mA Alarm without external relays
175 mA alarm with external relays

INPUT : TB3 & TB4 Alarm input (-ve switching) from Main Module
OUTPUTS : 24V DC / 1 Amp. maximum & 1 set of dry contact rated 24V DC 5A
24V DC / 1 Amp. maximum & 1 set of dry contact rated 24V DC 5A

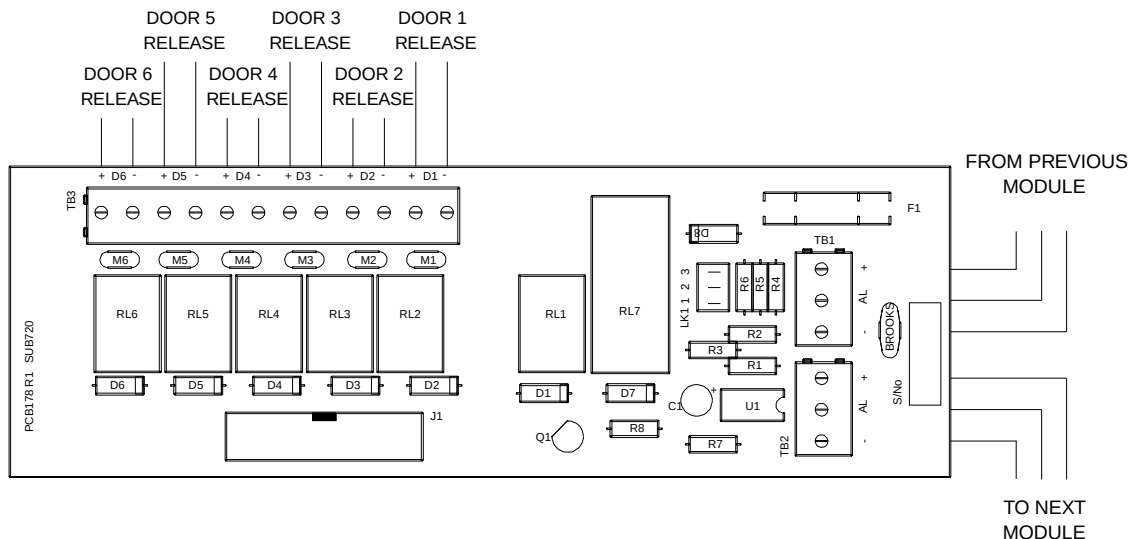
CONTROLS & INDICATORS(On Display Board):
AUTO/TEST switch with built in Amber LED for Emergency lighting to indicate "TEST" position
AUTO/OFF switch with built in Amber LED for Air-Conditioning/Heating to indicate "OFF" position

FUSES : F1 = 1A & F2 = 2A, Fast Blow, 1 AG

DIP SWITCH SETTING:

- S1.1 Factory use only (must be OFF)
S1.2 Set alarm response time "ON" 0 second "OFF" 15 second
S1.3 & S1.4 Set Emergency Lighting test time
*S1.3 OFF S1.4 OFF 30 Min. *S1.3 ON S1.4 OFF 60 Min.
*S1.3 OFF S1.4 ON 90 Min. *S1.3 ON S1.4 ON 120 Min.
S1.5 Set output of the Air conditioning System to 24V normal and 0V in alarm (fail safe)
S1.6 Set output of the Air conditioning System to 0V normal and 24V in alarm
S1.7 Set output of the Emergency Lighting to 24V normal and 0V in alarm (fail safe)
S1.8 Set output of the Emergency Lighting to 0V normal and 24V in alarm

				TITLE						
				ALARM 2000 RESIDENTIAL PANEL						
				NEW ANCILLARY CONTROL MODULE (AS2293)						
				DATA SHEET						
2306/2003	1	ORIGINAL ISSUE	O.P.	A.S.		DRAWN	CHECKED	PART No.	DRAWING No.	ISSUE No.
13/6/2003	0	PROTOTYPE	O.P.	A.S.		O.P.	A.S.			
DATE	ISS	REVISION	DRN	CHK		13/6/2003	13/6/2003	SUB741	F593	1



DESCRIPTION : The Manual Override Module provides 24V dc output for 6 individual electric door locks. Upon the receipt of an alarm, 24V supply to electric door locks switch off and release the doors. The doors can be released manually using an independent override switch for each door. The switches have built in LED's which illuminate to indicate that the switch is active i.e. the doors are opened.

Note : If more than 6 switches are required, additional modules can be added to the system.

SPECIFICATIONS Operational Voltage : 24V DC

Current Consumption : 1 mA Quiescent

25 mA Alarm

120 mA Override, 6 switches

INPUTS : Alarm input (-ve switching) from the main module activated by Smoke / Heat Alarms and Manual Call Point.

OUTPUTS : 24V dc for 6 door locks rated to 1 Amp. maximum, D1-D6

CONTROLS & INDICATORS (On Display Board) :

6 Toggle action switches with built in amber LED

Note : Maximum supply current to the module is 2 Amp. (F1)

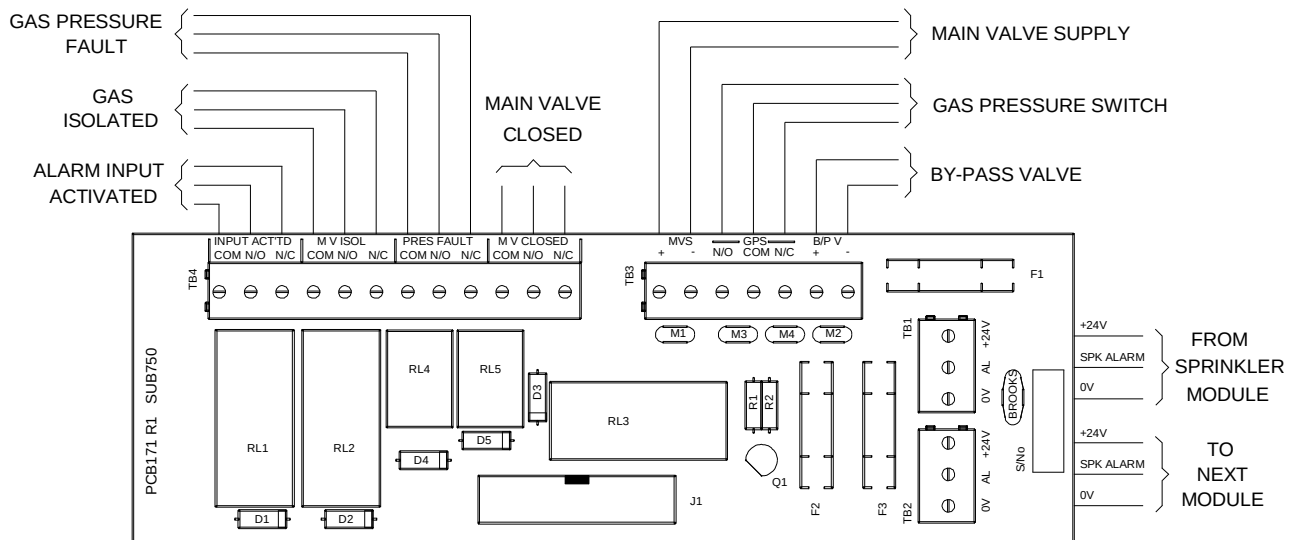
Time Delay Setting : LK1.1 = 30 Sec

LK1.2 = 15 Sec

LK1.3 = 1-2 Sec

FUSES : F1 = 2A, Fast Blow, 1 AG

						TITLE ALARM 2000 RESIDENTIAL PANEL MANUAL OVERRIDE MODULE DATA SHEET	BROOKS AUSTRALIA					
							DRAWN	CHECKED	PART No.	DRAWING No.	ISSUE No.	
20/20/2002	2	ADD FUSE FUNCTION, RATING & TYPE			O.P.		A.S.	O.P.	A.S.	SUB720	F565-D CHG 1 of 6	2
13/3/2002	1	UPDATE TO Vcdd			O.P.		A.S.					
21/11/2000	0	ORIGINAL ISSUE			O.P.		A.S.					
DATE	ISS	REVISION			DRN		CHK					



DESCRIPTION : The Gas Shutdown Module is used to control natural gas or LPG flow in premises where Sprinkler System is installed.

The main gas valve is powered from the module via a normally energized relay (fail safe). When the sprinkler system operates, an alarm signal from the sprinkler module will cause the relay to de-energize and switch off the power to the main gas valve which shutdown the gas to the appliances.

SPECIFICATIONS : Operational Voltage : 24V DC

Current Consumption : 67 mA Quiecent + 1.6 Amp. for gas valve
27 mA Sprinkler Alarm

INPUTS : Alarm input (-ve switching) from the sprinkler module, TB1.2
Dry contact com/no/nc from main gas valve pressure switch, TB3

OUTPUTS : 24V dc for main valve supply rated to 3 Amp. maximum, TB3
24V dc for by-pass valve rated to 3 Amp. maximum, TB3
Voltage free contact for sprinkler alarm input activation, TB4
Voltage free contact for gas isolated, TB4
Voltage free contact for pressure switch fault, TB4
Voltage free contact for main valve closed, TB4

CONTROLS & INDICATORS (On Display Board) :

GAS TEST Switch : simulate sprinkler alarm activation
GAS ISOLATE : Override sprinkler alarm to allow for sprinkler system maintenance
GAS RESET Switch : To open the by-pass valve to pressurise the pipes
MAIN VALVE OPEN LED
GAS PRESSURE FAULT LED

FUSES : F1 - F3 = 3A, Fast Blow, 1 AG

				TITLE		 AUSTRALIA				
				ALARM 2000 RESIDENTIAL PANEL GAS SHUTDOWN MODULE DATA SHEET		DRAWN	CHECKED	PART No.	DRAWING No.	ISSUE No.
20/8/2002	2	ADD FUSE FUNCTION, RATING & TYPE	O.P.							
13/3/2002	1	UPDATE TO Vc1ad	O.P.							
21/11/2000	0	ORIGINAL ISSUE	O.P.							
DATE	ISS	REVISION	DRN	CHK		21/11/2000	21/11/2000	SUB750	F565-E	2



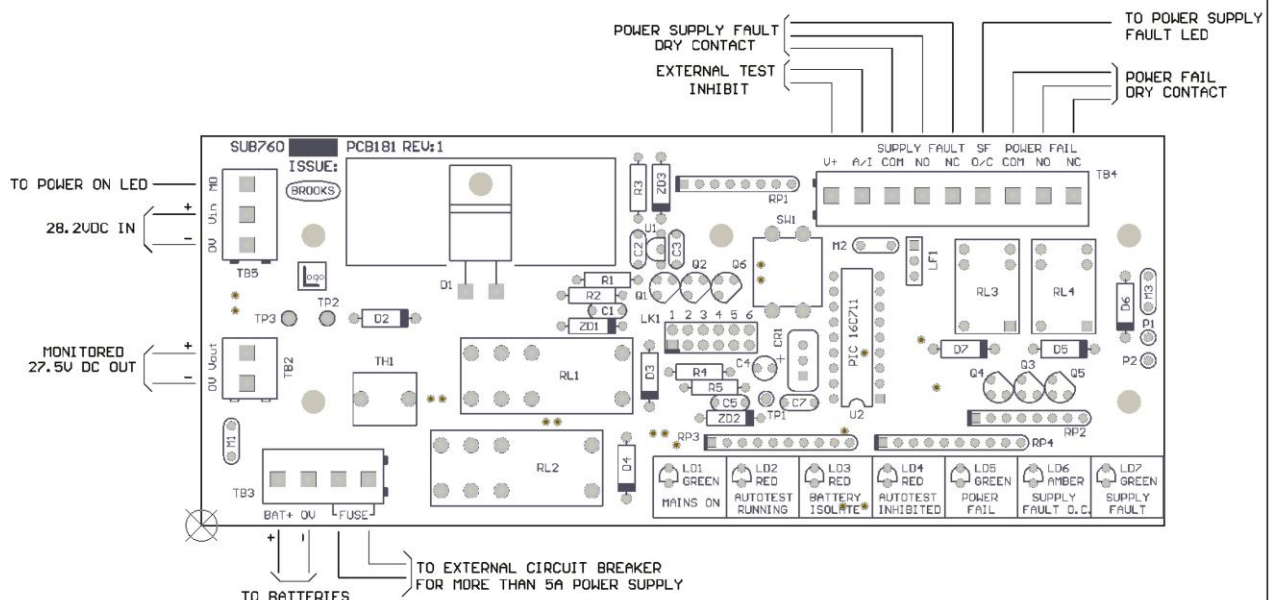
24V dc Power Supply Supervision Module

SUB760A

Description

The Power Supply Supervision Module is designed to meet the requirement of the Australian Standard for power supplies AS4428.5. The module continuously monitors the charger and batteries for loss of mains and stand-by power source, charger output voltage outside the specified range and for power fail status. An automatic battery test facility is provided with an input to stop the auto battery test. The module monitors the memory fault and outputs watchdog pulses for CPU fault monitoring.

Board Layout



Power Supply and Battery fault

The software continuously monitors the power supply / batteries and generates a supply fault on the following conditions:

- Mains fail

			Title 24VDC Power Supply & Battery Supervision Module SUB760A Page 1 of 2	Technical Datasheet			
				Created	Checked	TDS No.	Rev
				E.T.	A.S.	TDS027	0
8/8/2012	0	Original Issue		8/8/2012	8/8/2012		
Date	Rev	Description					

- Batteries disconnected
- Charger voltage higher than 28.2V and lower than 26.5V
- Battery capacity low i.e. battery voltage less than 23.8V
- Battery fail i.e. battery voltage less than 21V
- Auto battery test fail (latching fault)

Auto Battery Test

The Power Supply Supervision Module tests the batteries automatically, every approximately 72 hours, the DC supply input is disconnected and the system operates on the batteries for only 33-34 minutes at normal quiescent load.

Inputs

28.2V DC @ 10A maximum

Auto Battery Test Inhibit input (normally open), Default as Auto Battery Test enabled

Outputs

- Monitored 27.5Vdc (Input Voltage after a diode drop)
- Voltage free contact and open collector outputs for power supply / memory fault
- Voltage free contact for Power Fail
- Open collector for Power ON LED
- Terminals for battery connection
- Terminals for Mains On indication

Indicators

- LD1 : Mains On LED (green), normally **ON**
- LD2 : Autotest Running (red), to indicate that autotest battery routine is running, normally **OFF**.
- LD3 : Battery Isolate (red), to indicate that batteries are removed permanently or during battery removed test, normally **OFF**.
- LD4 : Autotest Inhibited (red), Illuminates when auto battery test inhibit input is closed, normally **OFF**.
- LD5 : Power Fail (green), indicate that power is normal and not failed, normally **ON**.
- LD6 : Open collector supply fault (Yellow), to indicate power supply fault status, when L1.5 installed, normally **OFF**.
- LD7 : Supply Fault (green), permanently ON to indicate that power supply is normal, normally **OFF**.

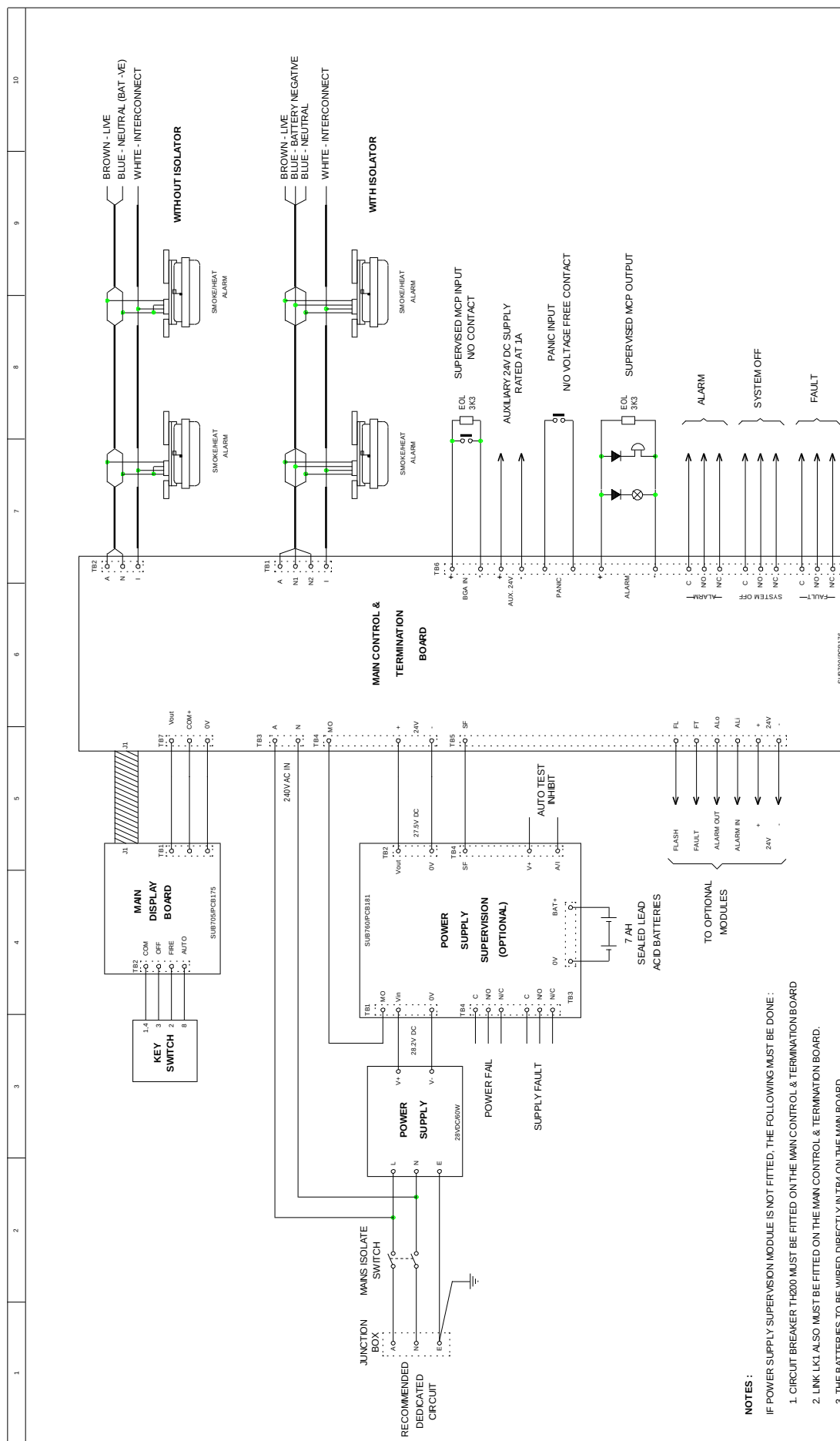
Switches

SW1 : To reset a latched power supply fault LED when the batteries fail the auto battery test.

Jumper Links

- LK1: Mode Selection:
Installed: Test Mode
Not installed: Normal Mode
- LK3 : Country Selection:
Installed: New Zealand convention
Not installed: Australian convention
- LK5 : Charger Fault Tolerance Selection. Installed - 3%, Not installed - 2%
- LK2, LK4, LK6 : Unused, shall not be installed

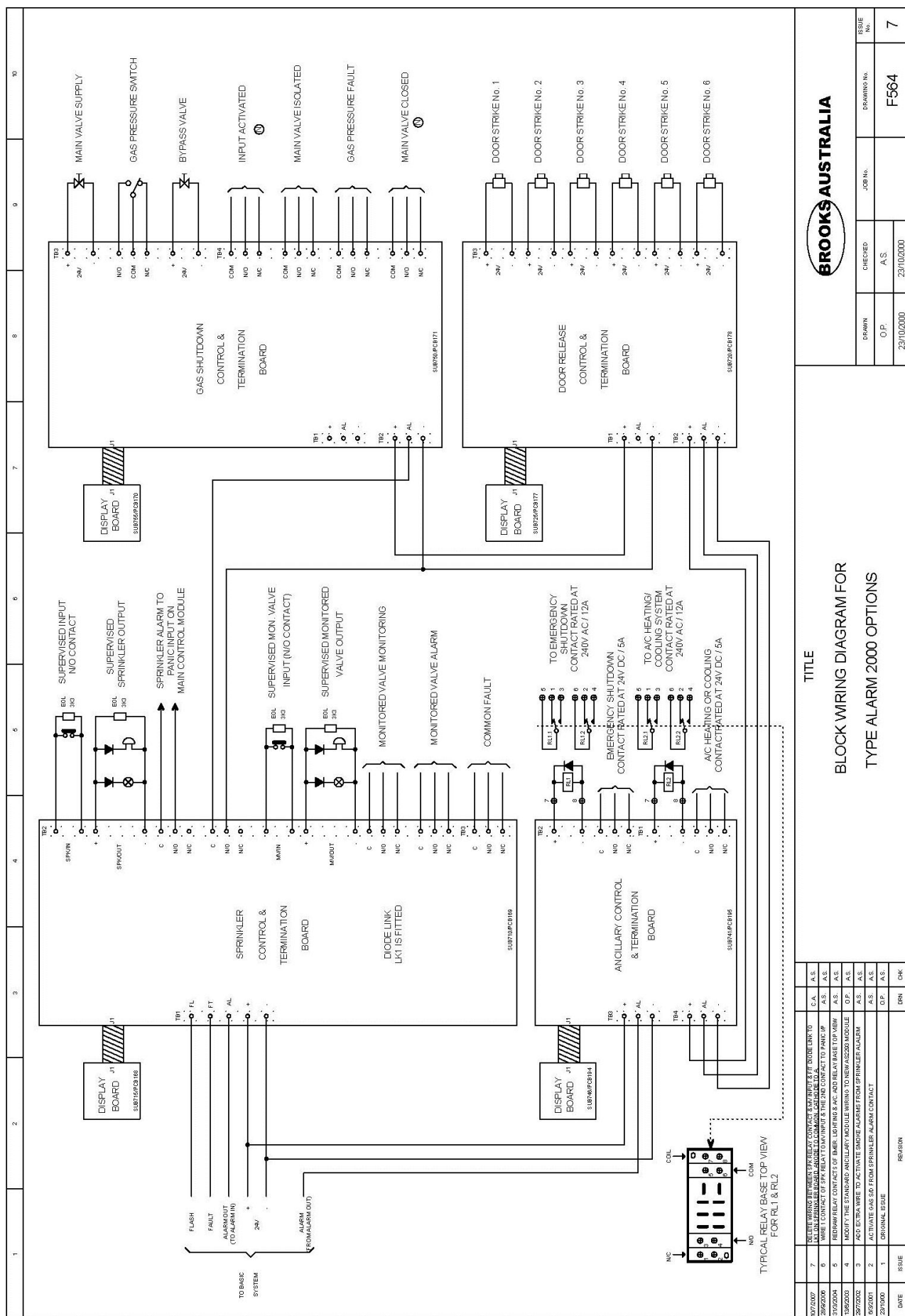
			Title 24VDC Power Supply & Battery Supervision Module SUB760A Page 2 of 2	Technical Datasheet			
				Created	Checked	TDS No.	Rev
8/8/2012	0	Original Issue		E.T.	A.S.	TDS027	0
Date	Rev	Description		8/8/2012	8/8/2012		



- NOTES :**
- IF POWER SUPPLY SUPERVISION MODULE IS NOT FITTED, THE FOLLOWING MUST BE DONE :
1. CIRCUIT BREAKER TH400 MUST BE FITTED ON THE MAIN CONTROL & TERMINATION BOARD
 2. LINK LK1 ALSO MUST BE FITTED ON THE MAIN CONTROL & TERMINATION BOARD.
 3. THE BATTERIES TO BE WIRED DIRECTLY IN TB4 ON THE MAIN BOARD.

[illegible]

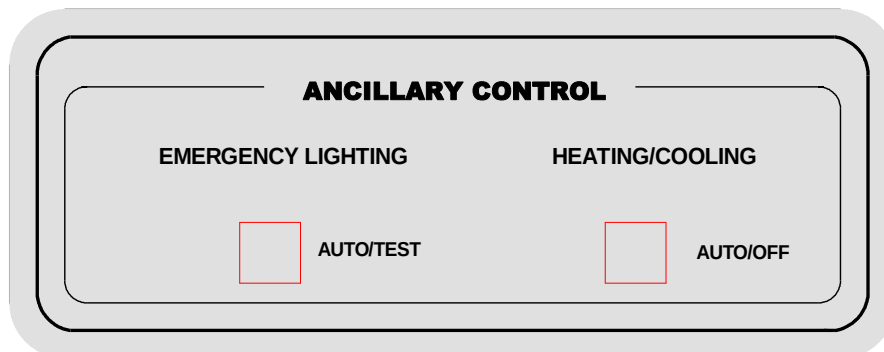
	BROOKS AUSTRALIA		DRAWING No.	ISSUE No.
	DRAWN	CHECKED	JOB No.	
	O.P.	A.S.		
	23/10/2000	29/10/2000	F563	3



12.3 APPENDIX “C”

Older Revision of Ancillary Control Module

12.3.1 Ancillary Control Module:



Provides controls for the automatic and manual operation of air-conditioning / heating plant and emergency lighting.

Air-conditioning

In the AUTO mode the air-conditioning/heating is automatically shut down if a fire alarm signal is received from a Smoke/Heat Alarm, MCP or Sprinkler alarm dependent upon the configuration selected. An output delay is provided to avoid a plant shutdown from a false alarm due to a transient alarm condition. The delay time is set to 15 Seconds.

The air-conditioning/heating plant may be manually switched 'OFF' by pressing and releasing the 'AUTO/OFF' button. In the 'OFF' mode the amber LED integral to the switch will illuminate and will remain in this condition until manually de-selected. To restore to the auto condition, press and release the "AUTO/OFF" button, the amber LED will extinguish.

Emergency Lighting

In the 'AUTO' mode the Emergency lighting will be automatically switched on if a fire alarm signal is received from a Smoke/Heat Alarm, MCP or Sprinkler alarm dependent upon the configuration selected. An output delay is provided to avoid unnecessary activation from a false alarm due to a transient alarm condition. The delay time is set to 15 Seconds.

The emergency lighting can be manually turned 'ON' for testing purposes by pressing and releasing the 'AUTO/TEST' button. The amber LED built in the switch body will illuminate. After the test is completed the emergency lighting "AUTO/TEST" button must be pressed to restore the module to the AUTO mode, the LED will distinguish.

Input:

- Alarm signal from either the Smoke / Heat Alarms or the MCP
- Sprinkler alarm voltage free contact to switch negative to the module (if required)

Outputs:

- Air-conditioning / heating
 1. 24V to drive high current relay - rated 240volt AC 10Amps
 2. set of Air-conditioning / heating voltage free contact
- Emergency Lighting –
 1. 24V to drive high current relay - rated 240volt AC 10 Amps
 2. Set of Emergency Lighting voltage free contact

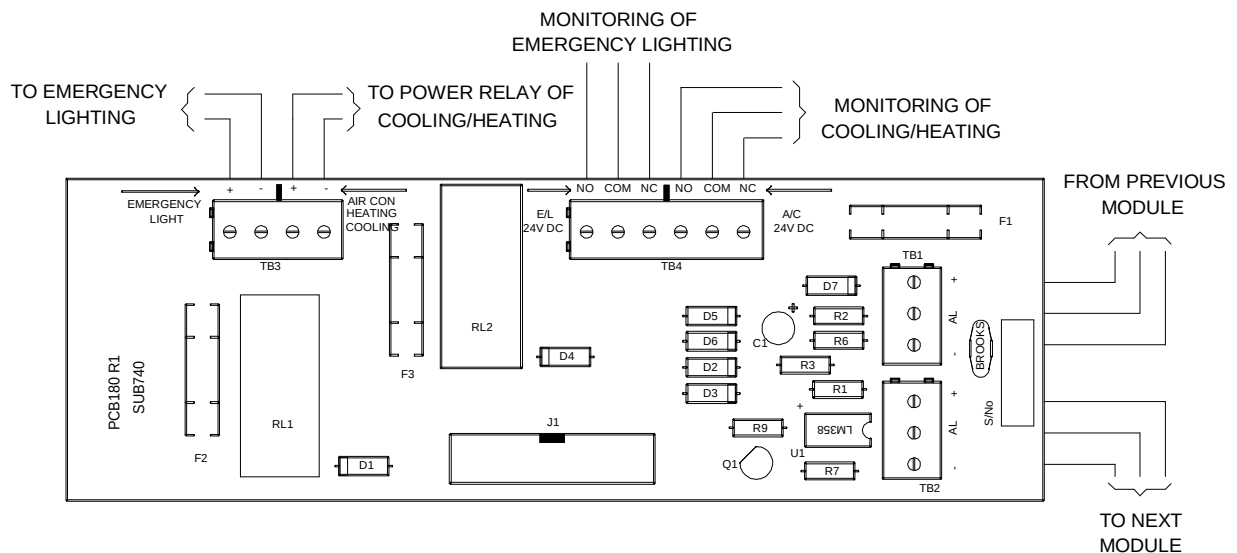
Controls:

- Heating/Cooling - AUTO/OFF
- Emergency Lighting - AUTO/TEST

Indicators:

- Heating/Cooling - AUTO/OFF, amber LED
- Emergency Lighting - AUTO/TEST, amber LED

Note: The 240V AC for the high current relays of Air conditioning and emergency lightings must be wired to a circuit separate to the RFP mains



DESCRIPTION : The Ancillary Control Module provides 2 outputs to control the operation of Air-Conditioning /Heating system and Emergency Lighting via 2 external relays. The contact rating of the 2 external relays 240V AC / 10 Amps.

The Emergency Lighting will be automatically activated by an alarm signal after approximately 15 seconds time delay. To manually test the Emergency Lighting, press the AUTO / TEST button, the switch build in LED will illuminate to indicate that the Emergency lighting is in test mode. To exit the test mode, press AUTO/TEST switch.

The second output of the Ancillary Control Module is used to shutdown the Air-Conditioning /Heating system. The time delay from receiving alarm signal until the system shuts down is approximately 15 seconds. To shutdown the Air-Conditioning/Heating system press AUTO/OFF switch, the LED illuminates and the system stays OFF until manually de-selected.

SPECIFICATIONS : Operational Voltage : 24V DC
Current consumption : 1 mA Quiecent
44 mA Alarm with no external relays
140 mA with external relays

INPUT : Alarm input (-ve switching) from Main Module activated by Smoke/Heat Alarms and/or Manual Call Point

OUTPUTS : Fused 24V DC / 1 Amp to drive Emergency Lighting high current relay
Fused 24V DC / 1 Amp. to drive Air-Conditioning/Heating high current relay
Voltage free contact For Emergency Lighting activation 24V/2A
Voltage free contact for Air-Conditioning/Heating shutdown 24V/2A

CONTROLS & INDICATORS(On Display Board):
AUTO/TEST switch with built in Amber LED for Emergency lighting
AUTO/OFF switch with built in Amber LED for Air-Conditioning/Heating

FUSES : F1 - F3 = 1A, Fast Blow, 1 AG

						TITLE		BROOKS AUSTRALIA				
20/8/2002	2	ADD FUSE FUNCTION, RATING & TYPE	O.P.	A.S.								
13/3/2002	1	UPDTAE TO Vcoid	O.P.	A.S.								
21/11/2000	0	ORIGINAL ISSUE	O.P.	A.S.								
DATE	ISS	REVISION	DRN	CHK								



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