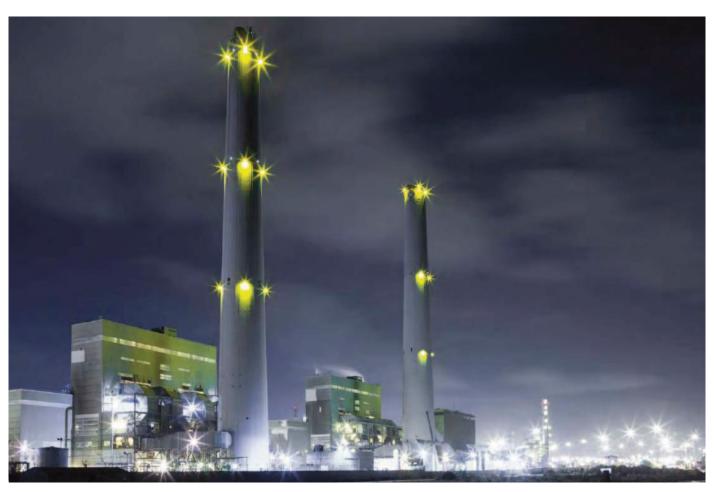
Manual Alarm Call Points

MEDC provide a range of manual alarm call points specifically designed for the purpose of raising an alarm in the case of an emergency in a hazardous area.

The call points can be made from a selection of materials depending on project specification, including glass reinforced polyester (GRP), a light weight and corrosion free material, allowing easy installation and low maintenance cost, and stainless steel, a heavy duty, long wearing material with an increased life span.

All of MEDC's call points have an IP rating of 66/67 and can be certified to one of our worldwide accreditations, including ATEX and IECEx. There are also options for the inclusion of LED status indicators and addressable location (or address) within the unit and many can be painted a variety of colours to the customer's specification.



Range Certifications

PRODUCT	ATEX	IECEx	UL	ULC	CSA	Inmetro	CUTR	CQST	ABS	SIL	IP Rating	Page
Manual Alarm Call	Manual Alarm Call Points											
SM87 PB											66 / 67	14
SM87 BG											66 / 67	14
PH1											66 / 67	16
РВ											66 / 67	18
BG											66 / 67	20
BG2											66 / 67	22
BG3											66 / 67	24















SM87 BG & PB Range - MANUAL CALL POINTS

Crouse-Hinds

Ex d, Intrinsically Safe (Ex ia), Weatherproof



Introduction

These manual fire alarm, emergency shutdown break-glass and pushbutton units have been designed for the most arduous environmental conditions. The units are both easy to install and maintain. Intrinsically safe Ex ia and flameproof Ex d versions of each model are available.

A choice of either stainless steel or alloy makes the range suitable for either the offshore or onshore industries. Stainless steel, one of the most durable materials available on the market, is both hard wearing and corrosion resistant, increasing the life of products in harsh environments and therefore reducing maintenance costs.

Stainless steel, one of the most durable materials available on the market, is both hard wearing and corrosion resistant, increasing the life of products in harsh environments and therefore reducing maintenance costs.

Features

- Zone 0, Zone 1 and Zone 2 use*.
- Ex d IIC T5/T6 or Ex ia IIC T4.
- ATEX approved, Ex II 1G (Ex ia) Ex II 2GD (Ex d).
- BASEEFA certified.
- UL listed for USA and Canada (PB only), Class I, Div 1, Groups C & D.
- ULC certified for Class I, Zone 1 Groups C & D.
- CSA certified.
- IECEx certified Gb, Db.
- CUTR certified.
- Chinese (CQST) certified.
- Brazilian (Inmetro) certified.
- SIL 2 pending. (Contact MEDC for details).
- IP66 and IP67.
- Certified temperature: -55°C to +70°C*.
- Stainless steel or marine grade alloy.
- Robust yet lightweight.
- Easy to maintain.

*Model dependent.





ATEX Ex d: Cert. no. Baseefa03ATEX0075. ATEX Approved Ex II 2GD.

Certified to: EN60079-0, EN60079-1, EN60079-31.

Ex d IIC T5/T6 Gb, Ex tb IIIC T85°C/T100°C Db. IP66/IP67.
Cert no. Baseefa 02ATEX0152X ATEX Approved Ex II 1G

ATEX Ex ia: Cert no. Baseefa 02ATEX0152X. ATEX Approved Ex II 1
Certified to: EN60079-0, EN60079-11, EN60079-26.

Ex ia IIC T4 Ga.

IECEx Ex d: Cert. no. IECEx BAS 09.0060.

Certified to: EN60079-0, EN60079-1, EN60079-31.

Ex d IIC T5/T6 Gb, Ex tb IIIC T85°/T100°C Db. IP66/IP67.

IECEx Ex ia: Cert. no. IECEx BAS 10.0033X.

Certified to: IEC60079-0, IEC60079-11, IEC60079-26.

Ex ia IIC T4 Ga.

UL: Listing no. E186629.

UL listed to Class 1, Div 1. Groups C & D. (SM87PBL).

ULC: Cert. no. 20091023-E320282.

ULC certified for Class I, Zone 1 Groups C & D.

CSA Ex d: Class 1, Div 1 & 2. Group D. CSA Ex ia: Class 1, Div 1 & 2. Groups A-D.

CUTR Ex d: ‡ 1Ex d IIC T5/T6 Gb, Ex tb IIIC T85°/T100°C Db. IP66/IP67.

Russian Fire Approved.

CUTR Ex ia: ‡ 0Ex ia IIC T4 Ga. Russian Fire Approved.

 Inmetro Ex d:
 Ex d IIC T5/T6 Gb.

 Inmetro Ex ia:
 Ex ia IIC T4 Ga.

 CQST Exd:
 Exd IICT85°C/T100°C.

 CQST Exia:
 Exia IIC T4.

SIL: SIL2 certification pending. Please contact MEDC for details.

Material: Grade 316 ANC4B Stainless Steel or LM 25 TF Marine Grade Alloy.

Finish: Paint finish as standard or to customer specification.

Voltage: Exd 24V a.c./d.c. Exia 28V.

Rating: 2 amp.

Terminals:

Switches 2 pole c/o, wired to terminals.

Optional up to 4 pole (UL version 2 pole only).

Optional Indicator: A red high intensity LED can be fitted for alarm indication.

Certified Temp: Exd* -55° C to $+70^{\circ}$ C. Exi* -55° C to $+60^{\circ}$ C.

 -20° C to $+55^{\circ}$ C (LED version only). UL -40° C to $+70^{\circ}$ C, -20° C to $+55^{\circ}$ C (LED version only).

CSA - 50°C to +55°C (Exd), -50°C to +40°C (Exi).

*Note: includes ATEX, IECEx, CUTR, Brazilian & Chinese versions.

Weight: 3.8 kg. steel (approx.) or 2.5 kg. alloy (approx).

Ingress Protection: IP66 and IP67. SM87 PB IP68 (40m for 8 hours).

Entries: Up to 4 x M20 or M25 ISO Ex d/Ex ia. Up to 4 x ¹/₂" or ³/₄" NPT UL.

Will accept up to 2.5mm² cable.

Resistor Values: 470R minimum (d.c. & I.S. units only)

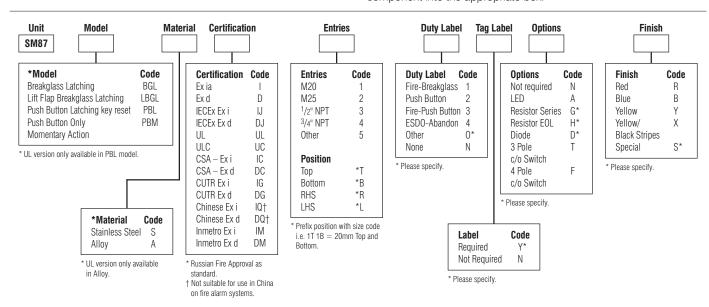
TAG LABEL
TOPTIONAL

T

Both the Exia units and the Exd units have the same external appearance. Also the internal components are identical throughout the range. Each unit can be wired for either NO, NC or CO contacts to customer specification.

Ordering Requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.





Exd, UL Hazardous & Ordinary Locations



Introduction

The PH1 double action pull handle call point has been designed for use in flammable atmospheres and harsh environmental conditions. The GRP enclosure is suitable for use offshore or onshore where light weight combined with a high level of corrosion resistance is required.

The large "Lift" and "Pull" GRP handles can be operated effortlessly whilst wearing industrial gloves and require double action to raise the alarm, preventing accidental activation.

Features

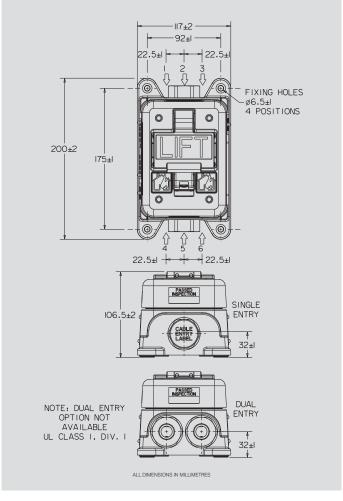
- Zone 1 and Zone 2 use.
- UL Listed for:
 - Hazardous Locations.
 - Class I, Division 1. Groups B, C & D.
 - Class I, Division2. Groups A-D.
 - Zone 1.
 - Ordinary Locations: Fire alarm boxes.
- Ex d IIC T6 Gb.
- Ex tb IIIC T85°C Db.
- IECEx certified Gb, Db.
- ATEX certified Ex II 2 GD.
- NEMA 4X & 6. IP66 & IP67.
- Certified temperature: -55°C to +70°C*.
- Corrosion free GRP construction.*
- Optional in line, end of line resistors and diodes.
- Retained stainless steel cover screws.

*Model dependent.





UL listed for USA and Canada. UL Haz Locs: Listing no. E186629. Class I, Div. 1. Groups B, C & D. Class I, Div. 2. Groups A- D. Class I, Zone 1, AEx d IIC, Ex d IIC. Class II, Div.2, Groups F & G. Class III **UL Ord Locs:** UL Listing no. S8117. Fire alarm boxes. UL for USA and Canada. IECEx Ex d: Cert. no. IECEx ITS.11.0021X. Certified to: IEC60079-0, IEC60079-1, IEC60079-31. Ex d IIC T6 Gb, Ex tb IIIC T85°C Db. IP66. ATEX Ex d: Cert. no. ITS11ATEX17308X. Certified to: EN60079-0, EN60079-1, EN60079-31. Ex II 2 GD, Ex d IIC T6 Gb, Ex tb IIIC T85°C Db. IP66. Material: Body/covers/handles:- GRP (glass reinforced polyester) UL Class I, Div. 1 Inner Cover: 316 (ANC4B) Stainless Steel. Fixings: - Stainless steel grade 316. Finish: Cover:- natural red, Body:- natural black. Handles:- natural white. Cover may be painted to customer's requirements. Voltage: 0-50Vdc, 0-254Vac. Switch Rating: 1 or 2 c/o switches, 254V, 3A max. UL Class I, Div 2, ATEX, IECEx & UW: Gross weight 3.2Kg. Weight: Net weight 2.6Kg. UL Class I, Div. 1: Gross weight 4.4 Kg. Net weight 3.8 Kg. Certified Temp: ATEX & IECEx: -55° C to $+70^{\circ}$ C UL Class I, Divs. 1 & 2, UW: -50° C to $+70^{\circ}$ C Ingress Protection: NEMA 4X & 6. IP66 & IP67. Entries: UL Class I, Div. 1 - Max 1 per face. Up to 2 x 1/2" NPT or 3/4" NPT. Positions 2 & 5 only. UL Class I. Div. 2. UW: Up to 2 x 1/2" or 3/4" NPT. 3/4" NPT. Max. 1 per face & positions 2 & 5 only. ATEX, IECEx - Max 2 per face. Up to 2 x M20 or M25, up to 2 x 1/2" or Please note that certified blanking plugs cannot be fitted to this product. Terminals: 6 x 2.5mm² as standard. Contact MEDC for options. **Earth Continuity:** Earth continuity is provided by internal plate. **Duty Labels:** 'Burning house' label fitted as standard on red units. Red blank duty label fitted as standard on all other colour units, unless text is supplied by customer. Tag Label: worded to customers requirements. Addr. module: Consult MEDC for options. Various configurations available, 470 Ohms minimum. Resistors:



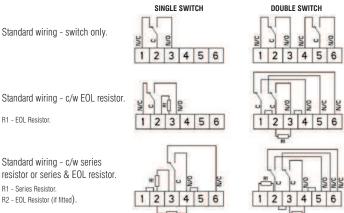
Ordering Requirements

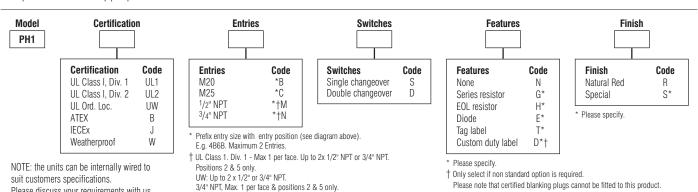
Please discuss your requirements with us.

Various configurations available.

Diodes:

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.





Ex de, Intrinsically Safe (Ex ia), Weatherproof PB Range



Introduction

These new and improved manual alarm call points have been designed for use in hazardous locations and harsh environmental conditions. The GRP enclosure is suitable for use onshore or offshore where light weight combined with a high level of corrosion resistance is required. The unit is now supplied with a lift flap that latches firmly in place.

Features

- ATEX certified.
- IECEx certified.
- UL listed for Haz locs.
- UL listing for Ord locs.
- CUTR certified.
- Chinese (CQST) certified.
- Brazilian (Inmetro) certified.
- SIL 2 pending. (Contact MEDC for details).
- IP66 and IP67.
- Corrosion free GRP construction.
- A variety of colours available.
- Up to 9 terminals available.
- Optional LED indicates that the unit has been operated.
- Earth continuity option for metal glands.
- 1 or 2 changeover switches.
- Captive cover screws.
- Lift Flap as standard.
- Latching as standard. Self reset (momentary) available.















Cert. no. BAS02ATEX2105X. ATEX Approved Ex II 2GD. ATEX Ex de:

EN60079-0, EN60079-1, EN60079-7, EN60079-31. Ex de IIC T6 Gb, Ex tb IIIC T85°C Db switch only. Ex de mb IIC T6 Gb. Ex tb IIIC T85°C Db with LED.

Ex de mb IIC T4 Gb, Ex tb IIIC T135°C Db with resistors & diodes.

Cert no. Baseefa 03ATEX0084X. ATEX Approved Ex II 1GD ATEX Exia:

Certified to: EN60079-0, EN60079-11. Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da.

IECEx Exia: Cert. no. IECEx BAS 12.0093X. Certified to: IEC 60079-0, IEC 60079-11.

Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da.

UL: Listing no. E186629

UL listed to Class 1, Div 2. Groups A - D.

UL listed for Ordinary Locations. Listing no. S8117 Cert. no. 79120-3. Class 1 groups A, B, C & D.

2Exed IICT6 (switch only), 2Exemd IICT4 (other versions). CUTR Ex de: ‡

Russian Fire Approved.

CUTR Ex ia:± 0Exia IICT4. Russian Fire Approved. Inmetro Exe: Ex de mb IIC T4 Gb, Ex de IIC T6 Gb.

Inmetro Exia: Fx ia IIC T4 Ga

COST Exe: Exed IICT6 (switch only), Exedm IICT4 (other versions),

CQST Exia: Exia IIC T4.

CSA:

Type Apps: American Bureau of Shipping type approval (ABS) PBI only. SIL: SIL 2 certification pending. Please contact MEDC for details.

Material: Anti-static UV resistant glass reinforced polyester.

Finish: Red painted finish as standard or to customer specification.

Voltage: Up to 254V a.c. Up to 28V d.c.

Weight: 1.2 kg. (Varies with models and entries)

Ingress Protection: IP66 & IP67

Entries: Up to 4 entries, M16 or M20 top and bottom (1/2" NPT available on UL version).

Terminals: 7 x 2.5mm² – standard.

9 x 2.5mm² optional – up to 60V only. Resistors:

Various configurations available on versions up to 24V and all 'IS' versions. (Minimum Resistor value 100ΩPBE, 470ΩPBI)

Earth Continuity: Internal and external earth continuity is provided with an optional

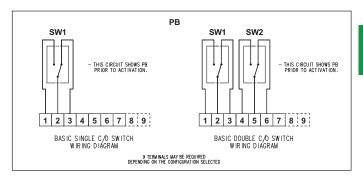
LED Indication: A high intensity red LED can be fitted as an optional extra to indicate operation on versions up to 24V and all 'IS' versions.

Duty label - worded to customers requirements. Riveted on.

Labelling: Tag label - worded to customers requirements. Screwed on.

Switch Ratings: d.c. 0-30v 5A (resistive) or 3A (inductive) (1 or 2 changeover 30-50v 1A (resistive or inductive) a.c. 0-254V 5A (resistive or Inductive) switches fitted)

DUTY LABEL 72±lmm FIXING CENTRES FIXING HOLES: ø6.0mm (4 POSITIONS) ALL DIMENSIONS IN MILLIMETRES



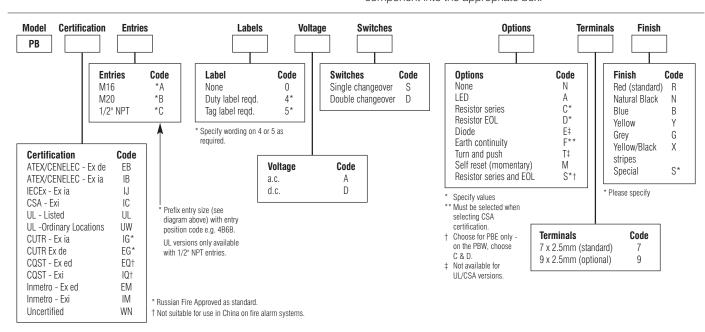
Temperature

Model	PBW	PBUL	PBE	PBI	CSA
	-40°C to +70°C	-25°C to +55°C†	$-40^{\circ}\text{C to} + 70^{\circ}\text{C*}$	-40°C to +70°C	-50°C to +40°C

- * -35° C to $+70^{\circ}$ C with LED , -20° C to $+50^{\circ}$ C for Inmetro.
- † -25°C to +50°C With resistors or LED fitted.

Ordering Requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.





Ex de, Intrinsically Safe (Ex ia), Weatherproof BG Range



Introduction

These manual alarm Call Points have been designed for use in hazardous locations and harsh environmental conditions. The Glass Reinforced Polyester enclosures are suitable for use both onshore and offshore, where light weight combined with a high level of corrosion resistance is required.

The break glass is covered by a membrane which protects the operator from glass fragments meaning that no hammer is required to activate the unit.

A plastic 'break glass' or deformable operating element is available to replace the break glass. Once the flexible element is pressed it will bend but will not break. The unit is reset by repositioning the element.

Features

- ATEX certified.
- IECEx certified.
- UL listed for Haz locs.
- UL listed for Ord locs
- CUTR certified.
- Chinese (CQST) certified.
- Brazilian (Inmetro) certified.
- IP66 and IP67.
- Corrosion free GRP construction.
- SIL 2 certified.
- A variety of colours available.
- Up to 9 terminals available.
- Optional LED indicates that the unit has been operated.
- Earth continuity option for metal glands.
- 1 or 2 changeover switches.
- Captive cover screws.
- Key operated test facility simple but secure.
- Breakglass hammer available.







ATEX Ex de: Cert. no. BAS02ATEX2105X. ATEX Approved Ex II 2G.

Certified to: EN60079-0, EN60079-1, EN60079-7.

Ex de IIC T6 Gb switch only. Ex de mb IIC T6 Gb with LED.

Ex de mb IIC T4 Gb with resistors & diodes.

ATEX Ex ia: Cert no. Baseefa 03ATEX0084X. ATEX Approved Ex II 1GD

Certified to: EN60079-0, EN60079-11. Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da.

IECEx Ex ia: Cert. no. IECEx BAS 12.0093X.

Certified to: IEC 60079-0, IEC 60079-11. Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da.

UL: Listing no. E186629

UL listed to Class 1, Div 2. Groups A – D.

UL listed for Ordinary Locations. Listing no. S8117

CUTR Ex de: 2Ex de IIC T6 Gb (switch only), 2Ex de mb IIC T4 (other versions).

Russian Fire Approved.

CUTR Ex ia: 0Ex ia IICT4. Russian Fire Approved. Inmetro Ex de: Ex de mb IIC T4 Gb, Ex de IIC T6 Gb.

Inmetro Ex ia: Ex ia IIC T4 Ga.

CQST Ex de: Ex de IICT6 (switch only), Ex de m IICT4 (other versions).

CQST Ex ia: Ex ia IIC T4

SIL: SIL 2 certified to IEC 61508. Cert no. Sira 11013

Type Apps: American Bureau of Shipping type approval (ABS).

 Material:
 Anti-static UV resistant glass reinforced polyester.

 Finish:
 Red painted finish as standard or to customer specification.

 Voltage:
 Up to 254V a.c. Up to 28V d.c.

Weight: 1.2 kg. (Varies with models and entries)

Weight. 1.2 kg. (Valies with Houels and entities)

Ingress Protection: IP66 & IP67

Terminals:

Entries: Up to 4 entries, M16 or M20 top and bottom (1/2" NPT available on UL version).

6 x 2.5mm² – standard (BGUL only).

7 x 2.5mm² – standard.

9 x 2.5mm² optional – up to 60V only. **Resistors:** Various configurations available on versions up to 24V and all 'IS

versions. (Minimum Resistor value 100ΩPBE/BGE, 470ΩPBI/BGI).

Earth Continuity: Internal and external earth continuity is provided with an optional earth plate.

LED Indication: A high intensity red LED can be fitted as an optional extra to indicate

operation on versions up to 24V and all 'IS' versions.

Labelling: BG Glass label – reads either (1) Fire Break glass – press here.

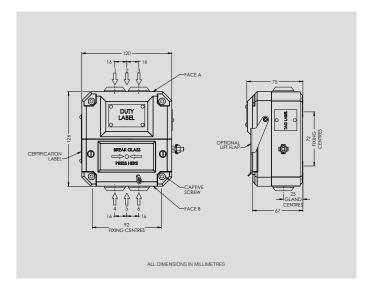
(2) Break glass – press here.

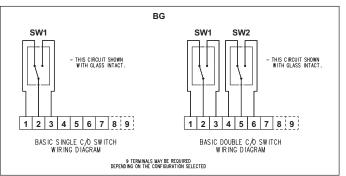
(3) Worded to customer requirements.

(7) Dot and arrows - no text. Duty label – worded to customer requirements. Riveted on.

Duty label — worded to customer requirements. Riveted on. Tag label — worded to customer requirements. Screwed on.

Switch Ratings: d.c. 0-30v 5A (resistive) or 3A (inductive) 30-50v 1A (resistive or inductive) switches fitted) a.c. 0-254V 5A (resistive or Inductive)





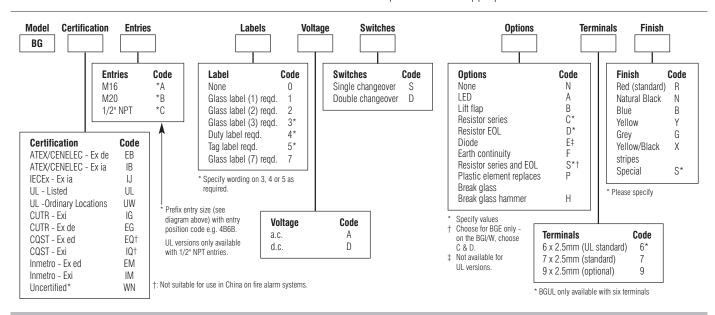
Temperature

Model BGW		BGUL	BGE	BGI	
	-40°C to +70°C	-25°C to +55°C†	-40°C to +70°C*	-40°C to +70°C	

^{*-35°}C to +70°C with LED, -20°C to +50°C for Inmetro.

Ordering Requirements

The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.





⁺ -25°C to +50°C With resistors or LED fitted.

Ex de, Intrinsically Safe (Ex ia), Weatherproof



Introduction

This manual fire alarm call point has been designed for use in flammable atmospheres and harsh environmental conditions. The GRP enclosure is suitable for use offshore or onshore where lightweight combined with a high level of corrosion resistance is required.

Features

- Zone 0, Zone 1 and Zone 2 use.
- Ex de, Ex ia or weatherproof.
- ATEX approved Ex II 1GD (Ex ia).

– Ex II 2G (Ex de).

- BASEEFA certified.
- IP66 and IP67.
- Certified temperature: -40°C to +70°C*.
- Corrosion resistant red painted GRP.
- Retained stainless steel cover screws.
- Optional lift flap.
- Key operated test facility.
- Lightweight and robust.
- Breakglass hammer available.
 (Contact sales office for details).

*Depending on version.





Cert. no. BAS02ATEX2105X. ATEX Approved Ex II 2G. ATEX Ex de:

Certified to: EN60079-0, EN60079-1, EN60079-7.

Ex de IIC T6 Gb switch only.

Ex de mb IIC T4 Gb with resistors & diodes.

ATEX Ex ia: Cert no. Baseefa 03ATEX0084X. ATEX Approved Ex II 1GD.

Certified to: EN60079-0, EN60079-11. Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da.

IECEx Ex ia: Cert. no. IECEx BAS 12.0093X.

Certified to: IEC 60079-0, IEC 60079-11. Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da.

Material: Anti static UV resistant Glass Reinforced Polyester.

Finish: Painted Red. Certified Temp: -40°C to +70°C. Up to 254V a.c. (Ex ia - Up to 28V d.c.). Voltage: Weight: Ingress Protection: IP66 & IP67 Cable Entries: 2 x M20 bottom.

Ex de - 100Ω minimum, $39K\Omega$ maximum. **Resistor Values:**

6 x 2.5mm²

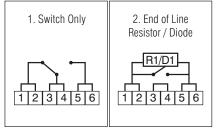
Terminals:

Ex ia - 470Ω minimum.

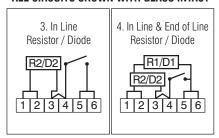
Switch ratings: d.c. 0-30V 5A (resistive) or 3A (inductive).

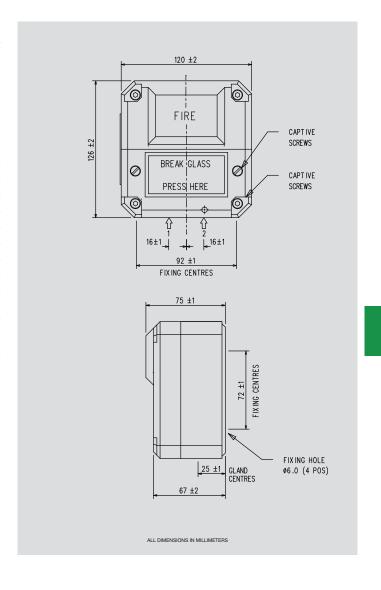
30V-50V 1A resistive or inductive

a.c. 0-254V 5A resistive or inductive.



ALL CIRCUITS SHOWN WITH GLASS INTACT

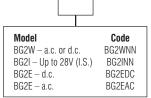




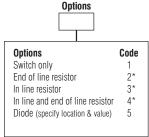
Ordering Requirements

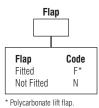
The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

The MEDC BG Range of Manual Alarm Call Points caters for numerous options such as variety of colours, LED indication, earth continuity, double switch, etc. See separate catalogue sheet for details.



Model







^{*} Specify resistor values

Intrinsically Safe (Exia), Weatherproof



Introduction

This manual fire alarm call point has been designed in accordance with the latest draft European Call Point Standard (EN54-11).

Weatherproof to IP66 and IP67 and available certified intrinsically safe, simple apparatus or uncertified. The units are manufactured from glass reinforced polyester (GRP) which provides a robust, corrosion free construction and ensures effective and reliable operation in harsh industrial and offshore environments.

Units are supplied in natural red GRP or painted to customer specification. 'Burning House' duty label is provided as standard, other duty and tag labels may be supplied to customer specification.

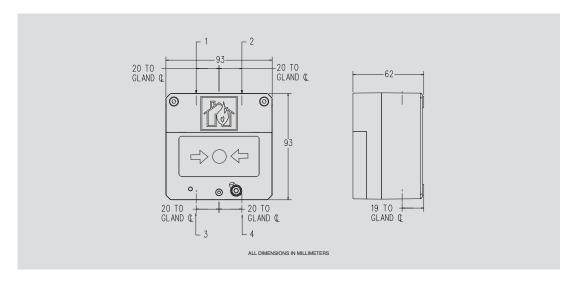
Features

- Zone 0, Zone 1 and Zone 2 use.
- Exia IIC T4.
- ATEX Approved Ex II 1 G.
- BASEEFA certified.
- Chinese (CQST) certified.
- Designed in accordance with EN54-11.
- IP66 and IP67.
- Certified temperature: -55°C to +55°C.
- Corrosion free GRP.
- Optional in line/end of line resistors/diodes.
- Optional LED indicator.
- Optional lift flap.
- Key operated test facility.
- Various body colours available.





	BG3I	BG3W		
Protection:	Explosion Protected Exi (Intrinsically Safe)	Dust-tight & Weatherproof		
Certification:	CENELEC EN50014, 020 BASEEFA Exia IIC T4 Cert No. BAS00ATEX1067X Suitable for use in Zones 0, 1 & 2 Chinese Certification CQST — Exia IIC T4†	Not applicable		
Voltage:	Up to 28V (IS)	Up to 250V a.c.		
Certified Temperature:	-55°C to +55°C	Not applicable		
Ingress protection:	IP66 & IP67	IP66 & IP67		
European Standard for Call Points:	EN54-11	EN54-11		
Terminals:	6 x 4.0mm ²	6 x 4.0mm ²		
Switch Ratings:	Not Applicable	d.c. 0V - 30V 3A resistive or inductive 30V - 50V 1A resistive or inductive a.c. 0 - 250V 3A resistive or inductive		
Resistor Values:	470R Minimum	270R Minimum		
Cable Entries:	2 x M20 top or bottom	2 x M20 top or bottom		
Weight: 0.5Kg		0.5Kg		
Material:	UV resistant glass reinforced polyester	UV resistant glass reinforced polyester		
Finish:	Natural Red GRP or Painted GRP to Customer requirements	Natural Red GRP or Painted GRP to Customer requirements		
Duty/Tag Labels:	Stainless steel as standard	Plastic as standard		



Ordering Requirements The following code is designed to help in selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box.

