




**PRINCIPLES OF OPERATION**

GEM® SAPPHIRE® COMPACT Local Alarm Units are intended to enable system installers to offer full and complete monitoring of the health and status of GEM SAPPHIRE COMPACT Fixed Fire Suppression System installations.

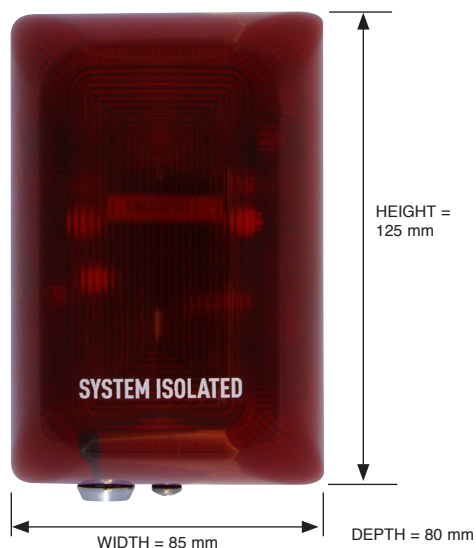
They offer alarm indications comprising of both an initial combined 30 second sounder and flashing beacon, followed by a continuous flashing beacon.

The alarm units come in three colour options for the beacon. Each colour has two base unit options that are activated by either **Normally Open (N/O)** or **Normally Closed (N/C)** switches. The three colour options are orange, blue, and red.

Alarm unit	Description
	<p><b>Orange - low pressure alarm</b></p> <p>The low pressure alarm indicates when SAPPHIRE COMPACT pressure is below the lowest normal system operating pressure. This occurs at the lowest system operating temperature. The low pressure alarm triggers through a pressure gauge with a switch contact. Use a higher pressure switch contact if two fitted.</p>
	<p><b>Blue - system discharged alarm</b></p> <p>The system discharged alarm indicates when the SAPPHIRE COMPACT system discharged. The system discharged alarm triggers through a pressure gauge with a switch contact, pressure switch, or integrated control valve activation switch. Use a lower pressure switch contact if two fitted.</p>
	<p><b>Red - system isolated alarm</b></p> <p>The system isolated alarm indicates when the SAPPHIRE COMPACT system valve is closed. The system isolated alarm triggers through an integrated ball valve position switch, where available.</p>

Part No.	Description	Notes
309150001	Low pressure alarm with orange lens	For use with <b>Normally Open</b> contacts (N/O) when conditions are good. (Contacts close on alarm).
309150002	System discharged alarm with blue lens	
309150003	System isolated alarm with red lens	
309150004	Low pressure alarm with orange lens	For use with <b>Normally Closed</b> contacts (N/C) when conditions are good. (Contacts open on alarm).
309150005	System discharged alarm with blue lens	
309150006	System isolated alarm with red lens	

**DIMENSIONS (ALL UNITS)**



**FIGURE 1**

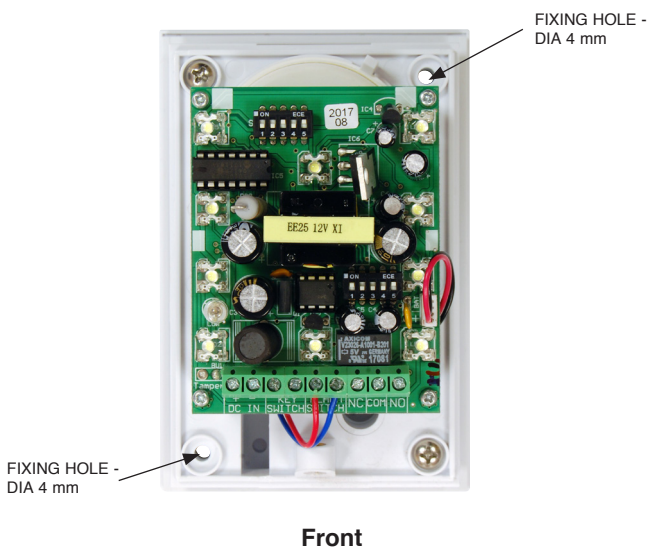
E001096

**TECHNICAL SPECIFICATIONS**

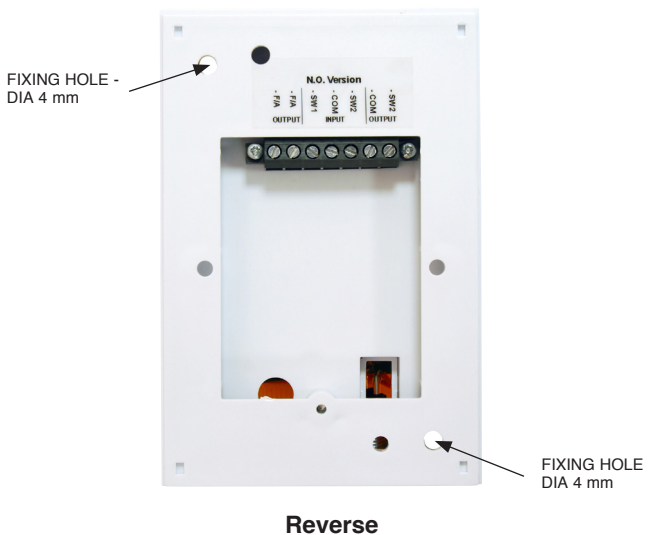
Operating voltage:	Internal power 9 VDC battery (included)
Remote power (optional on installation):	12-30 VDC, 125 mA (N/O), or 200 mA (N/C)*
Operating temperature:	0 °C - 48.9 °C
Power consumption (stand by):	50 µA (N/O); 60 µA (N/C)
Power consumption (siren):	90 mA (N/O); 200 mA (N/C)
Power consumption (strobe):	30 mA (N/O); 30 mA (N/C)
Siren voltage:	100 dB
Alarm indication:	30 s siren / strobe and continuous strobe
Low battery warning:	LED flash once every 60 s
Alarm switch:	309150001 - N/O contact required 309150002 - N/O contact required 309150003 - N/O contact required 309150004 - N/C contact required 309150005 - N/C contact required 309150006 - N/C contact required
Lens material:	Polycarbonate

**Note:** \*Polarity sensitive terminals

**FIXING THE ALARM UNIT**



**Front**



**Reverse**

**FIGURE 2**

E001097

1. Fix the alarm unit using the fixing hole locations in Figure 2.
2. Use the rawl plugs and screws provided, if appropriate, or use alternative fittings, if required.

**⚠ WARNING**

All alarm units are for indoor use only. Units must be tested periodically to verify the condition of the battery. The 9 V battery should be changed twice a year. When the battery is low, an indicator LED flashes every 60 seconds.

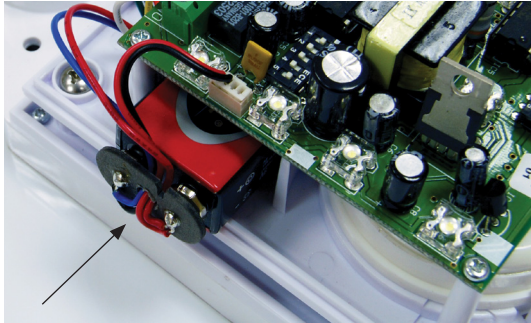
The installer must ensure that the alarm is suitable for the purposes of alarm indication in the installation environment.

All specifications and information shown are current as of the publication date and are subject to change without notice.

**COMMISSIONING**

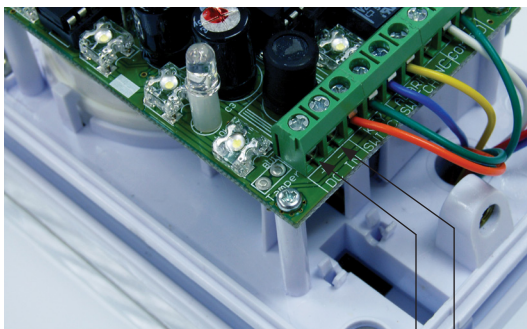
**Connecting the power supply**

- Connect a 9 V battery (supplied) to the terminals and position it as detailed in Figure 3.



**FIGURE 3**  
E001099

- **Optional:** Connect the unit to remote power (12 to 30 VDC, 125 mA (N/O) or 200 mA (N/C)).

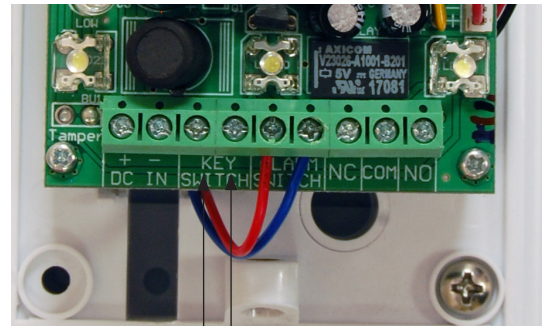


CONNECT HERE  
 NOTE: POLARITY SENSITIVE

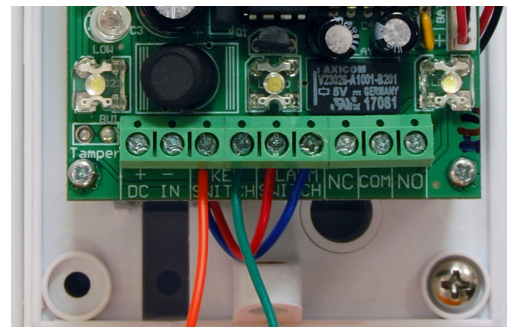
**FIGURE 4**  
E001100

**Connecting the key switch**

Connect the **orange** and **green** wires from the key switch attached to the lens.



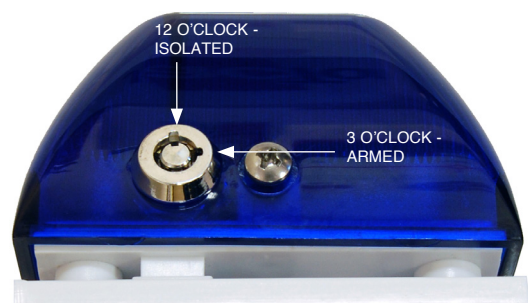
**Not connected**



**Connected**

**FIGURE 5**  
E001101

1. Using the key supplied, turn the key switch 90°, from 12 o'clock to 3 o'clock (see Figure 6), in order to set the alarm unit.
2. To service, isolate the alarm unit by turning the key switch 90° (3 o'clock to 12 o'clock).
3. To reset the alarm unit, cycle the key switch from 3 o'clock, to 12 o'clock, and then back to 3 o'clock.



**FIGURE 6**  
E001103

**ELECTRICAL INSTALLATION**

**N/O Switches**

- 309150001 - Normally Open contact
- 309150002 - Normally Open contact
- 309150003 - Normally Open contact

1. Always connect primary **inputs** to SW1 and Common on Alarm Unit 1.
2. If using a pressure gauge with two switch contacts, connect secondary **inputs** to SW2 and Common on Alarm Unit 1.
3. If required, connect SW2 and Common **outputs** to SW1 and Common **inputs** on Alarm Unit 2.
4. For Alarm Units 1 and 2, if fitted or required, connect the Fire Alarm (F/A) **output** to the Fire Alarm system.

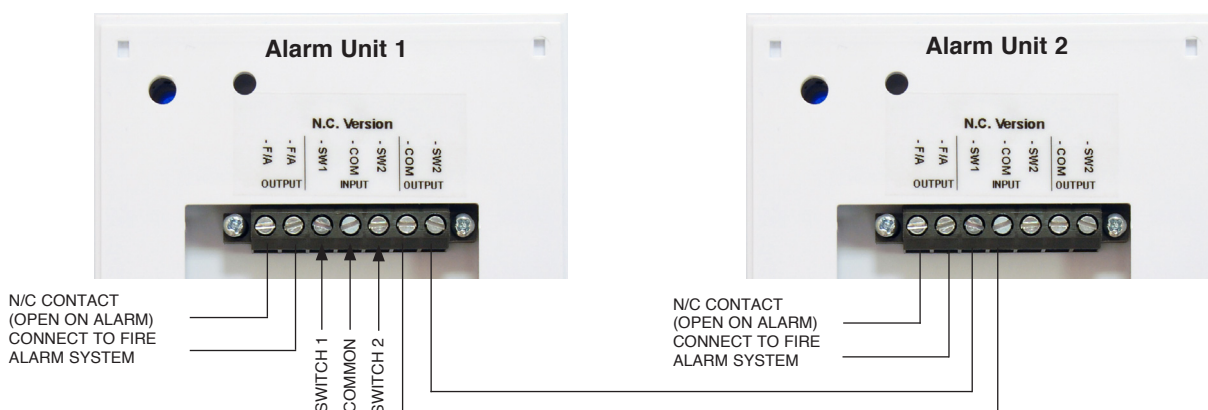


**FIGURE 7**  
E001104

**N/C Switches**






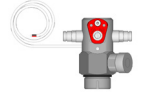






- 309150004 - Normally Closed contact
- 309150005 - Normally Closed contact
- 309150006 - Normally Closed contact

1. Always connect primary **inputs** to SW1 and Common on Alarm Unit 1.
2. If using a pressure gauge with two switch contacts, connect secondary **inputs** to SW2 and Common on Alarm Unit 1.
3. If required, connect SW2 and Common **outputs** to SW1 and Common **inputs** on Alarm Unit 2.
4. For Alarm Units 1 and 2, if fitted or required, connect the Fire Alarm (F/A) output to the Fire Alarm system.



**FIGURE 8**  
E001105

**SYSTEM MONITORING DEVICES**

				<b>Pressure gauges with switch contacts and signal generator / pressure switches</b>					
<b>Monitoring device Part No.</b>				302150001	302150002	302150003 / 302150010	302150004 / 302150011	302150005	302150008 / 302150009
<b>Monitoring device illustration</b>									
<b>Monitoring device operation</b>				Pressure gauge with switch contact, 0-40 bar, 9 bar switch point, M10x1.  N/C contacts at 15 bar nominal charge pressure.	Pressure gauge with switch contact, 0-40 bar, 9 bar switch point, M10x1.  N/O contacts at 15 bar nominal charge pressure.	Pressure gauge with two switch contacts, 0-40 bar, 4 bar and 9 bar switch points, M10x1.  N/O contacts at 15 bar nominal charge pressure.  302150010 liquid filled variant for environments subject to vibration.	Pressure gauge with two switch contacts, 0-40 bar, 4 bar and 9 bar switch points, M10x1.  N/C contacts at 15 bar nominal charge pressure.  302150011 liquid filled variant for environments subject to vibration.	Signal generator / pressure switch - 4.0 - 8.0 bar switch point, M10 x 1, 3 wire (black / red / brown), optional N/O (black and brown) or N/C (black and red) when pressure good.	<b>302150008</b> DLP valve, one outlet for detection tube, one outlet with G1/8 in. plug, with internal ball valve and sensor: open - closed (switch closed (N/C) when valve open), c/w 30 bar safety device.  <b>302150009</b> DLP valve two outlets with internal ball valve and sensor: open - closed (Switch closed (N/C) when valve open), c/w 30 bar safety device.
<b>Switch mode</b>	<b>Alarm unit illustration</b>	<b>Alarm unit Part No.</b>	<b>Alarm function</b>						
<b>N/O</b>		309150001	Low pressure alarm  Operates from N/O contact closing						
		309150002	System discharged alarm  Operates from N/O contact closing						
		309150003	System isolated alarm  Operates from N/O contact closing						
<b>N/C</b>		309150004	Low pressure alarm  Operates from N/C contact opening						
		309150005	System discharged alarm  Operates from N/C contact opening						
		309150006	System isolated alarm  Operates from N/C contact opening						

**SAPPHIRE COMPACT FIXED FIRE SUPPRESSION SYSTEM  
LOCAL ALARM UNITS**

PAGE 6 REV. 00 2019-SEP-30

**NOTES:**