COMPACT FBA

Sprinkler Fire Brigade Alarm

INSTALLATION AND OPERATING INSTRUCTIONS
FP0800 (Type-X) and FP0801 (Type-Y)

The Compact FBA is designed to provide Fire Brigade and Evacuation Alarm control and signalling facilities for sprinkler systems complying with NZS 4541:2003. Different versions are available to cater for Type-X and Type-Y requirements.

A Type-X FBA has a single pressure switch with separate drop-in-pressure trip points for Defect and Fire. A Type-Y FBA has an additional rise-in-pressure fire switch, and does not signal Defect on pressure drop.

A plug-on General Purpose SGD allows all types of connections to the ASE or ATS brigade receiving systems (2-wire, 4-wire, standard and multidrop). Alternatively a plug-on General Purpose Brigade Relay Interface board allows a standardised interface to all other brigade receiving system types. A local (no brigade connection) mode is also selectable. In this mode an internal buzzer gives warning of Defects.

Apart from the pressure switch(es), all functions of the Compact FBA are electronic. Input circuits are supervised, and helpful LED indications are provided for all current conditions. Historical conditions (Defects) may also be recalled.

When used in ASE/ATS 4-wire mode (multidrop or standard), the Compact FBA can operate from the SGD line alone and requires no external power supply. For other connection types a standard external 12V supply can power multiple FBAs. When an external power supply is used, high-power mode selection gives greater LED brightness and allows ancillary relays to be driven if required.

Features:

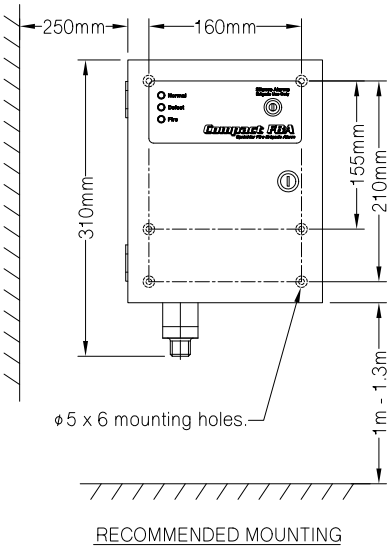
- Compact and robust metal cabinet
- Type-X and Type-Y versions
- Front panel LED status indications (3)
- Fully supervised anti-interference circuit (with Isolation switch) up to 1km (1mm^2) long for floor Isolation valves
- Defect input allows supervision of associated equipment
- "Recall" button allows historical Defect conditions to be displayed
- Silence Alarms front panel keyswitch standard
- All controls door-interlocked
- 5A evacuation alarm output with internal Isolation switch
- Compatible with all brigade receiving equipment types
- Line powered (4-wire SGD mode)
- Reliable electronic circuitry
- Separate Main Stop Valve supervision input
- Internal status & diagnostic LEDs (10)
- High-power mode allows ancillary relay drive (Fire, Defect, Normal)
- Electronic latching with Reset push button
- Two sets of Fire output contacts
- Internal buzzer (door interlock and non-connected Defect)

Installation

Mounting

The Compact FBA should be located to:

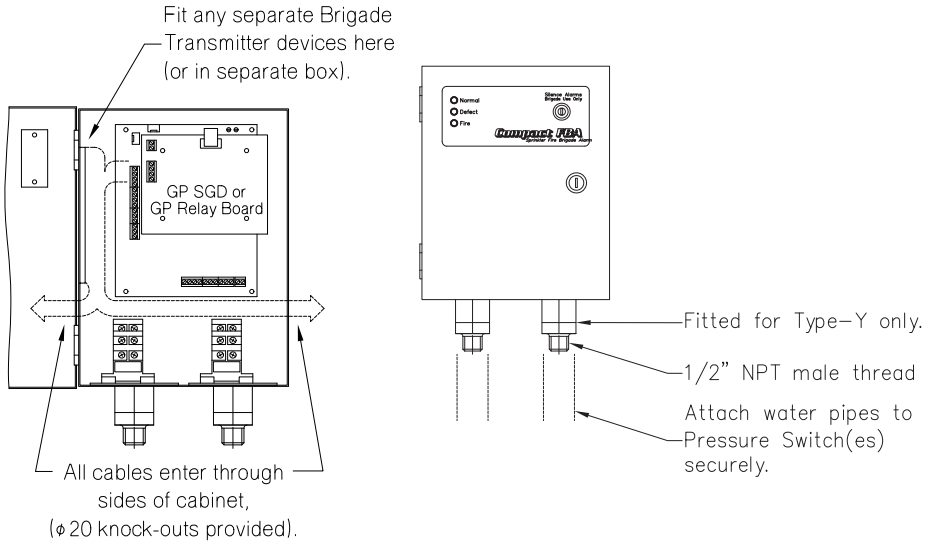
- Minimise humidity and dampness
- Allow for adequate clearances and easy access
- Avoid direct sunlight on the front panel as this can make the indicators hard to see.



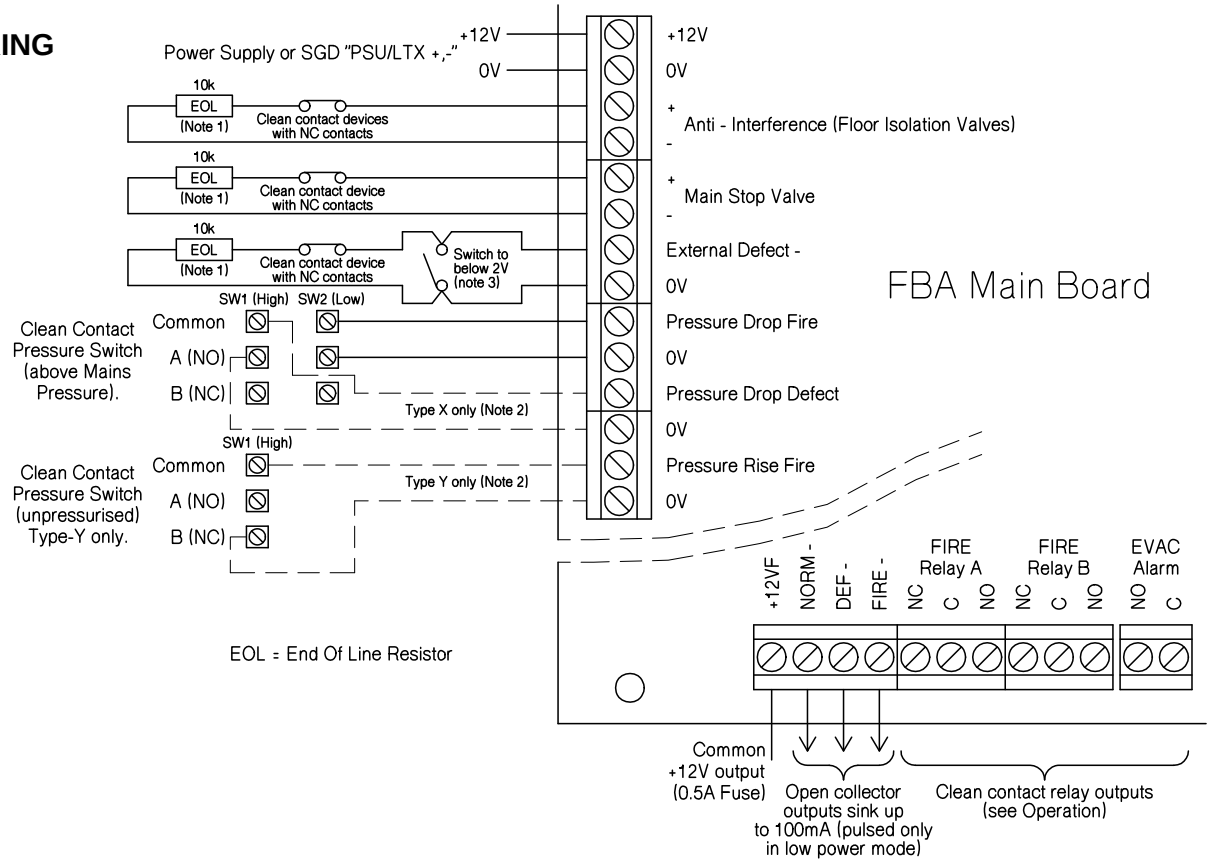
Fit the brigade Interface to the FBA main board using plastic standoffs and connect to FBA connector J13 using the 10 way FRC cable provided. Wire the interface as per its installation instructions.

If the FBA is to operate in line-powered mode from a 4 wire SGD, remove FBA link Lk1 and wire FBA "+12V" to SGD "PSU/LTX+" (leave unconnected until power up) and FBA "0V" to SGD "PSU/LTX-".

Do not make any connections to the FIP POWER terminals (J2) on the SGD.



WIRING



Note 1: If any of the Anti-Interference, Main Stop Valve, or Ext Defect- inputs are not used the 10k EOLR must be fitted to normalize the input. Cable lengths up to 1km (1mm^2) may be used. Keep separate from other building cabling as much as possible to avoid interference.

Note 2: Pressure switch contacts shown are NO or NC when unpressurised as per the pressure switch labels. The system normal condition is a closed circuit on both (used) pressure switch input terminals.

Note 3: If a local Power Supply (e.g. Vigilant FP0765) is used to power the FBA the PSU's Fault- or Defect- output should be wired to the FBA External Defect- input, retaining the 10k EOLR. Power supplies with relay fault outputs wire as shown.

Configuration Links

Lk1 REMOVE FOR LOW POWER MODE:

- Remove Lk1 if the FBA is to be line powered from a 4 wire SGD, or very low power operation is desired. Fit if powered from a local supply.

Lk2 FIT FOR TYPE-Y:

- Fitted for Type-Y FBA only (FP0801 version).

Lk4 FIT FOR NO BRIGADE SIGNALLING DEVICE:

- If no brigade signalling interface is fitted to J13, then fit Lk4. If this link is in the incorrect position, the FBA will signal a system defect, and will also sound the buzzer when the door is closed.

Pressure Switch Adjustment

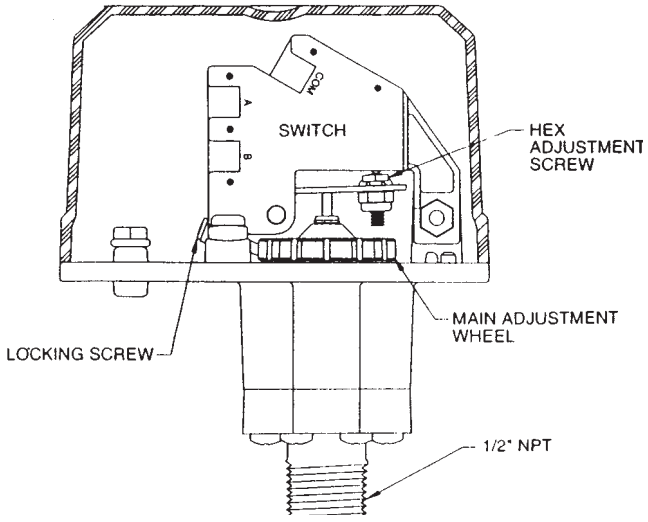
The 'drop in pressure' pressure switch is factory set to enter defect (Type-X only) at 1050 kPa and fire at 900 kPa. These settings may be adjusted as required using the following method.

First, set the upper (defect) trip pressure: Undo the locking screw (see diagram) to allow the main adjustment wheel to rotate freely. Apply water pressure equal to the desired defect trip point and adjust the main adjustment wheel (see diagram) until the switch trips. Turning the main adjustment wheel clockwise will reduce the trip pressure.

Next, set the lower (fire) trip pressure: Apply water pressure equal to the desired fire trip point and adjust the hex adjusting screw (see diagram) until the switch trips. Turning the hex adjusting screw clockwise will increase the trip pressure.

Retest the set points a number of times to ensure correct setting. Tighten the locking screw. Retest set points.

The 'rise in pressure' switch (Type-Y only) may be adjusted in the same way as for the upper trip pressure described above without the need to set the lower trip point as the secondary switch contacts are not used.



WARNING: Do not over tighten locking screw as this can affect pressure setting.

Commissioning

Initial Powering Up

- Isolate the Brigade Interface, configure and wire as per the applicable installation manual/instructions.
- Operate the Isolate Evac Alarm switch.
- If locally powered connect the external power supply to the +12V and 0V screw terminals and switch on. Otherwise connect the PSU/LTX+ wire on the SGD to the FBA +12V screw terminal, which will power up the FBA (if the power connection to the ASE/LTX is intact).

Fault Finding

- If an input Defect or Fire LED turns on, check the wiring for that input (see Operation).
- Check the System Defect LED (see Operation) and take appropriate steps if it is on.
- If no LEDs are on, switch Isolate Evac Alarm back to normal. Check the Normal LED turns on. If not, check that power is applied to the FBA, the door is not closed, the door switch operates correctly and is connected to J9 and J10, fuse F1 is not blown, etc.
- Deisolate the Brigade Interface.

Operation

External Indicators

Active LEDs will be on steady (or flashing in low power mode). The LED driver outputs are also available on J15 screw terminals for relay driving (high power mode only).

- Normal on: FBA operating with no fire or defect conditions, and all switches in normal positions.
- Fire on: FBA is in Fire (latches until RESET).
- Defect on: FBA is in Defect (does not latch).
- All off: A manual switch is operated (including Brigade Interface Isolate or Test), or power is off.

Internal Indicators

- Normal – If there are no fire or defect conditions, and no manual switches are operated, then flashes (in low-power mode), or is on steady with a "wink" off every 8 seconds to show processor is running.
- System Defect – If any of the following defects are present, then a sequence of 4 flashes will repeat every 7 seconds. A short flash indicates that defect source is not present, and a long flash indicates that defect is present.

  Flash 1 long = Brigade presence defect – Lk4 is fitted as well as a Brigade Interface, or Lk4 is removed and no Brigade Interface is fitted.
  Flash 2 long = Internal Checksum defect (FBA main board requires factory repair).
  Flash 3 long = Silence Alarms operated. (Keyswitch on door).
  Flash 4 long = Hardware defect (FBA main board requires factory repair).

- Input Indicator LEDs – If there is a Fire or Defect condition associated with a particular input, it will be displayed (flashing in low power mode).

  The inputs are:

Anti Interference	Defect/Fire
Main Stop Valve	Defect/Fire
External Defect	Defect
Pressure Drop	Defect (Type-X only)/Fire
Pressure Rise	Fire (Type-Y only)

- Buzzer – Gives one long beep, then continuous short beeping whenever door is closed and a manual switch is operated or there is a brigade presence defect. Also beeps if any defect is present with the door closed and no brigade interface fitted.

Outputs

- Relay Driver Outputs: – (May only be used in high-power mode). +12VF common output is available to power external relays (500mA load max). Open collector transistor (0V closure) outputs are provided for Fire, Defect, and Normal. These outputs also drive the door LEDs.
- Evacuation Alarm Relay – Contacts close when FBA is in fire from a pressure switch input and the Isolate Evacuation Alarm switch is not operated. Rated to switch 5A, 30VDC.
- Fire Relay A,B – Changeover contacts operate when FBA is in Fire. Rated to 1A, 30VDC. Not isolated by controls.

NOTE: Latching relays are used for the Fire and Evacuation switched contacts, which can under extreme circumstances become locked into an incorrect state. If a relay locks off when it should be on, correct by pressing the RESET button. If a relay is locked on, when it should be off, proceed as follows:

Isolate the Brigade and disconnect any outputs that would cause disturbance if briefly operated. Do not Isolate Evacuation Alarm if Evacuation Alarm relay is locked on.

1) Generate a Fire condition (drop water pressure or remove wire from pressure switch).
2) Remove the Fire condition after a few seconds and press RESET.
3) Relays should be back to normal.

OR: 1) Short the "FIRE-" test point and/or "EVAC-" test point to 0V depending on the relay that is stuck.
2) Release short after approximately 1 second.

CONTROLS

- Silence Alarms keyswitch (External) – Prevents Evacuation Alarm relay from operating, or deactivates relay if it is on. Signals Defect.
- Isolate Anti-Interference switch – Prevents FBA from supervising Anti-Interference (Floor Isolation Valve) input, signals Defect.
- Reset pushbutton – Clears memory of any Fire or Defect conditions not currently prevailing.
- Show Latched Defects pushbutton – Adds to LED display any Defect conditions that have been recorded but are not currently present (memory is cleared by RESET).
- Isolate Evacuation Alarm switch – Prevents Evacuation Alarm relay from operating, or deactivates relay if it is on.

SPECIFICATIONS:

GENERAL

Dimensions (mm):	255h x 205w x 145d (cabinet) 310h x 205w x 150d (overall)
Cabinet Finish:	1.2mm zinc plated steel
Colour:	Signal Red (leather finish)
Shipping Weight:	5kg
Operating Temperature:	0°C to 45°C
Storage Temperature:	-20°C to 70°C (dry)
Humidity:	0% to 95% RH, non-condensing

POWER SUPPLY

Low-Power Mode:	9-16Vdc @ 3.5mA max (2mA nominal) via ASE/LTX and internal 4-wire SGD (standard or multidrop)
High-Power Mode:	9-16Vdc @ 40mA max (8mA nominal) externally supplied
Supply Supervision:	Via External Defect input from external supply

INPUTS

Anti-Interference (Floor Isolate):	10k Ohm End-of-line = Normal, open circuit = Fire, short circuit = Defect (non-latching). Up to 1km circuit wiring permitted. Fire latches without evacuation
Main Stop Valve:	10k Ohm End of Line = Normal, open circuit = Fire, short circuit = Defect (non-latching). Fire latches without evacuation
External Defect:	10k Ohm End of line = Normal, open or short circuit = Defect non-latching). Compatible with Vigilant products with DEF- supervisory output
Drop-in-Pressure Switch:	Defect (non latching) below factory setting of 1050kPa. Type-X only Fire (latching with evacuation) below factory setting of 900kPa. Adjustment range 70-1380kPa. Differential between Fire and Defect trip points adjustable 0-200kPa
Rise-in-Pressure Switch: (Type-Y only)	Fire (latching with evacuation) above factory setting of 28kPa Adjustment range 28-138kPa
Maximum System Pressure:	1720kPa (higher with field-selected pressure switches)

OUTPUTS

Brigade Interface:	10-way FRC connector compatible with Vigilant “GP” range of interface boards, which cover all brigade receiving types. Signals: Fire, Defect, Isolate, Test.
Evacuation Alarm:	One set normally open contacts, 5A, 30V. Close on pressure switch Fire
Fire Relay:	Two sets changeover contacts, 1A, 30V. Operate whenever Fire is signalled
Relay Drivers:	Open collector switch to below 1V @ 100mA, 30V; Fire, Defect, Normal. Pulse 20ms per second in low power, steady in high power mode. Also used to drive front panel LEDs.

ORDERING CODES

FP0800	Compact FBA, Type-X
FP0801	Compact FBA, Type-Y
PA0861	PCB Assembly, 1922-43, GP Brigade Relay Interface
PA0862	PCB Assembly, 1924-25, General Purpose SGD
FP0765	SERIES 1948 PSU, 12VDC, 2A

APPROVALS

The Compact FBA complies with New Zealand Standard NZS 4541:2003 “Automatic Fire Sprinkler Systems”.
VeriFire listing numbers – Type-X:436, Type-Y:437
FPANZ listing numbers – Type-X: VF/809, Type-Y: VF/810

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