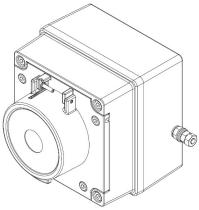


#### INSTRUCTION MANUAL

#### BExCP3C-PB Push Button Manual Call Point For use in Flammable Gas and Dust Atmospheres

## BExCP3C-PB Manual Call Point – Push Button With resistor Modules

For use in Flammable Gas and Combustible Dust Atmospheres



#### 1) Introduction

The BExCP3C-PB is a push button 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

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 & Marking

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

Unit Type No.:

BExCP3C-PB 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: BExCP3C-PB 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 CSAE 21UKEX3556X

Epsilon x:



II 2GD

CE Marking Notified Body No.  $\epsilon$ 

2813

UKCA Marking Notified Body No. UK 051

Year/Serial No. i.e. 20/1CP3CPB000001

WARNING - DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT

#### 3) Type Approval Standards

The beacon 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 BExCP3C-PB -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, IECEX SIR 09.0121X and CSAE 21UKEX3556X for special conditions of safe use.

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

Enclosure: Aluminium Pressure Die Cast Body LM6

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

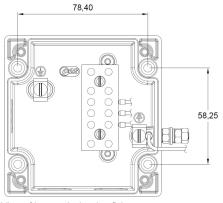
If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised.

"Aggressive substances" - e.g. acidic liquids or gases that may attack metals, 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.

#### 5) Call Point Location and Mounting

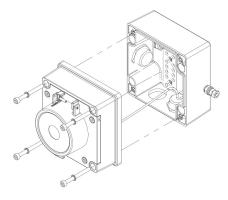
The location of the call point should enable ease of access for operation and testing. The unit should be mounted using the 4 off fixing holes which will accept up to M4 sized fixings.



View of base unit showing fixing centres.

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.

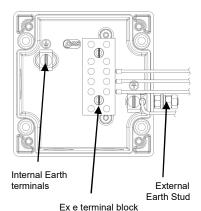
#### 6) Earthing

The unit has both internal and external earth terminals.

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 secured by an M4 screw and spring washer.

The external earth lug should be located between the two M5 washers provided and securely locked down with the M5 spring washer and two locknuts.



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 entry holes suitable 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 resistor combination selected. Refer to wiring schematic D150-06-051 for detail.

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

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 0.5mm² to 4.0mm². For the 8-way DIN rail wire sizes allowable are 0.5mm² to 2.5mm²

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:

 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.

 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

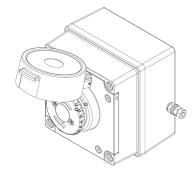
 If a Zener diode module is pre-fitted as either EOL or Series device, the following current limitation applies:

Zener	Max. Input	Max. Current
Voltage	Voltage	
3.3V		230mA
4.7V		162mA
5.1V		149mA
5.6V	56V DC	136mA
6.2V	36V DC	122mA
6.8V		112mA
10V		76mA
12V		63mA

#### 8) Testing unit operation

The push button unit can be tested without the need to replace any element.

To test, lift the cover lift flap to reveal the push button. The button should be pressed into the body to activate the unit and place it into the operated condition



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

Once testing is complete the unit needs to be reset from the operated condition.

Rotate the push button anticlockwise by an angle of 55°, see guide alignment marks on button and cover, shown below (1). The push button should pop back up to its original position.

Ensure that the push button has also twisted back clockwise by 55° to its original position see guide marks on button and cover, shown below (2). The unit is now reset.

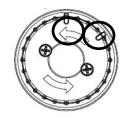




1. On operated unit Twist push button Anticlockwise 55° to reset



2. Button should pop up and twist back to original position



Note: use alignment marks circled to indicate the push button's status /position.

Unit currently shown as 'standby condition'

Resetting an operated unit is the same as resetting a tested unit.

#### 9) SIL 2 Reliability Data

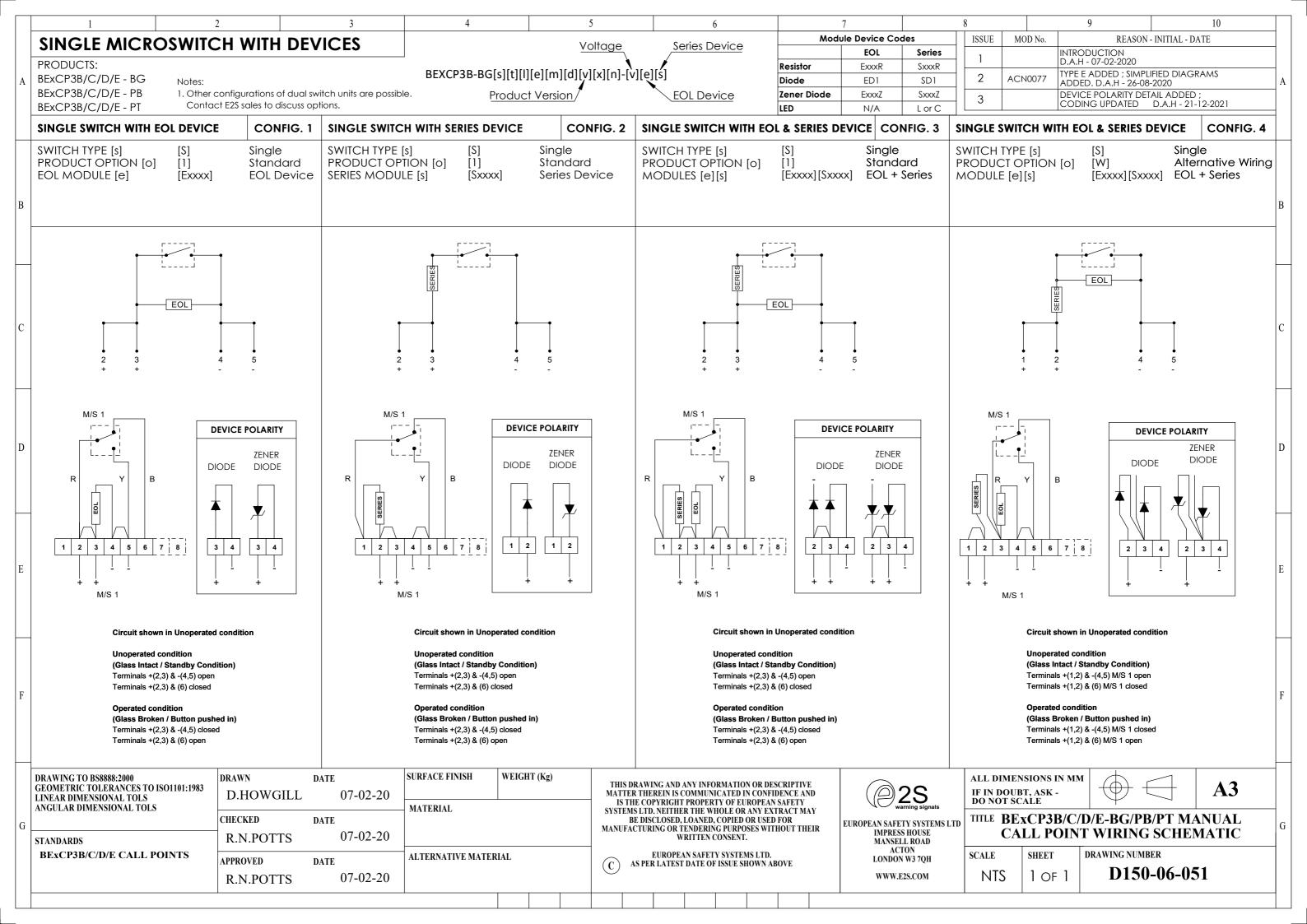
Reliability and Functional safety IEC/EN61508 which has been assessed and is considered suitable for use in low demand safety function:

- 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	SIL 2
close	
Total Failure rate	0.133 pmh
"hazardous" failure rate (revealed)	0 pmh
"hazardous" failure rate	0.1 pmh
(unrevealed)	
"safe" failure rate (revealed)	0.033 pmh
"safe" failure rate (unrevealed)	0
Diagnostic Coverage	99%
System type	Α
Hardware Fault Tolerance	0
Safe Failure Fraction	>99%
PFD (hazardous failure)	1.25 x 10 <sup>-3</sup>
Proof Test Interval	Up to 1 year



### **EU Declaration of Conformity**



Manufacturer: European Safety Systems Ltd.

Impress House, Mansell Road, Acton

London, W3 7QH **United Kingdom** 

Authorised Representative: E2S Warnsignaltechnik UG

Charlottenstrasse 45-51

72764 Reutlingen

Germany

BEXCP3A-BG, BEXCP3A-PB, BEXCP3A-PT, BEXCP3B-BG, BEXCP3B-PB, BEXCP3B-PT, **Equipment Type:** 

BEXCP3C-BG, BEXCP3C-PB, BEXCP3C-PT, BEXCP3D-BG, BEXCP3D-PB, BEXCP3D-PT,

BEXCP3E-BG, BEXCP3E-PB, BEXCP3E-PT

Directive 2014/34/EU: Equipment and Protective Systems for use in Potentially Explosive Atmospheres (ATEX)

Notified Body for EU type Examination (Module B): Sira Certification Service

Notified Body No.: 2813

CSA Group Netherlands B.V, Utrechtseweg 310, 6812 AR, Arnhem, Netherlands

EU-type Examination Certificate (Module B): SIRA 09ATEX3286X

Notified Body for Quality Assurance Notification / Conformity to EU-type

Sira Certification Service Notified Body No.: 2813

quality assurance of the production process (Module D):

CSA Group Netherlands B.V, Utrechtseweg 310, 6812 AR, Arnhem, Netherlands

Quality Assurance Notification (Module D): SIRA 05 ATEX M342

Provisions fulfilled by the equipment: BExCP3A: II 2G Ex db eb IIC T6 Gb (-40°C  $\leq$  Ta  $\leq$  +70°C)

II 2D Ex tb IIIC T75°C Db (-40°C  $\leq$  Ta  $\leq$  +70°C)

BExCP3B: II 2G Ex db eb mb IIC T4 Gb (- $40^{\circ}$ C  $\leq$  Ta  $\leq$  + $50^{\circ}$ C)

II 2D Ex tb IIIC T60°C Db (-40°C  $\leq$  Ta  $\leq$  +50°C)

BExCP3C: II 2G Ex db eb mb IIC T4 Gb (-40°C  $\leq$  Ta  $\leq$  +65°C)

II 2D Ex tb IIIC T75°C Db (-40°C  $\leq$  Ta  $\leq$  +65°C)

BExCP3D: II 2G Ex db eb mb IIC T4 Gb (-40°C  $\leq$  Ta  $\leq$  +70°C)

II 2D Ex tb IIIC T80°C Db (-40°C  $\leq$  Ta  $\leq$  +70°C)

BExCP3E: II 2G Ex db eb mb IIC T4 Gb (-40°C  $\leq$  Ta  $\leq$  +65°C)

II 2D Ex tb IIIC T75°C Db (-40°C  $\leq$  Ta  $\leq$  +65°C)

Standards applied: EN IEC 60079-0:2018

EN 60079-1:2014 EN 60079-7:2015/A1:2108 IEC 60079-18:2015/AC:2018

EN 60079-31: 2014

IP6X Dust Protection to EN60079-0 / EN 60079-31

Directive 2014/30/EU: Electromagnetic Compatibility Directive (EMC)

Standards applied: EN 61000-6-1:2007

EN 61000-6-2:2005

EN 61000-6-3:2007 / A1:2011 / AC: 2012

EN 61000-6-4:2007 / A1:2011

Directive 2011/65/EU: Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

The product and all the components contained within it are in accordance with the restriction of the use of hazardous substances in electrical and electronic equipment, including amendment by Directive 2015/863/EU.

### **EU Declaration of Conformity**



#### Regulation (EC) 1907/2006: Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

The product and all the components contained within it are free from substances of very high concern.

#### Other Standards and Regulations

EN 60529:1992+A2:2013 - Degrees of protection provided by enclosures (IP code) – enclosure rated IP66
Construction and design requirements according to EN54-11:2001 clause 4.7 – BExCP3A-BG / B-BG / C-BG / D-BG only (fitted with burning house symbol shown in figure 3a and no lift flap)

On behalf of European Safety Systems Ltd., I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives, regulations and standards.

This Declaration is issued under the sole responsibility of the manufacturer.

Martin Streetz

Quality Assurance Manager

Document No.: DC-0
Date and Place of Issue: Lond

DC-007\_lssue\_N London, 23/12/2020



## UKCA Declaration of Conformity



Manufacturer: European Safety Systems Ltd.

Impress House, Mansell Road, Acton

London, W3 7QH **United Kingdom** 

**Equipment Type:** BEXCP3A-BG, BEXCP3A-PB, BEXCP3A-PT, BEXCP3B-BG, BEXCP3B-PB, BEXCP3B-PT,

BEXCP3C-BG, BEXCP3C-PB, BEXCP3C-PT, BEXCP3D-BG, BEXCP3D-PB, BEXCP3D-PT,

BExCP3E-BG, BExCP3E-PB, BExCP3E-PT

Directive UKSI 2016:1107 (as amended by UKSI 2019:696) - Schedule 3A, Part 1: Product or Protective System Intended for use in Potentially Explosive Atmospheres (UKCA)

Notified Body for UK type Examination (Module B): Sira Certification Service

Notified Body No.: 0518

Sira Certification Service

Rake Lane, Eccleston, Chester CH4 9JN, UK

CSAE 21UKEX3556X UK-type Examination Certificate (Module B):

Notified Body for Quality Assurance Notification / Conformity to EU-type

based on

quality assurance of the production process (Module D):

Notified Body No.: 0518

Rake Lane, Eccleston, Chester CH4 9JN, UK

Quality Assurance Notification (Module D): CSAE 22UKQAN0046

Provisions fulfilled by the equipment: BExCP3A: II 2G Ex db eb IIC T6 Gb (-40°C  $\leq$  Ta  $\leq$  +70°C)

II 2D Ex tb IIIC T75°C Db (-40°C  $\leq$  Ta  $\leq$  +70°C)

BExCP3B: II 2G Ex db eb mb IIC T4 Gb (-40°C  $\leq$  Ta  $\leq$  +50°C)

II 2D Ex tb IIIC T60°C Db (-40°C  $\leq$  Ta  $\leq$  +50°C)

BExCP3C: II 2G Ex db eb mb IIC T4 Gb (- $40^{\circ}$ C  $\leq$  Ta  $\leq$  + $65^{\circ}$ C)

II 2D Ex tb IIIC T75°C Db (-40°C  $\leq$  Ta  $\leq$  +65°C)

BExCP3D: II 2G Ex db eb mb IIC T4 Gb (- $40^{\circ}$ C  $\leq$  Ta  $\leq$  + $70^{\circ}$ C)

II 2D Ex tb IIIC T80°C Db (-40°C  $\leq$  Ta  $\leq$  +70°C)

BExCP3E: II 2G Ex db eb mb IIC T4 Gb (-40°C  $\leq$  Ta  $\leq$  +65°C)

II 2D Ex tb IIIC T75°C Db (-40°C  $\leq$  Ta  $\leq$  +65°C)

Standards applied: EN IEC 60079-0:2018

EN 60079-1:2014 EN 60079-7:2015/A1:2108 IEC 60079-18:2015/AC:2018

EN 60079-31: 2014

IP6X Dust Protection to EN60079-0 / EN 60079-31

Directive 2014/30/EU: Electromagnetic Compatibility Directive (EMC)

Standards applied: EN 61000-6-1:2007

EN 61000-6-2:2005

EN 61000-6-3:2007 / A1:2011 / AC: 2012

EN 61000-6-4:2007 / A1:2011

Directive 2011/65/EU: Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

The product and all the components contained within it are in accordance with the restriction of the use of hazardous substances in electrical and electronic equipment, including amendment by Directive 2015/863/EU.

Regulation (EC) 1907/2006: Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

The product and all the components contained within it are free from substances of very high concern.



# UKCA Declaration of Conformity



#### Other Standards and Regulations

EN 60529:1992+A2:2013 - Degrees of protection provided by enclosures (IP code) – enclosure rated IP66 Construction and design requirements according to EN54-11:2001 clause 4.7 – BExCP3A-BG / B-BG / C-BG / D-BG only (fitted with burning house symbol shown in figure 3a and no lift flap)

On behalf of European Safety Systems Ltd., I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives, regulations and standards.

This Declaration is issued under the sole responsibility of the manufacturer.

**Quality Assurance Manager** 

Document No.: Date and Place of Issue: DC-093\_Issue\_A London, 24/02/2022