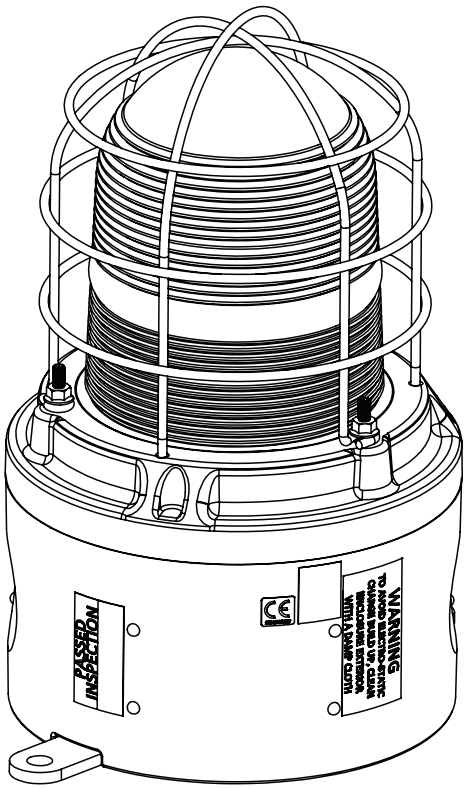
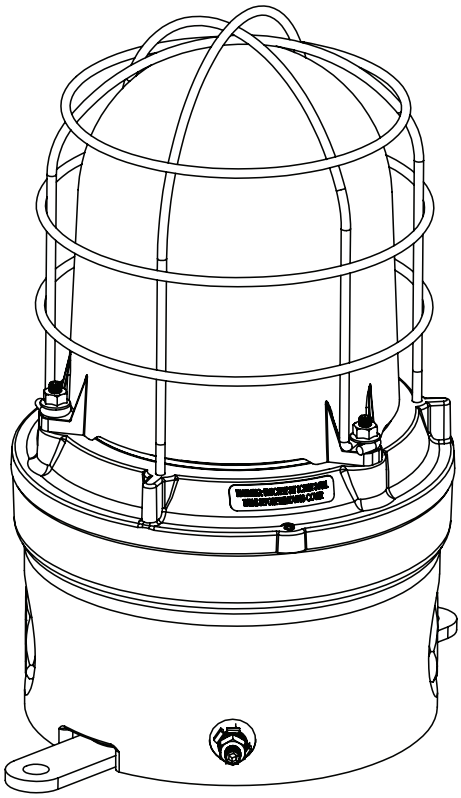
Technical manual

CROUSE-HINDS SERIES

XB15 (GRP) and XB15M (Metallic) Beacon Range





Powering Business Worldwide

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Contents

1.0 Introduction

These certified beacons have been designed for use in potentially explosive atmospheres and harsh environmental conditions. The enclosures are suitable for use offshore or onshore, where light weight combined with corrosion resistance is required.

The housing is manufactured completely from a U.V. stable, glass reinforced polyester (GRP), or either stainless steel or marine grade alloy. Stainless steel screws and mounting bracket are incorporated ensuring a totally corrosion free product.

Units can be painted to customer specification and supplied with identification labels.

2.0 General safety messages and warnings

All instructions and safety messages in this manual must be followed to allow safe installation of the device. The device must only be installed and maintained by correctly trained site personnel/installers. **Refer also to the installation and maintenance instructions contained in the Essential Safety Information Section 6.0**

i. Before removing the cover for installation or maintenance, ensure that the power to the device is isolated.

ii. Following installation, test the device to ensure correct operation.

iii. Following installation ensure a copy of this manual is made available to all operating personnel.

iv. When installing the device, requirements for selection, installation and operation should be referred to e.g. IEE Wiring Regulations and the 'National Electrical Code' in North America. Additional national and/or local requirements may also apply.

v. Cable termination should be in accordance with specification applying to the required application. MEDC recommends that all cables and cores should be correctly identified. Please refer to the wiring diagram in this manual (or separate diagram provided with the unit).

vi. The internal grounding terminal shall be used for the grounding connection and the external terminal, if available, is for a supplementary bonding connection where local codes or authorities permit or require such a connection.

vii. When installing the device, MEDC recommends the use of stainless steel fasteners. Ensure that all nuts, bolts and fixings are secure.

viii. Refer also to the installation and maintenance instructions contained in the Essential Safety Information (Section 6.0).

3.0 Installation

General

The device can either be directly mounted using the inserts moulded into the back of the enclosure (standard), or an optional backstrap can be fixed to the base of the device thus giving an optional mounting position for when direct mounting is deemed unsuitable.

For EN54-23:2010 compliance, the mounting back strap must be positioned in the horizontal plane. If the direct mount option is ordered the mounting holes must also be on the same horizontal plane as the back strap.

The 2 off threads in the base of the enclosure are designed to accept an M5 screw or bolt.

Note: For direct mounting, observe the following formula to determine the required fixing screw length: Length of screw = Thickness of mounting surface + 10mm

The 2 off Ø8.5mm mounting holes in the optional backstrap have been designed to accept an M8 screw or bolt.

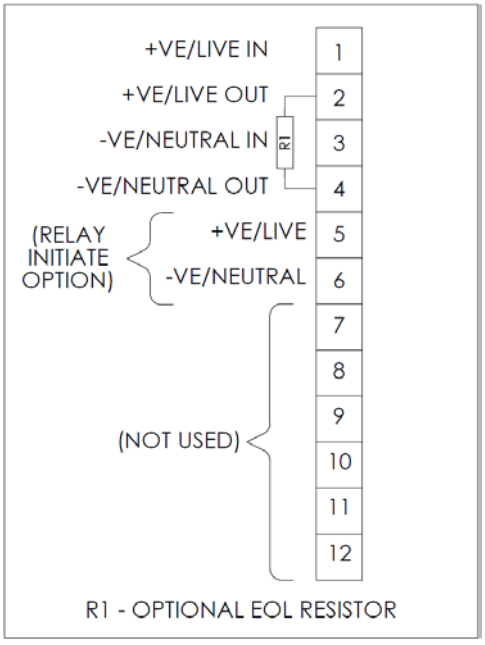
Any guard or polymer over lens fitted is optional, and may be removed/replaced as required.

Access to terminals

See maintenance paragraph in section 6.0 for instructions on the safe removal and replacement of the cover. Once the cover is removed, unscrew the 2 off thumbscrews and carefully lift the PCB assembly clear of the mounting pillars to gain access to the terminals.

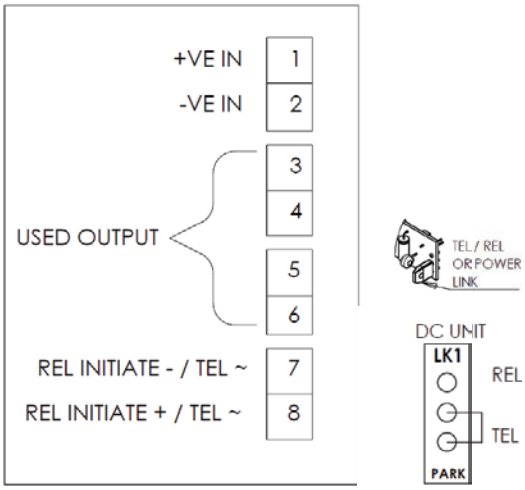
Once termination is complete, replace the PCB assembly onto the mounting pillars and fully tighten the thumbscrews, taking care not to overtighten them. Replace the cover assembly as instructed in section 6.0

Wiring detail
Standard

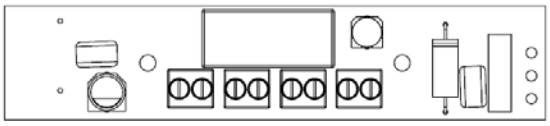


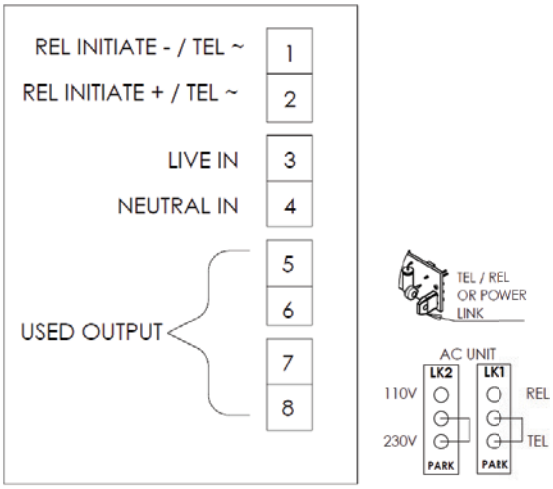
Monitoring resistors may be fitted to DC units.
See Installation and Maintenance paragraph in Section 6.0

Telephone initiate and Relay initiate

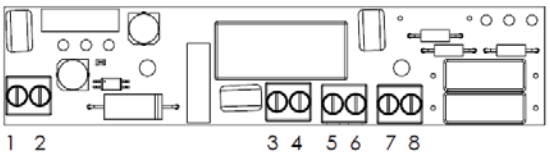


DC UNIT





AC UNIT



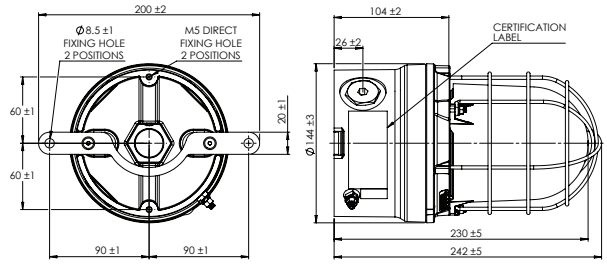
4.0 Operation

The beacon can be powered directly or initiated by a 24 Vdc relay or telephone ringing signal if requested when ordered

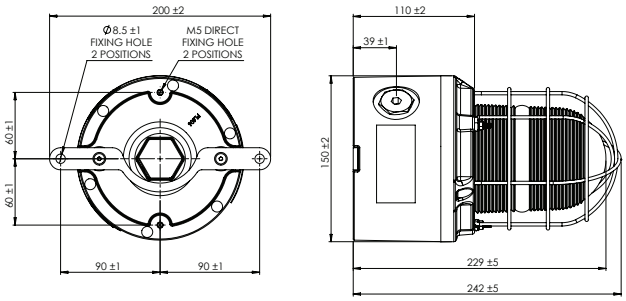
The operating voltage, tube energy and flash rate of the unit is stated on the unit label. The flash rate is pre-set by MEDC prior to shipping and cannot be adjusted once set.

For EN54-23:2010 Compliance only the 24Vdc, 60 fpm version is approved (with clear or red lens)

General arrangement



ALL DIMENSIONS IN MILLIMETRES



ALL DIMENSIONS IN MILLIMETRES

Wall mounted version only

For EN54-23:2010 Compliance the mounting back strap must be positioned in the horizontal plane (as shown above). If the direct mount option is ordered the mounting holes must also be on the same horizontal plane as the back strap.

All versions

A guard or polymer overlens should not be fitted on the EN54-23 version.

Note: Operation of the XB15 15 Joule unit for periods in excess of 15 mins in operational ambient temperatures exceeding +70°C may reduce the long term reliability and longevity of the product

Also see Section 6.0 for special conditions for safe use

5.0 Maintenance

During the working life of the unit, it should require little or no maintenance. GRP will resist attack by most acids, alkalis and chemicals and is as resistant to concentrated acids and alkalis as most metal products. However, if abnormal or unusual environmental conditions occur due to plant damage or accident etc., then visual inspection is recommended.

If the unit requires cleaning, then only clean the exterior with a damp cloth to avoid electro-static charge build up. Replacement of the xenon tube (see below) can be carried out by competent site personnel. Other repairs should be undertaken by returning the unit to MEDC.

If a unit fault should occur, then the unit can be repaired by MEDC. All parts of the unit are replaceable. If you acquired a significant quantity of units, then it is recommended that spares are also made available. Please discuss your requirements with the Technical Sales Engineers at MEDC.

During maintenance, if the cover/lens assembly grease needs to be re-applied, a PFPE (Perfluoropolyether) based grease such as Krytox GPL203 by DuPont or Perfluorolube 22/6 by Performance Fluids Ltd. should be used, to prevent damage to the O-ring.

Removing/replacing xenon tube

See Maintenance paragraph in section 6.0 for instructions on the safe removal and replacement of the cover. Once the cover is removed,the replacement tube can be fitted (see xenon tube installation sheet, which is supplied with the replacement tubes) Once the new tube has been correctly fitted, replace the cover assembly as instructed in section 6.0

Also see Section 6.0 for special conditions for safe use

6.0 Essential certification and safety information

This is a certified ATEX/IECEx controlled section and must not be changed without authorisation.

Title: Type XB15 & XB15M Xenon Beacon Essential Certification & Safety Information
Document reference: XB15-Ex

Revision: B

Release Date: 13 August 2025

Special conditions for safe use

1. Painting and other surface finishes, other than those applied by the manufacturer, are not permitted.
2. In order to maintain the dust tight integrity of the enclosures (IP6X), the threads of cable entry devices and stopping plugs shall be sealed in accordance with the applicable code of practice for flameproof installation.
3. For Type XB15 DC units, monitoring resistors must be securely fitted to the terminal block and formed to keep the body in free air, away from field wiring and the enclosure body. Maximum total power dissipation will be limited to 2W. Components must have a rated power at least three times higher than the power they will dissipate.

General messages and safety warnings

1. To reduce the risk of ignition of hazardous atmospheres and shock, do not apply power to the device until installation has been completed and the device is fully sealed and secured.
2. To reduce the risk of ignition of hazardous atmospheres and shock, keep device tightly closed when the circuit is energised.
3. Ensure that only the correct listed or certified cable glands are used, and that the assembly is shrouded and correctly earthed.
4. Ensure that only the correct listed or certified stopping plugs are used to blank off unused gland entry points in accordance with EN/IEC60079-14 clauses 16.3, 16.4 & 16.5 and that the NEMA/IP rating of the unit is maintained.
5. Maintain the IP rating of the unit by sealing glands in accordance with gland certification/manufacturer's instructions (i.e. use of a sealing washer or specific compound.)
6. When the unit is used in dust atmospheres, the cable entries or blanking plugs used shall be sealed to maintain the IP6X rating, in accordance with the applicable installation codes.
7. Warning – Do not open when an explosive atmosphere is present.
8. Potential Electrostatic Charging Hazard, protect from direct airflow from exhaust ducts and the like which may cause a charge transfer. If the unit requires cleaning, only clean exterior with a damp cloth to avoid electrostatic charge build-up. Ensure the equipment is correctly earthed.
9. Units fitted with dual tubes are identical in performance and temperature class to those with single tube.
10. EOL Resistors are prohibited from units fitted with Telephone / Relay modules.

Installation and maintenance

Removing / replacing the cover

Unscrew the grub screw (2.0mm A/F hexagon key) in the flange of the cover 3 full turns (do not fully unscrew). Unscrew and remove the cover and lens assembly to gain access to the inside of the unit.

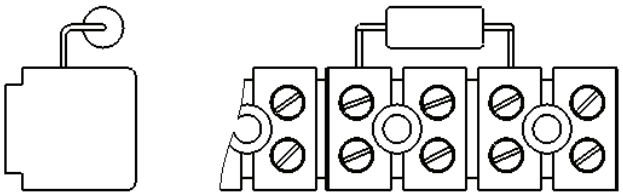
Before replacing the cover, inspect the threaded flame path for any signs of damage. Replace the cover assembly, ensuring the cover is fully screwed down.

There should be a maximum gap of 0.2mm between the faces of the cover and enclosure to ensure o-ring compression. Ensure the cover seal is correctly seated in its groove during re-assembly. Re-tighten the grub screw (2.0mm A/F hexagon key) in the cover flange to secure the cover.

During maintenance, if the cover/lens assembly grease needs to be re-applied, a PFPE (Perfluoropolyether) based grease such as Krytox GPL203 by DuPont or Perfluorolube 22/6 by Performance Fluids Ltd. Should be used, to prevent damage to the O-ring.

Monitoring resistors

Monitoring resistors may be fitted to DC units. They must be fitted securely to the terminal block and formed so that the body is in free air away from field wiring and the enclosure body. Components must be selected to minimise surface temperatures see special conditions for safe use.



Certification/approvals

Certified to IEC60079-0, IEC60079-1 & IEC60079-31

Ex d unit (IEC certification No. IECEx BAS 05.0048X)

Ex db IIC T_G Gb

Ex tb IIIC T_D Db IP6X

T_{amb}.

Max ambient temperature °C

Tube energy	T_{amb} (-55°C) to	40	45	50	55	60	65	70	75	80	85
21J DC/AC	T-rating (T_G)	T4	T4	T4	T4	T4	T3	T3	T3	T3	T3
	T-rating (T_D)	T135	T135	T135	T135	T135	T200	T200	T200	T200	T200
15J DC	T-rating (T_G)	T4	T4	T4	T4	T4	T4	T4	T3	T3	T3
	T-rating (T_D)	T135	T135	T135	T135	T135	T135	T135	T200	T200	T200
15J AC	T-rating (T_G)	T4	T4	T4	T4	T4	T4	T3	T3	T3	T3
	T-rating (T_D)	T135	T135	T135	T135	T135	T135	T200	T200	T200	T200
10J DC	T-rating (T_G)	T5	T5	T4	T4	T4	T4	T4	T4	T4	T3
	T-rating (T_D)	T100	T100	T135	T135	T135	T135	T135	T135	T135	T200
10J AC	T-rating (T_G)	T5	T4	T4	T4	T4	T4	T4	T4	T3	T3
	T-rating (T_D)	T100	T135	T135	T135	T135	T135	T135	T135	T200	T200
5J DC	T-rating (T_G)	T6	T6	T6	T5	T5	T5	T4	T4	T4	T4
	T-rating (T_D)	T85	T85	T85	T100	T100	T100	T135	T135	T135	T135
5J AC	T-rating (T_G)	T6	T5	T5	T5	T4	T4	T4	T4	T4	T4
	T-rating (T_D)	T85	T100	T100	T100	T135	T135	T135	T135	T135	T135

Max cable temperature with/without EOL or Tel/Rel components fitted. °C

Tube energy	With EOL or Tel/Rel	40	45	50	55	60	65	70	75	80	85
21J	YES	105	110	115	120	125	130	135	140	145	150
	NO	80	85	90	95	100	105	110	115	120	125
15J	YES	105	110	115	120	125	130	135	140	145	150
	NO	80	85	90	95	100	105	110	115	120	125
10J	YES	90	95	100	105	110	115	120	125	130	135
	NO	70	75	80	85	90	95	100	105	110	115
5J	YES	80	85	90	95	100	105	110	115	120	125
	NO	60	65	70	75	80	85	90	95	100	105

The IECEx certificate and product label carry the IECEx equipment protection level marking

Gb
Db

Where Gb signifies suitability for use in a Zone 1 surface industries area in the presence of gas.

Where Db signifies suitability for use in a Zone 21 surface industries area in the presence of dust.

ATEX units

Certified to EN60079-0, EN60079-1 & EN60079-31

Ex d unit (ATEX certification No. Baseefa04ATEX0009X)

Ex db IIC T_G Gb
Ex tb IIIC T_D Db IP6X
$T_{amb.}$

Max ambient temperature °C

Tube energy	$T_{amb.}$ (-55°C) to	40	45	50	55	60	65	70	75	80	85
21J DC/AC	T-rating (T_G)	T4	T4	T4	T4	T4	T3	T3	T3	T3	T3
	T-rating (T_D)	T135	T135	T135	T135	T135	T200	T200	T200	T200	T200
15J DC	T-rating (T_G)	T4	T4	T4	T4	T4	T4	T4	T3	T3	T3
	T-rating (T_D)	T135	T135	T135	T135	T135	T135	T135	T200	T200	T200
15J AC	T-rating (T_G)	T4	T4	T4	T4	T4	T4	T3	T3	T3	T3
	T-rating (T_D)	T135	T135	T135	T135	T135	T135	T200	T200	T200	T200
10J DC	T-rating (T_G)	T5	T5	T4	T4	T4	T4	T4	T4	T4	T3
	T-rating (T_D)	T100	T100	T135	T135	T135	T135	T135	T135	T135	T200
10J AC	T-rating (T_G)	T5	T4	T4	T4	T4	T4	T4	T4	T3	T3
	T-rating (T_D)	T100	T135	T135	T135	T135	T135	T135	T135	T200	T200
5J DC	T-rating (T_G)	T6	T6	T6	T5	T5	T5	T4	T4	T4	T4
	T-rating (T_D)	T85	T85	T85	T100	T100	T100	T135	T135	T135	T135
5J AC	T-rating (T_G)	T6	T5	T5	T5	T4	T4	T4	T4	T4	T4
	T-rating (T_D)	T85	T100	T100	T100	T135	T135	T135	T135	T135	T135

Max Cable temperature with/without EOL or Tel/Rel components fitted. °C

Tube energy	$T_{amb.}$ (-55°C) to	40	45	50	55	60	65	70	75	80	85
21J	YES	105	110	115	120	125	130	135	140	145	150
	NO	80	85	90	95	100	105	110	115	120	125
15J	YES	105	110	115	120	125	130	135	140	145	150
	NO	80	85	90	95	100	105	110	115	120	125
10J	YES	90	95	100	105	110	115	120	125	130	135
	NO	70	75	80	85	90	95	100	105	110	115
5J	YES	80	85	90	95	100	105	110	115	120	125
	NO	60	65	70	75	80	85	90	95	100	105

The ATEX certificate and product label carry the ATEX group and category marking:

 II 2 GD

Where:

 Signifies compliance with ATEX
II Signifies suitability for use in surface industries
2 Signifies suitability for use in a zone 1 area
G Signifies suitability for use in the presence of gases
D Signifies suitability for use in the presence of dust

End of ATEX/IECEX controlled section

7.0 Non Ex Certification information

EN54-23:2010 Visual Alarm Device – Beacon XB15 (24Vdc units only). EN54 and SIL is not available on the 21J variant.

Rating 21.6v- 26.4v DC Absolute. Amps 0.99
Environment Type B Outdoor applications
IP code (IP33C) to BS EN 60529:1992

The Red lens Beacon is supplied with the following LPCB markings

LOSS PREVENTION CERTIFICATION BOARD
LPCB
1120b/02

The White lens Beacon is supplied with the following LPCB markings

LOSS PREVENTION CERTIFICATION BOARD
LPCB
1120b/01

This signifies unit compliance to the relevant European directives, in this case 89/106/EEC, along with the name and number of the notified body issuing the certificate of conformity.

These units also have the following approvals:

Main Harmonics (AC) to EN61000-6-3:2007/ IEC61000-3-2:2006

Conducted Emissions (DC) to EN61000-6-3:2007

Radiated Field Immunity (DC and AC) to EN61000-6-2:2005/IEC61000-4-3:2002 + A1:2002

Electrical Fast Transients/Bursts (DC and AC) to EN61000-6-2:2005 / IEC61000-4-4:2004

Surge Immunity (DC and AC) to EN61000-6-2:2005/ IEC61000-4-5:1995 + A1:2000

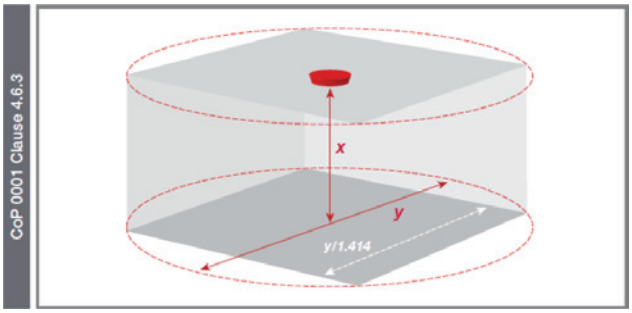
Dips and Interruptions (AC) to EN61000-6-2:2005/ IEC61000-4-11:2004

Ingress protection (IP66 & 67) to BS EN 60529:92

EN54-23 Coverage data and explanation of terminology

Ceiling mounted devices- C-x-y

C - Ceiling mounted Device



x - The maximum height of 3, 6 or 9m at which the VAD may be mounted.

y - The diameter in metres of the cylindrical volume covered (to a minimum level of 0.4 lux) when the device is mounted to the ceiling at a height of 3, 6, or 9 m.

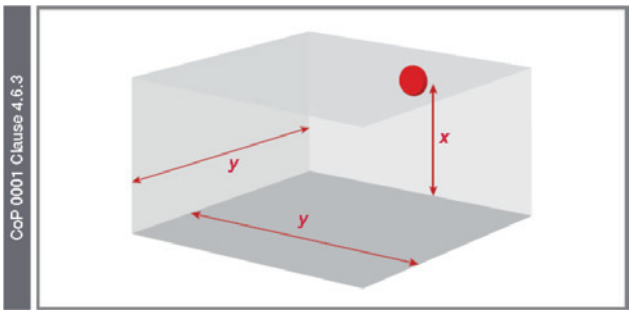
Example: C-3-32 corresponds to a ceiling mounted device giving a coverage cylindrical volume of 32 m, when mounted at 3 m.

Note: The projected space sits within the cylindrical volume and ensures that all areas meet the required illumination of 0.4 lux.

Tip: To convert the coverage diameter y to the width of a square room.
Width of square room = y/1.414 m.

Wall mounted devices- W-x-y

W - Wall mounted Device



x - The maximum height of the device on the wall in metres, with a minimum value of 2.4.m

y – The width in metres of the square volume covered (to a minimum level of 0.4 lux) when the device is mounted at a height x

Example: W-8-13 corresponds to a wall mounted device giving a coverage cuboid volume of 8 m x 13 m x 13 m, when mounted at a height of 8 m.

Tip: if the area to be covered is not square, use the larger of either the length or width to ensure that the whole area is covered

MEDC VAD Coverage data

	Ceiling mounted	Wall mounted
Red lens	C-3-16	W-3-5
	C-6-6	W-3-5
White lens	C-3-32	W-8-13
	C-6-31	W-8-13
	C-9-12	W-8-13

Further information is available via the Code of Practice (CoP 0001.)

CoP 0001 provides detailed guidance and recommendations on the planning, design, installation, commissioning and maintenance of VAD's. A copy is available at the following website:

http://www.redbooklive.com/pdf/CoP-0001-1-0.pdf

8.0 End of life

Eaton is developing customer solutions that drive sustainable growth around the globe, including efficiently using and conserving global resources, developing energy efficient products, reducing emissions, protecting the environment, and volunteering time to help build stronger communities.

For more information on Sustainability at Eaton, please visit www.eaton.com/sustainability

General end of life care

All local requirements must be followed for storage, handling, disposing and recycling of waste. For more information contact your local environmental agency or Eaton representative. This document is intended for use by end-of-life recyclers or treatment facilities. Maintenance & disassembly should be conducted by qualified personnel. Please visit www.eaton.com/recycling to learn more about WEEE.

During disassembly and recycling operation it is advised to wear suitable and appropriate personal protective equipment and to ensure that the equipment is completely de-energized.

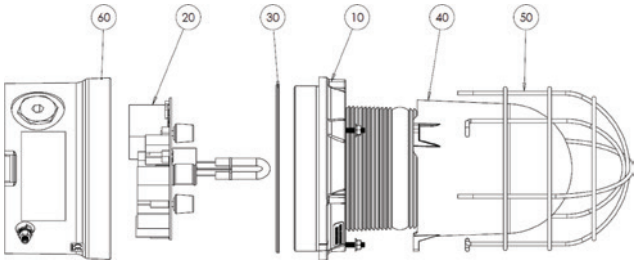
Eaton assumes no liability for failure to follow the end of life requirements set forth herein and under no circumstances will Eaton be liable for any personal injury, property damage or any other cost or expense resulting therefrom.

Selective end of life treatment

The product does not contain any materials or substances which are recommended to be treated separately during the End of Life procedure.

Recommended end of life treatment

Major components should be recycled following all local requirements and best recycling practices which may include reuse, other dismantling or shredding



ITEM	Key components for end of life disposal
10	Cover: XB15 = Glass reinforced polyester (GRP), XB15MA = Aluminium, XB15MS = Stainless steel. Lens: Borosilicate glass.
20	Electronic parts
30	Silicon 0-ring
40	Lens Cover: Polcarbonate
50	Wire guard: Stainless steel
60	Enclosure: XB15 = Glass reinforced polyester (GRP), XB15MA = Aluminium, XB15MS = Stainless steel Backstrap: Stainless steel.

Confirm the material type from the sales order code on the product label Product order code = DataSheet for XB15(M)

9.0 Functional safety

Introduction

The XB15 Beacon has been designed for use in potentially explosive atmospheres and harsh environmental conditions. The glass reinforced polyester enclosures are suitable for use offshore or onshore, where light weight combined with corrosion resistance is required.

The safety function of the Beacon is to provide an intermittent spherical visual warning light when the correct voltage is applied to the unit. The DC versions of the Beacon are designed to operate on a supply voltage tolerance of +/- 20%; the AC versions of the beacon are designed to operate on a supply voltage tolerance of +/- 10%. The telephone initiate versions of the Beacon are not included in this safety manual.

Under No fault (Normal) Operating conditions the XB15 Beacon will provide a spherical visual warning light when required by the system.

Under fault conditions the failure mode of the Beacon is a failure to provide a spherical visual warning light. For the failure rate associated with this failure mode please refer to the table below.

Assessment of functional safety – XB15 DC

This Beacon is intended for use in a safety system conforming to the requirements of IEC61508.

Sira Test and certification Ltd has conducted a Failure Modes Effect and Diagnostic Analysis (FMEDA) of the DC version of XB15 Xenon Beacon against the requirements of IEC 61508-2 using a Proof Test Interval of 730hrs.

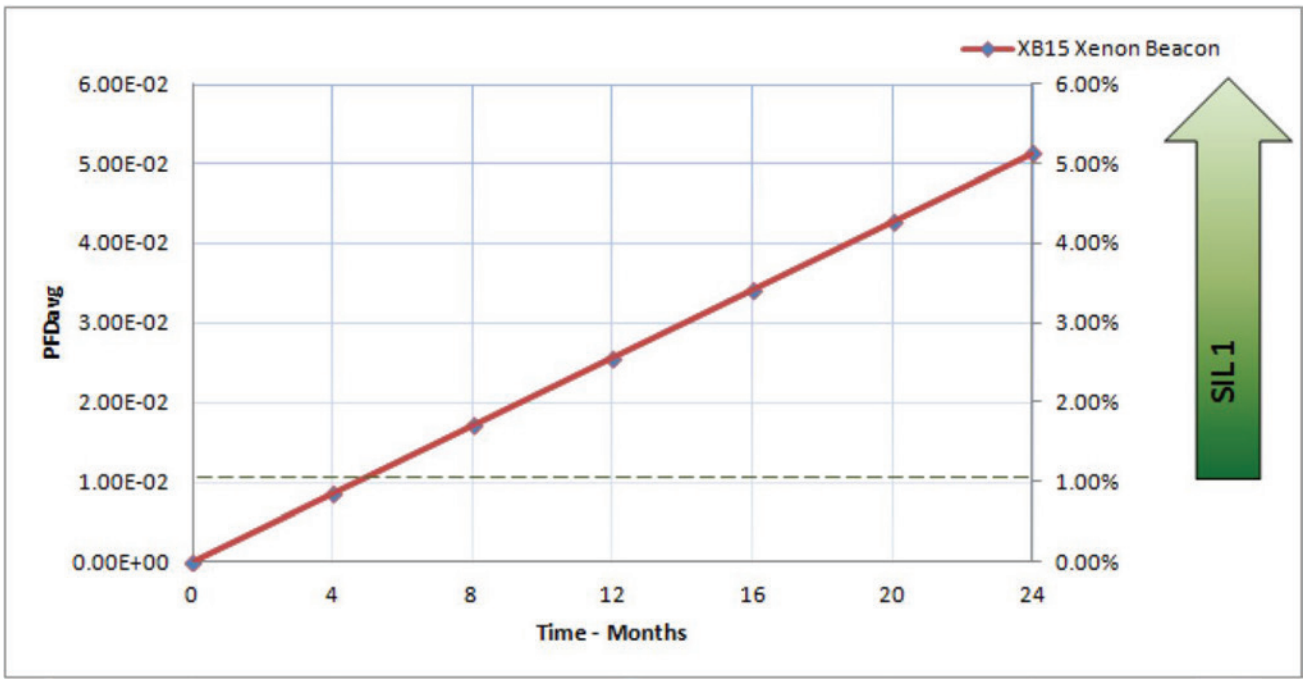
The results are shown below and are based on Route 1_H.

The Beacon is classed as a Type B device.

Safety function

'To provide a spherical cycled visual warning light when energized'.

		XB15 DC Beacon		
Summary of clauses 2/7.4.2 and 2/7.4.4		**XB15 Xenon beacon Single mode (1oo1)**	**XB15 Xenon beacon Redundant mode (1oo2)**	**Verdict**
Architectural constraints		**HFT=0**	**HFT=1**	**Type B**
Safe Failure Fraction (SFF)		**62%**	**62%**	**SIL 1**
Random hardware failures: [h^{-1}]	λDD λDU	0.00E+00 5.85E-06	0.00E+00 5.85E-07	
Random hardware failures: [h^{-1}]	λSD λSU	0.00E+00 9.53E-06	0.00E+00 9.53E-07	
Diagnostic coverage (DC)		0.00%	0.00%	
PFD @ PTI = 730Hrs, MTTR = 8 Hrs		**2.18E-03**	**2.18E-04**	**SIL 2 (1oo1)**
Average freq. of dangerous failure (high demand-PFH)[h^{-1}]		5.85E-06	5.85E-07	**SIL 1 (1oo1)**
Hardware safety integrity compliance		Route 1H		
Systematic safety integrity compliance		See report R56A24816B		
Systematic capability (SC1, SC2, SC3, SC4)		**SC2** (R56A24816B)		
Hardware safety integrity achieved		**Limited to: SIL 1 (1oo1) and SIL 2 (1oo2) due to SFF value.**		



Assessment of functional safety – XB15 AC

This Beacon is intended for use in a safety system conforming to the requirements of IEC61508.

UL has conducted a Failure Modes Effect and Diagnostic Analysis (FMEDA) of the XB15 Xenon Beacon against the requirements of IEC 61508-2 using a Proof Test Interval of 8760hrs.

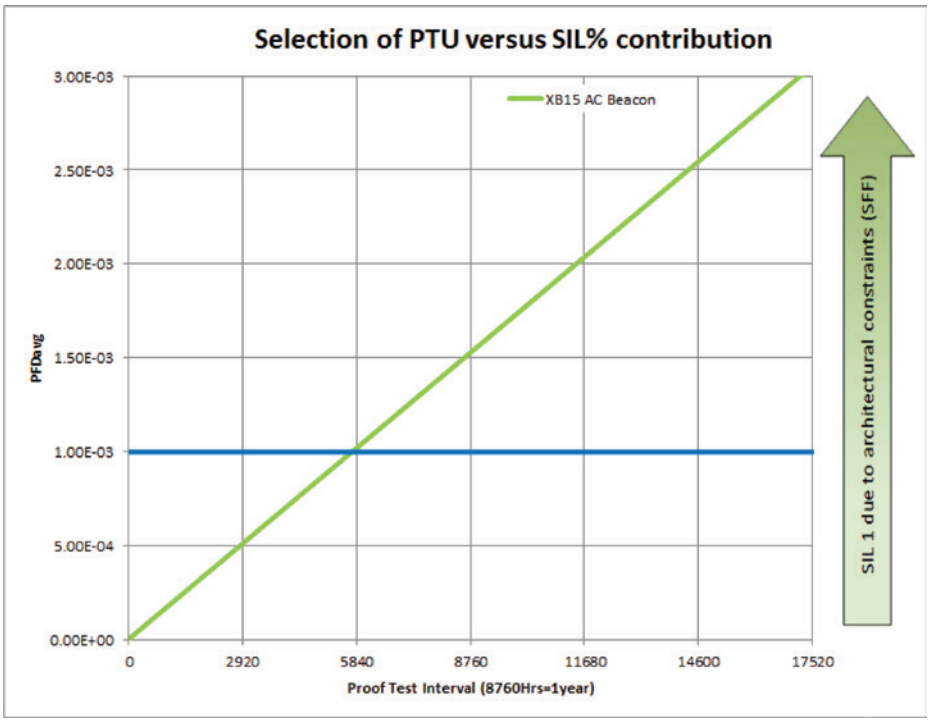
The results are shown below and are based on Route 1_H.

The Beacon is classed as a Type B device.

Safety function

'To provide a spherical cycled visual warning light when energized'.

		XB15 AC Beacon		
Summary of clauses 2/7.4.2 and 2/7.4.4		**XB15 Xenon beacon Single mode (1oo1)**	**XB15 Xenon beacon Redundant mode (1oo2)**	**Verdict**
Architectural constraints		**HFT=0**	**HFT=1**	**Type B**
Safe Failure Fraction (SFF)		**72%**	**72%**	**SIL 1 (1oo1)** **SIL 2 (1oo2)**
Random hardware failures: [h^{-1}]	λDD λDU	6.45E-09 3.48E-07	6.45E-10 3.48E-08	
Random hardware failures: [h^{-1}]	λSD λSU	0.00E+00 8.84E-07	0.00E+00 8.84E-08	
Diagnostic coverage (DC)		0.00%	0.00%	
PFD @ PTI = 8760Hrs, MTTR = 8 Hrs		**1.53E-03**	**1.53E-04**	**SIL 2 (1oo1)**
Average freq. of dangerous failure (high demand-PFH)[h^{-1}]		3.48E-07	3.48E-08	**SIL 3 (1oo1)**
Hardware safety integrity compliance		Route 1_H		
Systematic safety integrity compliance		Route 1_S		
Systematic capability (SC1, SC2, SC3, SC4)		**SC2**		
Hardware safety integrity achieved		**Limited to: SIL 1 (1oo1) and SIL 2 (1oo2) due to SFF value.**		



SIL Conditions of safe use

The following conditions apply to the installation, operation and maintenance of the XB15. Failure to observe these may compromise the safety integrity of the Beacon

1. The user shall comply with the requirements given in this Safety manual in regard to all relevant functional safety aspects such as application of use, installation, operation, maintenance, proof tests, maximum ratings, environmental conditions, repair, etc.
2. If the Beacon is to be used on a Fire Alarm system it is recommended as per BS 5839 part 1 (eq. EN 54), that the product is tested at least once a week. In all other applications it is strongly recommended to test the product at least once a year.
3. Selection of this equipment for use in safety functions and the installation, configuration, overall validation, maintenance and repair shall only be carried out by competent personnel, observing all the manufacturer's conditions and recommendations in the user documentation.
4. All information associated with any field failures of this product should be collected under a dependability management process (e.g., IEC 60300-3-2) and reported to the manufacturer.
5. If the product is used in a redundant installation, both hardware safety integrity and systematic safety integrity for SIL 2 can be achieved. The installation must be such as to ensure sufficient protection against common cause failures and independence from cascading failures.

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Publication No. TM250
February 2026

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