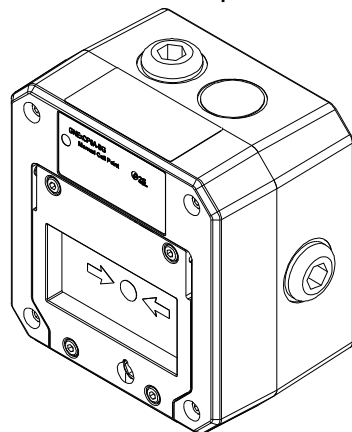


# INSTRUCTION MANUAL

## GNExCP6C-BG Break Glass Manual Call Point

### For use in Flammable Gas and Dust Atmospheres

#### GNExCP6C-BG Manual Call Point – Break Glass With Resistor Modules For use in Flammable Gas and Combustible Dust Atmospheres.



#### 1) Introduction

The GNExCP6C-BG is a break glass manual call point which is certified to the European and International Gas and Dust standards. The unit meets the requirements of the ATEX directive 2014/34/EU and IECEx scheme.

The call point can be used in hazardous areas where potentially flammable gas and dust atmospheres may be present.

All units have up to two of the following:

- Monitoring resistors up to 1.5W per module
- Monitoring diode
- Monitoring Zener diode

Units may also incorporate an LED indicator in addition to the two series and/ or EOL devices allowed.

The units are Group II, EPL (equipment protection level) Gb. The equipment is certified 'Ex db eb mb IIC T4 Gb' and as such may be used in Zones 1 and 2 with flammable gases and vapours with gas groups IIA, IIB & IIC and temperature classes T1, T2, T3 and T4.

These units are also Group III, EPL Db. The equipment is certified 'Ex tb IIIC T75°C Db' and as such may be used in Zones 21 and 22 for combustible dusts groups IIIA, IIIB & IIIC.

#### 2) Ratings & Markings

All units have a rating label, which carries the following important information: -

Unit Type No.:  
GNExCP6C-BG Manual Call Point

Input Voltages:

**Important:** See section 7.1 for current ratings


125VDC Max	0.5A Max. Resistive Load; 0.03A Max Inductive Load
75VDC Max	0.75A Max
48VDC Max	1.0A Max
24VDC Max	5.0A Max Resistive Load; 3.0A Max Inductive Load
12VDC Max	5.0A Max
6VDC Max	5.0A Max


Code:

GNExCP6C-BG  
Ex db eb mb IIC T4 Gb  
Ex tb IIIC T75°C Db  
IP66  
-40°C ≤ Ta ≤ +65°C

Certificate No.:

SIRA 09ATEX3286X  
IECEx SIR 09.0121X

Epsilon x:  II 2GD

CE Marking  2813

Year/Serial No. i.e. 20/1CP6CBG000001

**WARNING - DO NOT OPEN WHEN AN  
EXPLOSIVE ATMOSPHERE MAY BE PRESENT,  
ELECTROSTATIC HAZARD – CLEAN ONLY  
WITH A DAMP CLOTH**

#### 3) Type Approval Standards

The call point has an EC Type examination certificate issued by SIRA and have been approved to the following standards: -

EN60079-0:2018 / IEC60079-0:2017  
EN60079-1:2014 / IEC60079-1:2014  
EN60079-7:2015 / IEC60079-7:2017  
EN60079-18:2015 / IEC60079-18:2014  
EN60079-31:2014 / IEC60079-31:2013

The equipment is certified for use in ambient temperatures in the range  
GNExCP6C-BG -40°C to +65°C  
and shall not be used outside this range.

#### 4) Installation Requirements

Installation of this equipment shall only be carried out by suitably trained personnel in accordance with the applicable code of practice e.g.  
IEC 60079-14/EN 60079-14

Repair of this equipment shall only be carried out by the manufacturer or in accordance with the applicable code of practice e.g. IEC 60079-19/EN 60079-19.

Refer to certificates SIRA 09ATEX3286X and IECEx SIR 09.0121X for special conditions of safe use.

The certification of this equipment relies on the following materials used in its construction:

Enclosure: GRP - Glass Reinforced Polyester

Through enclosure mechanism: Plastic Nylon Zytel Injection Moulded

Sealing of enclosure and mechanism: O-ring Acrylonitrile-Butadiene Rubber

Potting Compound of resistors where used: Epoxy Resin

If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised.

"Aggressive substances" - e.g. acidic liquids, gases or solvents that may affect polymeric materials.

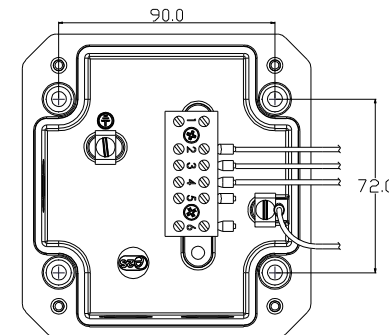
"Suitable precautions" - e.g. regular checks as part of routine inspections or establishing from the material's data sheet that it is resistant to specific chemicals.

Under extreme conditions the unit may generate an ignition-capable level of electrostatic charges. The unit must not be installed in a location where it may be subjected to external conditions (such as high-pressure steam) which may cause a build-up of electrostatic charges on non-conducting surfaces.

Cleaning of the unit must only be carried out with a damp cloth.

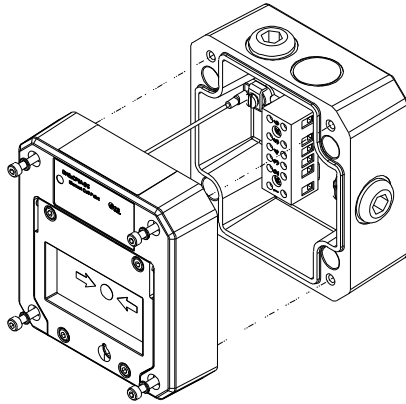
#### 5) Call Point Location and Mounting

The location of the call point should enable ease of access for operation and testing. The unit should be mounted using the 4 off fixing holes which will accept up to M5 sized fixings.



View of base unit showing fixing centres (in mm).

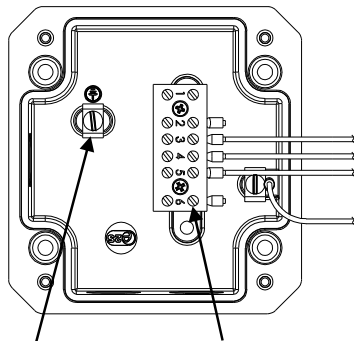
To gain access to the mounting holes in the base the front cover must be removed.  
This is achieved by removing the 4 off M4 cap head bolts holding on the cover.



Once the screws are removed the cover will hang down out of the way to gain access to the Ex e terminal block, the internal earth terminal and mounting hole recesses.

#### 6) Earthing

The unit has an internal earth terminal. It is recommended that a cable crimp lug is used on the earth wires. The internal earth wire is placed under an earth clamp which will stop the cable twisting. This is secured by an M4 screw and spring washer.



Internal Earth Terminal      Ex e terminal block

Note: Depending on options chosen an 8-Way DIN Rail or 6-Way terminal block may be selected.

#### 7) Cable connections

There are 3 off cable entries for M20x1.5 Ex e approved cable glands or stopping plugs with a minimum ingress protection of IP66

The unit can be wired in a number of different ways depending on the device combination selected.

EOL (End of line) device:  
resistor – ExxxR / diode – ED1 / zener – ExxxZ  
Series (In line) device:  
resistor – SxxxR / diode – SD1 / zener – SxxxZ / LED  
Microswitch 1 = M/S 1  
Microswitch 2 = M/S 2

The unit can be wired with a maximum of 2 module devices – refer to wiring schematic D154-06-051

When wiring to Increased Safety terminal enclosures, you are only permitted to connect one wire into each way on the terminal block unless a pair of wires are crimped into a suitable ferrule. For the six-way terminal block wire sizes allowable are 0.5mm<sup>2</sup> to 4.0mm<sup>2</sup>. For the 8-way DIN rail wire sizes allowable are 0.5mm<sup>2</sup> to 2.5mm<sup>2</sup>

Leads connected to the terminals shall be insulated for the appropriate voltage and this insulation shall extend to within 1mm of the metal of the terminal throat. They shall only be installed and wired with cable in an ambient temperature of -10°C to +80°C

All terminal screws, used or unused, shall be tightened down to between 0.5 Nm and 0.7 Nm.

Voltage option	Max Voltage	Min resistor value allowable in module Type C unit (1.5W)
6 V dc	6 V dc	27 ohms
12V dc	12 V dc	110 ohms
24V dc	24 V dc	430 ohms
48V dc	48 V dc	1K8 ohms

Table 1

#### 7.1) Current Limitations

The maximum allowable current is determined as the smallest value from the following scenarios:

1. When both module resistor values are the same as or above the minimum range of values shown in table 1, the current is not further limited.

However, when either resistor value is *lower* than those shown in table 1, the current must be limited to the values given in table 2.

Voltage option	Max Voltage	Max current when resistor values lower than minimum
6 V dc	6 V dc	250mA
12V dc	12 V dc	125mA
24V dc	24 V dc	62mA
48V dc	48 V dc	31mA

Table 2

For example, if a 24V DC unit is fitted with a series resistor of 270 ohms, the maximum current of the unit would be reduced to 62mA since the resistance is less than the minimum 430 ohms allowable at this voltage.

E2S recommends a minimum resistor value of 100 ohms for a Series device and 180 ohms for an EOL device fitted to a 24V unit.

2. If a diode module is pre-fitted as either an EOL or Series Device, the following current limitation applies:

Unit Voltage	Max. Diode Current
48V DC	0.75A
6, 12 & 24V DC	2.0A

3. If a Zener diode module is pre-fitted as either EOL or Series device, the following current limitation applies:

Zener Voltage	Max. Input Voltage	Max. Current
3.3V	56V DC	230mA
4.7V		162mA
5.1V		149mA
5.6V		136mA
6.2V		122mA
6.8V		112mA
10V		76mA
12V		63mA

4. Units with LED code 'C'

**GNExCP6C-BGXXXXXXXXXXC-XX-ExxxR-SxxxR**

Maximum current is **reduced to 20mA**. In this case, the current-limiting resistor for the LED is not present, so that to safely power the LED the maximum current must be limited.

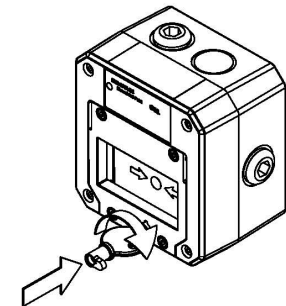
For units with LED code 'L', the current is limited by the LED current-limiting resistor. See value of this resistor in table below.

**GNExCP6C-BGXXXXXXXXXXL-XX-ExxxR-SxxxR**

LED Resistor	Max. Input Voltage
3K3 (3300 ohms)	56V DC
1K5 (1500 ohms)	28V DC

#### 8) Testing unit operation

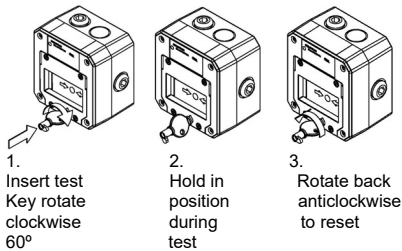
The break glass unit can be tested without the need to break/replace the frangible glass element. A test key is used to mechanically drop the glass down activating the switch.



The test key is inserted in the test cam and rotated clockwise by an angle of 60° the glass element will visibly drop down in the viewable window.

The call point switch will now change over its contacts to operate the alarm.

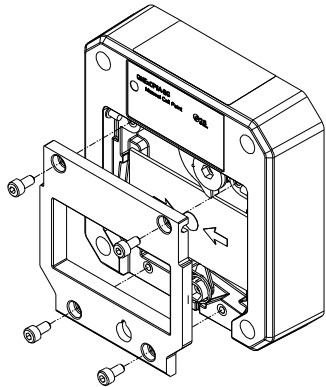
Once testing is complete the unit needs to be reset, the test key is rotated back anticlockwise by an angle of 60° back to its original position. The glass element should now raise up, so it is level again in the viewable window.



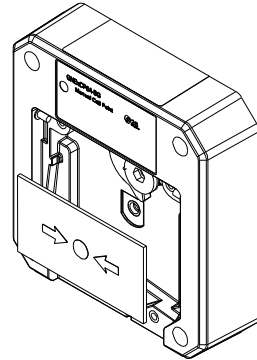
### 9) Replacement of glass element

If the break glass unit has been operated the broken glass element can be quickly replaced.

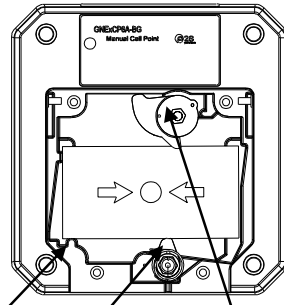
The break glass cover plate is removed by unscrewing the 4 off M4 cap head screws attaching it.



Once the cover is removed the broken glass will be free to be removed, clean out any other fragments of glass carefully.



To fit the new glass element, rotate the top cam clockwise by an angle of 50° (use a 6mm Allen key) this will then allow the glass to fit back into the pocket it sits in, resting on the pivot point and test cam, release the top cam to rest on the top of the glass element.



Pivot point Test Cam Top Cam (rotate)

Replace the cover plate and tighten the 4 off M4 cap head screws.

Ensure the glass element is free to move under the cover plate. This can be done by running through the units test operation. See section 8 of this instruction manual.

### 10) SIL 2 Reliability Data

Reliability and Functional safety IEC/EN61508 which has been assessed and is considered suitable for use in low demand safety function:

- Random Hardware Failures and Systematic Failures (route 2H)
- As an unvoted item (i.e. hardware fault tolerance of 0) at SIL 2

The product was assessed against failure modes:

- Failure to close a contact when the call point is struck with specified force
- Failure to open a contact when the call point is struck with specified force
- Spurious output despite no input

Integrity in respect of failure to close	SIL 2
Total Failure rate	0.133 pmh
"hazardous" failure rate (revealed)	0 pmh
"hazardous" failure rate (unrevealed)	0.1 pmh
"safe" failure rate (revealed)	0.033 pmh
"safe" failure rate (unrevealed)	0
Diagnostic Coverage	99%
System type	A
Hardware Fault Tolerance	0
Safe Failure Fraction	>99%
PFD (hazardous failure)	$1.25 \times 10^{-3}$
Proof Test Interval	Up to 1 year