



ADVANCED WARNING

SYSTEMS

ZoneSense



Fire Alarm Control Panel

NZ1/ NZ1R Installation, Commissioning & Operation Manual NZS:4512:2003

MAN 1529-2

WORLD LEADER OF INNOVATIVE SOLUTIONS
IN FIRE DETECTION AND ALARM SYSTEMS



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About This Manual

1.1 Purpose

This manual is an instructional tool for the installation, commissioning and operation of the **ZoneSense NZ1 / NZ1R** Fire Alarm Control Panel (FACP).

1.2 Scope

The information within this manual is only available to and for the use of personnel engaged in the installation and operation of the **ZoneSense NZ1 / NZ1R** power supply. **ZoneSense NZ1 / NZ1R** has been designed to comply with major world standards. To ensure these standards are not compromised in any way installation staff and operators should;

1. Be qualified and trained for the task/s they undertake;
2. Be aware this manual should be read prior to the installation and commissioning of the **ZoneSense NZ1 / NZ1R** power supply
3. Observe anti-static pre-cautions at all times; and
4. If a problem is encountered or there is any doubt with respect to the operational parameters of the installation the supplier should be contacted.

2. Introduction

There are four models of the New Zealand **ZoneSense** series of fire alarm control panels (FACP) the **NZ1** and the **NZ1R** in either ABS (BX1) or Metal cabinets (BX10), both are essentially a single zone automatic fire alarm system capable of accommodating heat detectors, smoke detectors and manual call points or a combination of these devices. The only difference between the two is that the **NZ1R** has a front panel "Reset" facility while the **NZ1** "Reset" is internal to the panel and can only be accessed by way of a key to meet NZS4512 requirements.

All circuitry except for the power transformer is on a single printed circuit board.



Note: Only devices compatible with the NZ1/ NZ1R should be used in an installation. These are listed in this document.

2.1 Features

- Two supervised I/P circuits –Sprinkler, Zone
- Two alarm circuits Alarm 1, Alarm 2
- Two open collector outputs (Fire and Defect)
- One relay output (assignable to Fire, Defect or both) with NO, C and NC contacts
- Walk test
- On board Defect indicators – Alarm, System, Zone and Battery
- Buzzer Mute
- Front panel functional Indicators – Fire, Sprinkler Activated, Defect and Normal
- Flush or surface mountable enclosure
- Controls have tactile and audible feedback of operation
- All terminals cater for 2.5mm cables
- Available in ABS (BX1) and Metal (BX10)



Figure 1: ZoneSense NZ1 (Commercial) ABS Cabinet (BX1)



Figure 2: ZoneSense NZ1R (Resident) Metal Cabinet (BX10)

3. Mechanical

The basic NZ1 / NZ1R consists of a;

1. Main Card with controls / indicators and switch-mode power supply
2. 1 X 12 Volt battery
3. Access and "Silence Alarms" / "Evacuation" keys

The **NZ1R** ABS (BX1) front door is locked by way of two clips on the right hand side of the cabinet. A special locating key which has two raised pins are inserted into the side of the cabinet to unlock the door. The Metal cabinet (BX10) is locked using a 003 key.

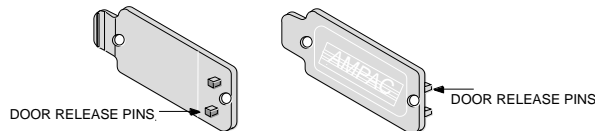


Figure 3 ABS (BX1) Door Release Key

3.1 Unpacking and Inspection

Carefully inspect the packing for any transit damage. Unpack the goods and check both externally and internally for any loose or damaged components that may affect the appearance, installation or operation of the goods.

3.2 Mounting the Enclosure

The panel **MUST** be mounted in an area that is **NOT** subject to conditions likely to affect its performance, e.g. damp, salt-air, water ingress, extremes of temperature, abuse etc. is at an easily accessible height and such that the indicators are at eye level.

3.2.1 Enclosure Details

The ABS (BX1) panel can be surface or semi-flush mounted, has a detachable front door, and a mountable back box.

The Metal Cabinet (BX10) can be surface mounted or semi-flush mounted using a supplied surround (ENC3016-A)

3.2.2 Fixing the Chassis to the Wall

Taking into account the weight of the panel securely mount it by using the three keyhole mounting holes. Use suitably sized screws and plugs for the type of mounting surface.

Mounting is best achieved by positioning the box against the surface it is to be mounted to, marking the holes, taking the box well away from the surface and then drilling the holes.

Caution: Any dust or swarf created during the fixing process must be kept out of the cabinet and great care should be taken not to damage any wiring or components.

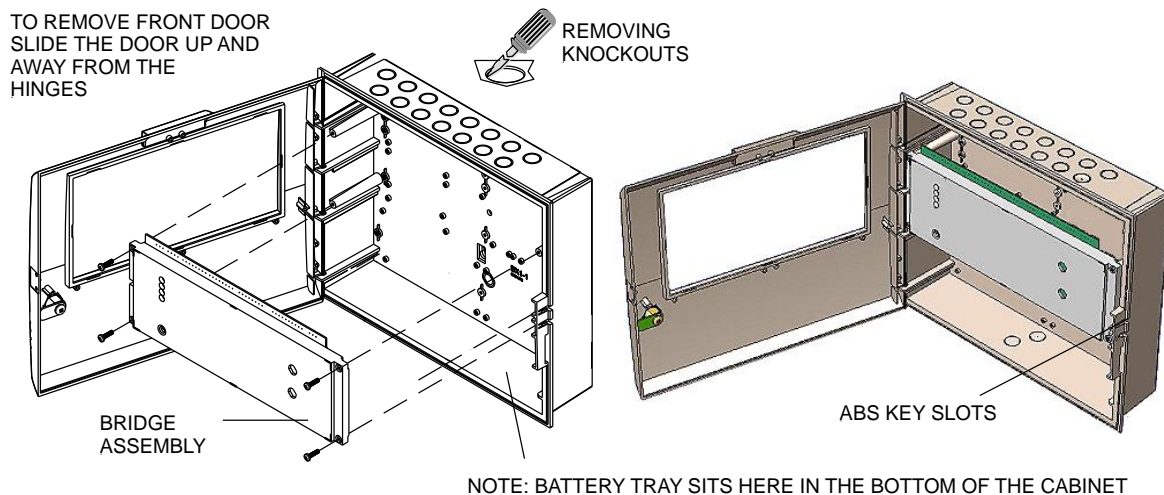


Figure 4: Exploded and assembled view with 003 Key entry (BX1)

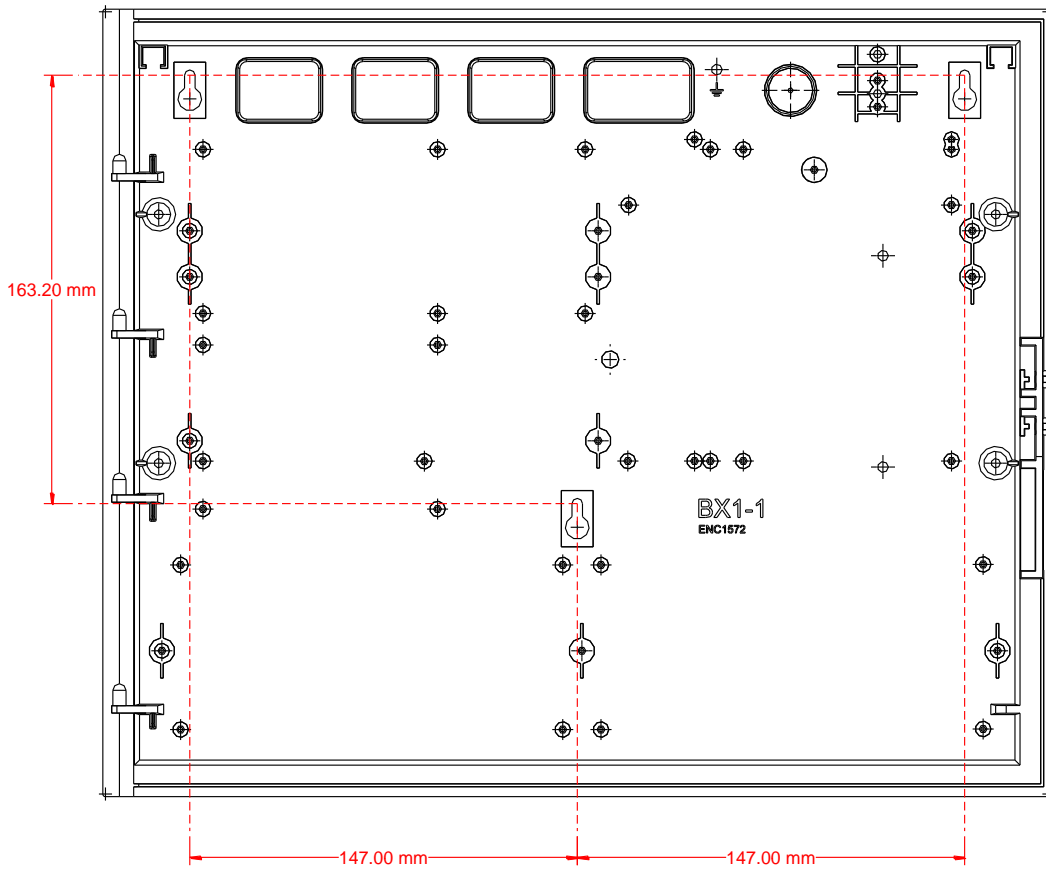


Figure 5: ABS (BX1) mounting points

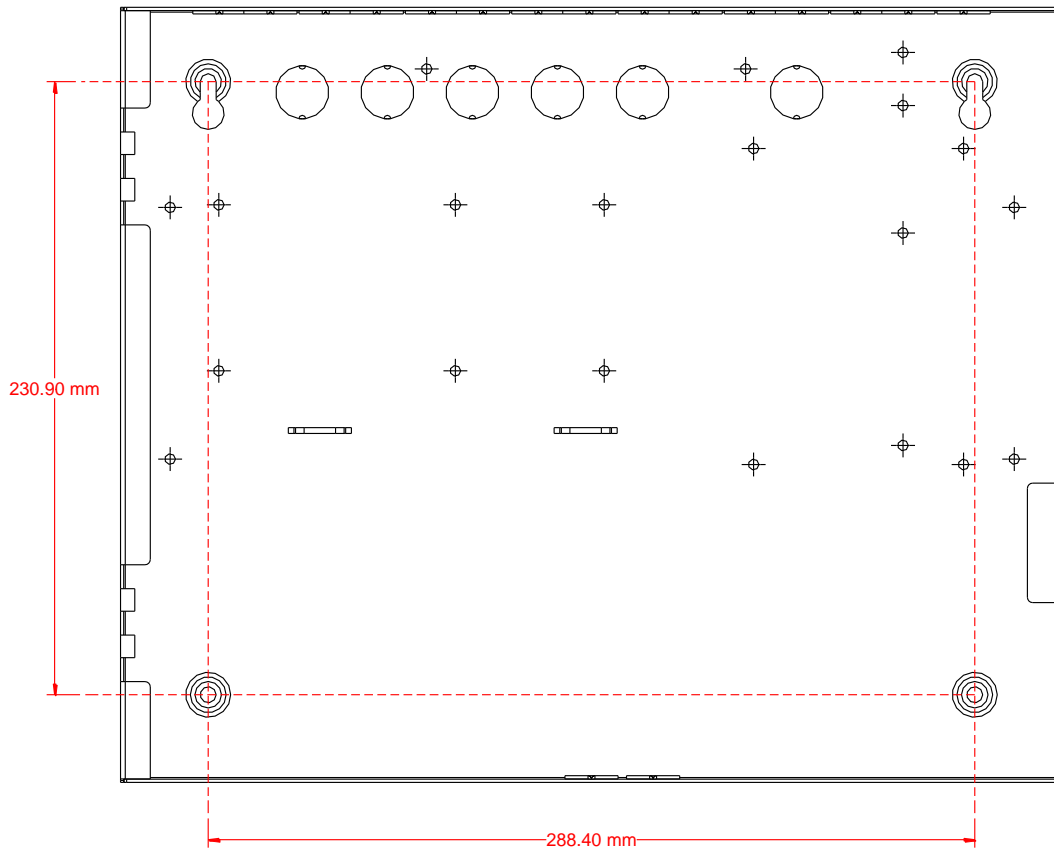


Figure 6: Metal Cabinet (BX10) mounting points

3.3 Board Removal / Replacement

If the main board has to be removed the following precautions should be observed;

1. Removing the door will provide better access and ensure the hinges are not stressed. Note: The Metal cabinet (BX10) does not have a removable door.
2. Personal anti-static procedures must be followed.



3.4 Removing Knockouts

Carefully decide how the wiring will be brought into the panel then remove the required knock-outs for the bushes and cables.

The knock-outs should be removed with a sharp tap in the rim of the knock-out using a flat broad-bladed screwdriver. Use of excessive force could damage the enclosure around the knock-out.

Always ensure if a knock-out is removed, the hole is filled with a good quality cable gland. Any unused knock-outs must be securely blanked off.

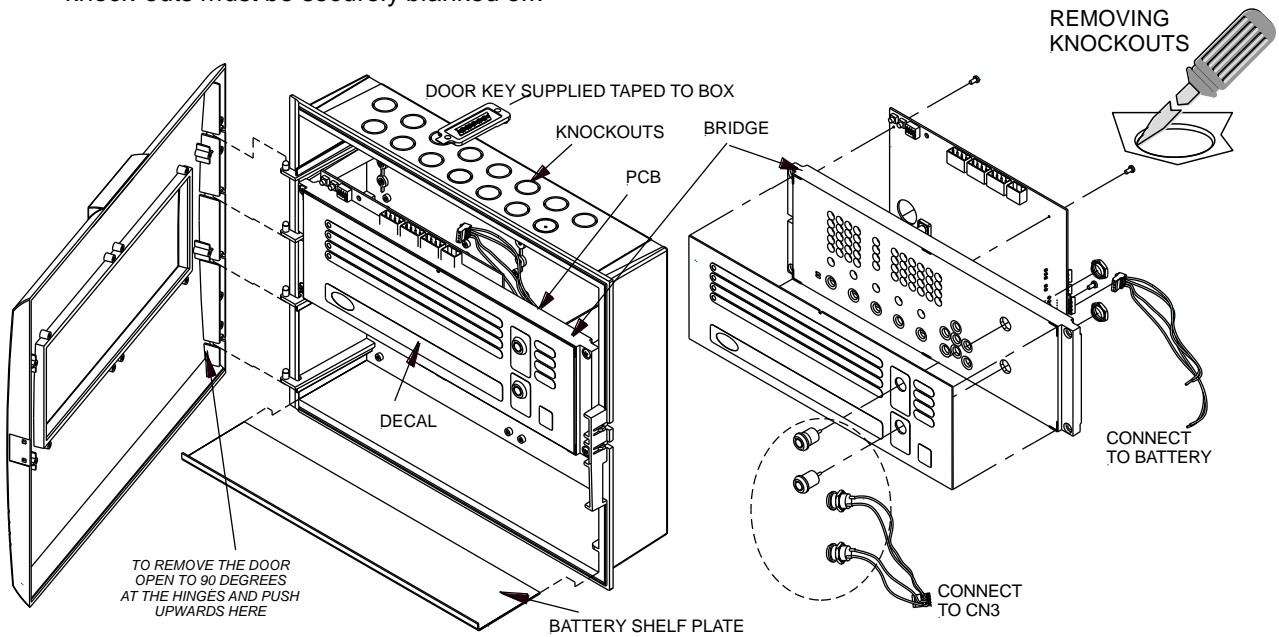


Figure 7: Explode View of the Basic Assembly with Side Entry Key (BX1)

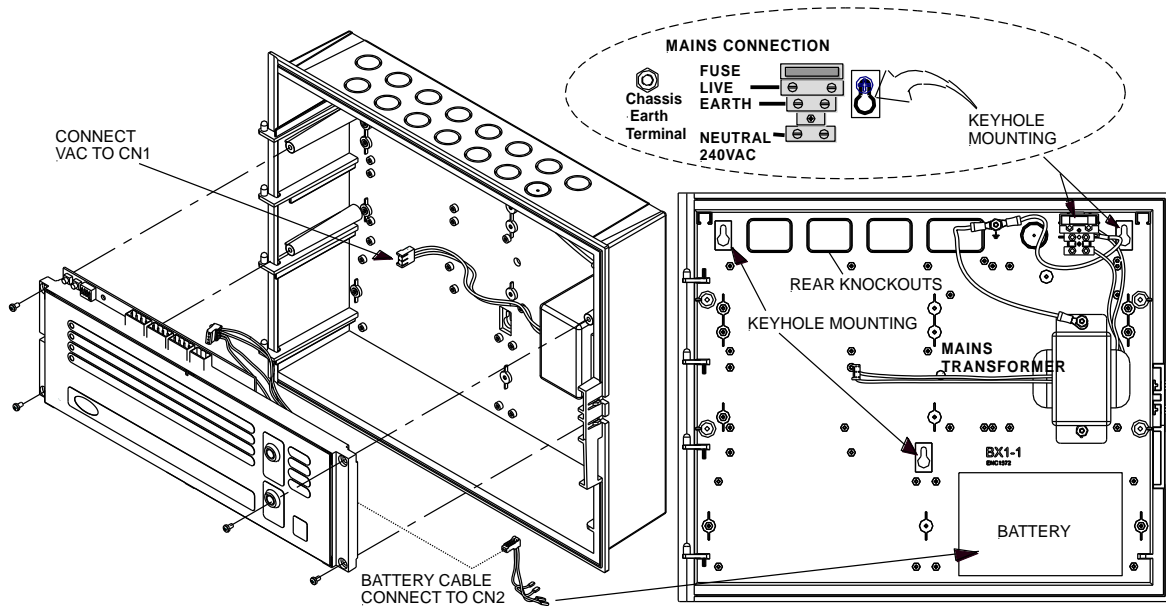


Figure 8: Assembly and Back box Layout and Mains Wiring (BX1)

4. Electrical

4.1 Primary Power Supply


The Power Supply combines the functions of a mains to DC switched mode power supply unit, battery charger and battery monitoring unit.

4.1.1 Mains wiring

The requirement for the Mains supply to the FACP is fixed wiring, using three core cable (no less than 0.75mm" and no more than 2.5mm") or a suitable three conductor system, fed from an isolating switch fuse spur, fused at 3A. This should be secured from unauthorised operation and be marked 'FIRE ALARM: DO NOT SWITCH OFF'. The Mains supply must be exclusive to the FACP.

4.1.2 Connecting the Mains

The incoming Mains cable should be brought into the Panel at the top right hand side of the enclosure and correctly terminated on the Chassis Earth Terminal and then to the mains transformer connector block.

 **Note:** Fuse F1 (1.25 Amp / 250VAC M205) is field replaceable.



Before switching on the power supply the earth MUST be connected to the chassis earth terminal.

4.1.3 Mains Earthing

1. All earth cabling must be terminated to the panel chassis earth terminal in a Star configuration.
2. The earth cable closest to the cabinet body must have an M4 SPW beneath the lug then an M4 SPW and M4 nut.
3. Each additional earth cable must be terminated with an M4 SPW and M4 nut.
4. An additional M4 nut and M4SPW are fitted to the earth terminal for installers to connect the mains earth

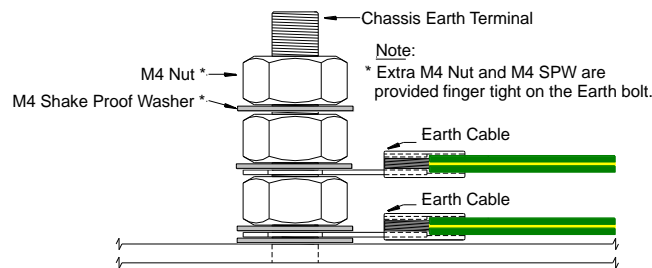




Figure 9: Chassis Earth Terminal Connection


 **Important:** DO NOT use an insulation tester ('Megger') with any electronic devices connected. Faults occurring in the wiring which are not picked up at this stage will almost certainly result in spurious and intermittent faults when the equipment is energised.

 **Important:** Under no circumstances should the panel be operated without the main board correctly mounted in the enclosure and the retaining screws securely tightened.

4.2 Battery Charger

The battery charger is an integral part of the power supply and is capable of;

1. Recharging standard sized system batteries within 24 hours;
2. Detecting a missing (voltage below 10V), damaged or undercharged battery nominally 11.1V;
3. Protecting the battery against reverse or a short circuit condition;
4. Charging the batteries in line with sealed lead acid battery manufacturers circuit temperature compensation guidelines so the charge voltage varies according to temperature. Typically at 0°C charge voltage is typically 13.9VDC, falling to 13.2VDC at 40°C.

 **Note:** Battery disconnect has been incorporated to prevent the battery from discharging through the battery charger should the charging voltage be less than the battery voltage.

4.3 Secondary Supply

In the event of a mains failure the backup battery is capable of maintaining the quiescent condition for 72 hours as well as full alarm load for a further period of 30 minutes.

When the FACP is running from batteries, a low battery condition is signaled when the battery falls below a nominal 12.2VDC.

4.3.1 Battery Capacity Test

The system conducts an extended battery capacity test. This test inhibits the charger for a duration of between 30 and 90 minutes at intervals between 20hr and 72hrs. A Battery defect is indicated should the battery voltage drop below 2.03V/cell (typical 12.2V) and be latched until the end of the test period.

If a Battery Defect occurs during this test it is indicated by the Battery Defect LED flashing and a Reset is required to clear the indication. Should an alarm occur during this test the test will be terminated and an alarm condition initiated.

Note: Any power supply fault is indicated within 1 hour.

4.3.2 Connecting the Stand-By Batteries

A new, good quality, fully charged 12V sealed lead acid battery housed in the bottom of the cabinet is required for the stand-by power supply. A protective tray is supplied in the packaging.

The red and black battery leads from the Power Supply (CN 2) should be run to the battery in such a way there is no risk of them being damaged. Connect the red wire to the positive (+ve) terminal and the black wire to the negative (-ve) terminal.

The panel's sophisticated battery monitoring protects the battery against deep discharge by activating a cut off circuit when the stand-by supply voltage reaches approx 11.1 volts. If the battery is not fitted, is discharged or in poor condition, the POWER FAULT LED will be illuminated.

The capacity of the battery to be installed depends on the panel configuration and required stand-by time. To calculate the required AH capacity of the battery refer to the calculation guide.

4.4 Power Management

In the quiescent state with Defect, current conditions are:

| Requirement | Current |
|---|---------|
| Battery Charger (assume max charge 7A/hr battery) | 300mA |
| 1 x Zone (Normal) | 15mA |
| 1 x OC output (Defect) @ 40mA (normal) | 40mA |
| FACP electronics | 25mA |
| Total | 380mA |

In the alarm state, the Battery current conditions 1 zone in alarm, and the charger disabled are:

| Requirement | Current x hrs |
|--|---------------|
| 1 x Zones @ 40mA (in alarm) (72hrs) | 40mA x 0.5 |
| 2 x Supervised Outputs (3A total) (30mins) | 3000mA / 2 |
| 12VDC Common for O/C outputs (72hrs) | 40mA x 0.5 |
| FACP electronics (72hrs) | 40mA x 72 |
| Total | 4.4A/hr nom |

4.5 Watchdog Circuitry

The main card has a watchdog external to the main processor. The watchdog is strobed by the main processor at intervals of 1 second. If this interval is not met the main processor is reset, the DEFECT indicator is illuminated and the buzzer sounds. These indicators will be illuminated until reset is initiated.

If the main processor fails to successfully restart after six to twelve reset operations the processor is held in reset. In this situation the buzzer will sound and the Defect indicator will flash ON and OFF at 2 second intervals.

4.6 Checksum

At periods not exceeding 72 hrs, the main processor performs a checksum operation on the application software and configuration data. If corrupted the main processor enters the RESET state, the buzzer sounds and the Defect indicator flashes ON and OFF at 2 second intervals.

4.7 Cable Types and Limitations

All System wiring should be installed to meet local wiring regulations.

4.8 Initial Operation

1. Switch on Mains power to the unit.
2. Battery defect LED should illuminate after 10 seconds.
3. Connect battery. Press 'RESET' and the battery defect LED will extinguish.
4. The unit is ready for operation.

5. Front Panel Indicators and Controls



Figure 10: NZ1R Front Panel (Note: NZ1 does not have the Front Panel 'RESET' option)

5.1 Controls

EVACUATION Keyswitch



This keyswitch, when operated, causes the only the Alarm output to be activated, regardless of the state of the SILENCE ALARMS keyswitch.

Operation of this switch does not activate a Zone Alarm condition hence the Fire LED won't flash.

Note: The activation key can only be removed in the Off state.

SILENCE ALARMS Keyswitch



"BRIGADE USE ONLY"
NOT SHOWN ON THE
NZ1 R SERIES

This keyswitch, when operated, causes the Alarm output to be deactivated and inhibit the system from generating further alarms. As a result the Defect LED flashes the Buzzer sounds and the ALARM LED remains flashing.

Switching back to its normal position will not change the state of the Defect LED or Buzzer but will clear the ALARM LED. The system will remain this way until the Buzzer Mute switch is depressed to silence the Buzzer or the Reset switch is depressed.

If the keyswitch is activated when no alarms are present then the DEFECT LED will become illuminated and the Buzzer will sound and deactivate when the keyswitch is returned to its normal position.

Note: The activation key can only be removed in the Off state.

5.1.1 Reset button



Only fitted to the NZ1R. This has the same effect as depressing the reset switch on the Main Board as used in the NZ1.

When the FACP is in the fire alarm condition the alarm outputs will be activated but can be silenced by activating the SILENCE ALARMS keyswitch. Pressing the Reset switch performs a Zone Reset but if the Zone is still in Alarm then the Alarms will re-activate.

5.2 Indicators (Front Panel and Main Board)

There are 4 indicators on the front panel of the FACP and 5 on the Main Board.

Front Panel

 FIRE – Red

Flashes when the Alarm output is indicating a Zone Alarm condition.

 SPRINKLER ACTIVATED – Red

Flashes during the time when the Sprinkler input is activated.

 DEFECT – Amber

Flashes when any defect is present or when the SILENCE ALARMS keyswitch has been operated.

 NORMAL – Green

Flashes when the system is powered up and is not operating under Fire or Defect conditions.

Main Board

 Power – Green

Illuminates to indicate that the FACP is supplied with Mains power.

 Battery Fault – Amber

Illuminates when the;

- Battery voltage is below 12.2 Volts during discharge (mains failure).
- Battery voltage is below 12.6 Volts whilst charging.
- Battery voltage is above 14 Volts.
- Battery is not connected.
- Battery failed automatic capacity test.

 Zone Fault – Amber

Illuminates when the Zone Circuit is indicating a defect e.g. short or open circuit.

 System Fault – Amber

Illuminates when a system defect occurs - Software failure or after loss of mains for a period greater than 10 minutes.

 Alarm Fault – Amber

Illuminates when the Alarm output is indicating a defect e.g. short or open circuit.

6. System Description and Operation

6.1 Main Board Layout

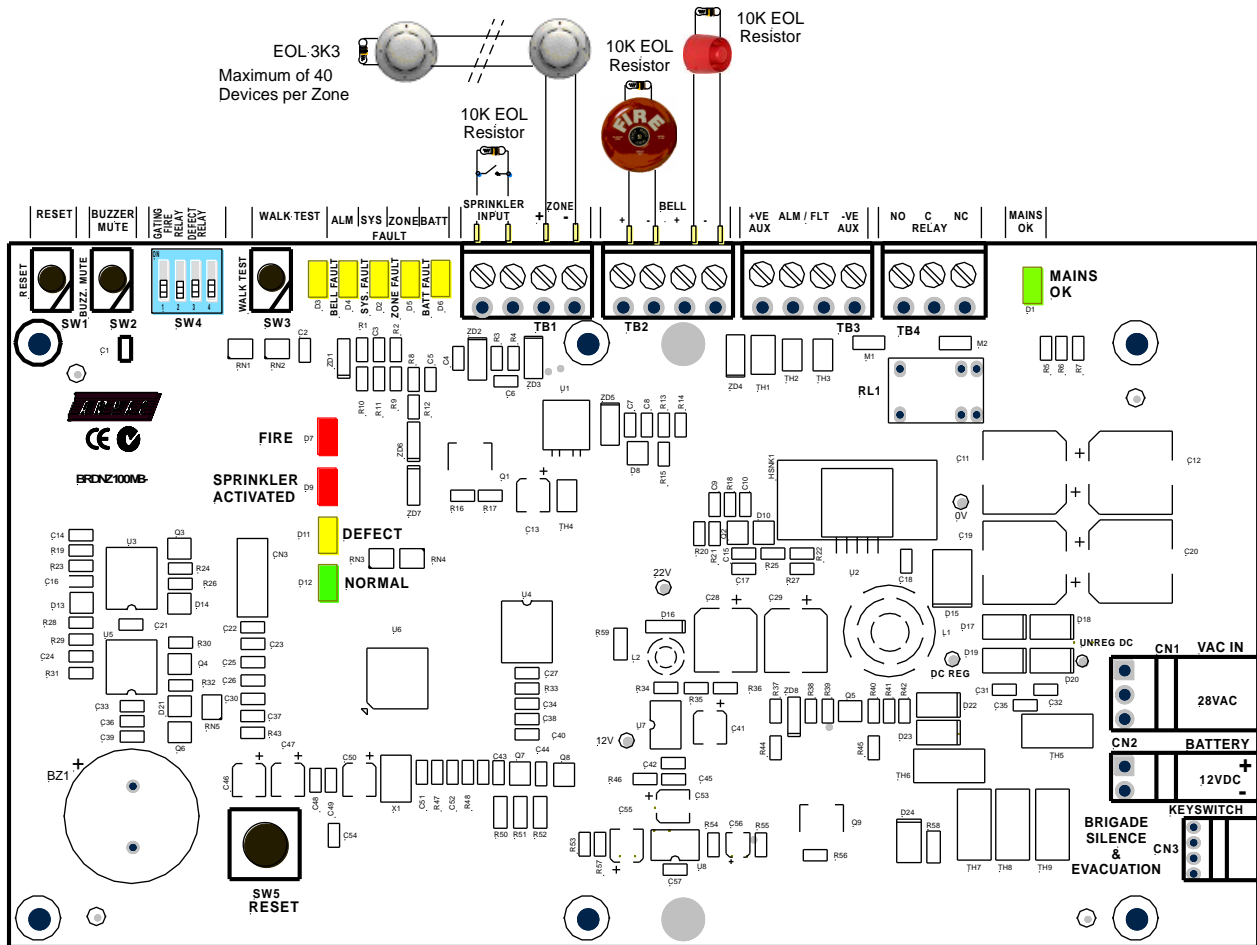


Figure 11: General Wiring Diagram

6.2 Power Supply

The onboard power supply provides 13.5VDC at 0.5A for system power and charging the system battery. The system incorporates a test function, controlled by the CPU that decreases the power supply output voltage to approximately 10V for 1 hour each day to check the condition of the system battery. If the battery voltage falls below 12.2V during the test period a defect signal is generated and the battery fault LED is illuminated.

6.3 Sprinkler Input

This Input is normally terminated with a 10kΩ resistor and when activated (input goes short circuit) the “SPRINKLER ACTIVATED” LED is illuminated and the Alarm outputs are activated. If the input impedance exceeds 15kΩ the “DEFECT” LED will be illuminated and the Buzzer will sound

6.4 Detector Circuit

The detector circuit requires 24VDC smoke detectors, heat detectors or manual call points that will cause the panel to go into the “Fire” condition within one second of an alarm being initiated. Detector types used are subject to the compatibility limitations as described in this manual.

The maximum number of detectors and MCP’s that can be supported will be influenced by the quiescent current draw of the detectors and MCP’s fitted.

In the case of a short circuit condition the zone circuit is current limited to 25mA.

6.4.1 Zone Circuit Conditions

Zone Defect

All zone defect conditions are non-latching but can be cleared when the Reset button is pressed. If the fault is still present a defect is re-announced within 15 seconds of the reset.

Zone Alarm

Zone alarm is only configured as latching. This means that the alarm condition can only be cleared when the Reset button is pressed irrespective of the condition of the zone itself.

When the zone reports an alarm condition, the output relay is activated within 1 second followed by an audible indication.

Devices such as smoke detectors, which signal by increasing line current, can, when signalling, go through a “gating” or Alarm Verification process. As such, when a detector goes into alarm it is reset and not supervised for two to three seconds, if an alarm is still present after this time the system will then latch into alarm. This function can be de-selected by turning switch 1 (GATING) of SW4 to “OFF”.

Important:

Detector line voltage is 22V (open circuit). Current signalling detectors (smoke or electronic heat) must be rated for 24V operation.

| Condition | Comment |
|-----------|--|
| Defect | Short circuit (<50Ω or open circuit (>4kΩ) exists on the zone circuit e.g. EOL not fitted |
| Alarm | One or more detectors have been activated – Typical impedance 100Ω to 1kΩ |
| Normal | All detectors are normal and EOL resistor is connected – typically 3k3Ω |

6.5 Alarm Circuits

The FACP provides 2 parallel PTC protected supervised alarm circuits which provide up to three (3) Amps @ 12VDC **total** of alarm load. Each line requires a 10kΩ EOL resistor across each line to give a system normal indication. If either output line is open or shorted, a defect signal is generated and the “ALM” defect LED is illuminated.

Supervision operates by sensing the 10kΩ terminating resistor independent of the loading of the bells and sounders. The supervision is forward biased and requires diodes to be fitted in series with each bell and/or sounder. Defects on the supervised outputs will be indicated within 60 seconds and the output common point is protected by a PTC.

The outputs are activated by the;

- Sprinkler Input
- Front panel EVACUATION keyswitch
- Zone entering the alarm condition

The outputs can be deactivated by the;

- Operation of the SILENCE ALARMS keyswitch
- De-activation of the Sprinkler Input
- Operation of the Reset Switch

6.6 Alarm & Defect Outputs

There are two unsupervised Alarm and Defect open collector type outputs provided. Each output is capable of supplying up to 40mA of output current and can withstand a short circuit condition to the common +12VDC output without damage.

6.7 Auxiliary Power Output

A common PTC 150mA current limited +VE, -VE feed is provided.

6.8 Relay Output

An auxiliary programmable relay is fitted to signal and or control ancillary devices. A set of normally open (NO), common (C) and normally closed NC rated at 1A - 30VDC are fitted to the relay.

6.9 Walk Test

This function is initiated by pressing the “Walk” test button on the back of the main board. When pressed the;

- Buzzer will sound once
- LED directly beside the switch will indicate the test is active;
- Test will remain active for ten minutes (automatically cancelling itself after this time);
- Detectors can be operated in the field which are then reset by the panel after 4 seconds.

To restore the panel to normal operation, repress the switch and the walk test indicator will turn off.

6.10 Evacuation

On the front panel a key switch is provided for Evacuation. Operating this key switch will cause the system to operate the bells / sounders and override any bell isolate or silence condition.

6.11 Buzzer

Mounted on the main board is an internal buzzer that will sound;

- Continuously should a defect occur; and
- In short bursts to confirm any key switch operation.

Buzzer Mute: Pressing this switch, situated on the back of the main board, will cause the buzzer to stop sounding though should another defect occur after this time the buzzer will resound.

6.12 Lamp Test

During Power up, all LED's will be sequentially illuminated before the system moves into its normal quiescent state.

6.13 Reset from the Fire Alarm Condition

NZ1 - Reset switch, inside the panel on the Main Board

NZ1R - one Reset switch on the Main Board and one on the front panel. (NB Not compliant with NZS4512 2003)

6.14 Summary of Main Card Terminations

| Terminal Number | Terminal Description |
|--|--|
| INPUTS (TB1) | |
| 1 | Sprinkler Input |
| 2 | Common |
| 3 | + Zone 1 |
| 4 | - Zone 1 |
| SUPERVISED OUTPUTS (TB2) | |
| 1 | Alarm 1 |
| 2 | 0V (Alarm 1) |
| 3 | Alarm 2 |
| 4 | 0V (Alarm 2) |
| OPEN COLLECTOR OUTPUTS (TB3) (PTC protected to 150mA) | |
| 1 | 12 VDC + Common for Open Collector outputs |
| 2 | Fire Output (40mA) |
| 3 | Defect Output (40mA) |
| 4 | 0 VDC |
| OUTPUTS VOLT FREE RELAY (TB4) | |
| 1 | NO Output |
| 2 | C Output |
| 3 | NC Output |
| AC INPUT FROM MAINS TRANSFORMER (CN1) | |
| 1 | V~ |
| 2 | N/A |
| 3 | V~ |
| BATTERY OUTPUT FROM MAIN BOARD (CN2) | |
| 1 | +VE (12 VDC) |
| 2 | -VE (0 VDC) |
| EVACUATION KEYSWITCH /SILENCE ALARMS KEYSWITCH (CN3) | |
| 1 | +3V3 |
| 2 | Evacuation Keyswitch |
| 3 | Silence Alarms Keyswitch |
| 4 | +3V3 |

7. Connecting Devices

See Appendix A for a sample calculator to determine the maximum loading on a circuit.

7.1 Detector

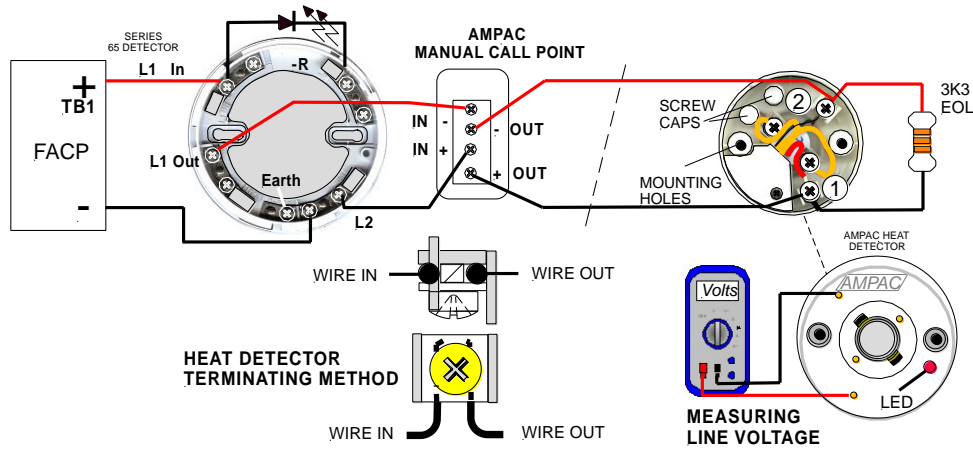


Figure 12: Example of Detector and MCP Wiring

The zone circuit must be terminated with an end of line resistor with a value of 3.3KΩ (2% tolerance or better, power rating 1/4W)

7.2 Manual Call Points

| Type | Quiescent Current |
|-------------------------|-------------------|
| Ampac Manual Call Point | 40µA |

Connect as shown above.

7.3 Bells and Sounders

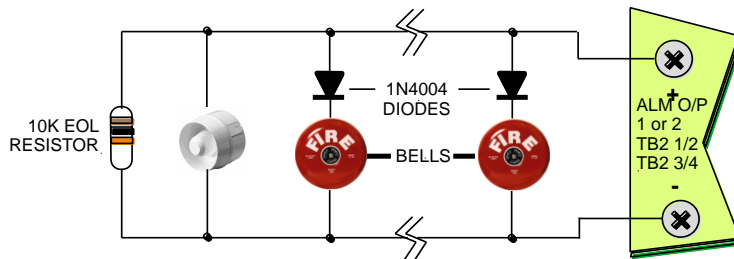


Figure 13: Wiring Bells and Sounders

Two ALARM circuits capable of driving a combined load of 3Amps are provided. These circuits are supervised hence it is necessary to connect any bells via diodes if not already fitted to the bells and observe bell/sounder polarity, 1N4004 diodes are recommended, as shown in the above diagram.

7.3.1 Compatible Bells and Sounders

| Item Number | Description |
|-------------|---|
| 206-0002 * | Bell 12VDC Red 150 mm. |
| 205-0006 * | Horn Siren 12VDC 200mA Red. |
| 205-0002 * | AS2W Flush sounder White 12/24V 15mA . |
| 205-0001 * | AS2R Flush sounder Red 12/24V 15mA. |
| 205-0009 | Vara Sounder white AS2220 Evac Tones |
| 205-0011 | Vector Sounder white AS2220 Evac Tones |
| 205-0062 | Vantage Sounder AS2220 Evac Tones (Red) |
| 205-0063 | Vantage Sounder AS2220 Evac Tones (White |
| 205-0066 | Vantage Combi Sounder AS2220 Evac Tones (Red) |
| 205-0067 | Vantage Combi Sounder AS2220 Evac Tones (White) |

Note: * these devices do not comply with NZS4512 2003

7.4 Auxiliary Relay

Un-supervised voltage free, single change over contacts are provided for user configured connection.

7.5 Defect Operational Criteria

The FACP responds to all sources of defect within 60 seconds of their occurrence by flashing the DEFECT indicator and activating the Buzzer.

All defects are non-latching.

A defect indication caused by the activation of the SILENCE ALARMS keyswitch is cleared by the use of the Reset control.

7.5.1 Indication of the Defect Condition

Presence of the defect condition is indicated without prior manual intervention by the common defect indicator (front panel DEFECT LED). The type of defect is indicated by the appropriate LED on the Main Board.

- Alarm
- System
- Zone
- Battery

For all defects the buzzer will sound but can be silenced by pressing the silence buzzer button on the Main Board. The buzzer will resound for any new defect condition.

7.5.2 Reset from the Defect Condition

All defect conditions are automatically reset except when the SILENCE ALARMS keyswitch is operated. In this situation the Reset button needs to be depressed.

7.5.3 Defect Output

The FACP does not provide an exclusive Defect output. If this facility is required the internal relay can be configured to provide Alarm or Defect operation using the DIP switches.

7.5.4 Disablement Condition

The FACP cannot be disabled by any combination of key switches or pushbuttons.

8. Settings

The FACP has a 4 way DIL options switch SW4. The settings are;

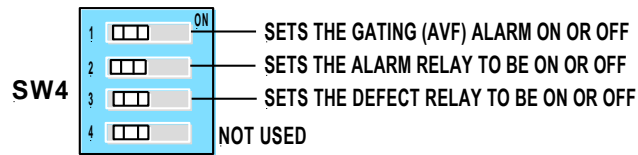


Figure 14: DIL Switch Settings

8.1 Alarm Verification Facility (AVF)

This facility is used to prevent spurious operation of detectors on the Zone circuits.

When the “GATING” is set to “On” the signal from the detectors is verified before an alarm is announced.

This dipswitch control when active will cause the following when a Zone Alarm occurs:-

The Zone circuit is reset for approx 1.5s (the minimum time to reset a smoke detector).

If an alarm condition still exists after this period then an alarm condition is announced.

8.2 Relay Settings

The relay function can be enabled or disabled using the Alarm and Fault relay DIP switches

| Alarm Relay | Defect Relay | Effect |
|-------------|--------------|---|
| 0 (Off) | 0 (Off) | Normal Operation, Relay never energised |
| 0 (Off) | 1 (On) | Relay energised when in Defect |
| 1 (On) | 0 (Off) | Relay energised when in Fire |
| 1 (On) | 1 (On) | Relay energised when in Fire or Defect |

9. Troubleshooting

| Problem | Possible cause/s | Suggested remedy/ action |
|--|--|---|
| Mains LED is off | Mains supply is not operational. AC Fuse or Mains Fuse is blown. | Check mains supply. Check and replace as necessary. |
| ALM circuits in defect. | Diodes not fitted in series with bell. End of line not fitted. Fuse blown. | Fit diodes to bells as shown in section 4. Fit end of line resistor Check Fuse F1 on PCB. Replace if necessary. |
| Zone always in defect. | Line is shorted. Line is open. End of line not fitted. | Check and remove short. Check line and rectify. Fit 3K3Ω resistor to end of line. |
| System fault LED is illuminated. (Mains is on). | Software "glitch". | Power down and restart |

10. Specifications

| Power Supply | |
|--------------------------------|--|
| Mains Supply Voltage | 204VAC to 264VAC at 47Hz to 63Hz – 0.5A |
| Primary Power Supply | Nominal 12VDC @ 1Amp |
| Charger Output Voltage | 13.5VDC |
| Charger Output Current | 0.5A |
| Battery | 12V 7AH |
| System Quiescent Current | 22mA (After 10 minute battery operation) |
| Dimensions | |
| Size | |
| ABS (BX1) | 360mm (W) x 300mm (H) x 80mm (D) |
| Metal (BX10) | 360mm (W) x 300mm (H) x 80mm (D) |
| Outputs | |
| Alarm Circuits | 2 total |
| Voltage | 12VDC |
| Maximum Current | 1.5A for each circuit |
| End Of Line resistor | 10KΩ 1/4W 2% |
| Auxiliary Output | |
| Voltage | 12VDC |
| Current | 40mA max |
| Relay (FIRE and / or FAULT) | NO, C & NC (30VDC @ 1A contacts) |
| Inputs | |
| Detector Circuit | |
| Line voltage (open circuit) | 22V |
| Short circuit current | 22mA |
| Maximum Cable Length Impedance | 100Ω |
| End Of Line resistor | 3K3Ω 1/4W 2% |
| Sprinkler | Supervised 10KΩ EOL closing contact to operate |

11. Compatible Devices

11.1 Devices

Heat Detectors

| Order Code | Description | Iq |
|------------|--|------|
| 4255-0300 | Ampac Heat Detector blue Indicating 57°C | 40µA |
| 4255-0400 | Ampac Heat Detector yellow Indicating 77°C | 40µA |

Note: Rate of Rise Heat Detectors are also available.

Smoke Detectors

| Item Number | Description | Iq |
|-------------|--|-------|
| 55000-217 | Ampac Series 65 Ionisation (LPC) | 45µA |
| 55000-317 | Ampac Series 65 Optical (LPC) | 45µA |
| 55000-220 | Ampac Series 65 Integrating Ionisation (LPC) | 45µA |
| 45681-200 | Ampac Series 60/65 universal base | N/A |
| 201-0532 | Ampac Orbis Optical | 107µA |
| 201-0533 | Ampac Orbis Optical with Flashing LED | 107µA |
| 201-0534 | Ampac Orbis MultiSensor | 107µA |
| 201-0540 | Ampac Orbis universal base | N/A |

Manual Call Points

| Item Number | Description | Iq |
|-------------|-------------------------|------|
| 213 0042 | Ampac Manual Call Point | 40µA |

11.2 Zone Circuit Loading

Zone Circuit Loading Calculator

| Detector Type | Iq | No. | Current |
|--|-------|-------|---------|
| Apollo Series 65 Ionisation Smoke Detector | 45µA | X | = |
| Apollo Series 65 Photoelectric Smoke Detector | 45µA | X | = |
| Orbis Photoelectric Smoke Detector with Flashing LED | 107µA | X | = |
| Ampac Thermal Detector Blue Indicating | 40µA | X | = |
| Ampac Thermal Detector Yellow Indicating | 40µA | X | = |
| Absolute worst case total MUST be less than 4,400µA | | Total | = |

Example of an Acceptable Zone Circuit Loading Calculation

| Detector Type | Iq | No. | Current |
|--|-------|-------|---------|
| Apollo Series 65 Ionisation Smoke Detector | 45µA | X 10 | = 450 |
| Apollo Series 65 Photoelectric Smoke Detector | 45µA | X | = |
| Orbis Photoelectric Smoke Detector with Flashing LED | 107µA | X 20 | = 2,140 |
| Ampac Thermal Detector Blue Indicating | 40µA | X 4 | = 160 |
| Ampac Thermal Detector Yellow Indicating | 40µA | X | = |
| Absolute worst case total MUST be less than 4,400µA | | Total | = 2,750 |

Note: Iq = Quiescent Current Draw quoted @ 19VDC

11.3 Item Numbers

| | |
|-----------|-----------------------------------|
| 2655-0100 | ZoneSense NZ1 (Commercial) BX1 |
| 2655-0101 | ZoneSense NZ1 (Commercial) BX10 |
| 2655-0150 | ZoneSense NZ1R (Residential) BX1 |
| 2655-0151 | ZoneSense NZ1R (Residential) BX10 |
| ENC3016-A | BX10 Surround |

UNCONTROLLED DOCUMENT

NOTE: Due to AMPAC's commitment to continuous improvement specifications may change without notice.