

**STExCP8-BG**

## 1) Warnings



- USE COVER BOLTS CLASS A4-70
- DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT
- POTENTIAL ELECTROSTATIC HAZARD
- ALL ENTRIES M20 X 1.5
- DO NOT OPEN WHEN ENERGIZED
- IF TEMPERATURE EXCEEDS 70°C AT ENTRY OR 80°C AT BRANCHING POINT USE SUITABLE RATED CABLE AND CABLE GLANDS

## 2) Rating & Marking Information

### 2.1 ATEX / IECEx Certification

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

**Model No.:** STExCP8-BG-S (Single Switch)  
 STExCP8-BG-D (Dual Switch)

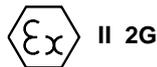
**Input Voltage:** DC Units 48Vdc Max  
 AC Units 250Vac max (units without series or end-of-line devices only)

**STExCP8-BG-S Codes:**  
 Ex db IIC T6 Gb Ta. -55°C to +70°C

**STExCP8-BG-D Codes:**  
 Ex db IIC T5 Gb Ta. -55°C to +70°C  
 Ex db IIC T6 Gb Ta. -55°C to +60°C

**Certificate No.** DEMKO 15 ATEX 1589X  
 IECEx ULD 15.0018X

ATEX Marking  
 Equipment Group and  
 Category:



CE Marking  
 Notified Body No.



The units can be installed in locations with the following conditions:

### Area Classification Gas:

Zone 1	Explosive gas air mixture likely to occur in normal operation.
Zone 2	Explosive gas atmosphere not likely to occur in normal operation but may be present for short periods.

### Gas Groupings:

Group IIA	Propane
Group IIB	Ethylene
Group IIC	Hydrogen and Acetylene

### Temperature Classification:

T1	450°C
T2	300°C
T3	200°C
T4	135°C
T5	100°C
T6	85°C (For Dual Switch models only up to Tamb 60°C)

**IP Rating:** IP66/67 to EN/IEC60529 and IP6X to EN/IEC60079-0, EN/IEC60079-31

**Equipment Category:** 2G

**Equipment Protection Level:** Gb

**Ambient Temperature Range:**  
 -55°C to +70°C Gas Groups IIA, IIB and IIC

### 2.2 DNV GL Type Approval

The units have been tested and approved for the installation on ships in the following locations:

**Temperature:** Class A,B,C & D (all locations including open decks and masts)

**Humidity:** Class A & B (all locations)

**Vibration:** Class A (all locations except installation on machinery such as combustion engines, compressors, pumps, including piping on such machinery)

**EMC:** Class A & B (all locations including open decks and bridge)

**Enclosure:** Class A, B & C – IP56 (all locations expect submerged applications and bilges)

### 3) Type Approval Standards

The beacon carries an EC Type Examination Certificate and IECEx Certificate of Conformity, and have been certified to comply with the following standards:

EN60079-0:2012+A11:2013 / IEC60079-0:2011 (Ed 6):  
Explosive Atmospheres - Equipment. General requirements

EN60079-1:2014 / IEC60079-1:2014 (Ed 7):  
Explosive Atmospheres - Equipment protection by flameproof enclosures "d"

### 4) Installation Requirements

The beacon must only be installed by suitably qualified personnel in accordance with the latest issues of the relevant standards:

EN60079-14 / IEC60079-14: Explosive atmospheres -  
Electrical installations design, selection and erection

EN60079-10-1 / IEC60079-10-1: Explosive atmospheres -  
Classification of areas. Explosive gas atmospheres

The installation of the beacon must also be in accordance with any local codes that may apply and should only be carried out by a competent electrical engineer who has the necessary training.

The equipment must not be installed with any obstruction to the flanged flameproof joint any closer than permitted as per EN/IEC60079-14, table 13.

### 5) Special Conditions of Use

On completion of the installation the flameproof joint surfaces should be inspected to ensure that they are clean and that they have not been damaged during installation. Flameproof joints are not permitted to be repaired.

When fitting the flameproof cover ensure the cover is sitting flat and correctly positioned on the base. Insert the M6 x 40 cover bolts and fully tighten down (tightening torque 8.8Nm), ensuring no gap is visible between the cover and base of the enclosure.

The metallic enclosure has a non-conductive coating. These may generate an ignition-capable level of electrostatic charges under certain extreme conditions. The user should ensure that the equipment is not installed in a location where it may be subjected to external conditions that might cause a build-up of electrostatic charges on non-conducting surfaces.

Additionally, cleaning of the equipment should be done only with a damp cloth.

The M12 Cap fitted to the top side of the unit is not a user serviceable part and must not be removed during installation and maintenance.

### 6) 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. They should only be fixed to services that can carry the weight of the unit.

To gain access to the mounting holes in the base the front cover must be removed. See Section 7.

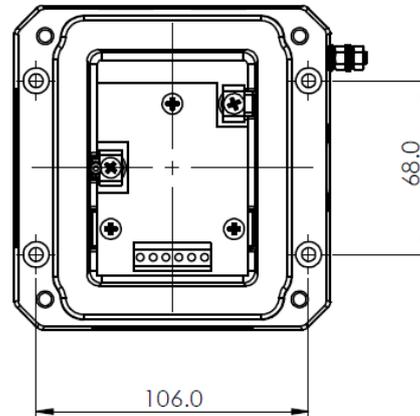


Fig. 1 View of base unit showing fixing centres (in mm).

### 7) Access to the Flameproof Enclosure



Warning – High voltage may be present, risk of electric shock. DO NOT open when energised, disconnect power before opening.



Warning – Hot surfaces. External surfaces and internal components may be hot after operation, take care when handling the equipment.

To access the Ex d chamber, remove the four off M6 x 40 hexagon socket head screws and withdraw the flameproof cover taking extreme care not to damage the flameproof faces in the process. M6 cover screws are Class A4-70 stainless steel and only screws of this category can be used for the enclosure.

On completion of the installation, the flameproof joints should be inspected to ensure that they are clean and that they have not been damaged during installation.

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

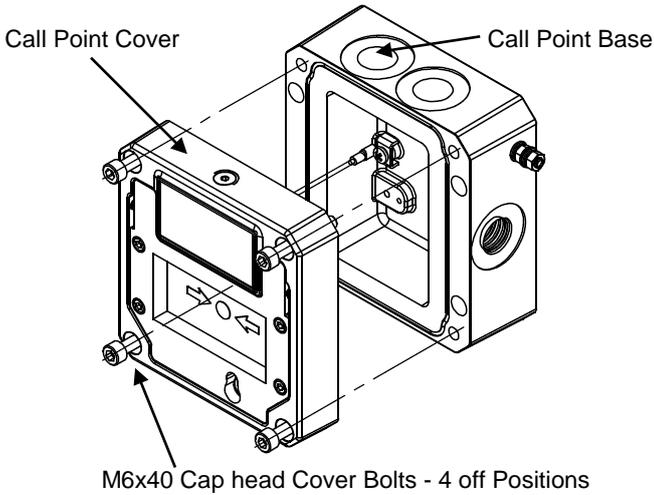


Fig. 2 Accessing the Explosion proof Enclosure.

Check that the earth bonding wire between the two castings is secure and the 'O' ring seal is in place. When replacing the flameproof cover casting ensure that it is square with the flameproof chamber casting before inserting. Carefully place the cover on the base. Only after the cover is fully in place should the four M6 Stainless Steel A4-70 cover bolts and their spring washer be tightened down. Never use the cover bolts to force the cover into position.

## 8) Earthing

The units are provided with internal and external earth terminals which are mounted in the base of the unit.

Internal earthing connections should be made to the Internal Earth terminal in the base of the housing using a ring crimp terminal to secure the earth conductor under the earth clamp. The earth conductor should be at least equal in size and rating to the incoming power conductors. When using the internal earth terminal ensure that the stainless steel M4 flat washer is between the incoming earth wire and the enclosure.

External earthing connections should be made to the M5 earth stud, using a ring crimp terminal to secure the earth conductor to the earth stud. The external earth conductor should be at least 4mm<sup>2</sup> in size.

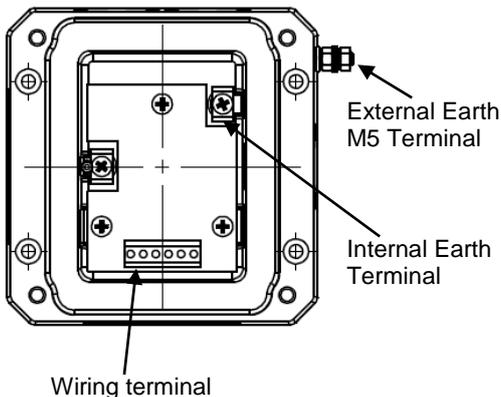


Fig 3 Earth terminals

## 9) Power Supply Selection

### Electrical Ratings

250Vac max. / 5.0A max  
48Vdc max. / 1.0A max  
24Vdc max / 3.0A max

A supply voltage variation of +/-10% outside the voltage range is permissible.

Electrical connections are to be made into the terminal blocks / DIN rail provided. See Section 15 for wiring options.

## 10) Selection of Cable, Cable Glands, Blanking Elements & Adapters

For high ambient temperatures the cable entry temperature may exceed +70°C or the cable branching point temperature may exceed 80°C and therefore suitable heat resisting cables and cable glands must be used, with a rated service temperature of at least the values stated below:

For Single Switch models STEXCP8-BG-S:

Max. ambient temperature	65°C	70°C
req. Cable / Cable Gland rating:	80°C	85°C

For Dual Switch models STEXCP8-BG:

Max. ambient temperature	50°C	55°C	60°C	65°C	70°C
req. Cable / Cable Gland rating:	80°C	85°C	90°C	95°C	100°C

The cable gland entries have an M20 x 1.5 entry thread. Only suitably rated and ATEX / IECEx certified cable glands which must be suitable for the type of cable being used and also meet the requirements of the current Ex 'd' flameproof installation standards EN 60079-14 / IEC60079-14.

When only one cable entry is used the other entries must be closed with suitably rated and ATEX / IECEx certified blanking plugs.

If a high IP (Ingress Protection) rating is required then a suitable sealing washer must be fitted under the cable glands or blanking plugs.

The STEXCP8 Call Point range can be supplied with the following types of adapters:

M20 to 1/2" NPT  
M20 to 3/4" NPT  
M20 to M25

It is important to note that stopping plugs cannot be fitted onto adapters, only directly onto the M20 entries.

Any other adapters used must be suitably rated and ATEX / IECEx certified adapters.

## 11) Cable Connections

Electrical connections are to be made into the terminal blocks on the PCBA located in the flameproof enclosure. See section 7 of this manual for access to the flameproof enclosure.

Wires having a cross sectional area between 0.5 mm<sup>2</sup> to 2.5mm<sup>2</sup> can be connected to each terminal way.

If an input and output wire is required the 2-off Live/Neutral or +/- terminals can be used. If fitting 2-off wires to one terminal way the sum of the 2-off wires must be a maximum cross sectional area of 2.5mm<sup>2</sup>. Strip wires to 8mm. Wires may also be fitted using ferrules. Terminal screws need to be tightened down with a tightening torque of 0.45 Nm / 5 Lb-in. When connecting wires to the terminals great care should be taken to dress the wires so that when the cover is inserted into the chamber the wires do not exert excess pressure on the terminal blocks. This is particularly important when using cables with large cross sectional areas such as 2.5mm<sup>2</sup>.

## 12) Wiring Unit

The units come with two options for the terminal block. A DIN rail version which has 8-way connection and allows for limited wiring of EOL devices. The PCB Terminal Version has a 6-way connector but is designed to allow for full configuration with Series and EOL devices in a number of wiring configurations.

For EOL and Series device limitations and configurations see Section 15.  
For full wiring details see wiring diagrams page 7.

### Wiring Diagram For 8-Way DIN Rail

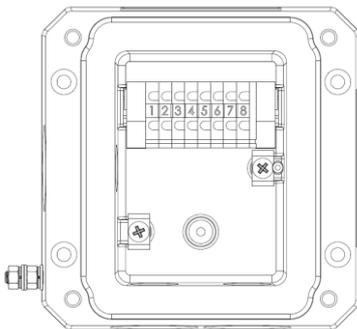


Fig. 4 DIN Rail in Base

### Wiring Diagram For 6-Way PCB Terminal Board

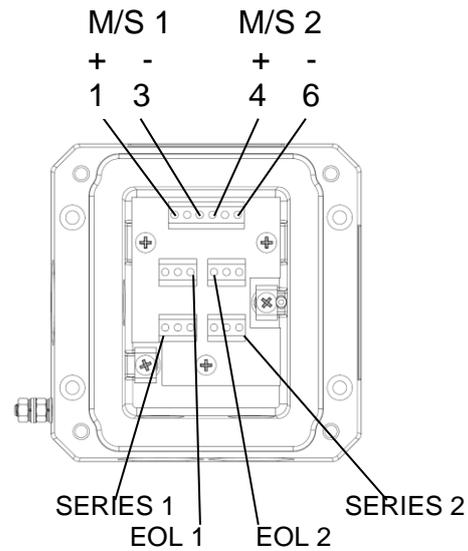
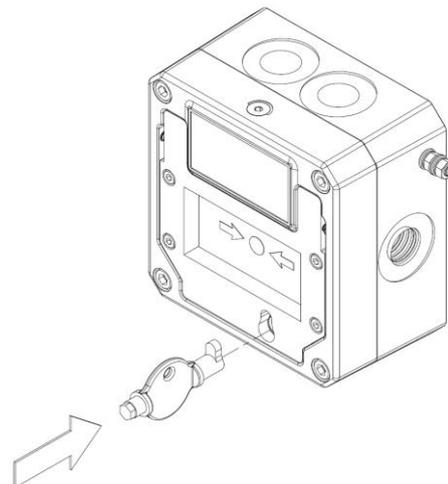


Fig. 5 PCB Terminal Block in Base

See section 15 and page 7 for details of adding Series and EOL devices on the PCB. This can either be done at the order stage or added to the correct terminal blocks afterward (see example on sheet 7). All devices must comply with the requirements stipulated in section 15.

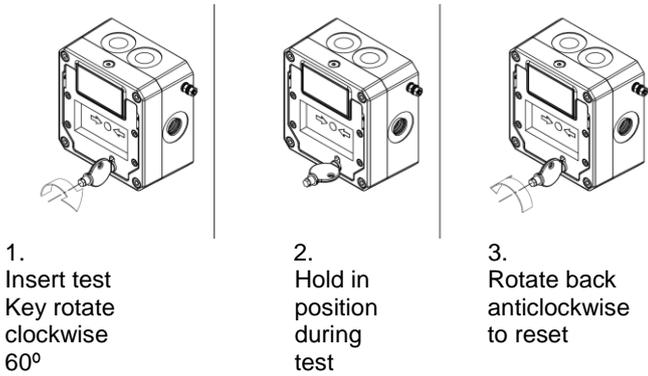
## 13) Testing unit operation

The break glass unit can be tested without the need to break/replace the frangible glass element. A test key (Plastic Key Supplied with unit) 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 90° 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 90° to its original vertical position. The glass element should now raise up so it is level again (horizontal) in the viewable window.

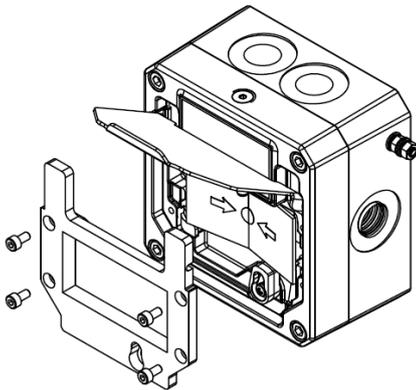


1. Insert test Key rotate clockwise 60°
2. Hold in position during test
3. Rotate back anticlockwise to reset

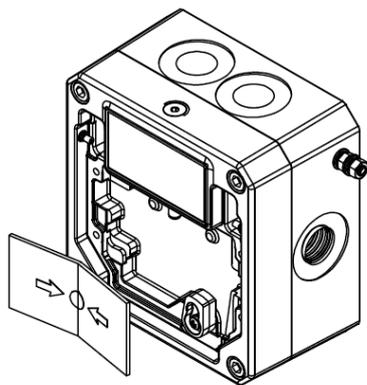
### 14) Replacement of glass element

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

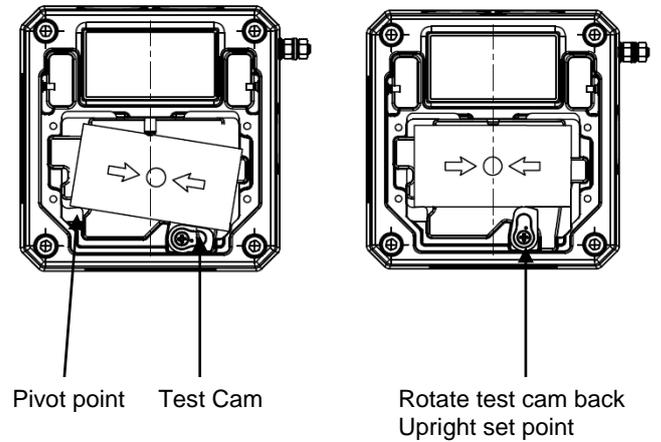
The break glass cover plate is removed by unscrewing the 4 off M4 cap head screws attaching it.



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 Rotate test cam back Upright set point

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 13 of this instruction manual.

## 15) End-of-Line and Series Devices

All models can be fitted with series resistors, end-of-line monitoring resistors, monitoring diodes and zener diodes if supplied with direct current up to 48Vdc.

Min. resistor values and current limitations must be observed depending on supply voltage and type of components fitted. If a combination of resistors / diodes / zener diodes is used, values for all components must be observed and lowest current limit for either component becomes overall limit.

Current limitation for units fitted with end-of-line resistors, diodes or zener diodes must be ensured by using a current limited power supply or fitting a current limiting resistor at the control panel (not provided).

The following table 1 shows limitations for all possible variations:

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 4 module devices – see wiring diagrams.

Note:- The maximum voltage stated must not be exceeded, as the internal resistor modules are rated as compliant with Ex d according to the units voltage

Please refer to wiring diagrams on sheets 4 & 7.

## 16) Maintenance, Overhaul & Repair

Maintenance, repair and overhaul of the equipment should only be carried out by suitably qualified personnel in accordance with the current relevant standards:

- EN60079-19 Explosive atmospheres - Equipment repair, overhaul and reclamation  
IEC60079-19
- EN 60079-17 Explosive atmospheres - Electrical installations inspection and maintenance  
IEC60079-17

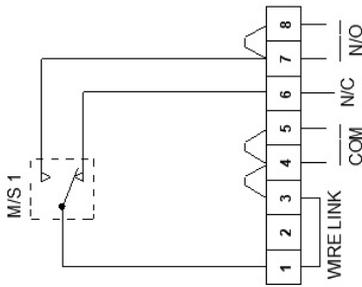
To avoid a possible ELECTROSTATIC CHARGE the unit must only be cleaned with a damp cloth.

Units must not be opened while an explosive atmosphere is present.

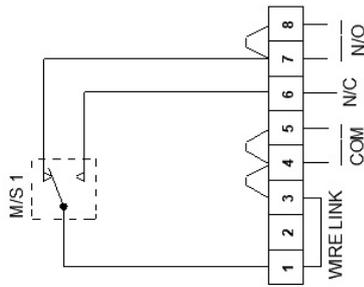
Type of component fitted	Supply voltage 24Vdc		Supply voltage 48Vdc	
	value	Max. current	value	Max. current
End-of-Line Resistor *See note	min. 470R / 2W or min. 2k2 / 0.5W	3.0 A	min. 2k2 / 2W or min. 8k2 / 0.5W	1.0 A
End-of-Line Diode Type 1N5401	2W	59.13 mA	2W	25.26 mA
Series Resistor *See note	min. 470R / 2W or min. 2k2 / 0.5W	3.0 A	min. 2k2 / 2W or min. 8k2 / 0.5W	1.0 A
Series Diode Type 1N5401	2W	59.13 mA	2W	25.26 mA
Series Zener Diode Type 1N5333B	3.3V	230 mA	3.3V	230 mA
	4.7V	162 mA	4.7V	162 mA
	5.1V	149 mA	5.1V	149 mA
	5.6V	136 mA	5.6V	136 mA
	6.2V	122 mA	6.2V	122 mA
	6.8V	112 mA	6.8V	112 mA
	10V	76 mA	10V	76 mA
	12V	63 mA	12V	63 mA

\* note :- EOL and series resistor values are listed as the minimum resistor value allowable at the specified minimum wattage.

Standard Unit as supplied by E2S Without Series /EOL Devices

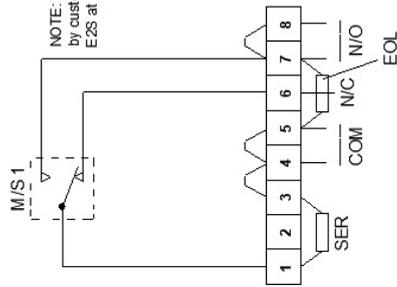


1A - Circuit as shown in Unoperated condition Terminals (4/5) & (7/8) open Terminals (4/5) & (6) closed

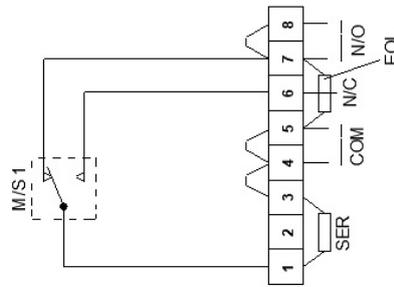


1B - Circuit as shown in Unoperated condition Terminals (4/5) & (7/8) closed Terminals (4/5) & (6) open

Standard Unit showing positions of optional Series / EOL Devices

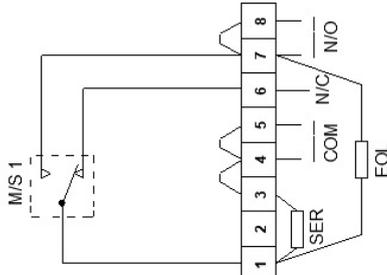


2A - Circuit as shown in Unoperated condition Terminals (4/5) & (7/8) open Terminals (4/5) & (6) closed

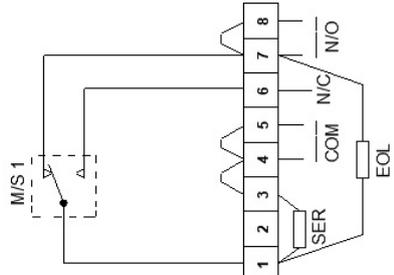


2B - Circuit as shown in Unoperated condition Terminals (4/5) & (7/8) closed Terminals (4/5) & (6) open

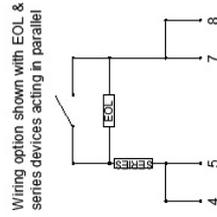
Standard Unit with suggested Series / EOL Devices - Alternative Configuration



3A - Circuit as shown in Unoperated condition Terminals (4/5) & (7/8) open Terminals (4/5) & (6) closed

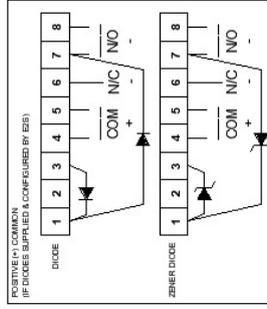


3B - Circuit as shown in Operated condition Terminals (4/5) & (7/8) closed Terminals (4/5) & (6) open



Wiring option shown with EOL & series devices acting in parallel

When fitting diodes or zener diodes, polarity across devices must be observed (Resistor polarity is unimportant)

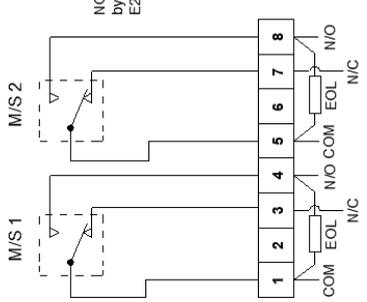
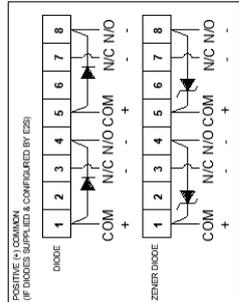


POSITIVE (+) COMMON (IF DIODES SUPPLIED CONFIGURED BY E2S)

DIODE

ZENER DIODE

COM N/C NO

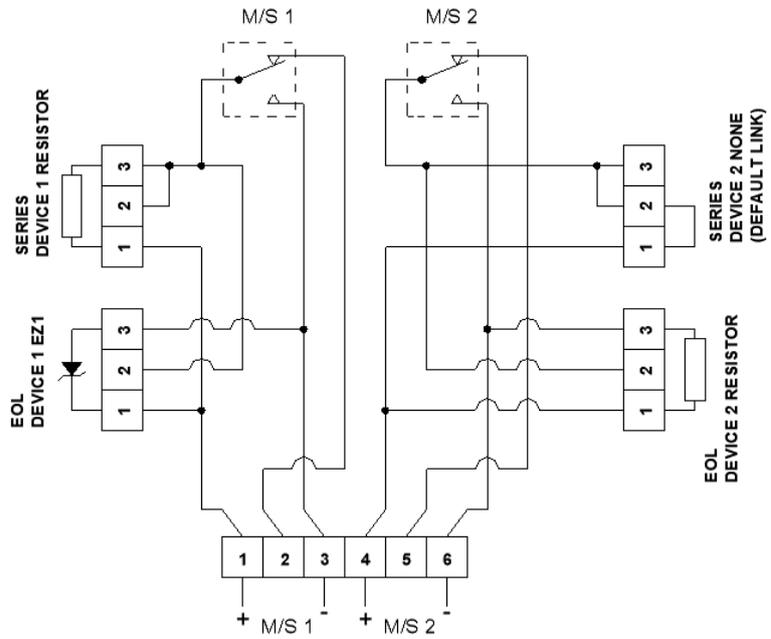
STEXCP8 [ ] [X] [D]	SWITCH TYPE: [D] - Double Microswitch	TERMINAL TYPE [D] - DIN RAIL	STEXCP8 [ ] [X] [D]	SWITCH TYPE: [X] - SPECIAL ORDER	TERMINAL TYPE [D] - DIN RAIL
<p>Standard Unit showing positions of optional Series / EOL Devices</p>  <p>NOTE: These can be fitted either by customer or pre-installed by E2S at point of order.</p>			<p>Other wiring configurations are available pre-configured (e.g. Dual switch configured with series and EOL devices)</p> <p>Contact E2S sales for special wiring request</p>		
<p>4A - Circuit as shown in Unoperated condition Terminals (1) &amp; (4) M/S 1 and (5) &amp; (8) M/S 2 open Terminals (1) &amp; (3) M/S 1 and (5) &amp; (7) M/S 2 closed</p>	<p>When fitting diodes or zener diodes, polarity across devices must be observed (Resistor polarity is unimportant)</p> 				
<p>4B - Circuit as shown in Operated condition Terminals (1) &amp; (4) M/S 1 and (5) &amp; (8) M/S 2 closed Terminals (1) &amp; (3) M/S 1 and (5) &amp; (7) M/S 2 open</p>					

STExCP8 [ ] [S] [P]  
STExCP8 [ ] [D] [P]

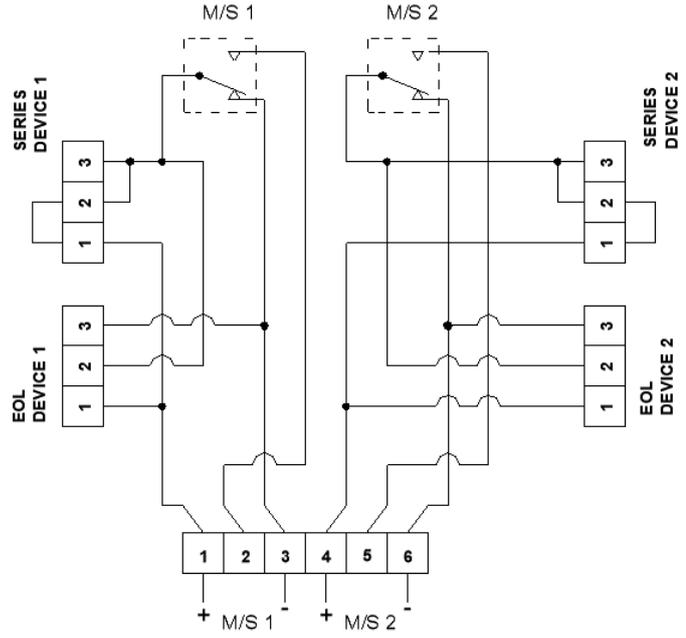
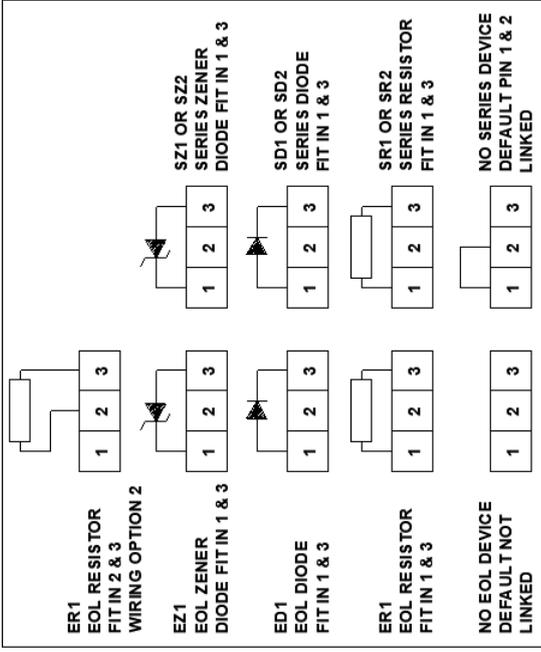
SWITCH TYPE: [S] - Single Microswitch  
SWITCH TYPE: [D] - Double Microswitch

TERMINAL TYPE [P] - PCB  
TERMINAL TYPE [P] - PCB

Optional Single or Double Microswitch  
Circuit shown with Double Microswitch, Unit un-operated : STExCP8 PCB Version



5A - Circuit as shown in Unoperated condition  
Terminals +(1) & -(3) M/S 1 and +(4) & -(6) M/S 2 open  
Terminals +(1) & (2) M/S 1 and +(4) & (5) M/S 2 closed



5B - Circuit as shown in Operated condition  
Terminals +(1) & (2) M/S 1 and +(4) & (5) M/S 2 open  
Terminals +(1) & -(3) M/S 1 and +(4) & -(6) M/S 2 closed