

Why Cooper Crouse-Hinds?

- The broadest line of harsh and hazardous signaling, alarm and communication products available in both IEC and NEC designs and certifications.
- A new line of hazardous area call points (fire alarm or emergency notification devices) provides you a unique product offering unequalled by any other manufacturer of hazardous location signaling products.
- Worldwide listings with UL, cUL, ATEX, GOST, CSA and CQST (Chinese) approvals provide customer solutions that the competition can't match.
- Superior enclosure materials providing unmatched ingress protection and corrosion resistance from the harshest conditions.
- A unique signaling product offering integral visual and audible signaling capability pre-wired for simultaneous output activation.
- A new line of heat detectors for early indication of potential processing problems.

Applications Include:



Petrochemical Facilities



Manufacturing Areas



Waste Water Treatment



Food Processing Facilities



Paper and Pulp Operations



Pharmaceutical Manufacturing

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A Guide To The Use Of Electrical Equipment In Potentially Explosive Atmospheres

Introduction

Potentially explosive atmospheres exist where there is a risk of explosion due to mixtures of gas/air, vapor/air, dust/air or other flammable combinations. In such areas there is a necessity to eliminate sources of ignition such as sparks, hot surfaces or static electricity which may ignite these mixtures. Where electrical equipment has to be used in these areas it must be so designed and constructed as to not create sources of ignition capable of igniting these mixtures. Before electrical equipment can be used in a potentially explosive atmosphere, a representative sample has to be fully tested and certified by an independent authority such as Baseefa 2001 in Europe or UL in the U.S.A.

This information is intended as a guide only and further expert guidance should be sought before placing into service, maintaining or repairing any item of equipment in a potentially explosive atmosphere.

Where comparisons are shown between, for example, European and North American practice this may be an approximation and individual standards/codes of practice should be consulted for precise details.

Area Classification

Plants are divided into Zones (European and IEC method) or Divisions (North American method) according to the likelihood of a potentially explosive atmosphere being present.

Note: North American legislation now allows Zones to be used to classify areas, where this practice is used it follows the IEC Zone method.

European & IEC Classification	Definition of zone or division	North American Classification
Zone 0 (gases) Zone 20 (dusts)	An area in which an explosive mixture is continuously present or present for long periods	Class I, Division 1 (gases) Class II, Division 1 (dusts)
Zone 1 (gases) Zone 21 (dusts)	An area in which an explosive mixture is likely to occur in normal operation	Class I, Division 1 (gases) Class II, Division 1 (dusts)
Zone 2 (gases) Zone 22 (dusts)	An area in which an explosive mixture is not likely to occur in normal operation and if it occurs it will exist only for a short time	Class I, Division 2 (gases) Class II, Division 2 (dusts) Class III, Division 1 (fibers) Class III, Division 2 (fibers)

Gas Groups (plus dusts and fibers)

There are two main gas groups, Group I—Mining only and Group II—Surface Industries. These categories are used in European and I.E.C. groupings.

Group I is concerned only with underground mining where methane and coal dust are present.

Group II gases occurring in surface industries, are sub-grouped according to their volatility. This enables electrical equipment to be designed to less onerous tolerances if it is to be used with the least volatile gases.

Typical gas/material	European/I.E.C. Gas Group	North American Gas Group
Methane	I	-
Acetylene	IIC	A
Hydrogen	IIC	B
Ethylene	IIB	C
Propane	IIA	D
Metal dust	-	E
Coal dust	-	F
Grain dust	-	G

Temperature

Hot surfaces can ignite explosive atmospheres. To guard against this, all electrical equipment intended for use in a potentially explosive atmosphere is classified according to the maximum surface temperature it will reach in service. This temperature is normally based on a surrounding ambient temperature of 40 degrees Centigrade (102 degrees Fahrenheit). This temperature can then be compared to the ignition temperature of the gas(es) which may come into contact with the equipment and a judgement reached as to the suitability of the equipment to be used in that area.

Temperature Classification		Maximum Surface Temperature
European/I.E.C.	North American	
T1	T1	450° C
T2	T2 T2A T2B T2C T2D	300° C 280° C 260° C 230° C 215° C
T3	T3 T3A T3B T3C	200° C 180° C 165° C 160° C
T4	T4 T4A	135° C 120° C
T5	T5	100° C
T6	T6	85° C

e.g. Butane has an ignition temperature of 365 degrees Centigrade, equipment used in the vicinity of this gas would need a T rating of T2 or better.

Types of Electrical Equipment Suitable for use in Potentially Explosive Atmospheres			
Different techniques are used to prevent electrical equipment from igniting explosive atmospheres. There are restrictions on where these different types of equipment can be used as follows:	European Area of use Designation Standard	IEC Area of use Designation Standard	NEC Area of use Designation Standard
Flameproof Enclosure —An enclosure used to house electrical equipment, which when subjected to an internal explosion will not ignite a surrounding explosive atmosphere.	Zones 1 & 2 EExd EN60079-1	Zones 1 & 2 Exd IEC60079-1	Class I Divisions 1 & 2 — UL1203
Intrinsic Safety —A technique whereby electrical energy is limited such that any sparks or heat generated by electrical equipment is sufficiently low as to not ignite an explosive atmosphere.	Zones 0, 1 & 2 EExi EN50020	Zones 1 & 2 Exi IEC60079-11	Class I Divisions 1 & 2 — UL913
Increased Safety —This equipment is so designed as to eliminate sparks and hot surfaces capable of igniting an explosive atmosphere.	Zones 1 & 2 EExe EN60079-7	Zones 1 & 2 Exi IEC60079-7	— — —
Purged and Pressurized —Electrical equipment is housed in an enclosure which is initially purged to remove any explosive mixture, then pressurised to prevent ingress of the surrounding atmosphere prior to energization.	Zones 1 & 2 EExp EN50016	Zones 1 & 2 Exp IEC60079-2	Class I Divisions 1 & 2 — NFPA496
Encapsulation —A method of exclusion of the explosive atmosphere by fully encapsulating the electrical components in an approved material.	Zones 1 & 2 EExm EN60079-18	Zones 1 & 2 Exm IEC60079-18	— — —
Oil Immersion —The electrical components are immersed in oil, thus excluding the explosive atmosphere from any sparks or hot surfaces.	Zones 1 & 2 EExo EN50015	Zones 1 & 2 Exo IEC60079-6	Class I Division 2 — UL698
Powder Filling —Equipment is surrounded with a fine powder, such as quartz, which does not allow the surrounding atmosphere to come into contact with any sparks or hot surfaces.	Zones 1 & 2 EExq EN50017	Zones 1 & 2 Exq IEC60079-5	— — —
Non-sparking —Sparking contacts are sealed against ingress of the surrounding atmosphere, hot surfaces are eliminated.	Zone 2 EExn EN60079-15	Zone 2 Exn IEC60079-15	— — —

Selection, installation and maintenance of electrical equipment intended for use in potentially explosive atmospheres.

International and national standard requirements for the safe use of electrical equipment in potentially explosive atmospheres as follows:

	International	Europe	U.S.A.
General Recommendations	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Classification of Hazardous Areas	IEC60079-10	EN60079-10	N.E.C. Chapter 5
Inspection and Maintenance of Electrical Equipment	IEC60079-17	EN60079-17	–
Requirements for Flameproof Enclosures	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Requirements for Intrinsically Safe Equipment	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Requirements for Increased Safety Equipment	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Requirements for Purged and Pressurized Equipment	IEC60079-14	EN60079-14	N.E.C. Chapter 5
Requirements for Non-Sparking Equipment	IEC60079-14	EN60079-14	–

Cooper Crouse-Hinds advises that all Explosionproof electrical equipment is maintained, by suitably trained personnel, in accordance with the Manufacturers' recommendations.

Any spare parts used should be purchased from the original Manufacturer and repairs should be carried out by the Manufacturer or under his supervision, in order that the item remains in conformance with the certification documents.

The Certification Process

All electrical equipment, intended for use in a potentially explosive atmosphere, should be certified as suitable for such use.

The methods of obtaining certification differ in detail, see below, between each certifying body or group of bodies (e.g. CENELEC). Basically this process consists of supplying a representative sample of the equipment along with a set of drawings to a recognised test/certification body e.g. Baseefa 2001 who in turn test the equipment against a recognised Standard e.g. EN60079-14 and issues a Certificate. The user of the equipment can then refer to this Certificate to enable him to safely put the item into service in a zone appropriate to the Certification.

European Practice

ALL EQUIPMENT, BOTH ELECTRICAL AND MECHANICAL, INTENDED TO BE PUT INTO SERVICE WITHIN THE EEC HAS TO BE CERTIFIED IN ACCORDANCE WITH THE ATEX DIRECTIVE.

It should be noted also that **MECHANICAL** equipment is covered by the ATEX Directive so for the first time items such as gearboxes will have to carry ATEX certification.

The equipment coding signifying compliance with ATEX is as follows:



II2G i.e.



– Explosionproof in accordance with ATEX.

II – Group II surface industries.

2 – category 2 equipment (suitable for use in Zone 1) note: Category 1 is suitable for Zone 0.
Category 3 is suitable for Zone 2.

G – suitable for atmospheres containing gas (D is suitable for atmospheres containing dusts).

Equipment will be CE marked when certified to ATEX.

North American Practice

Sample equipment and supporting documentation are submitted to the appropriate authority e.g. U.L., F.M., C.S.A.

The equipment is tested in accordance with relevant standards for explosion protection and also for general electrical requirements e.g. light fittings.

After successful testing, a listing is issued allowing the manufacturer to place the product on the market.

The product is marked with the certification details such as the gas groups A,B,C,D and the area of use e.g. Class I, Division 1.

Applicable UL, cUL, ULC, CSA Certifications

UL1638 Visual Signaling Appliances—Private-mode emergency and general utility signaling.

ULC S526-02—Visual signal devices for fire alarm systems.

UL1971—Listed for signaling devices for the hearing impaired.

ULC S526-02—Visual signal devices for fire alarm systems

UL38—Manual signaling boxes for fire alarm systems.

Similar to CAN/ULC S58-M91—Standard for manual pull stations for fire alarm systems

UL464—Audible signal appliances.

ULC S525-99—Audible signal devices for fire alarm systems

UL11604—Electric equipment for use in Class II, Division 2, and Class III, hazardous locations.

UL844—Electric lighting fixtures for use in hazardous locations.

CSA C22.2 No. 137-M1981—Electric Luminaires for use in hazardous locations

UL1203—Explosionproof and dust ignitionproof electrical equipment for use in hazardous locations.

CSA C22.2 No. 30-M1986—Explosionproof enclosures for use in Class I Locations.

CSA C22.2 No. 25-1966—Explosionproof enclosures for use in Class II Groups E, F and G hazardous locations.

UL1598A—Supplemental requirements for luminaires for installation on marine vessels.

Refer to Transport Canada Technical Publication TP127E-Ships Electrical Standards.

Worldwide Certification

Most countries outside Europe or North America use the IEC Standards as a basis for their own national standards.

The Russian Federation certifies equipment to GOST 'R' standards, these closely follow CENELEC practice.

In Russia, certain products used in fire alarm systems may be required to carry the Russian fire approval (VNIPO). Note that not all Cooper Crouse-Hinds products that have been certified to GOST 'R' are VNIPO approved. Check specification on technical data sheets before ordering.

Kazakhstan has a certification process (GOST 'K') where approval is normally based on compliance with CENELEC standards.

Certification in China is based on compliance with international standards such as CENELEC or UL, or their own CQST standard.

There is a scheme in place which will, when fully adopted, allow for internationally recognized certification to become a reality, this is the IEC EX SCHEME. This uses the IEC standards and IEC recognised test and certification bodies to issue mutually recognised test reports and certificates. The scheme is in its infancy and its level of success cannot yet be measured.

Ingress Protection

2 digits are used to denote the level of ingress protection that a piece of apparatus enjoys:

IP 			
	Solids		Liquids
0	No protection.	0	No protection.
1	Protected against solid objects up to 50mm, e.g. hands.	1	Protected against vertically falling drops of water.
2	Protected against solid objects up to 12mm, e.g. fingers.	2	Protected against water spray up to 15 degrees from vertical.
3	Protected against solid objects up to 2.5mm, e.g. tools.	3	Protected against water spray up to 60 degrees from vertical.
4	Protected against solid objects over 1mm, e.g. wires.	4	Protected against water sprays from all directions.
5	Protected against dusts. (No harmful deposits).	5	Protected against water jets from all directions.
6	Totally protected against dust.	6	Protected against strong water jets from all directions, e.g. Offshore.
		7	Protected against immersion between 15cm and 1m in depth.
		8	Protected against long immersion under pressure.

NEMA Standards

North American practice is to use NEMA standards to describe ingress protection, i.e.:

NEMA 3	is similar to	IP 54
NEMA 4	is similar to	IP 55
NEMA 4X	is similar to	IP 56
NEMA 6	is similar to	IP 67

Manual Call Points



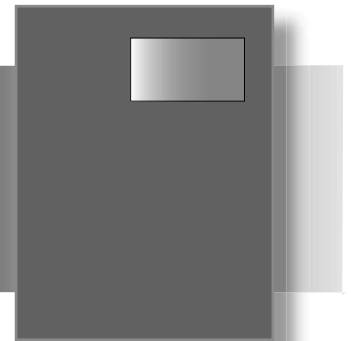
BG & SM87 BG
Call Points

Heat Detectors



HD1 Series
Heat Detectors

Hazardous Location Input Field Devices



**Fire Alarm
Panel**



(For illustration purposes only,
not available from this catalog)

Smoke Detector

**Strobe Warning
Lights**



XB15 & XB16 Strobe Lights

**Rotating
Beacons**



EXS0301

**Combination
Units**



Horn/Strobe Unit

**Remote Speaker/
Amplifier**



Explosionproof ETH Series

Hazardous Location Output Field Devices



DB3 Horn

Speakers



EXFASC Series

Fire Alarms



SM87 SL

Status Lights



XB12

Strobe Lights



Class I, Div. 2, Zone 2
Touch-safe coated glass for
finger activation.



Class I, Div. 2, Zone 2
Push to activate.



Class I, Div. 1
Push to activate.
Key switch to reset.

These manual fire alarm call points have been designed for use in hazardous locations and harsh environmental conditions. They offer:

- The broadest range of hazardous location manual fire alarm activation devices in the industry.
- The compact design, activation choices such as pushbutton or breakglass, housing color choices and comprehensive worldwide certifications make this product family a project closer.
- Flexibility as all units accept metric cable or NPT conduit entries, and each unit can be custom designed for a specific fire alarm or emergency activation requirements.

Primary Applications

- Fire alarm activation
- Emergency evacuation
- Process shut-down

Industries

- Liquid natural gas terminals
- Energy exploration
- Chemical
- Refinery
- Power generation

Key Features & Benefits

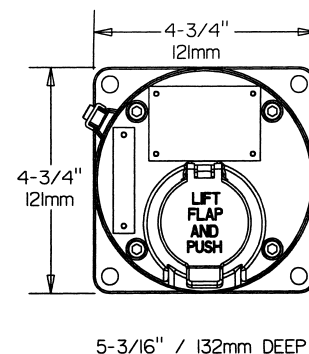
- In-line and end-of-line resistors fitted for use in fire activation circuits
- Optional LED to indicate operation
- Plastic break glass element available—easy activation yet safe to touch
- Corrosion resistant GRP—ideal for Marine applications
- Retained stainless steel cover screws—won't corrode and never lose screws
- Optional lift flap for protection

SM87PBL

Push Button Fire Alarm Call Point—Explosionproof



Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Marine Grade Alloy Stainless Steel (ATEX only)
Entries	Up to 4 x 1/2" or 3/4" NPT
Weight	5.5lb/2.5kg
Options: Body color, certification	



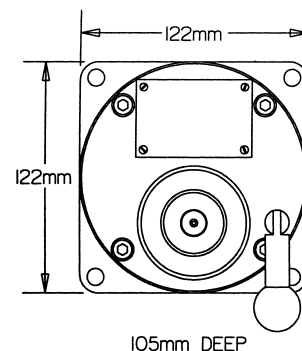
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, CSA, Class I, Div 1, Groups C & D, Zone 1	36200102	SM87PBLAUL3T3B3NNR	Explosion protected, 2 x 1/2" NPT entries, duty label "Fire—Press Here," single push button switch—latching, marine grade alloy, red finish

SM87BG

Break Glass Call Point—Explosionproof



Certification	ATEX GOST 'R' & 'K', Chinese
Intrinsically Safe Flameproof	ATEX Ex II 1G, EExia IIC T4 ATEX Ex II 2G, EExd IIC T6
Certified Ambient Temperature	-55°C to +70°C -20°C to +55°C (LED)
Ingress Protection	IP66 & 67
Material	Stainless Steel or Alloy
Entries	Up to 4 x 20mm or 25mm
Weight	3.8kg (Steel) 2.5kg (Alloy)
Options: Body color, 3 & 4 pole changeover switch, certification	



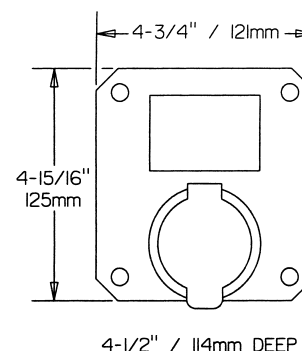
Certification	Ordering Code	Catalog #	Standard Product Configuration
ATEX Ex II 2GD	16200174	SM87BGLAD1B1NNR	Break glass call point, Ex II 2GD, EExd IIC T6, IP 66 & 67, 1 x M20 bottom entries, duty label, "Fire Breakglass," alloy material, red finish

PB

Push Button Fire Alarm Call Point—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups A,B,C,D Class I, Zones 1 & 2
Certified Ambient Temperature	-13°F to +158°F -25°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 4 x 1/2" NPT, M20
Weight	2.6lb/1.2kg
Options: Body color, certification	



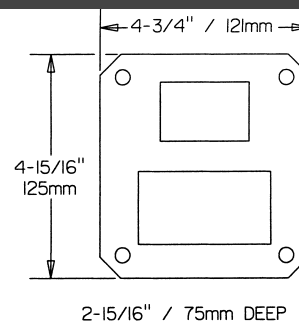
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, Class I, Div 2, Groups A, B, C, D, Zone 1 & 2	869105	PBUL4C6C0DSN7R	Explosion protected, 2 x 1/2" NPT bottom entries, no duty label, DC, single push button switch latching, painted red GRP
ATEX Ex II 2GD	800010	PBEB4B6B0DSN6R	Explosion protected, Ex II 2GD, EExe, IIC, T6, Zone 1 & 2, 2 x M20 entries, DC, single switch, red finish

BG

Break Glass Fire Alarm Call Point—Hazardous Locations



Certification UL Listed for:	Ⓐ ATEX Class I, Div 2, Groups A,B,C,D Class I, Zone 2
Certified Ambient Temperature	-13°F to +131°F -25°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 4 x ½" NPT, M20
Weight	2.6lb/1.2kg



Options: Body color, certification, lift flap, LED, tag & duty label, series and EOL resistor

Certification	Type	Ordering Code	Catalog #	Standard Product Configuration
UL Listed, Class I, Div 2, Groups A, B, C, D, Zone 2	Haz. Loc.	869101	BGUL4C6C1DSN7R	Explosion protected, 2 x ½" NPT bottom entries, single break glass switch latching, painted red GRP finish
ATEX Ex II 1GD	Intrinsically Safe	800002	BGIB4B6B1DSN6R	Explosion protected, Zone 0, 1 & 2, DC, 2 x M20 bottom entries, single break glass switch latching, single switch, red finish
ATEX Ex II 2GD	Increased Safety	800003	BGEB4B6B1DSN6R	Explosion protected Ex II 2GD, EExed, IIC, T6, Zone 1 & 2, DC, 2 x M20 bottom entries, single break glass switch latching, red finish
IP66 & 67	Waterproof	800001	BGWN4B6B1ASN6R	Dust-tight and weatherproof, Uncertified AC, 2 x M20 bottom entries, single break glass switch latching, red finish

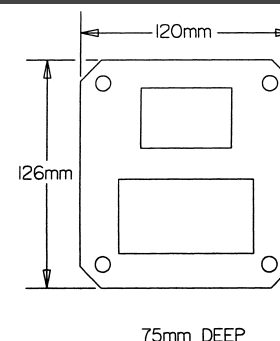
BG2

Break Glass Call Point—Hazardous Locations



Certification Intrinsically Safe Increased Safety	Ⓐ ATEX ATEX Ex II 1GD, EExia IIC T4 ATEX Ex II 2GD, EExed(m) IIC T4 (T6)
Certified Ambient Temperature	-40°C to +55°C (EExia) -20°C to +50°C (EExed)
Ingress Protection	IP66 & 67
Material	Corrosion-free GRP
Entries	2 x M20
Weight	1.2kg

Options: Lift flap



Certification	Type	Ordering Code	Catalog #	Standard Product Configuration
ATEX Ex II 1GD	Intrinsically Safe	800005	BG2INN1N	Explosion protected, Zone 0, 1 & 2, DC, 2 x M20 bottom entries, single break glass switch latching, red finish
Increased Safety	Increased Safety	800004	BG2EDC1N	Explosion protected, Zone 1 & 2, DC, 2 x M20 bottom entries, single break glass switch latching, red finish

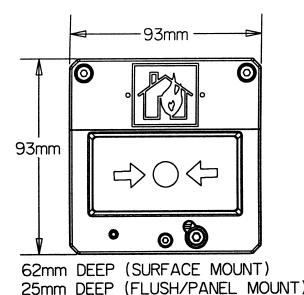
BG3

Break Glass Call Point—Explosionproof & Weatherproof



Certification Intrinsically Safe	Ⓐ ATEX, Chinese ATEX Ex II 1G, EExia IIC T4
Certified Ambient Temperature	-55°C to +55°C (EExia)
Ingress Protection	IP66 & 67
Material	Corrosion-free GRP
Entries	2 x M20
Weight	0.5kg

Options: Body color, lift flap

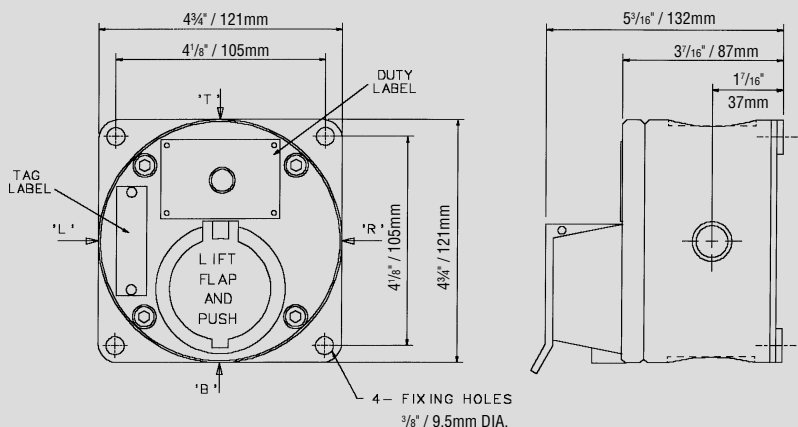


Certification	Type	Ordering Code	Catalog #	Standard Product Configuration
ATEX Ex II 1G	Intrinsically Safe	800007	BG3I1NBN	Explosion protected, Zone 0 / 1 & 2 DC, standard models are surface mount version, have 2 x M20 bottom entries, single break glass switch latching, duty label "Burning House," red GRP finish
IP66 & 67	Weatherproof	800006	BG3W1NBN	Uncertified, Dust-tight & weatherproof, 24V DC, Single break glass switch latching, duty label "Burning House," red GRP finish

MEDC Series Fire Alarm or Emergency Call Points—Hazardous Locations, Weatherproof, Marine

SM87PBL Unit

ALL DIMENSIONS IN INCHES AND MILLIMETERS



Specification—SM87PBL Unit

Certification: UL Listed: Class I, Div 1 Groups C & D and Class I, Zone 1. Listing No: E186629.

CSA Certification:

I.S. Version—Class I, Groups A, B, C, D.
Exd Class I, Div 2 ½ Group D.

Enclosure type 4, Cert. No. 79120.

ATEX approved:

EN50014, EN50018.

Cert. No. Baseefa 03ATEX0075.

Voltage: 24V AC/DC

Rating: 2 amp.

Switches: 2 pole c/o, wired to terminals.

Terminals: Will accept up to 14AWG cable.

Entries: Up to 4 x ½" or ¾" NPT, 20mm, 25mm

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

Material: LM 25 TF Marine Grade Alloy or Grade 316 ANCHB stainless steel

Weight: 5.5 lb/2.5kg (approx.).

Finish: Epoxy paint finish as standard or to customer's specification.

Certified Temperature EExd/Exi: -55°C to 70°C
-20°C to +55°C (LED version only).

UL: -67°F to +158°F (-55°C to +70°C).
-4°F to +131°F (-20°C to +55°C) LED version only.

CSA: -58°F to +131°F (-50°C to +55°C) (Exd).
-58°F to +104°F (-50°C to +40°C) (Exi).

Ingress Protection: NEMA 4X and 6, IP66 & 67.

SM87 PB IP68 (40m for 8 hours).

Addressable: Consult MEDC for specification.

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

Field Installed Duty Labels

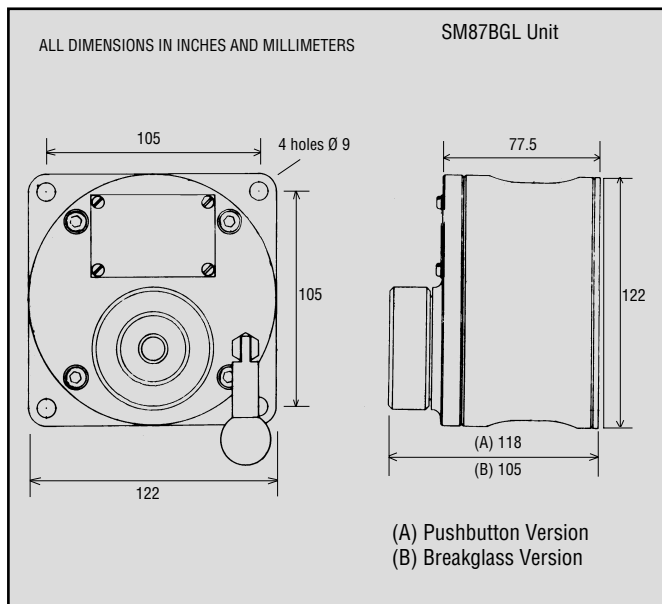
Use with SM87 Call Points:	Duty Label	Ordering Code
SM87PBL/SM87BGL	Blank	869530
SM87PBL/SM87BGL	FIRE	869526
SM87PBL/SM87BGL	Emergency Shut Down	869532
SM87PBL/SM87BGL	Suppression Release	869534

Ordering Requirements

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

Unit Type	Model	Material	Certification	Entries	Duty Label	Tag Label	Features	Finish																																												
SM87	PBL				N	N	N																																													
		<table border="1"> <thead> <tr> <th>*Material</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>Stainless Steel</td> <td>S</td> </tr> <tr> <td>Alloy</td> <td>A</td> </tr> </tbody> </table> <p>*UL version only available in Alloy.</p>	*Material	Code	Stainless Steel	S	Alloy	A																																												
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Stainless Steel	S																																																			
Alloy	A																																																			
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MEDC Series Fire Alarm or Emergency Call Points—Hazardous Locations, Weatherproof, Marine



Both the EExIICT4 units and the EExdIICT6 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.

Field Installed Duty Labels

Use with SM87 Call Points:	Duty Label	Ordering Code
SM87PBL/SM87BGL	Blank	869530
SM87PBL/SM87BGL	FIRE	869526
SM87PBL/SM87BGL	Emergency Shut Down	869532
SM87PBL/SM87BGL	Suppression Release	869534

Specification—SM87BGL Unit

Breakglass unit, latching	Type SM87BGL
Lift flap, Breakglass, latching	Type SM87LBGL
Voltage:	EExd 24V AC/DC EExia 28V.
Rating:	2 amp.
Switches:	2 pole c/o, wired to terminals. Optional up to 4 pole.
Terminals:	Will accept up to 2.5mm ² cable.
Entries:	Up to 4 x 20mm or 25mm ISO EExd/EExia.
Optional Indicator:	A red high intensity LED can be fitted for alarm indication.
Material:	Grade 316 ANC4B Stainless Steel or LM 25 TF Marine Grade Alloy.
Weight:	3.8 kg. steel (approx.) or 2.5 kg. alloy (approx.).
Finish:	Epoxy paint finish as standard or to customer's specification.
Certification:	CENELEC EN 50014, EN50018 (for Exd) and EN50020 (for Exi). EExIICT T4 Cert No. Baseefa 02 ATEX 0152X. EExdIIC T5/T6 Cert No. Baseefa 03 ATEX 0075. CSA Certification: Class I Groups A-D I.S. version (SM87 PBI only). Class I, Div 1 & 2, Group D (Exd – SM87 PB & SM87 BG). GOST 'R' Certification: 1Exib IIC T4, 1Exd IIC T4* GOST 'K' Certification: Exib IIC T4.* Chinese Certification: CQST – Exia IIC T4, Exd IIC T5/T6.* *Available upon request

Certified	EExd/Exi* –55°C to +70°C.
Temperature:	–20°C to +55°C (LED version only). CSA –50°C to +55°C (Exd), –50°C to +40°C (Exi). *Note: includes ATEX, GOST & Chinese versions.
Ingress	IP66 and IP67.
Protection:	SM87 PB IP68 (40m for 8 hours).
Resistor Values:	470R minimum (DC & I.S. units only).

Ordering Requirements

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

Unit Type	Model	Material	Certification	Entries	Duty Label	Tag Label	Features	Finish
SM87	BGL				N	N	N	

Material	Code
Stainless Steel	S
Alloy	A

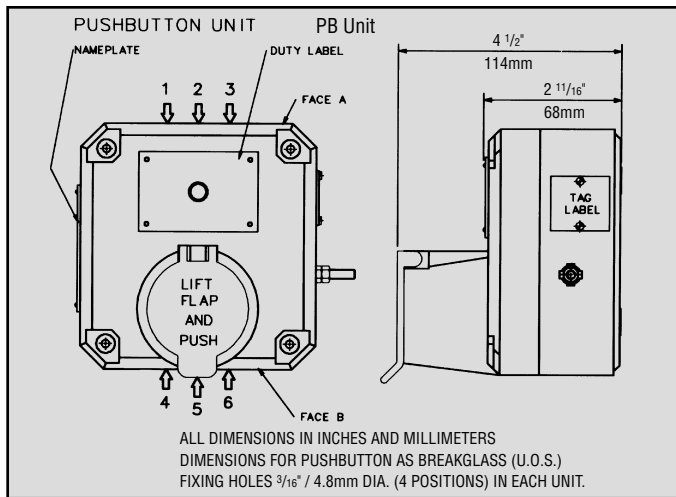
Certification	Code
EExdIICT6	D
CSA	C

Entries	Code
20mm Left/Right	1L1R
20mm Top/Bottom	1T1B
20mm Bottom	1B
25mm Left/Right	2L2R
25mm Top/Bottom	2T2B
25mm Bottom	2B
½" NPT Left/Right	3L3R
½" NPT Top/Bottom	3T3B
½" NPT Bottom	3B
¾" NPT Left/Right	4L4R
¾" NPT Top/Bottom	4T4B
¾" NPT Bottom	4B

Finish	Code
Red	R
Blue	B
Yellow	Y
Yellow/Black Stripes	X

Note: the units can be internally wired to suit customers' specifications. Please discuss your requirements with us.

MEDC Series Fire Alarm or Emergency Call Points—Hazardous Locations, Weatherproof, Marine

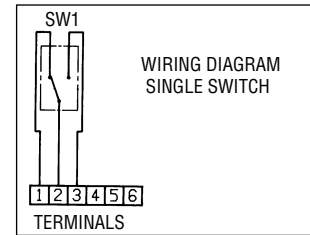


Field Installed Duty Labels

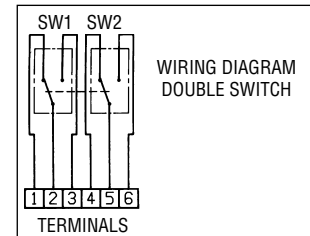
Use with PB Call Points:	Duty Label	Ordering Code
PB	Blank	869530
PB	FIRE	869526
PB	Emergency Shut Down	869532
PB	Suppression Release	869534

Specification—PB Unit

Certification:	UL Listed — Hazardous locations: Class I, Div. 2, Groups A, B, C, D and Class I, Zone 2. UL Listing No. E186629. Ordinary locations: Fire Alarm Boxes. UL Listing No. S8117. CSA Certified to C22.2 (PB only), Nos. 0-M, 0.4M, 14-M, 25,30-M, 94, 142-M 1987, 157M 1987, 157-92, Enclosure Type 4, 4A, Class I, Groups A, B, C, D, Cert. No. 79120. ATEX Approved: EN50014, EN50018, EN50019, EN50028. Cert. No. BAS02ATEX2105X (BG & PB), EExed II C T6 (switch only), EExedm IIC T4 (other versions).
Voltage:	Up to 240V.
Certified Temperature:	BGUL: -13°F to +131°F (-25°C to +55°C); PBUL: -13°F to +131°F (-25°C to +55°C). PB (CSA): -58°F to +104°F (-50°C to +40°C).
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Terminals:	7 x 14 AWG standard.
Switch Rating (1 or 2 changeover switches fitted):	Max Rating 240VAC, 3A.
Cable Entries:	Up to 4 entries 1/2" NPT or 20mm.
Weight:	2.6 lb/1.2kg (Varies with model & entries).
Material:	Glass reinforced polyester.
Finish:	Red epoxy painted finish as standard or to Customer's specification.
Resistors:	Various configurations available on versions up to 24V, 470R minimum.
LED Indication:	A high intensity red LED can be fitted as an optional extra to indicate operation on versions up to 24V.
Labeling:	PB & BG Duty label — worded to Client's requirements. Riveted on. PB & BG Tag label — worded to Client's requirements. Screwed on.



Basic single changeover switch wiring diagram



Basic double changeover switch wiring diagram

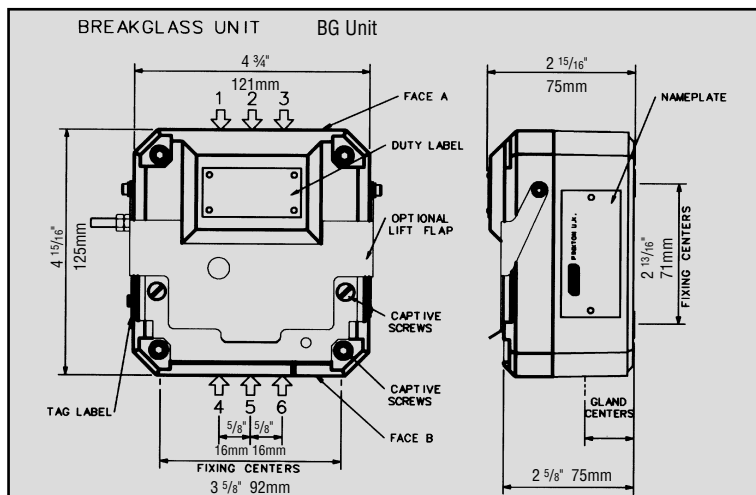
For versions containing inline and end of line resistors, please specify your requirements.

Ordering Requirements

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

Model	Certification	Entries	Labels	Switches	Features	Terminals	Finish
PB			N	DS	N	7	

Certification	Code	Entries	Code	Switches	Code	Finish	Code
ATEX/CENELEC – EExe	EB	1 Bottom M20	5B	DC double change over	DD	Red (Standard)	R
ATEX/CENELEC – EExi	IB	2 Bottom M20	4B 6B	AC single change over	AS	Natural Black	N
CSA – Exi (PBI only)	IC	1 Top, 1 Bottom M20	2B 5B	AC double change over	AD	Blue	B
UL – Class I, Div. 2	UL	1 Bottom 1/2" NPT	5C			Yellow	Y
		2 Bottom 1/2" NPT	4C 6C			Gray	G
		1 Top, 1 Bottom 1/2" NPT	2C 5C				
		16 mm	*A				
		20 mm	*B				
		1/2" NPT	*C				
		*Prefix entry size (see diagram above) with entry position code e.g. 1A, 2A.					
		UL & CSA Versions only available with 1/2" NPT entries					

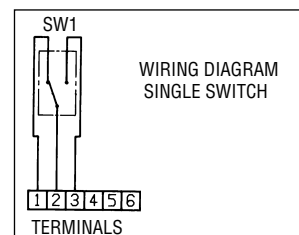


Field Installed Duty Labels

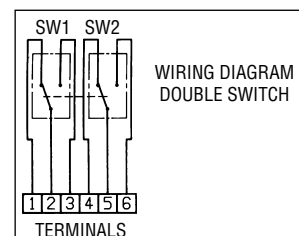
Use with BG Call Points:	Duty Label	Ordering Code
BG	Blank	869531
BG	FIRE	869525
BG	Emergency Shut Down	869533
BG	Suppression Release	869535

Specification—BG Unit

Certification:	UL Listed — Hazardous locations: Class I, Div. 2, Groups A, B, C, D and Class I, Zone 2. UL Listing No. E186629. Ordinary locations: Fire Alarm Boxes. UL Listing No. S8117. CSA Certified to C22.2 (PB only), Nos. 0-M, 0.4M, 14-M, 25,30-M, 94, 142-M 1987, 157M 1987, 157-92, Enclosure Type 4, 4A, Class I, Groups A, B, C, D, Cert. No. 79120. ATEX Approved: EN50014, EN50018, EN50019, EN50028. Cert. No. BAS02ATEX2105X (BG & PB), EExed II C T6 (switch only), EExedm IIC T4 (other versions).
Voltage:	Up to 240V.
Certified Temperature:	BGUL: -13°F to +131°F (-25°C to +55°C); PBUL: -13°F to +131°F (-25°C to +55°C). PB (CSA): -58°F to +104°F (-50°C to +40°C).
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Terminals:	7 x 14 AWG standard.
Switch Rating (1 or 2 changeover switches fitted):	Max Rating 240VAC, 3A.
Cable Entries:	Up to 4 entries 1/2" NPT or 20mm.
Weight:	2.6 lb/1.2kg (Varies with model & entries).
Material:	Glass reinforced polyester.
Finish:	Red epoxy painted finish as standard or to Customer's specification.
Resistors:	Various configurations available on versions up to 24V, 470R minimum.
LED Indication:	A high intensity red LED can be fitted as an optional extra to indicate operation on versions up to 24V.
Labelling:	BG Glass label — reads either (1) Fire Break glass — press here. (2) Break glass — press here. (3) Worded to Client's requirements. PB & BG Duty label — worded to Client's requirements. Riveted on. PB & BG Tag label — worded to Client's requirements. Screwed on.



Basic single changeover switch wiring diagram



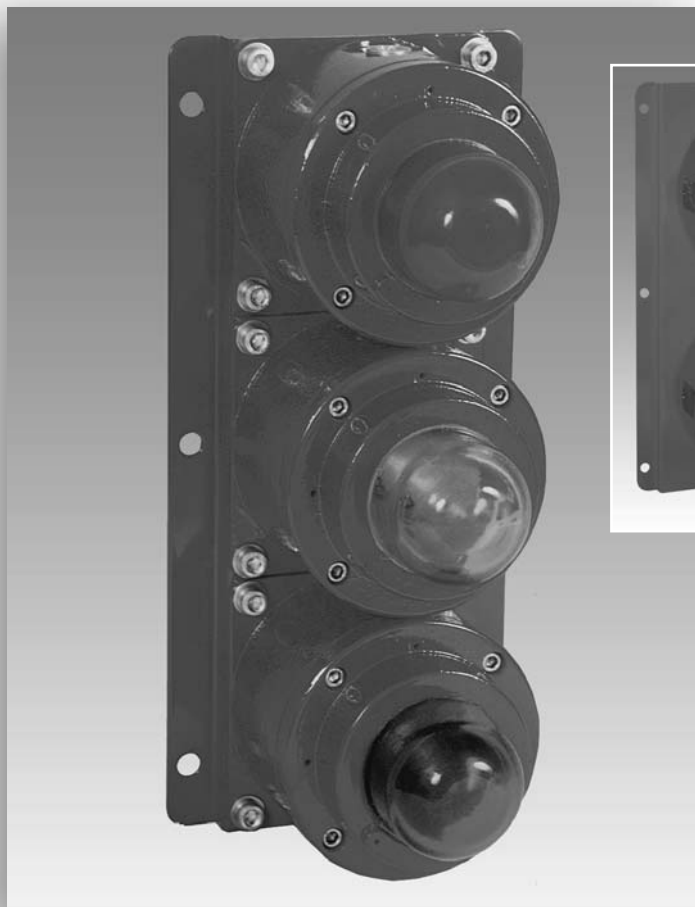
Basic double changeover switch wiring diagram

For versions containing inline and end of line resistors, please specify your requirements.

Ordering Requirements

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

Model	Certification	Entries	Labels	Switches	Features	Terminals	Finish
BG				DS	N	7	
Certification	Code	Entries	Code	Labels	Code	Finish	Code
ATEX/CENELEC – EExe	EB	1 Bottom M20	5B	Glass Label (1)	1	Red (Standard)	R
ATEX/CENELEC – EExi	IB	2 Bottom M20	4B 6B	"Fire Break Glass—Press Here"		Natural Black	N
CSA – Exi (PBI only)	IC	1 Top, 1 Bottom M20	2B 5B	Glass Label (2)	2	Blue	B
UL – Class I, Div. 2	UL	1 Bottom 1/2" NPT	5C	"Break Glass—Press Here"		Yellow	Y
		2 Bottom 1/2" NPT	4C 6C			Gray	G
		1 Top, 1 Bottom 1/2" NPT	2C 5C				
		16 mm	*A				
		20 mm	*B				
		1/2" NPT	*C				
		*Prefix entry size (see diagram above)					
		with entry position code e.g. 1A, 2A.					
		UL & CSA Versions only available with 1/2" NPT entries					
				Switches	Code		
				DC double change over	DD		
				AC single change over	AS		
				AC double change over	AD		



SM87 SL



XB12 SL

Note: Units shown are for representation only. Other variations are available.

The most rugged and reliable status lights for harsh and hazardous applications.

Available as Xenon, incandescent and fluorescent beacons/strobes.

The SM87 SL range is manufactured in marine grade alloy and the XB12 SL in corrosion-free GRP to provide a wide range of status lights to suit your requirements.

All units can be supplied as 1, 2, 3, 4 or 5 stacks.

Primary Applications

- Process status
- Messaging
- Alert or emergency condition indication

Industries

- Offshore & onshore
- Energy exploration & transmission
- Refining
- Chemical & petrochemical
- Pharmaceutical

Certifications & Compliances

- UL Listed for USA and Canada*
 - Class I, Div. 1 & 2, Groups C & D
 - Class I, Zone 1, AExd IIB T6
- CSA certified*
- ATEX approved
- Xenon, fluorescent, incandescent*
- NEMA 4X & 6, IP66 & 67
- Certified temperature -67°F to +131°F*
-55°C to +55°C

Key Features & Benefits

- 4-wire monitored connection for supervisory circuits*
- Marine grade alloy or GRP
- Pre-wired to customer's requirements

*Depending on model

SM87 SL

Xenon, Incandescent & Fluorescent Status Lights—Explosionproof



Certification
UL Listed for:

ATEX
Class I, Div 1, Groups C & D,
Class I, Zone 1, AExd IIB T4

Certified Ambient Temperature

-67 °F to +158 °F
-55°C to +70°C

Ingress Protection

NEMA 4X & 6
IP66 & 67

Material

Alloy

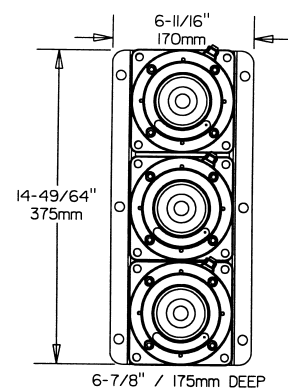
Entries

Up to 1 x 1/2" NPT

Max. No. of Ways

4

Options: Body & lens color, certification, voltages
24–48V DC, 110–254V AC



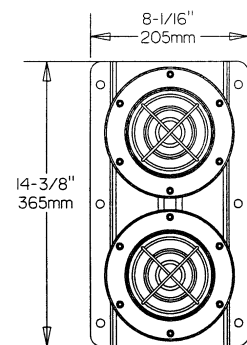
Certification	Voltage	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200043	SM87SL3	Explosion protected, three stack , one 1/2" NPT entry on bottom, no lens guards, xenon strobe with red, green, and clear lens
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200055	SM87SL2	Xenon status lamp, two stack 5 joule beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, 1/2" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200056	SM87SL2	Incandescent status lamp, two stack 40 watt beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, 1/2" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200057	SM87SL2	Fluorescent status lamp, two stack 5 watt beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, 1/2" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	26200058	SM87SL2	Xenon status lamp, two stack 5 joule beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, 1/2" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200059	SM87SL3	Xenon status lamp, three stack 5 joule beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, 1/2" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24VDC	26200060	SM87SL3	Incandescent status lamp, three stack 40 watt beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, 1/2" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	26200061	SM87SL3	Fluorescent status lamp, three stack 5 watt beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, 1/2" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	26200062	SM87SL3	Xenon status lamp, three stack 5 joule beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, 1/2" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	26200066	SM87SL3	Incandescent status lamp, three stack 40 watt beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, 1/2" NPT entry in the bottom unit for customer connection
UL, cUL Listed, Class I, Div 1, Groups C & D	220V AC	26200063	SM87SL3	Fluorescent status lamp, three stack 5 watt beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, 1/2" NPT entry in the bottom unit for customer connection

XB11 SLUL

Xenon Strobe & Incandescent Status Lights—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T4
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	1 x ½" NPT
Max. No. of Ways	5
Options: Body & lens color, tag & duty labels	



7-9/16" / 192mm DEEP

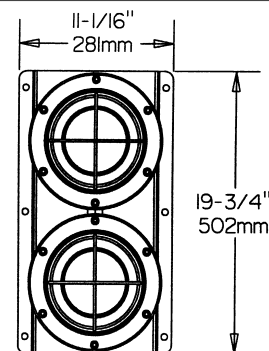
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL Listed, Class I, Div 2, Groups C & D	42500005	XB11ULSL3	Explosion protected, 3 stack, one ½" NPT entry on bottom, 24V DC, green incandescent on top, yellow xenon flashing in middle, red xenon flashing on bottom, no lens guards, red finish

XB12 SL/FB12 SL

Xenon Strobe & Incandescent Status Lights—Hazardous Locations



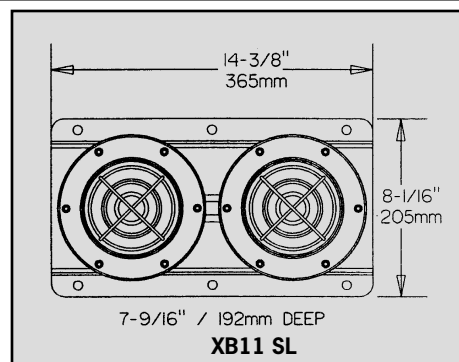
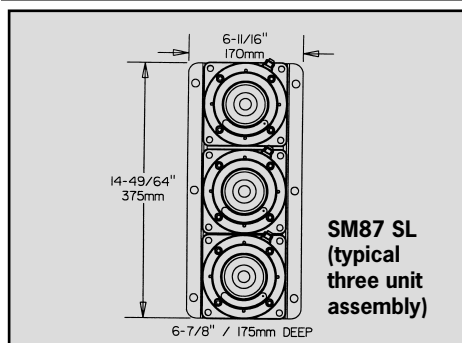
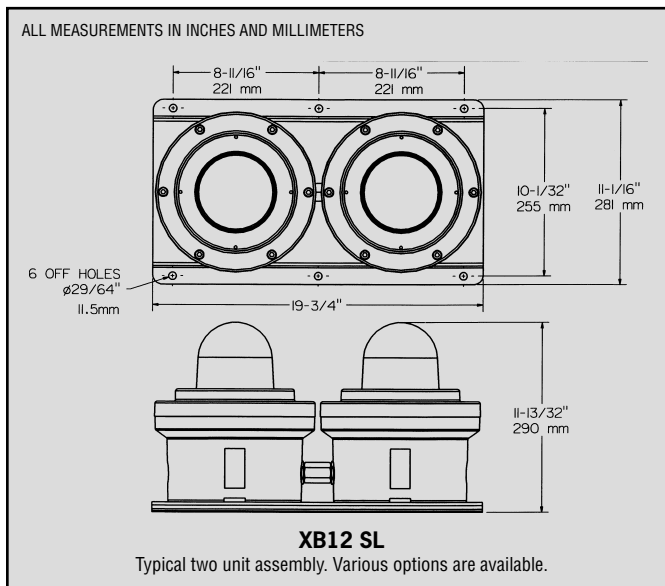
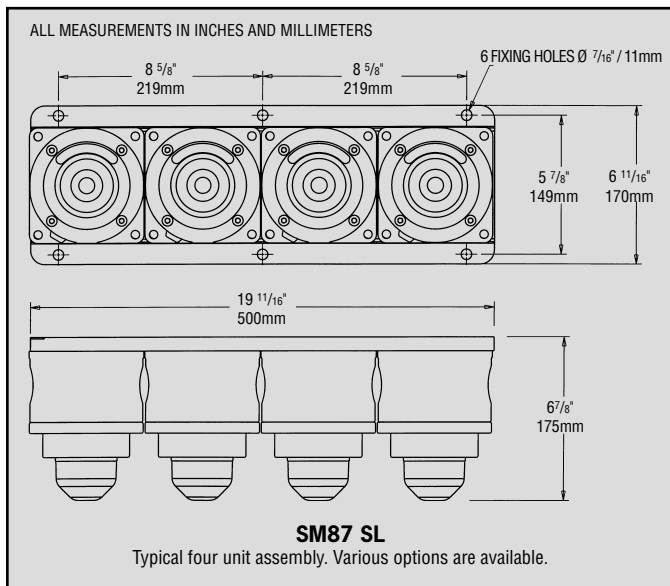
Certification UL Listed for:	ATEX Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T4
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	1 x ½" NPT
Max. No. of Ways	5
Options: Body & lens color, certification, voltages 24V DC, 110–254V AC	



11-13/32" / 290mm DEEP

Certification	Ordering Code	Catalog #	Standard Product Configuration
UL Listed, Class I, Div 2, Groups C & D	42600001	XB12ULSL3	110V AC, explosion protected, three stack , one ½" NPT entries, red xenon flashing on top, amber xenon flashing in middle, clear xenon flashing on bottom; no lens guards, red finish
UL Listed, Class I, Div 2, Groups C & D	42600007	XB12ULSL2	24V DC xenon status lamp, two stack 21 joule beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL Listed, Class I, Div 2, Groups C & D	42600008	FB12ULSL2	24V DC incandescent status lamp, two stack 60W beacons interconnected on a painted red stainless steel baseplate, one red and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL Listed, Class I, Div 2, Groups C & D	42600009	XB12ULSL3	24V DC xenon status lamp, three stack 21 joule beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection
UL Listed, Class I, Div 2, Groups C & D	42600010	FB12ULSL3	24V DC incandescent status lamp, three stack 60W beacons interconnected on a painted red stainless steel baseplate, one red, one amber and one green lens color, ½" NPT entry in the bottom unit for customer connection

MEDC Series Status Lights—Explosionproof, Weatherproof



Specification—SM87SL Unit and XB12SL Unit

Lamp Types	SM87 SL	XB12 SL
	Xenon 5 joules maximum. Fluorescent 10W or 5W. Incandescent 40W maximum.	Xenon 21 joules. Incandescent 60W.
Voltage Frequency	50 Hz as standard. 60 Hz available if required.	
Xenon Voltages	24, 48V DC 110, 120, 240, 254V AC (see SM87 HXB data sheet for further information)	24V DC, 110V, 240V AC (see XB12 data sheet for further information)
Incandescent Voltages	12, 24, 48V DC, 110, 220, 240, 254V AC (see SM87 LU3 data sheet for further information)	120V AC (see FB12 data sheet for further information)
Fluorescent Voltages	12, 24, 48V, 220, 240, 254V AC (see SM87 LU1 data sheet for further information)	—
Lamp Colors	Red, Amber, Yellow, Green, Blue or Clear.	
Certification	UL Listed for USA and Canada Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB T6. Listing No. E187894. CSA Certified: Class I, Div 1 & 2, Group D. Cert. No. 96406. ATEX Approved: EExd IIC T4 (incandescent), EExd IIC T6 (Fluorescent & Xenon). Cert. No. Baseefa 03ATEX0222X, CENELEC EN50014, EN50018.	UL Listed for USA and Canada Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T4/T5. Listing No. E187894. ATEX Approved: EExd IIB T4/T5. Cert. No. 99 ATEX 2196 CENELEC EN50014 and EN50018.
Terminals	Will accept up to 14AWG cable.	Will accept up to 6 off 10AWG cable.
Wiring	Standard configuration of internal wiring is to common the negative/neutral connections. If individually wired lamps are required, please state requirements.	
Entries	Up to $3 \times \frac{1}{2}"$ or $\frac{3}{4}"$ NPT.	$1 \times \frac{1}{2}"$ NPT.
Enclosure	LM 25TF Marine Grade Alloy.	GRP.
Lens	Glass	
Finish	Epoxy paint as standard or to customer's specification.	Natural Black or Epoxy paint to customer's specification.
Ingress Protection	NEMA 4X and 6, IP66 & 67.	
Ambient Temp.	-13°F to 131°F (-25°C to $+55^{\circ}\text{C}$) – Class I, Div 1. -67°F to $+131^{\circ}\text{F}$ (-55°C to $+55^{\circ}\text{C}$) – Class I, Zone 1.	-67°F to $+158^{\circ}\text{F}$ (-55°C to $+70^{\circ}\text{C}$).

Note: XB11 SLUL also available.

Hazard•Gard™ Series MEDC® Series



XB12

EXS301
Strobe Light



XB11

EXS0301
Steady-on
Indicating Light



EXR301
Rotating Beacon



XB16



XB15

Cooper Crouse-Hinds and MEDC provides a complete line of Strobe Lights and rotating beacons for harsh and hazardous visual indications.

- Products that meet world-wide standards such as UL, cUL, CSA, ATEX and GOST, and all Class, Division & Zone area classifications
- Products designed for both conduit wiring and/or cable connection, NPT or metric
- Complete line of strobe light output intensities, strobe light colors and operating voltages
- Units designed for use in fire alarm circuits meeting National Fire Protection Agency requirements for visual signaling for the hearing impaired

What Types of Signals are Available?

1. *Strobe Lights* — Used for signaling or warning of various conditions. Emits a powerful blast of bright light.
2. *Rotating Beacons* — Used to signal over a large area when the light must be seen from a long distance.
3. *Steady-on Beacons* — Typically used as a continuous source to warn, communicate or draw attention to an area, machine or process.

4. *Stack Lights* — Used for multiple indication in one signaling device. Compact and versatile, the three-color (red, amber and green) is most popular.

Lens Color and Their Applications

Most Cooper Crouse-Hinds strobes, steady and flashing beacons come in six lens colors: amber, blue, clear, green, magenta and red. Cooper Crouse-Hinds LED signals come in amber, blue, green, red and, in some cases, white. The following are examples of how various lens colors are used in industrial and commercial signaling environments:

Amber — Denotes caution.

Blue — Used for safety and security.

Clear (or White) & Green — Used to indicate normal run operation.

Clear for Fire Alarm Applications — Used to indicate a fire emergency.

Magenta — Used for radiation alarms.

Red — Denotes emergency or warning.



These listed strobes have been designed for use in potentially explosive atmospheres and harsh environmental conditions. The enclosures are suitable for use offshore or onshore, where a lightweight product combined with corrosion resistance is required.

The housing is manufactured from a U.V. stable, glass reinforced polyester, with the lens manufactured from a U.V. stable polycarbonate. Stainless steel screws are used ensuring a totally corrosion-free product.

The strobes contain supervisory diode and four wire leads for fire alarm applications. This strobe is also available UL 1971 (ADA) Listed for hearing impaired applications.

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

Primary Applications

- Condition signaling
- Security alert
- Equipment obstruction warning
- Emergency evacuation signaling

Typical Industries

- Utility gas plants
- Wastewater treatment plants
- Mining
- Petroleum refineries
- Chemical & petrochemical
- Pulp & paper

Certifications & Compliances

- UL Listed for USA and Canada
 - Hazardous locations for USA and Canada Class I, Div. 2, Groups A, B, C & D*
UL 1971 compliant version available¹
 - Ordinary locations: Visual Signal Device
- NEMA 4X and 6, IP66 & 67
- Certified temperature -67°F to +158°F
-55°C to +70°C

Key Features & Benefits

- Pipe mount with ½" NPT entry
- Corrosion resistant GRP enclosure
- XB16 580,000 peak candlepower
XB15 520,000 peak candlepower
- Polycarbonate lens, various colors available¹
- 4 wire diode monitored board
- Optional relay initiate
- Optional lens guard

*Conforms to UL regulated voltage

¹UL 1971 version available with clear lens only (XB16 only)

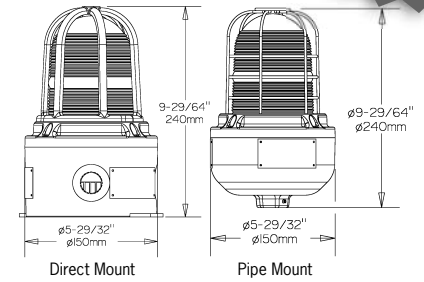
XB15

15 Joule Flashing Xenon—Hazardous & Ordinary Locations

New!



Certification UL Listed for:	cULus ATEX Class I, Div 2, Groups A,B,C,D Class I, Zones 1 & 2, AExd IIC T5/T6
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 3 x 1/2" NPT or 3 x 3/4" NPT
Weight	6–8lb/2.6–3.6kg
Options: Body & lens color, voltages 12–48V DC, 110–254V AC	



Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Red	869400	XB15UL12006RWBNN	15 joules, direct mount w/backstrap , 2 x 3/4" NPT side entries, wire guard, 60 flashes per minute, natural black finish
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Amber	869401	XB15UL12006AWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Red	869402	XB15UL12006RWPNN	15 joules, pipe mount , 1 x 3/4" NPT entry, wire guard, 60 flashes per minute, natural black finish
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Amber	869403	XB15UL12006AWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Clear	27600042	XB15UL02406CWBNN	15 joule beacon, 60 flashes per minute, wire guard, backstrap , 2 x 3/4" NPT entries, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Green	27600043	XB15UL02406GWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Blue	869393	XB15UL02406BWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Red	869398	XB15UL02406RWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Amber	869399	XB15UL02406AWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Clear	27600047	XB15UL02406CWPNN	15 joule beacon, 60 flashes per minute, wire guard, pipe mounting , 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Green	27600048	XB15UL02406GWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Blue	869394	XB15UL02406BWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Red	869396	XB15UL02406RWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Amber	869397	XB15UL02406AWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Clear	27600052	XB15UL12006CWBNN	15 joule beacon, 60 flashes per minute, wire guard, backstrap , 2 x 3/4" NPT entries, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Green	27600053	XB15UL12006GWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Blue	869405	XB15UL12006BWBNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Clear	27600057	XB15UL12006CWPNN	15 joule beacon, 60 flashes per minute, wire guard, pipe mounting , 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Green	27600058	XB15UL12006GWPNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Blue	869404	XB15UL12006BWPNN	

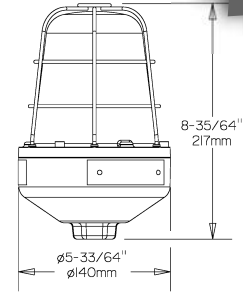
XB16 UL

10 Joule Flashing Xenon—Hazardous & Ordinary Locations



Certification UL Listed for:	cUL ^{us} UL 1971 compliant Class I, Div 2, Groups A, B, C, D
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Standard 1 x 3/4" NPT
Weight	2.2lb/1kg

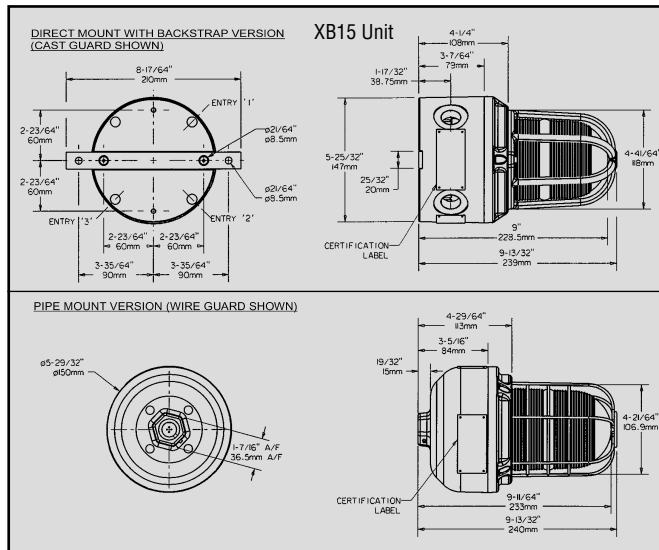
Options: Body & lens color, lens guard,
voltages 12–48V DC, 110–254V AC



New!

Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
UL 1971 compliant	24V DC	Clear	29600023	XB16US02460CYNN	UL 1971 Listed for Signaling devices for the hearing impaired. Suitable for fire alarm indication. 10 joule beacon, 60 flashes per minute, lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Blue	869406	XB16UL12060BYNN	10 joules, 60 flashes per minute, 1 x 3/4" NPT entry, 240 Cd, lens guard, natural black finish
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Red	869407	XB16UL12060RYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Amber	869408	XB16UL12060AYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Clear	29600013	XB16UL12060CYNN	10 joule beacon, 60 flashes per minute, lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Green	29600014	XB16UL12060GYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Blue	29600011	XB16UL12060BYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Red	29600003	XB16UL12060RYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	120V AC	Amber	29600004	XB16UL12060AYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Green	29600016	XB16UL02460GYNN	10 joule beacon, 60 flashes per minute, lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Blue	29600017	XB16UL02460BYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Red	869410	XB16UL02460RYNN	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	24V DC	Amber	869411	XB16UL02460AYNN	

MEDC Series Strobe Warning Light—Hazardous Locations, Weatherproof



Electrical Ratings:

	DC		AC				
Voltage	24	48	110	120	230	240	254
Current (A) at 60 fpm	.78	.67	0.4	0.4	0.2	0.2	0.17
Current (A) at 80 fpm	.99	.73	0.4	0.4	0.2	0.2	0.17
Current (A) at 120 fpm	.99	.73	0.4	0.4	0.2	0.2	0.17
Effective Candlepower	330 (Effective candlepower is the intensity that would appear to an observer if the light was burning steadily)						
Peak Candlepower	520,000 (Peak candlepower is the maximum light intensity generated by a flashing light during its light pulse)						

Multiplying Factor for Colored Lenses:

Red	Blue	Amber	Green	Yellow
0.15	0.12	0.51	0.49	0.86

Specification—XB15 Unit

Certification: UL Listed for USA and Canada:

– Hazardous locations

Class I, Div 2, groups A, B, C & D

Class I, Zone 1, AExd IIC T5/T6

UL listing No. E187894.

– Ordinary locations: Visual Signal Device

UL listing No. S8128

CENELEC/ATEX approved.

CENELEC EN50014 & EN50018

ATEX Cert. No. Baseefa 04ATEX0009X.

Material:

Body: Glass reinforced polyester.

Lens: Glass.

Backstrap: stainless steel 316.

Wire Guard (optional): Stainless steel wire.

Cast Guard (optional): Aluminium LM25M.

Finish:

Natural black or epoxy painted to customer specification.

Voltage:

24, 48V DC

110, 120, 230, 240, 254V AC

Tube Energy:

15 joules.

Tube Life:

>1 x 10⁶ flashes.

Flash Rate:

60, 80, 120 fpm.

Certified

-67°F to +131°F (-55°C to +55°C) T6.

Temperature:

-67°F to +158°F (-55°C to +70°C) T5.

Weight:

Pipe mount: 5¼lb/2.6kg; Direct mount: 6½lb/3.0kg.

Ingress

NEMA 4X & 6, IP66 & IP67.

Protection:

Entries:

Supplied as 2 x ¾" NPT (direct mount) or ¾" (pipe mount) as standard.

Other options available:

Up to 3 x ½" NPT or 3 x ¾" NPT (direct mount);

½" NPT (pipe mount) — contact sales office to order.

Terminals:

Direct mount: 12 x 14AWG.

Pipe mount: 8 x 14AWG.

Relay Initiate:

Available on all units — suitable for 24V DC supplies only.

Labels:

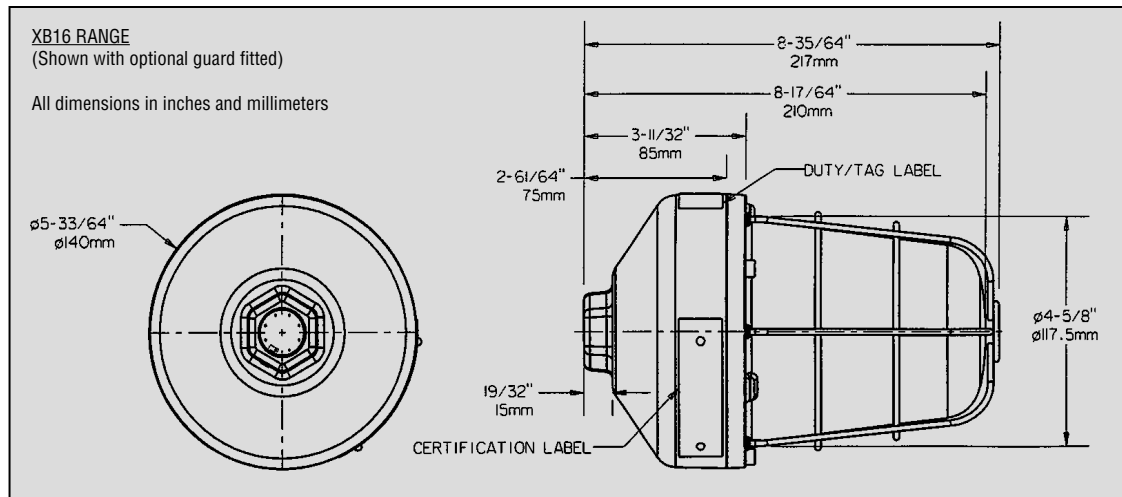
Tag/Duty label option.

Ordering Requirements

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

Model	Certification	Voltage	Lens Flashrate	Lens Color	Unit Guard	Fixing	Unit Options	Finish																									
XB15	<input type="text"/>	<input type="text"/>	06	<input type="text"/>	<input type="text"/>	<input type="text"/>	N	N																									
<table border="1"> <thead> <tr> <th>Certification</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>ATEX</td> <td>B</td> </tr> <tr> <td>UL</td> <td>UL</td> </tr> </tbody> </table>		Certification	Code	ATEX	B	UL	UL	<table border="1"> <thead> <tr> <th>Voltage</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>24V DC</td> <td>024</td> </tr> <tr> <td>110V AC</td> <td>110</td> </tr> <tr> <td>120V AC</td> <td>120</td> </tr> <tr> <td>240V AC</td> <td>240</td> </tr> </tbody> </table>	Voltage	Code	24V DC	024	110V AC	110	120V AC	120	240V AC	240			<table border="1"> <thead> <tr> <th>Guard</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>None</td> <td>N</td> </tr> <tr> <td>Cast</td> <td>C</td> </tr> <tr> <td>Wire</td> <td>W</td> </tr> </tbody> </table>	Guard	Code	None	N	Cast	C	Wire	W				
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			<table border="1"> <thead> <tr> <th>Lens Flashrate</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>08</td> <td>80 fpm</td> </tr> <tr> <td>12</td> <td>120 fpm</td> </tr> </tbody> </table>	Lens Flashrate	Code	08	80 fpm	12	120 fpm	<table border="1"> <thead> <tr> <th>Color</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>Red</td> <td>R</td> </tr> <tr> <td>Blue</td> <td>B</td> </tr> <tr> <td>Green</td> <td>G</td> </tr> <tr> <td>Amber</td> <td>A</td> </tr> <tr> <td>Yellow</td> <td>Y</td> </tr> <tr> <td>Clear</td> <td>C</td> </tr> </tbody> </table>	Color	Code	Red	R	Blue	B	Green	G	Amber	A	Yellow	Y	Clear	C	<table border="1"> <thead> <tr> <th>Unit Fixing</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>Pipe mount</td> <td>P*</td> </tr> <tr> <td>Direct w/backstrap</td> <td>B</td> </tr> </tbody> </table> <p>*Not available on ATEX version.</p>			Unit Fixing	Code	Pipe mount	P*	Direct w/backstrap	B
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MEDC Series Strobe Warning Light—Hazardous Locations, Weatherproof



Specification—XB16UL Unit

Certification:	UL Listed for USA and Canada: – Hazardous locations for USA and Canada Class I, Div 2, groups A, B, C & D. UL listing No. E251185. – Ordinary locations: Visual Signal Device: UL1638. UL listing No. E251185. – Hazardous locations for hearing impaired: UL1971. UL listing No. E251185.
Material:	Body: Glass reinforced polyester. Lens: U.V. stable polycarbonate. Lens screws: stainless steel 316.
Finish:	Natural black or painted to customer specification.
Voltage:	24, 48V DC 110, 120, 230, 240, 254V AC Conforms to UL regulated voltage output (12V DC, 24V DC, 120V AC, 240V AC).
Certified Temperature:	-67°F to +158°F (-55°C to +70°C)
Tube Energy:	10 joules.
Tube life:	>1 x 10 ⁶ flashes.
Weight:	2.2lb/1.0kg.
Ingress Protection:	NEMA 4X & 6, IP66 & IP67.
Entries:	Standard 1 x 1/2" NPT pipe mount.
Terminals:	8 x 14AWG.
Labels:	Tag/Duty label option.

Electrical Ratings:

For Hazardous Locations and Ordinary Locations (UL1638) Units

	DC		AC				
Voltage	24	48	110	120	230	240	254
Current (A) at 60 fpm	0.89	0.30	0.38	0.38	0.22	0.22	0.18
Current (A) at 80 fpm	0.89	0.30	0.38	0.38	0.22	0.22	0.18
Current (A) at 120 fpm	0.89	0.30	0.38	0.38	0.22	0.22	0.18

Effective intensity (Cd): 240 at 80 f.p.m.

Peak candlepower: 580,000 (Peak candlepower is the maximum light intensity generated by a flashing light during its light pulse)

For UL1971 Units Only

	DC		AC				
Voltage	24	48	110	120	230	240	254
Current (A) at 60 fpm	1.22	1.52	0.38	0.38	0.78	0.78	0.18
Current (A) at 80 fpm	1.22	1.52	0.38	0.38	0.78	0.78	0.18
Current (A) at 120 fpm	1.22	1.52	0.38	0.38	0.78	0.78	0.18

Effective intensity (Cd): 240 at 80 f.p.m.

Peak candlepower: 580,000 (Peak candlepower is the maximum light intensity generated by a flashing light during its light pulse)

Note: on UL1971 units, max. current rating is based on in-rush current. This is why the current ratings are not proportional as with other beacons/strobes.

UL 1971 On-axis output: 15 Cd.

Note: 24V DC units are certified for use in regulated 24V DC supplies (16–33V AC)
110/120V DC units are certified for use on regulated 120V AC supplies (96–132V AC)
230/240V DC units are certified for use on regulated 240V AC supplies (192–264V AC)

Multiplying factor for colored lenses:

Red	Blue	Amber	Green	Yellow
0.15	0.12	0.51	0.49	0.86

Relay Initiate: 24V DC relay initiate only. Relay Initiate: 24V DC relay initiate only.

Ordering Requirements

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

Model	Certification	Voltage	Flashrate	Lens Color	Guard	Options	Unit Finish
XB16	UL		60			N	N

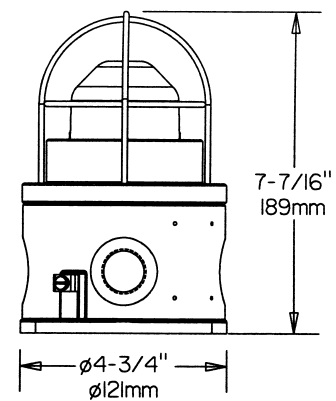
Certification	Code	Voltage	Code	Lens Flashrate	Code	Color	Code	Guard	Code
UL	UL	12V DC	012	80	80 fpm	Red	R	Yes	Y
		24V DC	024	120	120 fpm	Blue	B	None	N
		110V AC	110			Green	G		
		120V AC	120			Amber	A		
		240V AC	240			Yellow	Y		
						Clear	C		

SM87 HXB

5 Joule Xenon Strobe—Explosionproof



Certification UL Listed for:	cULus ATEX Class I, Div 1, Groups C & D, Class I, Zone 1
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 2 x 1/2" or 3/4" NPT, M20, M25
Weight	4.4lb/2.0kg approx
Options: Body & lens color, certification, lens guard, voltages 24–48V DC, 110–254V AC	



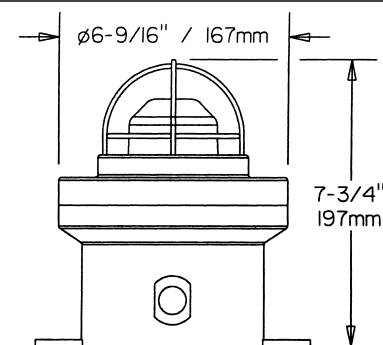
Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
ATEX EX II 2GD	24V DC	Red	813005	SM87HXBAB024RN1R1LNNR	5 joules, 2 x M20 Entries, 29Cd, EExd IIC
ATEX EX II 2GD	24V DC	Amber	813006	SM87HXBAB024AN1R1LNNR	
ATEX EX II 2GD	240V AC	Red	813007	SM87HXBAB240RN1R1LNNR	7 joules, 2 x M20 Entries, 39Cd, EExd IIC
ATEX EX II 2GD	240V AC	Amber	813008	SM87HXBAB240AN1R1LNNR	
ATEX EX II 2GD	24V DC	Red LED	813009	SM87LEDB024RN1R1LNNR	192Cd, 2 x M20 Entries, EExd IIC
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Red	869161	SM87HXBAL024RN3R3LNNR	Standard models are in alloy, red body color, no tag or duty labels, 2 x 1/2" NPT entries, 29Cd, 60 flashes per minute
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Amber	869162	SM87HXBAL024AN3R3LNNR	
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	Red	869165	SM87HXBAL110RN3R3LNNR	Standard models are in alloy, red body color, no tag or duty labels, 2 x 1/2" NPT entries, 32Cd, AExd IIB, 60 flashes per minute
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	Amber	869166	SM87HXBAL110AN3R3LNNR	

XB11

5 Joule Xenon Strobe—Hazardous Locations

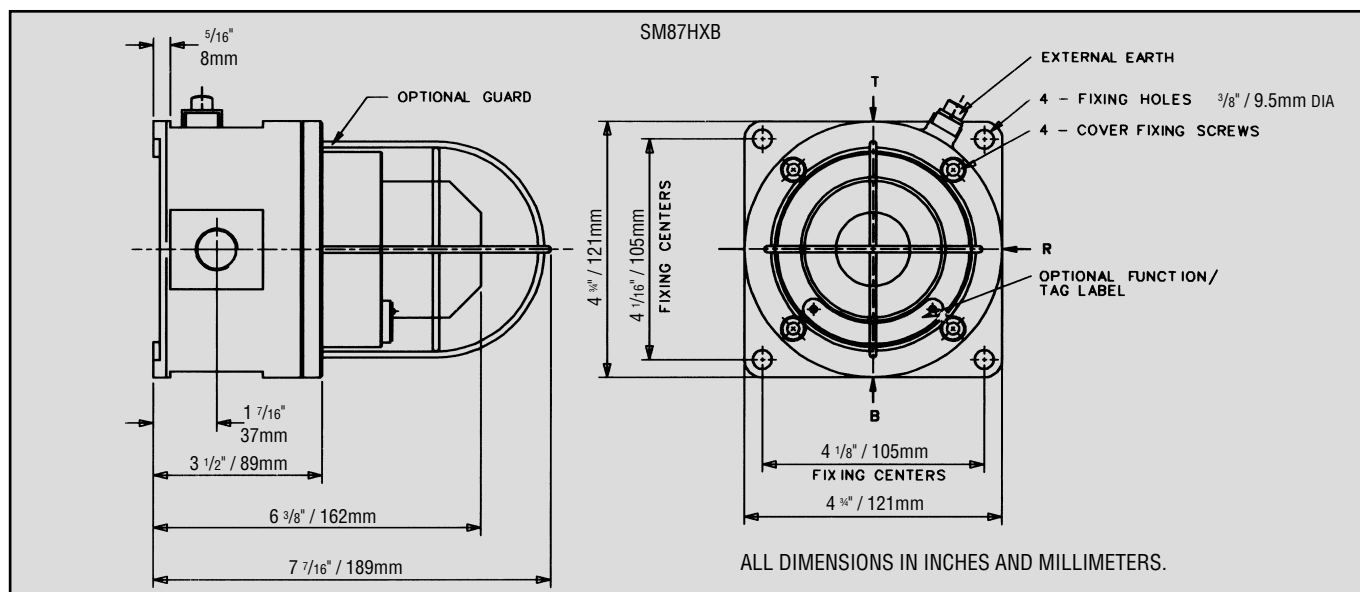


Certification UL Listed for:	cULus ATEX Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T5
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	2 x 1/2" NPT, 20mm
Weight	2.6lb/1.2kg
Options: Body & lens color, voltages 24V DC, 110–254V AC	



Certification	Voltage	Body Color	Lens	Ordering Code	Catalog #	Standard Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red	Red	869171	XB11UL02406RNBNNNR	No tag or duty labels, 2 x 1/2" NPT entries, 60 flashes per minute
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red	Amber	869172	XB11UL02406ANBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Natural Black	Clear	869173	XB11UL02406CNBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red	Clear	869174	XB11UL02406CNBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	110V AC	Red	Red	869175	XB11UL11006RNBNNNR	
ATEX EX II 2GD	24V DC	Natural Black	Red	811101	XB11B02406RNBNNNR	GRP, natural black body, no tag or duty labels, backstrap mounting, 2 x M20 entries, 60 flashes per minute
ATEX EX II 2GD	24V DC	Natural Black	Amber	811102	XB11B02406ANBNNNR	
ATEX EX II 2GD	24V DC	Natural Black	Red	811103	XB11B24006RNBNNNR	
ATEX EX II 2GD	24V DC	Natural Black	Amber	811104	XB11B24006ANBNNNR	

MEDC Series Strobe Lights—Medium Intensity



Specification—SM87HXB Unit

Certification:	UL Listed for USA and Canada for Class I, Div. 1. Groups C & D and Class I, Zone 1. Listing No. E187894. CSA Certification to C22.2, Nos. 0, 0.4, 0.5, 9, 30-M 1986, 94-M91, 137-M 1981, Class I, Div 1, Group 0, Enclosure ¾, Cert. No. 96406. ATEX approved: EN50014, EN50018, EN50019. Cert. No. Baseefa 03ATEX0222, EExd IIC T6.
Material:	LM25 TF Marine Grade Alloy. Lens: Toughened Glass.
Finish:	Epoxy paint finish as standard or to customer's specification.
Weight:	4.4lb/2.0kg. approx.
Certified Temperature:	Standard unit SM87 HXB: -67°F to +158°F, -55°C to +70°C. High temperature unit: -67°F to +185°F, -55°C to +85°C.
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Terminals:	4 off suitable for up to 14AWG conductor size.
Labels:	Duty & Tag Labels optional.
Entries:	Up to 4 off ½" or ¾" NPT.

Voltage	DC		AC 50/60 Hz			
	24	48	110	120	240	254
Tube Energy (joules)	5	5	6	7	7	8
Peak Current Consumption (mA)	320	170	250	275	135	150
Power Consumption (Watts)	7.2	7.6	25	27	27	35
Effective Intensity (Cd)	29	29	32	39	39	44
Peak Candle Power	22213	22213	25061	30187	30187	34174

Note: The above figures (Cd) are for a clear lens @ 1Hz flash rate.

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor	0.15	0.12	0.51	0.49	0.86

The photometric data has been independently verified.
A report is available if required.

Ordering Requirements

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

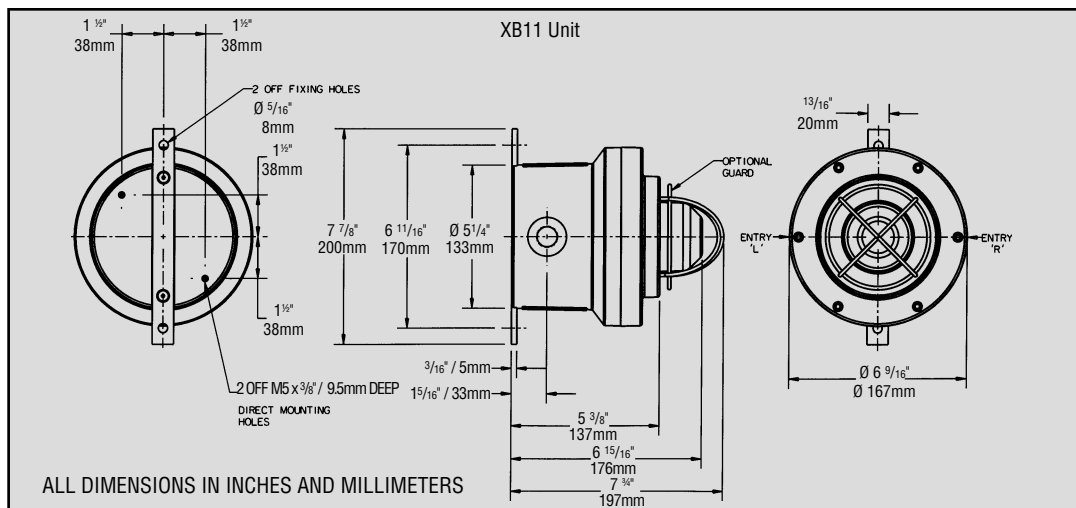
Model	Material	Certification	Voltage	Lens/LED color	Lens Guard	Entries	Tag/Duty Label	Initiate Option	Finish
SM87HXB							N	N	R

Type	Code	Color	Code	Guard	Code	Entries	Code
Alloy	A	Red	R	Yes	Y	20mm Left/Right	1L1R
Stainless Steel	S*	Blue	B	No	N	20mm Top/Bottom	1T1B
		Green	G			20mm Bottom	1B
		Amber	A			25mm Left/Right	2L2R
		Yellow	Y			25mm Top/Bottom	2T2B
		Clear	C			25mm Bottom	2B
						½" NPT Left/Right	3L3R
						½" NPT Top/Bottom	3T3B
						½" NPT Bottom	3B
						¾" NPT Left/Right	4L4R
						¾" NPT Top/Bottom	4T4B
						¾" NPT Bottom	4B

Certification	Code	Voltage	Code
ATEX	B	24V DC	024
UL	UL	110V AC	110
CSA	C	120V AC	120
Only HXBS is available CSA certified.		220V AC	220
		240V AC	240

*Not UL Listed

MEDC Series Strobe Lights—Medium Intensity



Specification—XB11 Unit

Certification: UL Listed for USA and Canada
 – Hazardous locations:
 Class I, Div. 2, Groups C & D
 Class I Zones 1 & 2, AExd IIB T5
 UL Listing No. E187894.
 – Ordinary locations: Visual-Signal Device
 UL Listing No. S8128.
ATEX approved: EExd IIB T5/T6.
 Cert. No. 99 ATEX 2195X.
 CENELEC EN50014 and EN50018.

Material: Body: Glass reinforced polyester.
 Lens: Glass
 Cover Screws + Backstrap: Stainless steel 316.

Finish: Natural black or painted to customer specification.

Weight: 5 1/2 lb/2.5kg.

Certified Temperature: -67°F to +158°F (-55°C to +70°C) hazardous locations.
 -67°F to +131°F (-55°C to +55°C) ordinary locations.

Ingress Protection: NEMA 4X and 6, IP66 & 67.

Terminals: 6 off suitable for up to 14 AWG conductor size.

Labels: Duty/Tag Label optional.

Entries: 2 x 1/2" NPT, 20mm

Strobe/Sounder Unit: The beacon may be combined with an MEDC sounder to create a visual/audible alarm.
 Contact MEDC for price and specification.

Voltage	DC		
	24	110	240
XB11 Tube Energy (joules)	5	5	5
Peak Current Consumption (mA)	320	100	60
Effective Intensity (Cd)	29	29	29
Peak Candle Power	22213	22213	22213
Power Consumption (Watts)	8	11	18
NOTE: The Cd figures are for a clear lens @ 1Hz flash rate.			

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor	0.15	0.12	0.51	0.49	0.86

The photometric data has been verified by BSI.
 A report is available if required.

Ordering Requirements

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

Model Type	Certification	Voltage	Flash Rate	Lens Color	Lens Guard	Unit Fixing	Earth Continuity	Tag/Duty Label	Options	Unit Finish
XB11			06			B	N	N	N	

Certification	Code
ATEX	B
UL	UL

Voltage	Code
24V DC	024
110V AC	110
240V AC	240
Other voltages available, please specify.	

Guard	Code
Yes	Y
No	N

Color	Code
Red	R
Blue	B
Green	G
Yellow	Y
Amber	A
Clear	C

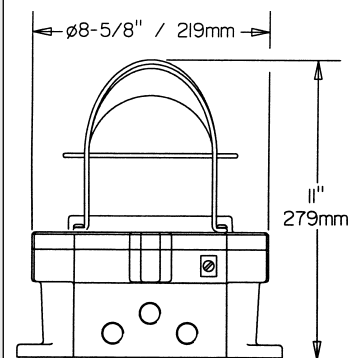
Finish	Code
Natural Black	N
Red	R

XB4

21 Joule Xenon Strobe—Explosionproof



Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB T4, T5
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 3 x ½" or ¾" NPT, 20mm, 25mm
Weight	14.5lb/6.6kg
Options: Body & lens color, lens guard, certification, voltages 24V DC, 110V AC & 240V AC	



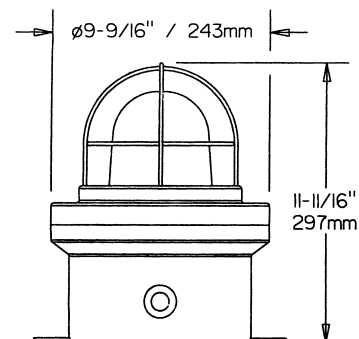
Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
ATEX Approved Ex II 2G	24V DC	Red	814001	XB4BB8D2B3B06ANORN1R	21 joules, 2 x M20 entries, 355Cd, 60 flashes per minute, no labels, red finish
ATEX Approved Ex II 2G	240V AC	Red	814002	XB4BH8D2B3B06ANORN1R	
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Red	869121	XB4ULB8D2E3E06ANRN1R	Marine grade alloy, 2 x ¾" NPT entries, no lens guard, 60 flashes per minute, red finish
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Amber	869122	XB4ULB8D2E3E06ANAN1R	
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	Red	869125	XB4ULE8D2E3E06ANRN1R	
UL, cUL Listed, Class I, Div 1, Groups C & D	110V AC	Amber	869126	XB4ULE8D2E3E06ANAN1R	

XB12

21 Joule Xenon Strobe—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups C & D, Class I, Zones 1 & 2, AExd IIB T4
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 2 x ½" NPT, 20mm
Weight	15.5lb/7.0kg
Options: Body & lens color, lens guard, certification, voltages 24V DC, 110–254V AC	



Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
ATEX Approved Ex II 2G	24V DC	Red	812101	XB12B02406RNBNNNN	21 joules, 2 x M20 entries, 355Cd, 60 flashes per minute, no labels, black body
ATEX Approved Ex II 2G	24V DC	Amber	812102	XB12B02406ANBNNNN	
ATEX Approved Ex II 2G	240V AC	Red	812103	XB12B24006RNBNNNN	
ATEX Approved Ex II 2G	240V AC	Amber	812104	XB12B24006ANBNNNN	
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red	869181	XB12UL02406RNBNNNR	Red painted GRP, no tag or duty labels, 2 x ½" NPT, 60 flashes per minute, 355 Cd
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Amber	869182	XB12UL02406ANBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	110V AC	Red	869185	XB12UL11006RNBNNNR	
UL, cUL Listed, Class I, Div 2, Groups C & D	110V AC	Amber	869186	XB12UL11006ANBNNNR	

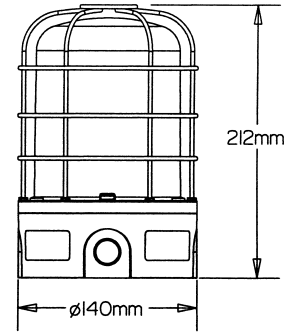
MEDC Series Strobe Lights—High Intensity for Outdoor Use

XB13

10 Joule Flashing Xenon—Weatherproof and Heavy Duty

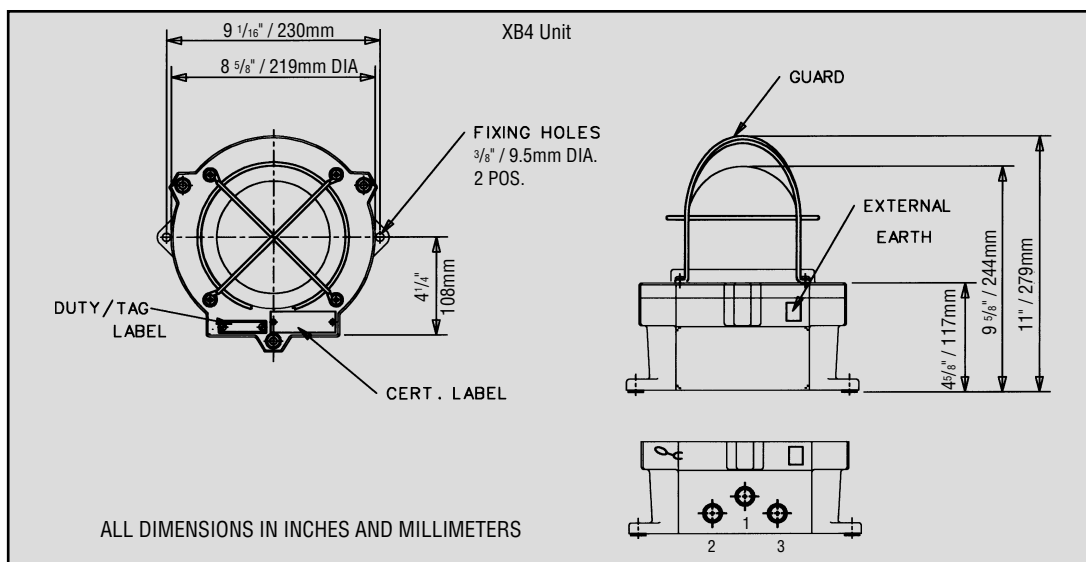


Certification UL Listed for:	Weatherproof IP66 & 67
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 3 x 20mm via knockouts
Weight	1.1kg
Options: Body & lens color, lens guard, voltages 12–24V DC, 115–230V AC	



Certification	Voltage	Lens Color	Ordering Code	Catalog #	Standard Product Configuration
Weatherproof, IP66 & 67	24V DC	Red	813101	XB13024RNNN	Dust-tight and weatherproof, uncertified, no tag or duty labels, 3 x 20mm entries via knockouts, 60 flashes per minute, dual and single flash modes, natural red GRP
Weatherproof, IP66 & 67	24V DC	Amber	813102	XB13024ANNN	
Weatherproof, IP66 & 67	230V AC	Red	813103	XB13230RNNN	
Weatherproof, IP66 & 67	230V AC	Amber	813104	XB13230ANNN	

MEDC Series Strobe Lights—High Intensity for Outdoor Use



Specification—XB4 Unit

Certification:	UL Listed for USA and Canada – Hazardous locations: Class I, Div. 1, Groups C & D Class I, Zone 1, AExd IIB T4. UL Listing No. E187894. – Ordinary locations: Visual-Signal Device. UL Listing No. S8128. ATEX approved: EExd IIC T5. Cert. No. Baseefa 02ATEX0224X.
Materials:	LM25TF Marine Grade Alloy body. Grade 316 ANC4B Stainless Steel body. Toughened Wellglass.
Finish:	Red epoxy paint finish as standard or to customer's specification.
Weight:	LM25: 14.5lb/6.6kg. Stainless Steel: Add 18.5lb/8.5kg.
Certified Temperature:	-67°F to +158°F. -55°C to +70°C.
Ingress Protection:	NEMA 4X & 6, IP66 & 67.
Terminals:	8 off suitable for up to 8 AWG conductor size.
Entries:	Up to 3 x 1/2" or 3/4" NPT, 20mm, 25mm

Voltage	DC	AC 50/60 Hz	
	24	110	240
Tube Energy (joules)	21	21	21
Peak Current Consumption (mA)	1400	350	185
Effective Intensity (Cd)	355	355	355
Peak Intensity (Cd)	123691	123691	123691

NOTE: The above figures (Cd) are for a clear lens @ 1Hz flash rate.

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor (Approximate)	0.15	0.12	0.51	0.49	0.86

The photometric data has been independently verified. A report is available if required.

Ordering Requirements

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

Model Type	Certification	Voltage	Terminals	Cable Entries	Flash Rate	Initiate Options	Lens Guard	Lens Color	Tag/Duty Label	Material	Finish
XB4			8D		06	A			N		R

Certification	Code
ATEX	B
UL	UL

Entries	Code
1-M25 Entry	1C
2-M25 Entries	2C3C
1-3/4" NPT Entry	1E
2-3/4" NPT Entry	2E3E
1-20mm Entry	1B
2-20mm Entries	2B3B
1-1/2" NPT	1D
2-1/2" NPT	2D3D

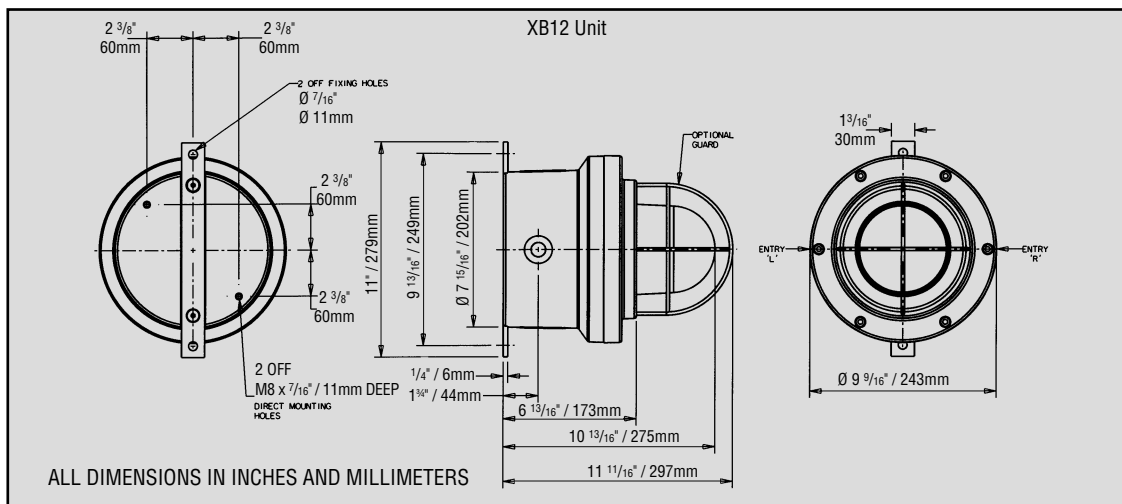
Voltage	Code
24V DC	B
110V AC	E
240V AC	H

Guard	Code
Yes	Y
No	N

Color	Code
Red	R
Blue	B
Green	G
Yellow	Y
Amber	A
Clear	C

Material	Code
Alloy	1
Stainless Steel	0

MEDC Series Strobe Lights—High Intensity for Outdoor Use



Specification—XB12

Certification:	UL Listed for USA and Canada
	– Hazardous locations:
	Class I, Div. 2, Groups C & D
	Class I, Zone 1 & 2, AExd IIB T4/T5
	UL Listing No. E187894.
	– Ordinary locations: Visual-Signal Device
	UL Listing No. S8128.
	ATEX approved: EExd IIB T4/T5.
	Cert. No. 99 ATEX 2196.
Material:	Body: Glass reinforced polyester.
	Lens: Toughened Glass
	Cover Screws + Backstrap: Stainless steel 316.
Finish:	Natural black or painted to customer specification.
Weight:	15½ lb/7.0kg.
Certified Temperature:	-67°F to +158°F (-55°C to +70°C) hazardous locations.
	-67°F to +131°F (-55°C to +55°C) ordinary locations.
Ingress Protection:	NEMA 4X and 6, IP66 & 67.
Terminals:	6 off suitable for up to 10 AWG conductor size.
Labels:	Duty/Tag Label optional.
Entries:	2 x ½" NPT, 20mm

Voltage	DC	AC50/60 Hz	
	24	110	240
XB12 Tube Energy (joules)	21	21	21
Peak Current Consumption (mA)	1400	350	185
Effective Intensity (Cd)	355	355	355
Peak Intensity (Cd)	123691	123691	123691
Power Consumption (Watts)	33.6	38.5	44.4
NOTE: The Cd figures are for a clear lens @ 1Hz flash rate.			

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor	0.15	0.12	0.51	0.49	0.86

The photometric data has been verified by BSI.

A report is available if required.

Ordering Requirements

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

Model Type	Certification	Voltage	Flash Rate	Lens Color	Lens Guard	Unit Fixing	Earth Continuity	Tag/Duty Label	Options	Unit Finish
XB12			06			B	N	N	N	

Certification	Code
ATEX	B
UL	UL

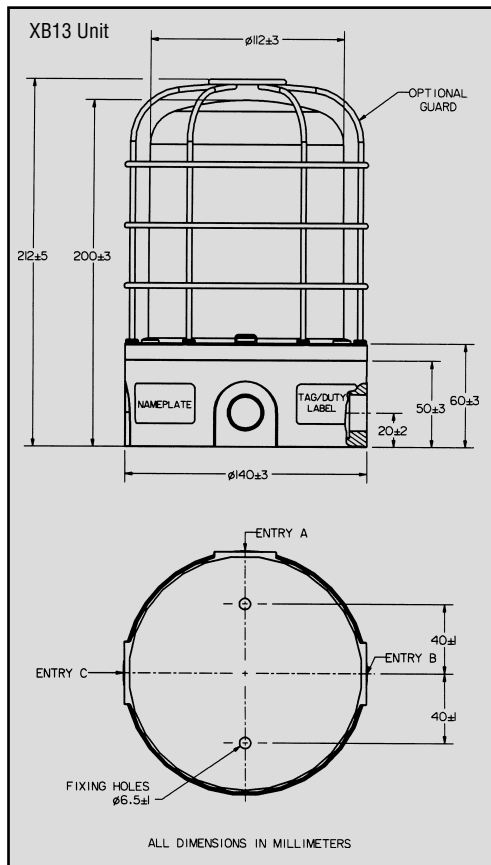
Voltage	Code
24V DC	024
110V AC	110
240V AC	240
Other voltages available, please specify.	

Color	Code
Red	R
Blue	B
Green	G
Yellow	Y
Amber	A
Clear	C

Guard	Code
Yes	Y
No	N

Finish	Code
Natural Black	N
Red	R

MEDC Series Strobe Lights—High Intensity for Outdoor Use



Specification—XB13 Unit

Material:	UV stable glass reinforced polyester body. UV stable polycarbonate cover/lens. Retained stainless steel cover screws.
Finish:	Self colored red as standard or epoxy coated to customer's specification.
Tube Energy:	10 joules (second flash 7.5 joules).
Weight:	1.1kg,
Operating Temperature:	-55°C to +70°C.
Ingress Protection:	IP66 & IP67.
Tube Life:	>1 x 10 ⁶ flashes.
Voltage:	12V DC, 24V DC, 115V AC, 230V AC

Current Consumption:

Voltage	Current Consumption
12V DC	1.4A
24V DC	650mA
115V AC	180mA
230V AC	100mA

Tube Type:	Xenon discharge.
Lens Color:	Various colors available.
Terminals:	8 x 2.5mm ² .
Flash Rate:	1 flash per second.
Dual Flash Rate:	Time between dual flashes = 0.5 seconds. Charging time = 1 second. Cycle repeats every 1.5 seconds.
Labels:	Duty and tag labels available.
Cable Entries:	Up to 3 x M20 via knockouts.
Intensity:	Effective intensity 220 Cd. Peak intensity 75,000 Cd. (Figures are for clear lens at 1Hz flash rate).

FOR COLORED LENSES

Color	Red	Blue	Amber	Green	Yellow
Multiplying Factor	0.15	0.12	0.51	0.49	0.86

Ordering Requirements

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

Unit Type	Voltage	Lens Color	Lens Guard	Options	Unit Finish is Red																												
XB13				N	N																												
	<table border="1"> <tr> <th>Voltage</th> <th>Code</th> </tr> <tr> <td>24V DC</td> <td>024</td> </tr> <tr> <td>115V AC</td> <td>115</td> </tr> <tr> <td>230V AC</td> <td>230</td> </tr> </table>	Voltage	Code	24V DC	024	115V AC	115	230V AC	230	<table border="1"> <tr> <th>Color</th> <th>Code</th> </tr> <tr> <td>Red</td> <td>R</td> </tr> <tr> <td>Blue</td> <td>B</td> </tr> <tr> <td>Green</td> <td>G</td> </tr> <tr> <td>Yellow</td> <td>Y</td> </tr> <tr> <td>Amber</td> <td>A</td> </tr> <tr> <td>Clear</td> <td>C</td> </tr> </table>	Color	Code	Red	R	Blue	B	Green	G	Yellow	Y	Amber	A	Clear	C	<table border="1"> <tr> <th>Guard</th> <th>Code</th> </tr> <tr> <td>Yes</td> <td>Y</td> </tr> <tr> <td>No</td> <td>N</td> </tr> </table>	Guard	Code	Yes	Y	No	N		
Voltage	Code																																
24V DC	024																																
115V AC	115																																
230V AC	230																																
Color	Code																																
Red	R																																
Blue	B																																
Green	G																																
Yellow	Y																																
Amber	A																																
Clear	C																																
Guard	Code																																
Yes	Y																																
No	N																																

The Hazard•Gard Series is our new line of visual and audible signaling and communication products for industrial use. The Hazard•Gard Series of visual signals is available in Division 1, Zone 1 and Division 2, Zone 2 applications. This new visual product offering provides three methods of light generation for visual indication: Xenon strobe, rotating beacon and steady-on indicators. All models come in red, amber, green, blue, clear and magenta, and AC and DC voltage.

The Hazard•Gard Division 1, Zone 1 EX Series is a compact, rugged cast aluminum visual signaling device for use in explosionproof and corrosive applications. The Hazard•Gard delivers six color choices and a complete range of operating voltages for AC and DC circuits. The Hazard•Gard UL approved fire alarm strobe delivers the industry required 16–33VDC voltage for light output for Fire Alarm circuits. With powerful light output, compact design and Crouse-Hinds explosionproof integrity, the Hazard•Gard is applicable for safety, indication, evacuation, and security uses. All are marine rated and offer four mounting methods—pendant, ceiling, wall and stanchion.



Types of visual signals that are available:

1. **Rotating lights**—our line uses halogen lights for brightness in areas that have high ambient light levels or when the light must be seen from a long distance.
2. **Steady-on or flashing lights** using a halogen incandescent lamp or LED. Used as a continuous source to warn, communicate or draw attention to an area, machine or process.
3. **Strobe lights** use a strobe light (for more on strobe technology, see section “Strobe, Principle of Operation” below) for signaling or warning of various conditions. A strobe emits a powerful blast of bright light.


PRODUCT OVERVIEW—HAZARD•GARD EXPLOSIONPROOF VISUAL INDICATION:

Description	Catalog Reference	Operating Voltage	Operating Circuit
Fire Alarm Strobe	EXFASC301	16–33V DC	Fire alarm circuits and other applications requiring electrical supervision of signaling.
Strobe Light	EXS301	120VAC or 12–48V DC	Standard electrical circuits 12–48V DC either AC or DC operation.
Strobe Light Diode Polarized	EXDS301	24V DC	Standard electrical circuits or auxiliary fire or warning circuits requiring electrical supervision.
Strobe Light Non-Marine, Fused	EXSNM301	12–48V DC	Fused for use on standard electrical DC circuits.
Rotating Beacon	EXR301	120V AC	Standard electrical circuits, AC operation.
Rotating Beacon Diode Polarized	EXDR301	24–28V DC	Standard electrical circuits or auxiliary fire or warning circuits requiring electrical supervision.
Steady-On Beacon	EXSO301	120VAC or 24–28V DC	Standard electrical circuits either AC or DC operation.

All Hazard•Gard Series explosionproof visual signals are marine rated (except the EXSNM), NEMA 4X and offer 6 color choices of lens: Amber, Blue, Clear, Green, Magenta & Red.

For Class I areas, consider the following:

- Utility gas plants
- Petroleum refining production and dispensing locations
- Cleaning facilities
- Dip tanks containing combustibles or flammable liquids
- Plant facilities extracting solvents
- Inhalation anesthetics areas

For Class II areas, consider the following:

- Flour mills
- Feed mills
- Grain elevators and grain handling facilities
- Aluminum manufacturing and storage areas
- Magnesium manufacturing and storage areas
- Coal preparation and handling facilities
- Starch manufacturing and storage areas
- Confectionery plants
- Pulverized sugar and cocoa manufacturing and storage plants

For Class III areas, consider the following:

- Textile mills
- Woodworking plants & furniture manufacturers
- Cotton gins
- Cotton seed milling plants
- Flax plants
- Carpet manufacturers



STANDARD MATERIALS AND FINISHES:

Class I, Division 1, Zone 1 Visual Signaling Devices





- Bodies, mounting modules and guards are die cast copper free aluminum
- Globe is heat and impact resistant glass
- Gaskets—silicone
- Internal components are solid-state electronics in a moisture-resistant and heat-dissipating epoxy

RATINGS (ELECTRICAL/SIZE):

Division 1, Zone 1 Signaling Devices

Description	Catalog Reference	Operating Voltage	Amperage	Peak Candlepower
Fire Alarm Strobe	EXFASC301	16–33V DC	0.95–0.55 amps	800,000
Strobe Light	EXS301	120V AC or 12–48V DC	0.1 amps	800,000
Strobe Light Diode Polarized	EXDS301	24V DC	0.8 amps	800,000
Rotating Beacon	EXR301	120V AC	0.35 amps	3328
Rotating Beacon Diode Polarized	EXDR301	24–28V DC	0.8 amps	2838
Steady-On Indication	EXS0301	120V AC or 24–28V DC amps	0.35 amps 0.8 amps	3328

MOUNTING MODULE HUB SIZES:

Type	Conduit	Catalog Number	
Pendant	¾ inch 1 inch	EVMP2 EVMP3	
Ceiling (and for use with wall)	¾ inch 1 inch	EV22 EV33	
Wall bracket arm	¾ inch 1 inch	EV87 and EV22 EV87 and EV33	
Stanchion	1 ¼ inch	EVMJ4	

CERTIFICATIONS AND COMPLIANCES:**IEC/NEC/CEC**

- Class I, Division 1, Groups C & D
- Class I, Zone 1 & 2, Group IIB
- Class II, Groups E, F, & G
- Class III & Simultaneous Presence
- Wet locations
- Marine locations for the 151XST only
- NEMA/Type 4X, IP66
- UL listed: UL1638, UL 1203, UL844
- Fire Alarm Strobe (EXFASC) is UL 1971
- cUL Listed (Certified by UL to CSA Standards)

UL Standards

- 844 — Hazardous (Divisions Classified) Locations
- 1598 — Luminaires
- 1598A — Luminaires for Installation on Marine Vessels
- 1638 — Indicating Appliance Circuits
- 1971 — Indicating Appliance for Fire Alarm

CSA Standards

- C22.2 No. 137
- CAN/CSA-E79 Series

IEC Standards

- 6079-15



The **Hazard•Gard™ EXFASC Series** is a visual fire alarm signaling device for hazardous areas. The EXFASC Series strobes are UL 1971 Listed for indoor signaling applications for the hearing impaired in non-sleeping areas. They are also UL Listed for Type 3R, 4X installations. The strobes are available for pendant, wall and ceiling mounts.

The **EXFASC Series Fire Alarm Explosionproof Strobe** contains a supervisory diode for use in fire alarm applications. Under normal operation the diode is reversed biased, meaning it blocks voltage from being applied to the strobe light and prevents it from lighting. When a fire-initiating device such as a smoke alarm is activated, the diode's polarity is reversed through a fire alarm panel. The diode becomes forward biased, allowing voltage to the device and activating the strobe.

Primary Applications

- Visual fire alarm signaling device for hazardous areas

Typical Industries

- Energy exploration
- Utilities
- Wastewater treatment plants
- Pulp & paper plants
- Petrochemical plants
- Petroleum refineries
- Oil rigs

Key Features & Benefits

- Meets NFPA requirements for fire safety warning devices
- State of the art electronic design (full wave rectified design)
 - Low current draw is efficient
 - 24V DC regulated full wave rectified
 - Limited in-rush current favorable to other fire alarm system components
 - Proven, reliable circuitry designed specifically for use with fire alarm control panels
- Available in pendant, wall and ceiling mount
- Strobe light produces 65 flashes per minute
- Factory sealed—no external seals required
- Quick connect—Strobe fixture threads onto mounting module for easy installation
- Small compact size—ceiling mount is 13 ¾-inch long

Certifications & Compliances

- Class I, Division 1, Groups C & D
- Class I, Zones 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL 1638 and 1203 Listed
- UL 1971 Listed for indoor visual signaling for the hearing impaired in non-sleeping areas
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard—Copper-free aluminum
- Globe—Heat and impact-resistant glass
- Gaskets—Silicone
- External hardware—Stainless steel
- Internal components—Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 16–33V DC
- Operating Current: 1.08–0.83 amps
- Peak Candlepower: 800,000

Hub Size

- ¾-inch NPT pendant, ceiling and wall mount

ORDERING INFORMATION
STEP 1
Order Strobe Type

Catalog Number	Voltage	Lens Color	NEMA Rating
FIRE ALARM RATED EXPLOSIONPROOF STROBES			
EXFASC301/16 33	24V DC regulated full wave rectified	Clear	3R, 4X

STEP 2
Order Strobe Type

Catalog Number	Hub Size	Mounting Style
EVMP2	¾"	Pendant
EV22 & EV87		Wall
EV22	¾"	Ceiling
EVMJ4	1 ¼"	Stanchion

TEMPERATURE PERFORMANCE DATA

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Groups C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Groups E, F, G	Class II, Class III Div. 2 Groups F, G
EXFASC Series Fire Alarm Voltage 24VDC Regulated Full Wave Rectified (Operating Range 16-33V DC) (Marine Listed)	40°C 55°C	75°C 90°C	T6(85°C) T5(100°C)	T4A(120°C) T4(135°C)	T4A(120°C) T4(135°C)



The **Hazard-Gard EXS and EXDS Series Explosionproof Strobe Lights** are designed for installation indoors and outdoors in locations which are hazardous due to the presence of flammable vapors or gases, ignitable dusts or ignitable fibers and flyings. The units are UL Listed for Type 3R and 4X installations. The 120V and 24V DC models are **Marine Rated**. The strobes are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

The **EXDS Series** is diode polarized for use in electrically supervised circuits. Electrically supervised circuits are typically used in life-safety or security applications.

Under normal operation the diode is reversed biased, meaning it blocks voltage from being applied to the strobe and prevents it from lighting. When an initiating device such as a smoke detector is activated, the diode's polarity is reversed through a circuit panel. The diode becomes forward biased, allowing voltage to the device and activating the strobe.

Primary Applications

- Condition signaling
- Equipment obstruction warning
- Security alert
- Emergency evacuation signaling
- In areas where audible signals cannot be heard

Typical Industries

- Utility gas plants
- Petroleum refineries
- Wastewater treatment plants
- Chemical & petrochemical
- Mining
- Pulp & paper

Key Features & Benefits

- Strong strobe signal that produces 65 flashes per minute.
- Compact design will not obstruct in low ceiling or small areas, ceiling mount is only 13¾-inch long
- Quick connect—Strobe fixture threads onto mounting module for easy installation
- Factory sealed—No external seals required
- Available in pendant, wall, stanchion and ceiling mount
- Available in six different globe colors—clear, red, blue, amber, green and magenta
- Silicone gasket seals out dirt and moisture

Certifications & Compliances

- Class I, Division 1, Groups C & D
- Class I, Zones 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed (120V AC and 24V DC only)
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard—Copper-free aluminum
- Globe—Heat and impact-resistant glass
- Gaskets—Silicone
- External hardware—Stainless steel
- Internal components—Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120V AC (EXS), 12–48V DC (EXSNM) and 24V DC nominal, voltage operating range is 16–33V DC (EXDS)
- Operating Current: 0.10 amps at 120V AC
1.2–3.8 amps at 12–48V DC
0.8 amps at 24V DC
- Peak Candlepower: 800,000

Hub Size

- ¾-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

ORDERING INFORMATION
STEP 1
Order Strobe Type

Catalog Number	Voltage	Lens Color	NEMA Rating
EXPLOSIONPROOF STROBES			
EXS301A/120	120V AC	Amber	3R, 4X, Marine
EXS301B/120	120V AC	Blue	3R, 4X, Marine
EXS301C/120	120V AC	Clear	3R, 4X, Marine
EXS301G/120	120V AC	Green	3R, 4X, Marine
EXS301M/120	120V AC	Magenta	3R, 4X, Marine
EXS301R/120	120V AC	Red	3R, 4X, Marine
EXSNM301A/12 48	12-48V DC	Amber	3R, 4X
EXSNM301B/12 48	12-48V DC	Blue	3R, 4X
EXSNM301C/12 48	12-48V DC	Clear	3R, 4X
EXSNM301G/12 48	12-48V DC	Green	3R, 4X
EXSNM301M/12 48	12-48V DC	Magenta	3R, 4X
EXSNM301R/12 48	12-48V DC	Red	3R, 4X
DIODE POLARIZED EXPLOSIONPROOF STROBES			
EXDS301A/24	24V DC	Amber	3R, 4X, Marine
EXDS301B/24	24V DC	Blue	3R, 4X, Marine
EXDS301C/24	24V DC	Clear	3R, 4X, Marine
EXDS301G/24	24V DC	Green	3R, 4X, Marine
EXDS301M/24	24V DC	Magenta	3R, 4X, Marine
EXDS301R/24	24V DC	Red	3R, 4X, Marine

STEP 2
Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	¾"	Pendant
EV22 & EV87		Wall
EV22	¾"	Ceiling
EVMJ4	1¼"	Stanchion

TEMPERATURE PERFORMANCE DATA

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Groups C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Groups E, F, G	Class II, Class III Div. 2 Groups F, G
EXFASC Series Fire Alarm Voltage 24V DC Regulated Full Wave Rectified (Operating Range 16-33V DC) (Marine Listed)	40°C 55°C	75°C 90°C	T6(85°C) T5(100°C)	T4A(120°C) T4(135°C)	T4A(120°C) T4(135°C)
EXS Series Strobe Light Voltage 120V AC (Marine Listed)	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T6(85°C) T6(85°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)
EXSNM Series Strobe Light Voltage 12-48V DC (Not Marine Listed)	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T6(85°C) T6(85°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)
EXDS Series Strobe 40°C Light-Diode Polarized Voltage 24V DC (Marine Listed)	75°C 55°C	T6(85°C) 90°C	T4A(120°C) T5(100°C)	T4A(120°C) T4(135°C)	T4(135°C)

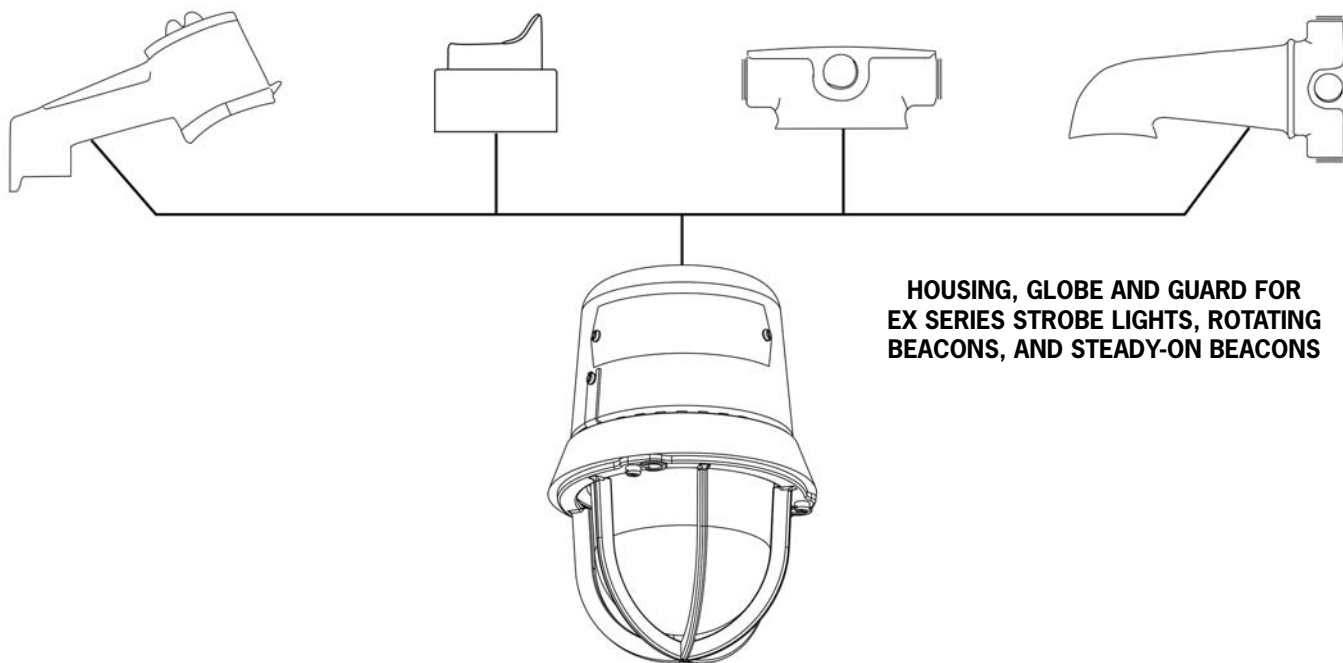
FAMILY TREE—EX STROBES, ROTATING AND STEADY-ON BEACONS

STANCHION
EVMJ4 1¼" HUB

PENDANT
EVMP2 ¾" HUB

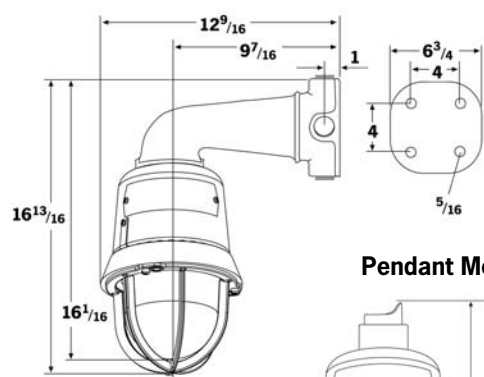
CEILING
EV22 ¾" HUB

WALL
EV22 & EV87 ¾" HUB

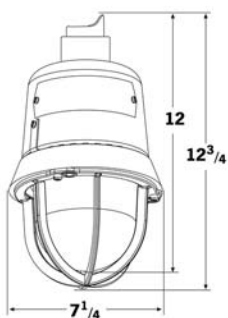


DIMENSIONS—EX STROBES, ROTATING AND STEADY-ON BEACONS

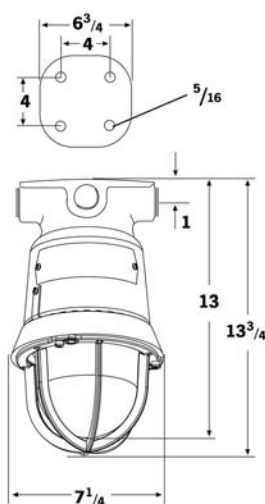
Wall Mount



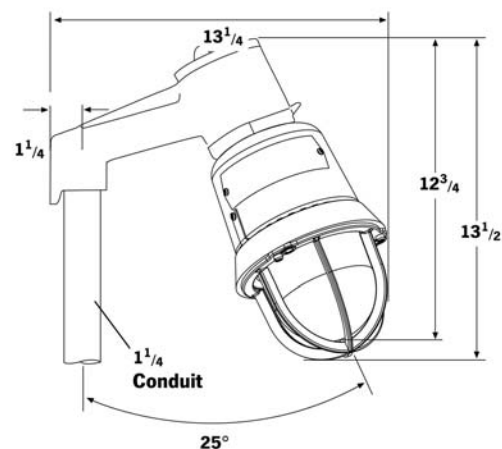
Pendant Mount



Ceiling Mount



Stanchion Mount



NET LUMINAIRE WEIGHTS

Luminaire Housing with Guard 11.0 lbs.

Add mounting modules

Pendant 1.0 lbs.

Ceiling 1.0 lbs.

Wall 4.5 lbs.

Stanchion 2.5 lbs.



The **Hazard•Gard EXR Series Explosionproof Rotating Beacons** are designed for installation in hazardous locations, such as manufacturing plants, heavy industrial facilities, refineries, chemical, petrochemical, pharmaceutical and off-shore drilling platforms.

The units are UL Listed for Type 3R, 4X and marine installations. The rotating beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

The **EXDR Series Explosionproof Rotating Beacon** is diode polarized for use in standard 24–28V DC electrical circuits or in electrically supervised circuits. Electrically supervised circuits are typically used in life-safety or security applications.

Under normal operation in an electrically supervised circuit, the diode is reversed biased, meaning it blocks voltage from being applied to the rotating beacon and prevents it from lighting. When a warning detecting device is activated, the diode's polarity is reversed through a circuit panel. The diode becomes forward biased, allows voltage to the device and activates the rotating beacon.

Primary Applications

- Security alert
- Equipment obstruction warning
- Obstacle warning
- Status indication of a process
- Areas under construction
- Supplement audible signaling or off limits

Typical Industries

- Utility gas plants
- Pharmaceutical plants
- Wastewater treatment plants
- Refineries
- Chemical plants
- Mining

Key Features & Benefits

- Powerful halogen rotating beacon emits bright light to provide critical visual warning
- Available in pendant, wall, stanchion and ceiling mount
- Available in six different globe colors—amber, blue, clear, green, magenta and red
- Beacon produces 75 rotations per minute
- Factory sealed—No external seals required
- Quick connect—Strobe fixture threads onto mounting module for easy installation

Certifications & Compliances

- Class I, Division 1, Groups C & D
- Class II, Division 1, Groups E, F & G
- Class I, Zones 1 & 2, Group IIB
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard—Copper-free aluminum
- Globe—Heat and impact-resistant glass
- Gaskets—Silicone
- External hardware—Stainless steel
- Internal components—Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120V AC (EXR) and 24–28V DC (EXDR)
- Operating Current: 0.382 amps at 120V AC
0.8 amps at 24–28V DC
- Peak Candlepower: 3328 (EXR)
2838 (EXDR)

Hub Size

- ¾-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

ORDERING INFORMATION
STEP 1 Order Rotating Beacon Type

Catalog Number	Voltage	Lens Color	NEMA Rating
EXPLOSIONPROOF ROTATING BEACONS			
EXR301A/120	120V AC	Amber	3R, 4X, Marine
EXR301B/120	120V AC	Blue	3R, 4X, Marine
EXR301C/120	120V AC	Clear	3R, 4X, Marine
EXR301G/120	120V AC	Green	3R, 4X, Marine
EXR301M/120	120V AC	Magenta	3R, 4X, Marine
EXR301R/120	120V AC	Red	3R, 4X, Marine
DIODE POLARIZED EXPLOSIONPROOF ROTATING BEACONS			
EXDR301A/24 28	24–28V DC	Amber	3R, 4X, Marine
EXDR301B/24 28	24–28V DC	Blue	3R, 4X, Marine
EXDR301C/24 28	24–28V DC	Clear	3R, 4X, Marine
EXDR301G/24 28	24–28V DC	Green	3R, 4X, Marine
EXDR301M/24 28	24–28V DC	Magenta	3R, 4X, Marine
EXDR301R/24 28	24–28V DC	Red	3R, 4X, Marine

STEP 2 Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	¾"	Pendant
EV22 & EV87		Wall
EV22	¾"	Ceiling
EVMJ4	1¼"	Stanchion

TEMPERATURE PERFORMANCE DATA

	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Groups C, D Class I, Zone 1 Group II B	Class II, Class III Div. 1 Groups E, F, G	Class II, Class III Div. 2 Groups F, G
EXR Series Rotating Beacon	40°C	75°C	T6(85°C)	T4A(120°C)	T4A(120°C)
Voltage 120V AC	55°C	90°C	T5(100°C)	T4(135°C)	T4(135°C)
	65°C	105°C	T5(100°C)	T4(135°C)	T4(135°C)
EXR Series Rotating Beacon—	40°C	75°C	T6(85°C)	T4A(120°C)	T4A(120°C)
Diode Polarized	55°C	90°C	T6(85°C)	T4(135°C)	T4(135°C)
Voltage 24–28V DC	65°C	105°C	T6(85°C)	T4(135°C)	T4(135°C)

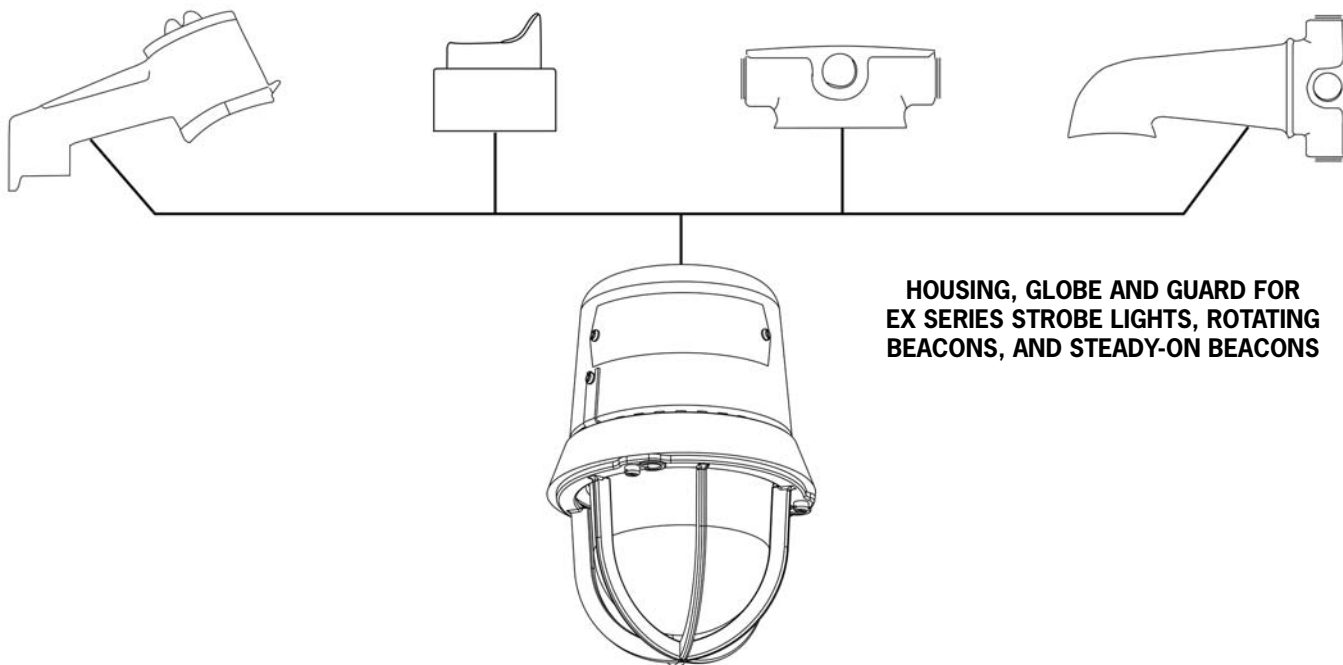
FAMILY TREE—EX STROBES, ROTATING AND STEADY-ON BEACONS

STANCHION
EVMJ4 1 1/4" HUB

PENDANT
EVMP2 3/4" HUB

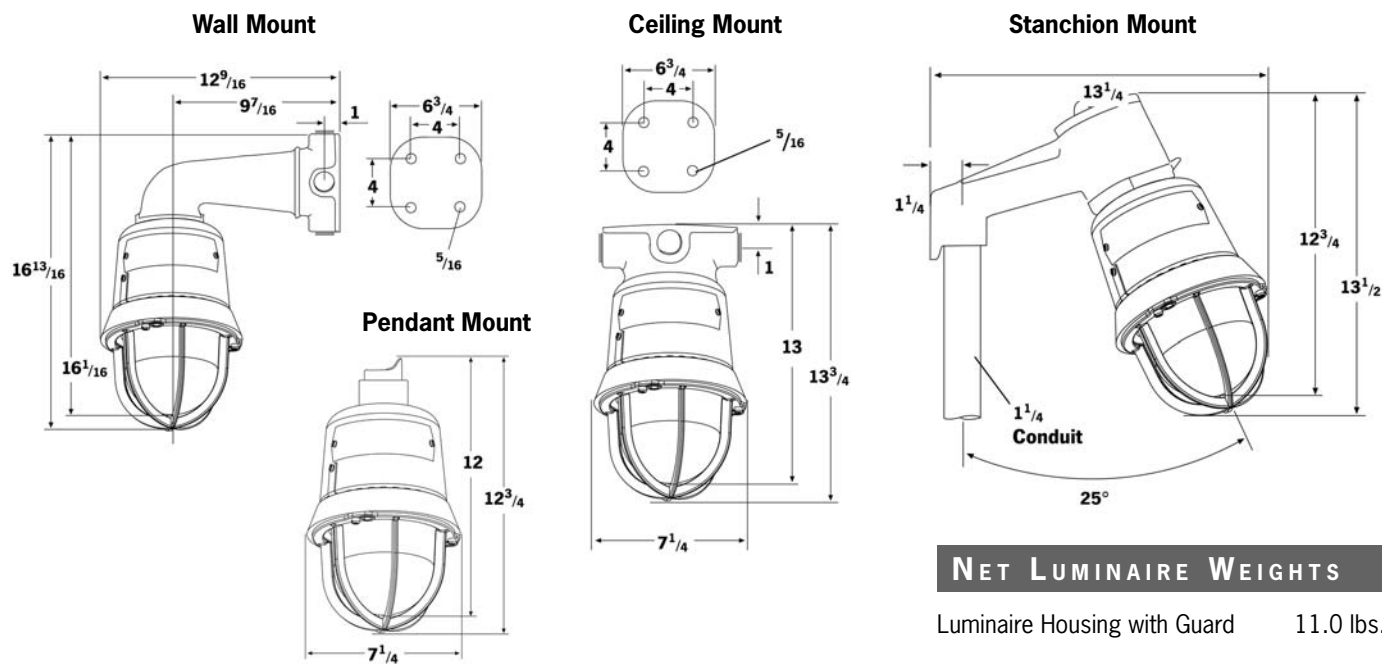
CEILING
EV22 3/4" HUB

WALL
EV22 & EV87 3/4" HUB



**HOUSING, GLOBE AND GUARD FOR
EX SERIES STROBE LIGHTS, ROTATING
BEACONS, AND STEADY-ON BEACONS**

DIMENSIONS—EX STROBES, ROTATING AND STEADY-ON BEACONS



NET LUMINAIRE WEIGHTS

Luminaire Housing with Guard 11.0 lbs.

Add mounting modules

Pendant	1.0 lbs.
Ceiling	1.0 lbs.
Wall	4.5 lbs.
Stanchion	2.5 lbs.



**FB15 Pipe Mount
(with cast guard)**



EXSO Stanchion Mount



**FB15
Direct Mount
(with wire guard)**

The steady-on beacons are available for pendant, wall, stanchion and ceiling mounts, and come in a variety of globe colors. Typical industrial and commercial applications include food processing plants, refineries, mines, tankers, laboratories, sewage treatment plants, off-shore oil rigs, water and filtration plants and chemical plants. The diode polarized steady-on beacon is used in electrically supervised circuitry for life-safety or security applications.

Primary Applications

- Safety lighting
- Continuous source to communicate
- Obstacle warning
- Exit or entrance lights
- For identifying the location of safety equipment such as showers or emergency telephones

Typical Industries

- Chemical plants
- Storage handling
- Dust conveyor systems
- Energy exploration
- Textile mills
- Flour and feed mills

Steady-on Beacons are designed for harsh & hazardous locations where a visual signal is required for tough environmental conditions involving corrosives, water, dust and extreme temperature.

- Broad range of light source options such as halogen, incandescent, compact & fluorescent for both indication and illumination
- Products designed for both conduit wiring and/or cable connection. NPT or metric entries meeting all installation needs



FB15 Pipe Mount
(with cast guard)



FB15
Direct Mount
(with wire guard)

The units are UL Listed for Type 3R, 4X and marine installations. The steady-on beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

Typical industrial and commercial applications include food processing plants, refineries, mines, tankers, laboratories, sewage treatment plants, off-shore oil rigs, water and filtration plants and chemical plants.

The diode polarized steady-on beacon is used in electrically supervised circuitry for life-safety or security applications.

Primary Applications

- Safety lighting
- Continuous source to communicate
- Obstacle warning
- Exit or entrance lights
- For identifying the location of safety equipment such as showers or emergency telephones

Typical Industries

- Chemical plants
- Storage handling
- Dust conveyor systems
- Energy exploration
- Textile mills
- Flour and feed mills

Certifications and Compliances

- Class I, Division 1, Groups C & D
- Class I, Zone 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed
- NEMA 4X watertight, IP 66

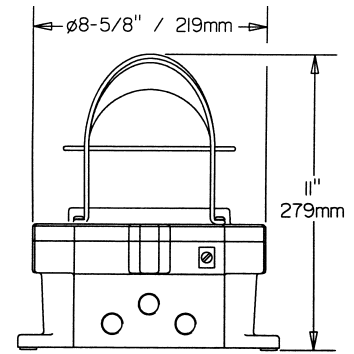
MEDC Series Steady-On Beacons

FB4

100 Watt Steady Incandescent Light—Explosionproof



Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB T4
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 3 x 1/2" or 2 x 3/4" NPT
Weight	13lb/6.4kg
Options: Body & lens color, lens guard, certification, voltage 120V AC only	



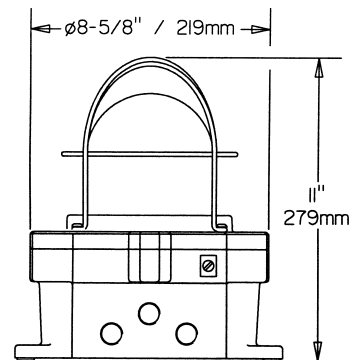
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	17800002	FB4EUL8U1N100B1N1G	Marine grade alloy, 120V AC, 100W bulb (not included), blue lens, lens guard, no labels, gray finish

FL4

13–39 Watt Steady Fluorescent Light—Explosionproof

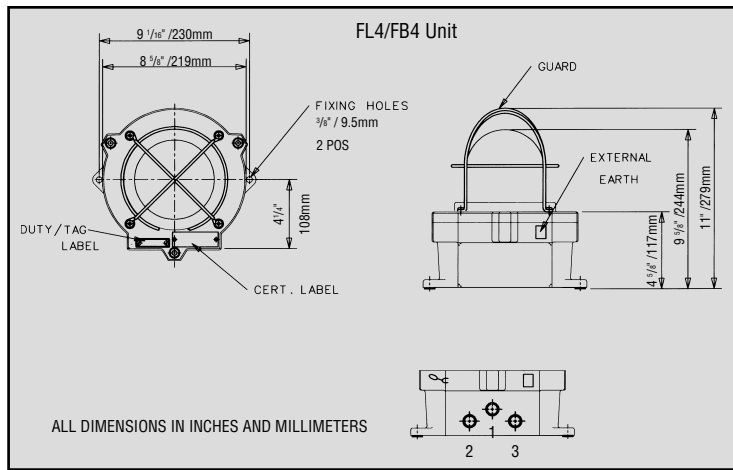


Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIC T5
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	Up to 3 x 1/2" NPT or 2 x 3/4" NPT
Weight	14.5lb/6.6kg
Options: Body & lens color, lens guard, certification, voltages 24V DC, 120V, 240V AC	



Certification	Ordering Code	Catalog #	Standard Product Configuration
UL Listed, Class I, Div 2, Groups C & D	27800006	FL4BUL8U2M3M13R1N1RZ	Marine grade alloy, 24V DC, 2 x 1/2" NPT entries, 13W tube (not included), red lens, lens guard, red finish , one certified plug

MEDC Series Steady-On Beacons



Specification—FL4 and FB4 Units

Certification:	UL Listed for USA and Canada – Hazardous locations: Class I, Div. 1, Groups C & D. Class I, Zone 1, AExd IIB T4/T5. UL Listing No. E187894. – Ordinary locations: Visual-Signal Device (FL4 only). UL Listing No. S8128. ATEX approved: EExd IIC. Certificate No. Baseefa 02ATEX0224X.
Material:	LM25TF Marine Grade Alloy body. Grade 316 ANC48 Stainless Steel body. Toughened Wellglass.
Models:	FL4: Up to 3 x 13 Watt PL compact fluorescent lamps. FB4: 100 watt GLS incandescent lamps. E27 holder as standard.
Finish:	Gray epoxy paint finish as standard or to customer's specification.
Voltage:	FL4: 24V DC, 120V AC, 240V AC \pm 10% 50/60hz. FB4: 120V AC \pm 10% 50/60hz.
Weight:	FL4: 14–17lb/6.5–7.9kg (add 19lb/8.4kg for stainless steel). FB4: 13lb/6.4 kg.
Certified Temperature:	FL4: -4°F to +131°F (-20°C to + 55°C). FB4: -67°F to +131°F (-55°C to + 55°C).
Ingress Protection:	NEMA 4X & 6. IP66 and IP67.
Lamps:	Units are supplied without lamps.
Terminals:	8 off suitable for up to 8 AWG conductor size.
Entries:	Up to 3 x 1/2" NPT or 2 x 3/4" NPT.

FL4 LAMP DETAILS

Unit Type	Lamp Type	Lamp Ref.	Holder Type
FL4 DC	Osram Dulux D/E 13W	DD/E 13/XX	G24q-1
	Philips PLC 13W	PLC 13 P4	G24q-1
FL4 AC	Osram Dulux D 13W	DD 13	G24d-1
	Philips PLC 13W	PLC 13	G24d-1
Osram Color XX = (21 = Cool white) (31 = Warm white) (41 = Interna)			

Temperature Ratings

Type	Voltage/Wattage	T Class	Max. Amb.
FL4	DC units	T5	55°C
	AC units	T4	55°C
FB4	60W	T4	55°C
	100W	T3	55°C

Ordering Requirements

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

Unit Type	Voltage	Certification	Entries	Lamp Wattage	Lens Color	Guard	Options	Material	Finish
FL4							N		R
FB4									
Voltage Code		Certification Code		Entries Code		Color Code		Guard Code	
24V DC	B	ATEX	B8D	1 x 20mm	1B	Clear	C	None	0
120V AC	E	UL*	UL8U	2 x M20	2B3B	Red	R	Guard	1
240V AC	H			1 x M25	1C	Blue	B		
				2 x M25	2C3C	Green	G		
				1 x 1/2" NPT	1M	Yellow	Y		
				2 x 1/2" NPT†	2M3M	Amber	A		
				1 x 3/4" NPT†	1N				
				2 x 3/4" NPT†	2N3N				
				Lamp Wattage Code					
				FL4 13W(1 x 13W tube)		13			
				26W(2 x 13W tubes)		26*			
				FB4 60W		60			
				100W		100			
*Only available in the following voltages: 26W—AC only.									

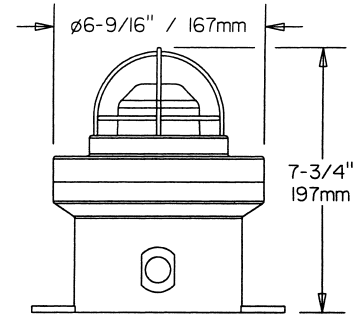
MEDC Series Steady-On Beacons

FB11 UL

10 Watt Steady Incandescent Light—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups C & D, Class I, Zone 1, AExd IIB T4/T5
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 2 x ½" NPT, M20
Weight	6.2lb/2.8kg
Options: Body & lens color, lens guard, certification, voltage 24, 48V DC, 110–120V AC	



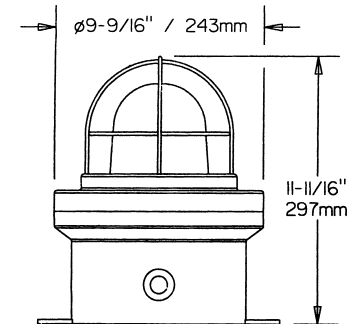
Certification	Ordering Code	Catalog #	Standard Product Configuration
ATEX	32500004	FB11B02410RNBNNN	24V DC, 10W bulb, red lens, mounting bracket, natural black finish
UL, cUL Listed, Class I, Div 2, Groups C & D	32500028	FB11UL02410GNBNNR	10W incandescent beacon, 24V DC, green lens, no lens guard, 2 x ½ NPT entries, painted red enclosure
UL, cUL Listed, Class I, Div 2, Groups C & D	32500029	FB11UL11010GNBNNR	10W incandescent beacon, 110V AC, green lens, no lens guard, 2 x ½ NPT, painted red enclosure

FB12 UL

60W/100W Steady Incandescent Light—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups C & D, Class I, Zone 1, AExd IIB T4/T5
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 2 x ½" NPT, M20
Weight	2.6lb/1.2kg
Options: Body & lens color, lens guard, certification, voltage 120V AC	



Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	326023	FB12UL12060CNBNNN	120V AC, 60W bulb, clear lens, mounting bracket, no labels, natural black finish
UL, cUL Listed, Class I, Div 2, Groups C & D	32600035	FB12UL12060GNBNNR	60W incandescent beacon, 120V AC, green lens, no lens guard, 2 x ½ NPT entries in a painted red enclosure
UL, cUL Listed, Class I, Div 2, Groups C & D	32600036	FB12UL02460GNBNNR	60W incandescent beacon, 24V DC, green lens, no lens guard, 2 x ½ NPT entries, painted red enclosure
UL, cUL Listed, Class I, Div 2, Groups C & D	32600037	FB12UL120100GNBNNR	100W incandescent beacon, 24V DC, green lens, no lens guard, 2 x ½ NPT entries, painted red enclosure

MEDC Series Steady-On Beacons

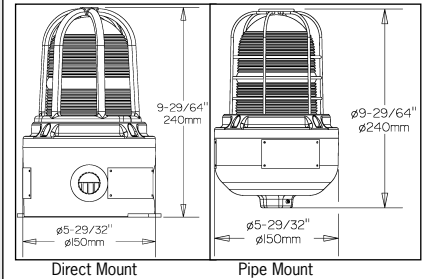
FB15

100W Steady Incandescent Light—Hazardous & Ordinary Locations



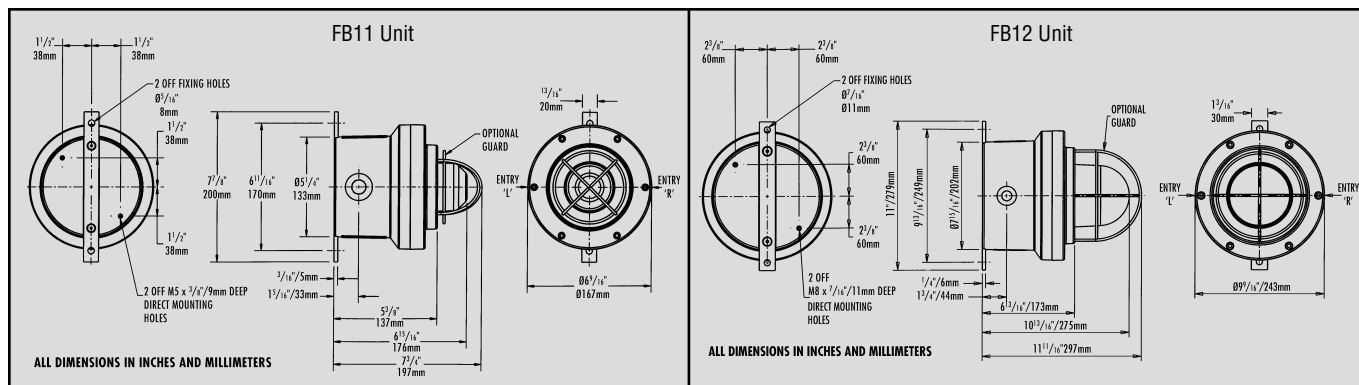
Certification UL Listed for:	cULus ATEX Class I, Div 2, Groups A, B, C, D Class I, Zone 1, AExd IIC T3/T4
Certified Ambient Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 3 x 1/2" NPT or 3 x 3/4" NPT
Weight	6–8lb/2.6–3.6kg

Options: Body & lens color, lens guard, lamp wattage, unit fixing, mounting method, voltages 12–48V DC, 110–254V AC



Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600001	FB15UL120100GNANR	120V AC, 100W bulb, green lens, mounting bracket, no labels, red finish
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600020	FB15UL120100ANPNN	100W incandescent beacon, 120V AC, amber lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600021	FB15UL120100RNPNN	100W incandescent beacon, 120V AC, red lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600022	FB15UL120100GNPNN	100W incandescent beacon, 120V AC, green lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600023	FB15UL120100CNPNN	100W incandescent beacon, 120V AC, clear lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600024	FB15UL120100BNPNN	100W incandescent beacon, 120V AC, blue lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600025	FB15UL024100ANPNN	100W incandescent beacon, 24V DC, amber lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600026	FB15UL024100RNPNN	100W incandescent beacon, 24V DC, red lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600027	FB15UL024100GNPNN	100W incandescent beacon, 24V DC, green lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600028	FB15UL024100CNPNN	100W incandescent beacon, 24V DC, clear lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	47600029	FB15UL024100BNPNN	100W incandescent beacon, 24V DC, blue lens, no lens guard, pipe mounting, 1 x 3/4" NPT entry, natural black enclosure

MEDC Series Steady-On Beacons



Specification—FB11 and FB12 Units

Models:	FB11 & FB12—Incandescent.
Certification:	UL Listed for USA and Canada. <ul style="list-style-type: none"> – Class I, Div 2, Groups C & D. – Class I, Zone 1, AExd IIB T4/T5. UL listing No. E187894. ATEX approved: CENELEC EN50014 and EN50018. FB11: Cert. No. 99 ATEX 2195X. FB12: Cert. No. 99 ATEX 2196.
Voltage:	FB11: 24, 48V DC 110, 220, 240, 250V AC FB12: 120V AC
Incandescent:	FB11: 10W incandescent fitted as standard. FB12: 60W or 100W incandescent fitted as standard.
Material:	Body: Glass reinforced polyester. Lens: Glass. Cover screws + backstrap: stainless steel 316.

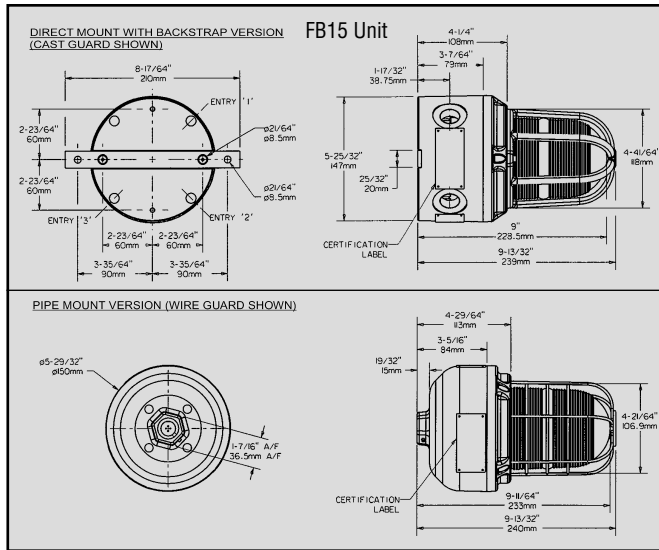
Finish:	Natural black or painted to customer specification.
Ingress Protection:	NEMA 4X & 6, IP66 & IP67.
Terminals:	FB11: 6 x 14 AWG. FB12: 6 x 10 AWG.
Labels:	Duty/Tag Label optional.
Entries:	2 x 1/2" NPT.
Certified Temperature:	FB11: -67°F to +131°F (-55°C to +55°C) T4. -67°F to +104°F (-55°C to +40°C) T5. FB12: -67°F to +131°F (-55°C to +55°C) T4. -67°F to +104°F (-55°C to +40°C) T5.
Weight:	FB11: 6.2lb / 2.8kg. FB12: 16.7lb / 7.6kg.

Ordering Requirements

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

Unit Type	Certification	Voltage	Lamp Wattage	Lens Color	Lens Guard	Unit Fixing	Earth Continuity	Tag/Duty Label	Finish
<div>FB11</div> <div>FB12</div>	<div>Cert.</div> <div>ATEX</div> <div>UL Listed</div>	<div>Code</div> <div>B</div> <div>UL</div>			N	B	N	N	<div>Finish</div> <div>Natural Black</div> <div>Red</div>
		<div>Code</div> <div>024</div> <div>110</div> <div>120</div> <div>240</div> <div>Other voltages available, please specify.</div> <div>†FB12 UL Listed only</div>	<div>Code</div> <div>10</div> <div>60</div> <div>100</div>	<div>Color</div> <div>Red</div> <div>Blue</div> <div>Green</div> <div>Amber</div> <div>Yellow</div> <div>Clear</div>					<div>Code</div> <div>R</div> <div>B</div> <div>G</div> <div>A</div> <div>Y</div> <div>C</div>

MEDC Series Steady-On Beacons



Electrical Ratings:

	DC			AC			
Voltage	24	48	110	120	230	240	254
Current (A)—60W lamp	2.5	1.25	0.55	0.50	0.26	0.25	0.24
Current (A) —100W lamp	4.2	2.1	0.91	0.83	0.43	0.42	0.39

Specification—FB15 Unit

Certification: UL Listed for USA and Canada:

– Hazardous locations

Class I, Div 2, groups A, B, C & D.

Class I, Zone 1, AExd IIC T3/T4.

UL listing No. E187894.

– Ordinary locations: Visual Signal Device.

UL listing No. S8128

CENELEC/ATEX approved.

CENELEC EN50014 & EN50018

ATEX Cert. No. Baseefa 04ATEX0009X.

Material:

Body: Glass reinforced polyester.

Lens: Glass.

Backstrap: stainless steel 316.

Wire Guard (optional): Stainless steel wire.

Cast Guard (optional): Aluminium LM25M.

Finish:

Natural black or epoxy painted to customer specification.

Voltage:

24, 48V DC

110, 120, 230, 240, 254V AC

Lamp Type:

60W or 100W GLS incandescent.

Lamp Holder:

E27 as standard..

Certified

60W: -67°F to +131°F (-55°C to +55°C) T4.

Temperature:

-67°F to +158°F (-55°C to +70°C) T3.

100W: -67°F to +104°F (-55°C to +40°C) T4.

Weight:

Pipe mount: 5¼lb/2.6kg; Direct mount: 6¼lb/3.0kg.

Ingress

NEMA 4X & 6, IP66 & IP67.

Protection:

Entries:

Supplied as 2 x M20, up to 3 x M20 or 3 x M25.

Supplied as 2 x ½" NPT (direct mount) or ¾" (pipe mount) as standard.

Other options available:

Up to 3 x ½" NPT or 3 x ¾" NPT (direct mount);

½" NPT (pipe mount)—contact sales office to order.

Terminals:

Direct mount: 12 x 14AWG.

Pipe mount: 8 x 14AWG.

Labels:

Tag/Duty label option.

Ordering Requirements

The following code is designed to help in the selection of the correct unit. Build up the reference number by inserting the code for each component into the appropriate box. Standard products available for immediate shipping—contact sales office for details.

Model	Certification	Voltage	Lamp Wattage	Lens Color	Unit Guard	Fixing	Unit Options	Finish
FB15							N	N

Certification	Code	Voltage	Code	Lamp Wattage	Code	Guard	Code
ATEX	B	24V DC	024	60	60	None	N
UL	UL	110V AC	110	100	100	Cast	C
		120V AC	120			Wire	W
		240V AC	240				

Color	Code	Unit Fixing	Code
Red	R	Pipe mount	P*
Blue	B	Direct w/backstrap	B
Green	G		
Amber	A		
Yellow	Y		
Clear	C		

* Not Available on ATEX version.

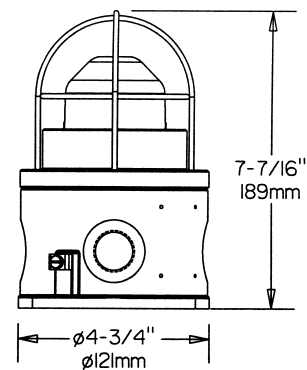
MEDC Series Steady-On Beacons

SM87 LU3

10 Watt Steady Incandescent Light—Explosionproof



Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	2 x 1/2" or 3/4" NPT, 20mm, 25mm
Weight	4.4lb/2.0kg
Options: Body & lens color, lens guard, certification, voltages 12–48V DC, 110V–254V AC	



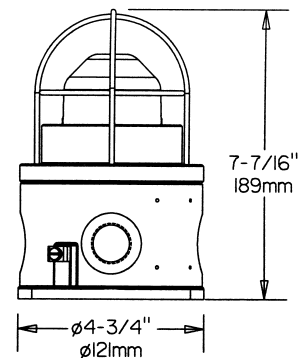
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	762311	SM87LU3AUL024RN3R3LNR	24V DC, red lens, 2 x 1/2" NPT entries, no labels, red finish
ATEX	46200122	SM87LU3AB024GN1T1BNR	EExd, IIC, T4/T6 incandescent beacon, 24V DC, green lens, no lens guard, 2 x M20 cable entries, painted red enclosure
UL, cUL Listed, Class I, Div 1, Groups C & D	46200096	SM87LU3AUL024GN3T3BNR	24V DC, green lens, 10W incandescent bulb, marine grade alloy, red finish

SM87 LU1

10 Watt Steady Fluorescent Light—Explosionproof

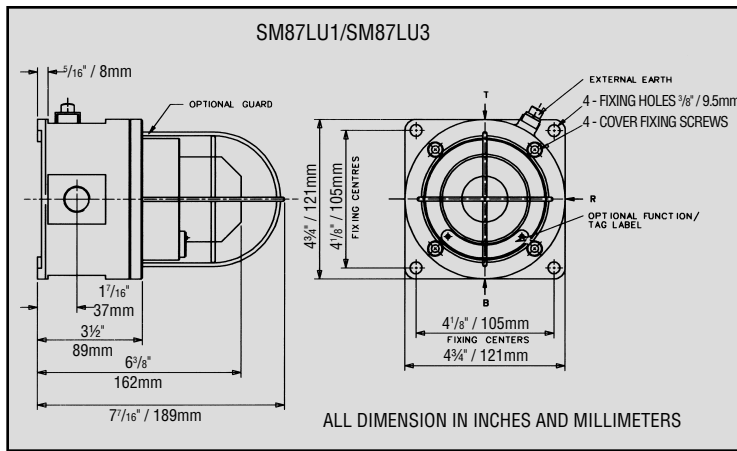


Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1, AExd IIB
Certified Temperature	-67°F to +131°F -55°C to +55°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Alloy
Entries	2 x 1/2" or 3/4" NPT, 20mm, 25mm
Weight	4.4lb/2.0kg
Options: Body & lens color, lens guard, certification, voltages 12–48V DC, 120V–254V AC	



Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	46200054	SM87LU1AUL024RN4T4BNR	24V DC, red lens, 2 x 3/4" NPT entries, no labels, red finish
UL, cUL Listed, Class I, Div 1, Groups C & D	46200052	SM87LU1AUL024GN4T4BNR	24V DC, green lens, 10W fluorescent bulb, marine grade alloy, red finish
ATEX	46200121	SM87LU1AB024GN1T1BNR	EExd, IIC, T4/T6 fluorescent beacon, 24V DC, green lens, no lens guard, 2 x M20 cable entries, painted red enclosure

MEDC Series Steady-On Beacons



Specification—SM87LU1/SM87LU3 Units

Models:	SM87 LU1: Fluorescent. SM87 LU3: Incandescent.
Certification:	UL Listed for USA and Canada: Class I, Div 1, Groups C & D and Class I, Zone 1. Listing No: E187894. CSA Certified for Class I, Div 1 & 2, Group D. Certificate No. 96406. ATEX approved: EExd IIC T3-T6 (model dependent). Certificate No. 03ATEX0222X
Ingress Protection:	NEMA 4X and 6 IP66 & 67.
Material:	Marine Grade Aluminium Alloy LM25TF with glass lens.
Finish:	Epoxy paint finish as standard or to customer's specification.
Fluorescent:	10 Watt tube light output 600 Lumens (240V & 254V AC versions). 5 Watt tube max. light output 250 Lumens (DC versions).
Incandescent:	Single incandescent fitted as standard 10 watts. Others may be available, please contact MEDC with your requirements.
Weight:	4.4lb/2.0kg approx.
Certified Temperature:	SM87LU1/3 -67°F to +131°F -55°C to +55°C.
Voltage:	12, 24, 48V DC, 110V (LU3 only), 220V, 240V, 254V AC 50Hz as standard. 60Hz available if required.
Terminals:	SM87: 4 off for up to 14 AWG cable.
Entries:	SM87LU1 & 3: 2 x 1/2" or 3/4" NPT, 20mm, 25mm
Power Consumption:	LU1- 7 Watts for 12V DC, 24V DC, 48V DC, 220V AC 14 Watts for 240V AC, 15 Watts for 254V AC LU3- Single incandescent fitted as standard 10W. Other options are available—please contact MEDC with your requirements.

Ordering Requirements

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

Model	Certification	Voltage	Lens Color	Lens Guard	Entries	Tag/Duty Label	Unit Finish
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="N"/>	<input type="text"/>	<input type="text" value="N"/>	<input type="text" value="R"/>

Type	Code
Fluorescent (Alloy) [†]	SM87LU1A
Fluorescent (Stainless Steel)*	SM87LU1S
Incandescent (Alloy) [†]	SM87LU3A
Incandescent (Stainless Steel)*	SM87LU3S

*Not available UL Listed or GOST Certified.
† Not available CSA certified.

Voltage	Code
24V DC	024
110V AC	110
240V AC	240

Color	Code
Red	R
Blue	B
Green	G
Amber	A
Yellow	Y
Clear	C

Entries	Code
M20 left, M20 bottom	1B1L
M20 bottom	1B
1/2" NPT left, 1/2" NPT bottom	3B3L
1/2" NPT Bottom	3B

Certification	Code
ATEX/CENELEC	B
UL Listed	UL
CSA Certified	C



The units are UL Listed for Type 3R, 4X and marine installations. The steady-on beacons are available for pendant, wall, stanchion and ceiling mounts, and come in six different globe colors.

Typical industrial and commercial applications include food processing plants, refineries, mines, tankers, laboratories, sewage treatment plants, off-shore oil rigs, water and filtration plants and chemical plants.

The diode polarized steady-on beacon is used in electrically supervised circuitry for life-safety or security applications.

Key Features & Benefits

- Powerful halogen light source for clear visual indication
- Available in six different globe colors—amber, blue, clear, green, magenta and red
- Factory sealed—no external seals required
- Quick connect—Steady-on beacon fixture threads onto mounting module for easy installation
- Small compact size—ceiling mount is 13¾-inch long
- Available in pendant, wall, stanchion and ceiling mount

Steady-on Beacons are designed for harsh & hazardous locations where a visual signal is required for tough environmental conditions involving corrosives, water, dust and extreme temperature.

- Broad range of light source options such as halogen, incandescent, compact & fluorescent for both indication and illumination
- Products designed for both conduit wiring and/or cable connection. NPT or metric entries meeting all installation needs
- Six light color options: Amber, Red, Green, Clear, Blue and Magenta for all signaling conditions

Certifications & Compliances

- Class I, Division 1, Groups C & D
- Class I, Zones 1 & 2, Group IIB
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 1638, UL 1203 and UL 844 Listed
- 1598A Marine Listed (120V AC and 24V DC only)
- cUL Listed C22.2 No. 205
- NEMA 4X watertight, IP 66

Materials & Finishes

- Body, mounting modules and guard—Copper-free aluminum
- Globe—Heat and impact-resistant glass
- Gaskets—Silicone
- External hardware—Stainless steel
- Internal components—Solid-state electronics in a moisture-resistant and heat-dissipating epoxy
- Epoxy powder coated for corrosion resistance

Ratings

- 120V AC and 24–28V DC
- Operating Current: 0.35 amps at 120V AC (EXSO)
0.8 amps at 24–28V DC (EXDSO, diode polarized)
- Peak Candlepower: 3328

Hub Size

- ¾-inch NPT pendant, ceiling and wall mount
- 1¼-inch NPT stanchion mount

ORDERING INFORMATION
STEP 1
Order Steady-On Beacon Type

Catalog Number	Voltage	Lens Color	NEMA Rating
Explosionproof STEADY-ON BEACONS			
EXSO301A/120	120V AC	Amber	3R, 4X, Marine
EXSO301B/120	120V AC	Blue	3R, 4X, Marine
EXSO301C/120	120V AC	Clear	3R, 4X, Marine
EXSO301G/120	120V AC	Green	3R, 4X, Marine
EXSO301M/120	120V AC	Magenta	3R, 4X, Marine
EXSO301R/120	120V AC	Red	3R, 4X, Marine
DIODE POLARIZED Explosionproof STEADY-ON BEACONS			
EXDSO301A/24 28	24–28V DC	Amber	3R, 4X, Marine
EXDSO301B/24 28	24–28V DC	Blue	3R, 4X, Marine
EXDSO301C/24 28	24–28V DC	Clear	3R, 4X, Marine
EXDSO301G/24 28	24–28V DC	Green	3R, 4X, Marine
EXDSO301M/24 28	24–28V DC	Magenta	3R, 4X, Marine
EXDSO301R/24 28	24–28V DC	Red	3R, 4X, Marine

STEP 2
Order Mounting Module

Catalog Number	Hub Size	Mounting Style
EVMP2	¾"	Pendant
EV22 & EV87		Wall
EV22	¾"	Ceiling
EVMJ4	1¼"	Stanchion

TEMPERATURE PERFORMANCE DATA

Description	Ambient Max. Temp.	Supply Wire	Class I Div. 1, 2 Group C, D Class I, Zone 1 Group II B	Class II, Class II Div. 1 Group E, F, G	Class II, Class III Div. 2 Group F, G
EXSO Series Steady-On Beacon Voltage 120V AC	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T5(100°C) T5(100°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)
EXDSO Series Steady-On Beacon—Diode Polarized Voltage 24–28V DC	40°C 55°C 65°C	75°C 90°C 105°C	T6(85°C) T6(85°C) T6(85°C)	T4A(120°C) T4(135°C) T4(135°C)	T4A(120°C) T4(135°C) T4(135°C)

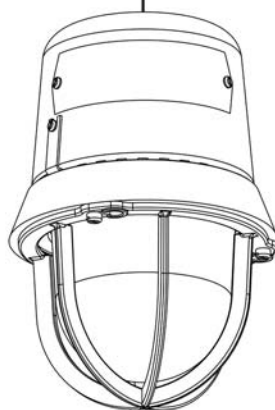
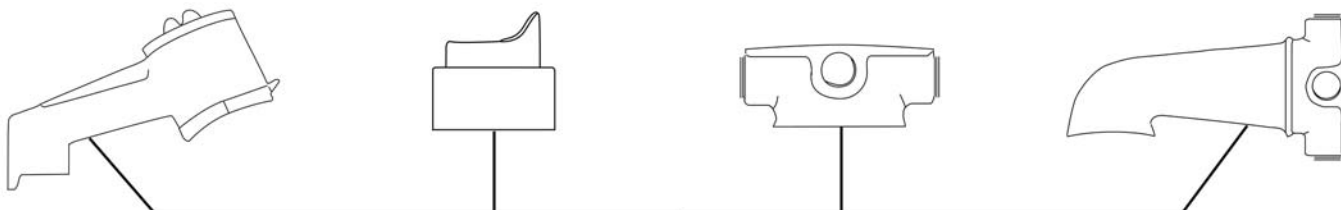
FAMILY TREE—EX STROBES, ROTATING AND STEADY-ON BEACONS

STANCHION
EVMJ4 1¼" HUB

PENDANT
EVMJ2 ¾" HUB

CEILING
EV22 ¾" HUB

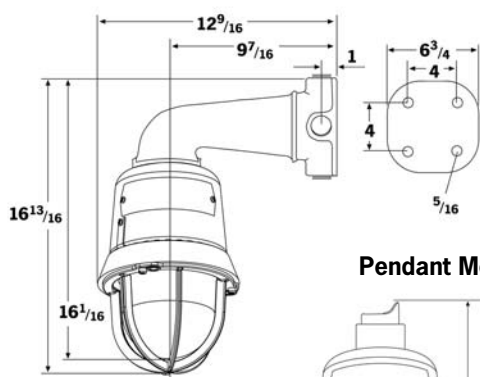
WALL
EV22 & EV87 ¾" HUB



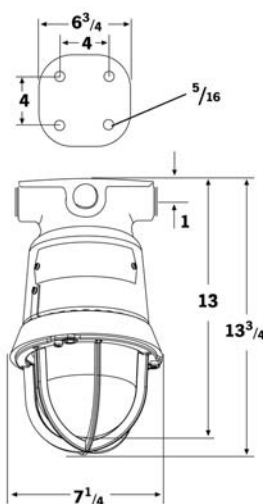
**HOUSING, GLOBE AND GUARD FOR
EX SERIES STROBE LIGHTS, ROTATING
BEACONS, AND STEADY-ON BEACONS**

DIMENSIONS—EX STROBES, ROTATING AND STEADY-ON BEACONS

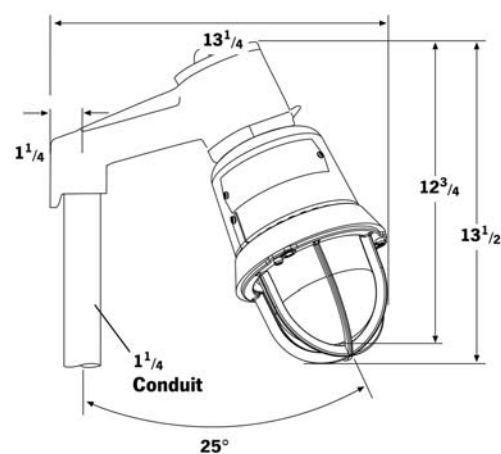
Wall Mount



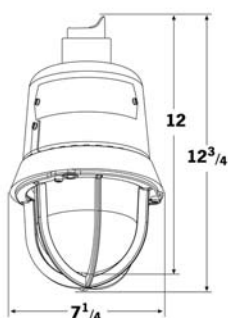
Ceiling Mount



Stanchion Mount



Pendant Mount



NET LUMINAIRE WEIGHTS

Luminaire Housing with Guard 11.0 lbs.

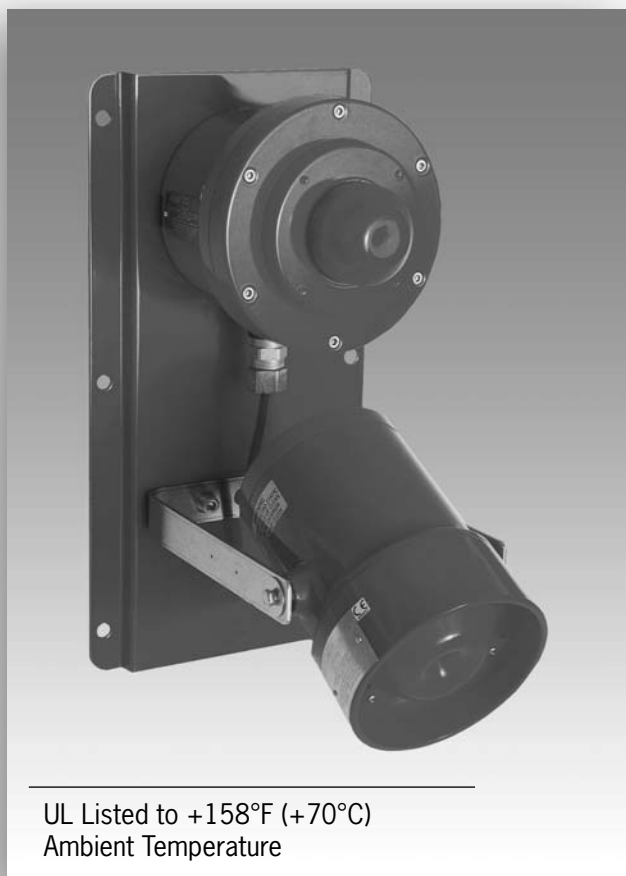
Add mounting modules

Pendant 1.0 lbs.

Ceiling 1.0 lbs.

Wall 4.5 lbs.

Stanchion 2.5 lbs.



UL Listed to +158°F (+70°C)
Ambient Temperature

Horn/Strobe Combination Unit

This range of light weight all GRP, explosionproof horns intended for use in potentially explosive atmospheres has been designed with high ingress protection to cope with the harsh environmental conditions found offshore and onshore in the oil, gas and petrochemical industries. The flamepaths, flare and the body, are manufactured completely from a UV stable glass reinforced polyester. Stainless steel screws and sinter are incorporated thus ensuring a corrosion free product. A tapered flamepath is used to overcome the problems of assembly of parallel spigot flamepaths.



Truly a unique product offering with integral visual and audible signaling devices pre-wired for simultaneous output activation.

- Suitable for Class I, Division 2 applications
- Strobe light and audible tone generator in one package
- Mounts with ease and facilitates quick field wiring
- UL, cUL, Ex and ATEX for worldwide acceptance

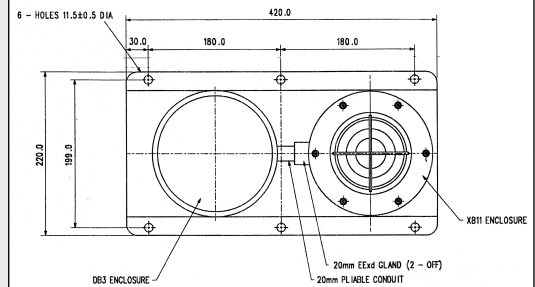
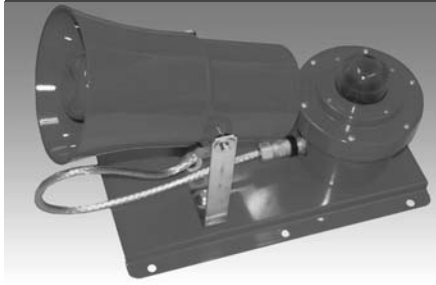
Certifications & Compliances

- UL Listed for USA and Canada
 - Hazardous locations:
 - Class I, Div. 2, Groups A, B, C & D
 - Class I, Zones 1 & 2, AExd IIC T4
 - Ordinary locations: Audible-Signal device
- ATEX approved
- NEMA 4X & 6, IP66 & 67
- Certified temperature -67°F to +158°F
-55°C to +70°C

Key Features & Benefits

- All GRP corrosion free
- Up to 108dBA output at 10 feet
- Integral volume control
- 27 tones, user selectable
- Horn/Strobe Combination Unit available

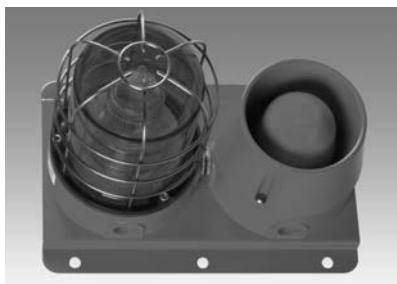
Visual & Audible Combination Units—Hazardous Locations, Weatherproof



Certification	Voltage	Lens/Body Color	Ordering Code	Catalog #	Standard Product Configuration
ATEX Ex II 2GD	24V DC	Red/Red	803130	DB3/XB11B24V RED/RED	DB3/XB11, EExd IIB T5, choice of 27 tones, 115dB(A) at 1m output, 29 Cd, no labels, 1 x M20 entry
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red/Natural Black	869200	DB3/XB11UL24V RED/NB	DB3/XB11, GRP material, NEMA 4X & 6, choice of 27 tones, 106dB(A) at 10 feet output, 29 Cd, no labels, 1 x ½" NPT entries
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red/Red	869205	DB3/XB11UL24V RED/RED	
UL, cUL Listed, Class I, Div 2, Groups C & D	110V AC	Red/Red	869210	DB3/XB11UL110V RED/RED	



Certification	Voltage	Lens/Body Color	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 1, Groups C & D	24V DC	Red/Red	62500182	DB1P/SM87HXBUL 24V RED/RED	24V DC, alloy sounder, interconnected to, painted red stainless steel baseplate, alloy 5 joule beacon
UL, cUL Listed, Class I, Div 2, Groups C & D	24V DC	Red/Red	62500183	DB3/SM87HXBUL 24V RED/RED	GRP sounder interconnected to, painted red stainless steel baseplate, alloy 5 joule beacon



Certification	Voltage	Lens/Body Color	Ordering Code	Catalog #	Standard Product Configuration
Ex II 2GD	24V DC	Red/Red	62500009	DB12/XB13 24V RED/RED	IP66 & 67 weatherproof only, 24V DC, GRP sounder interconnected to, on a painted red stainless steel baseplate, a IP66 & 67 weatherproof only, GRP 10 joule beacon



DB16

This range of loudspeakers, intended for use in potentially explosive gas and dust atmospheres, has a power rating of up to 30 Watts and is suitable for use in the harsh environmental conditions found offshore and onshore in the oil, gas and petrochemical industries. The flamepaths, flare and body, are manufactured from a UV stable glass reinforced polyester. Stainless steel screws and mounting stirrup are incorporated to ensure a corrosion-free product.

Primary Applications

- Plant-wide alarm notification
- Audible process alarms

Typical Industries

- Refineries
- Chemical plants
- Oil and gas exploration
- Marine terminals for transportation & storage

Loudspeakers and tone generators provide high decibel communication for messaging, alert and evacuation in harsh and hazardous locations.

- Metallic and non-metallic housings
- Explosionproof and Class I, Division 2 horns and speakers
- Mounting brackets that allow a full 180° swivel
- Products designed for both conduit wiring and/or cable connection (NPT or metric entries available)
- Selectable tones

Certifications & Compliances

- UL Listed for USA and Canada
 - Hazardous locations:
 - Class I, Div 2, Groups A, B, C, D*
 - Class I, Zone 1, AExde IIB/IIC T3/T4*
 - Ordinary locations: Signalling Speaker
- ATEX approved
- NEMA 4X & 6, IP66 and IP67
- Certified temperature -67°F to +104°F
-50°C to +40°C

Key Features & Benefits

- GRP corrosion-free flamepath
- Up to 112dBA at 30 Watts at 10 feet*
- Power tapings via integral transformer
- Ratcheted swivel mounting stirrup
- Stainless steel fixtures
- 100V line or 8 ohm versions available

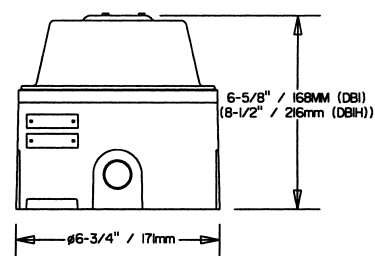
*Model dependent

DB1

103dB(A) @ 10ft Horn—Explosionproof



Certification UL Listed for:	ATEX Class I, Div 1, Groups C & D, Class I, Zone 1
Certified Temperature	-13°F to +158°F -25°C to +70°C
Ingress Protection	NEMA 4X IP66
Material	Alloy
Entries	Up to 3 x 1/2" or 3/4" NPT, 20mm, 25mm
Weight	7.7lb/3.5kg (model dependent)
No. of Tones	Multiple tones available
Options: Body color, certification, voltages 12–48V DC, 110V AC	



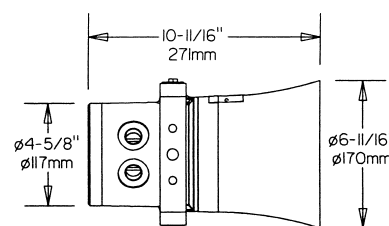
Certification	Output	Ordering Code	Catalog #	Standard Product Configuration
ATEX approved Ex II 2GD	103dB(A)	801001	DB1BA024A1A3NNNR	Choice of 6 tones, red finish
UL Listed, Class I, Div 2, Groups C & D	Up to 96dB(A) @ 10ft	869111	DB1PULA024D1D2NNNR	Two-stage alarms, with 26 tones, 24V DC, alloy, red body color, no tag or duty labels, 2 x 3/4" NPT entries
UL Listed, Class I, Div 2, Groups C & D	Up to 103dB(A) @ 10ft	869115	DB1HPULA024D1D2NNNR	
UL Listed, Class I, Div 2, Groups C & D	Up to 96dB(A) @ 10ft	17300108	DB1PULA110C1C3NNNR	Sounder, 110V AC, 2 x 1/2" NPT entries, red painted enclosure

DB3

108dB(A) @ 10ft Horn—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups A,B,C,D Class I, Zones 1 & 2, AExd IIC T4
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP65 & 67
Material	Corrosion-free GRP
Entries	Up to 2 x 1/2" NPT, 20mm
Weight	13.2lb/6.0kg
No. of Tones	27 + 5 Programmable
Options: Body color, certification, voltages 12–48V DC, 110V–254V AC	



Certification	Body Color	Voltage	Type*	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	Red	12–48V DC	Single Stage	869131	DB3UL048N2CNRZ	27 tones, no tag or duty labels, 108 dB(A) output, NEMA 4X & 6, 2 x 1/2" NPT entries with certified plug
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	Red	12–48V DC	Two Stage	869132	DB3PUL048N2CNRZ	
UL, cUL Listed, Class I, Div 2, Groups A, B, C, D	Red	110V AC	Single Stage	869135	DB3UL110N2CNRZ	
ATEX Ex II 2GD	Natural Black	12–48V DC	Two Stage	803121	DB3PD048N2BNNZ	27 tones, no tag or duty labels, 2 x M20 entries with one certified plug fitted
ATEX Ex II 2GD	Natural Black	240V AC	Single Stage	803122	DB3D240N2BNNZ	
ATEX Ex II 2GD	Red	12–48V DC	Two Stage	803123	DB3PD048N2CNRZ	
ATEX Ex II 2GD	Red	240V AC	Single Stage	803124	DB3D240N2BNRZ	
ATEX Ex II 2GD	Red	12–48V DC	Single Stage	803125	DB3D048N2CNRZ	

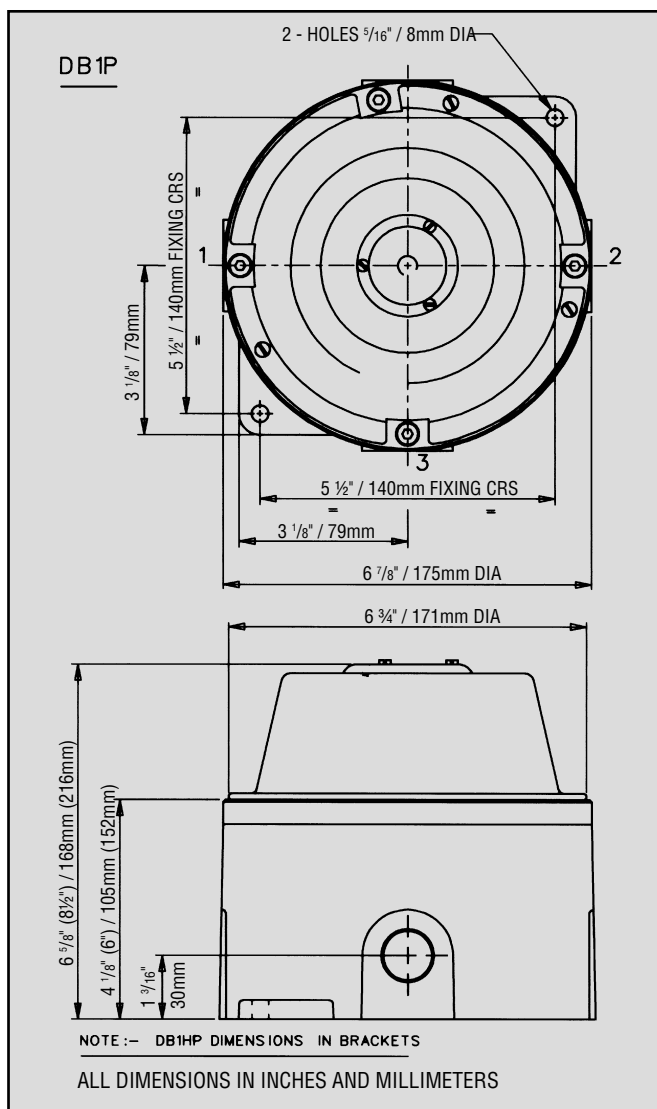
*Single Stage

4 wired diode monitored connection—on board diode allows unit to be operated in supervisory mode when monitoring line in reverse polarity.

*Two Stage

Switchable unit available in DC versions only either by:

- Reversing the polarity of the supply, or,
- By a 3 wire common +ve system, switching between the –ve lines.



Specification—DB1 Unit

Certification: UL Listed for Class I, Div. 1. Groups C & D and Class I, Zone 1.
UL Listing No. E187688.
ATEX Approved: EExd, IIB T3.
Cert. No. Baseefa 02ATEX0207 for DB1(P).
Cert. No. Baseefa 02ATEX0209 for DB1H(P).

Material: LM25 corrosion resistant alloy with stainless steel cover screws.
ABS flare.

Finish: Epoxy paint finish as standard or to customer's specification.

Max Sound Levels: DB1P=93±3dB(A) (86±3dB(A) for 12V DB1).
DB1HP=100 ± 3dB(A) @ 10 feet.
Note: Sound level is dependent upon the tone selection.

Weight: DB1P 7.7lb/3.5kg approx. DB1HP 12.3lb/5.6kg approx.

Certified Temperature: -13°F to +158°F.

Temperature: -25°C to +70°C.

Ingress Protection: NEMA 4X, IP66.

Tone Selection: 27 user selectable tones.

Tone	Tone Frequency	Tone	Tone Frequency
1	Alt Tones 800/970 Hz at 1/4 sec.	15	554 Hz for 0.1S/440 Hz for 0.1S
2	Sweeping 800/970 Hz at 7 Hz	16	Int 660 Hz 150 mS on 150 mS off
3	Sweeping 800/970 Hz at 1 Hz	17	Int 660 Hz 1.8 sec. on 1.8 sec. off
4	Continuous at 2850 Hz	18	Int 660 Hz 6.5 sec. on 13 sec. off
5	Sweeping 2400-2850 Hz at 7 Hz	19	Continuous 660 Hz
6	Sweeping 2400-2850 Hz at 1 Hz	20	Alt 554/440 Hz at 1 Hz
7	Slow Whoop	21	Int 660 Hz at 7/8 Hz
8	Sweep 1200-500 Hz at 1 Hz	22	Int 2850 Hz 150 mS on 100 mS off
9	Alt Tones 2400/2850 Hz at 2 Hz	23	Sweep 800-970 Hz at 50 Hz
10	Int Tones of 970 Hz at 1 Hz	24	Sweep 2400-2850 Hz at 50 Hz
11	Alt Tones 800/970 Hz at 7/8 Hz	25	3x970 Hz pulses 0.5 off, 1.5 off
12	Int Tone at 2850 Hz at 1 Hz	26	3x2850z pulses 0.5 on/0.5 off, 1.5 off.
13	970 Hz at 1/4 sec. on 1 sec. off	27	Int 3100 Hz 0.3 sec. on 0.7 sec. off
14	Continuous at 970 Hz		

Single Stage

4 wired diode monitored connection—on board diode allows unit to be operated in supervisory mode when monitoring line in reverse polarity.

Two Stage

Switchable unit available in DC versions only either by:

- (i) Reversing the polarity of the supply, or,
- (ii) By a 3 wire common +ve system, switching between the -ve lines.

Current Consumption:

	DB1P	DB1HP
12V	125mA	900mA
24V	250mA	700mA
48V	250mA	—
110V	60mA	200mA

Labels: Duty and tag labels optional.

Entries: Up to 3 x 1/2" or 3/4" NPT.

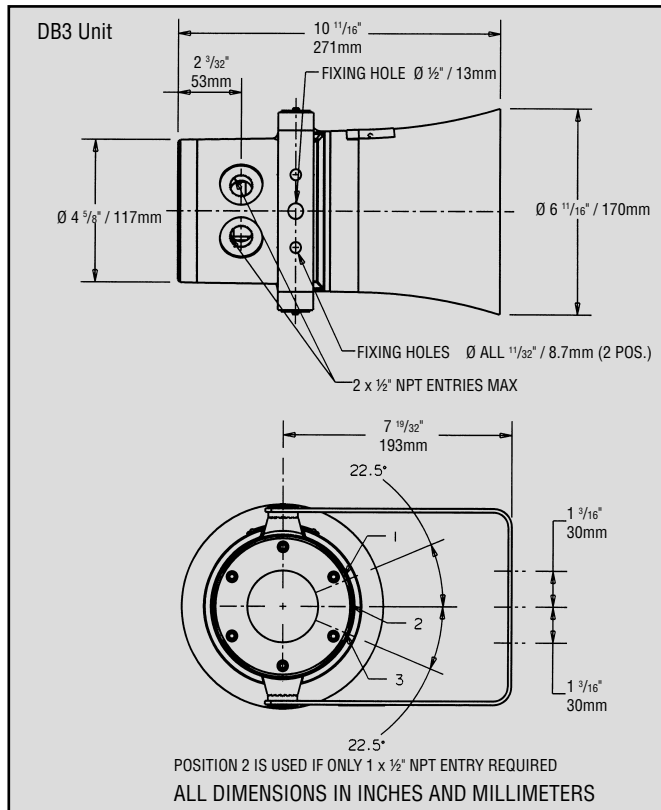
Terminals: Suitable to accept up to 12 AWG conductor size.

Ordering Requirements

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

Unit Type	Certification	Material	Voltage	Cable Entries	Duty Labels	Tag Label	Features	Finish
DB1 DB1H DB1P DB1HP	Cert. Code ATEX/CENELEC B UL(DB1P & DB & IHP only) UL UL – available Alloy only. – 12V DC, 24V DC, 48V DC, 110V AC only	Material Code Stainless Steel S Alloy A	Voltage Code 12V DC 012 24V DC 024 110V AC 110 240V AC 240	Entries Code 1 x 20mm A3 1 x 25mm B3 1 x 1/2" NPT (UL only) C3 1 x 3/4" NPT (UL only) D3 2 x M20 A1A2 2 x M25 B1B2 2 x 1/2" NPT C1C2 2 x 3/4" NPT D1D2	N	N	N	R

MEDC Series Speakers & Tone Generators—Up to 30 Watts Hazardous Locations, Weatherproof



Terminals:	4 x 14 AWG (AC), 6 x 14 AWG (DC).
Mounting:	Stainless steel bracket with ratchet facility.
Labels:	Duty and tag labels optional.
Cable Entries:	UP TO 2 x 1/2" NPT.
Tone Selection:	27 user selectable tones available.
Horn/Strobe Unit:	The DB3 may be combined with an MEDC strobe to create a combined audio/visual alarm. Contact MEDC for price and specification.
Two Stage Unit: DB3P	Switchable between any two tones by either: (i) Reversing the polarity of the supply, or (ii) by a 3 wire common +ve system, switching between the two -ve lines. Note: Two stage unit available in <u>DC</u> versions only.
3 & 4 Tone unit:	Remote 3 & 4 tone unit available—contact sales office for details.

Specification—DB3 Unit

Certification:	UL Listed for USA and Canada – Hazardous locations: Class I, Div. 2, Groups A, B, C, D. Class I, Zones 1 & 2, AExd IIC T4. UL Listing No. E203310. – Ordinary locations: Audible-Signal device. UL Listing No. S8116. ATEX approved: CENELEC EN50014, 18, 19. Cert. No. BAS00ATEX2097X, EExd IIC. Cert. No. BAS00ATEX2098X, EExde IIC. Zones 1 & 2.
Material:	Body & horn in anti-static, UV stable, glass reinforced polyester. Swivel bracket and captive cover screws in stainless steel.
Finish:	Body and horn, natural black or epoxy paint coated to client's color requirements.
Sound Output:	DB3 105 ±3dB(A) Typical at 10 feet (tone dependent).
Volume Control:	Integral volume control

*Nominal Output (dBA)	Input Current (mA)
83	50
95	100
98	150
101	200
102	250
104	300
105	350

*Output measured with 24V input voltage. Tone set to 970Hz continuous.

Weight:	13.2lb/6.0kg approx.																				
Certified	-67°F to +158°F.																				
Temperature:	-55°C to +70°C.																				
Ingress Protection:	NEMA 4X & 6, IP66 & 67.																				
Voltage:	Up to 48V DC Up to 254V AC.																				
Current Consumption:	<table> <tr> <th>V</th><th>I</th></tr> <tr> <td>12V DC</td><td>760mA</td></tr> <tr> <td>24V DC</td><td>380mA</td></tr> <tr> <td>48V DC</td><td>190mA</td></tr> <tr> <td>110V AC</td><td>135mA</td></tr> <tr> <td>120V AC</td><td>124mA</td></tr> <tr> <td>220V AC</td><td>68mA</td></tr> <tr> <td>230V AC</td><td>65mA</td></tr> <tr> <td>240V AC</td><td>62mA</td></tr> <tr> <td>254V AC</td><td>59mA</td></tr> </table>	V	I	12V DC	760mA	24V DC	380mA	48V DC	190mA	110V AC	135mA	120V AC	124mA	220V AC	68mA	230V AC	65mA	240V AC	62mA	254V AC	59mA
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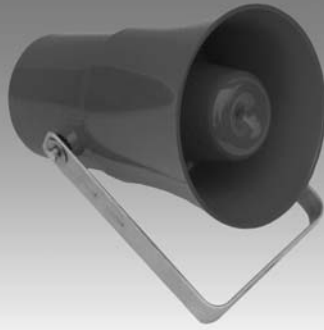
Ordering Requirements

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.

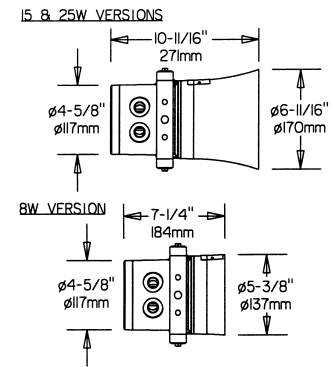
Unit Type	Certification	Voltage	Labels	Entries	Options	Color																																						
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="N"/>	<input type="text"/>	<input type="text" value="N"/>	<input type="text"/>																																						
<table> <tr> <th>Type</th><th>Details</th></tr> <tr> <td>DB3</td><td>Standard unit</td></tr> <tr> <td>DB3P</td><td>Two stage (DC only)</td></tr> </table>	Type	Details	DB3	Standard unit	DB3P	Two stage (DC only)	<table> <tr> <th>Type</th><th>Code</th></tr> <tr> <td>EExd</td><td>D</td></tr> <tr> <td>UL Listed</td><td>UL</td></tr> </table>	Type	Code	EExd	D	UL Listed	UL	<table> <tr> <th>Voltage</th><th>Code</th></tr> <tr> <td>12V–48V DC</td><td>048</td></tr> <tr> <td>*110V AC</td><td>110</td></tr> <tr> <td>*120V AC</td><td>120</td></tr> <tr> <td>*240V AC</td><td>240</td></tr> <tr> <td>*DB3P not available in AC version.</td><td></td></tr> </table>	Voltage	Code	12V–48V DC	048	*110V AC	110	*120V AC	120	*240V AC	240	*DB3P not available in AC version.		<table> <tr> <th>Entries</th><th>Code</th></tr> <tr> <td>1 x 20 mm (EExd)</td><td>1B</td></tr> <tr> <td>2 x 20mm (EExd/EExde)</td><td>2B</td></tr> <tr> <td>1 x 1/2" NPT (UL only)</td><td>1C</td></tr> <tr> <td>2 x 1/2" NPT (UL only)</td><td>2C</td></tr> </table>	Entries	Code	1 x 20 mm (EExd)	1B	2 x 20mm (EExd/EExde)	2B	1 x 1/2" NPT (UL only)	1C	2 x 1/2" NPT (UL only)	2C	<table> <tr> <th>Finish</th><th>Code</th></tr> <tr> <td>Natural Black</td><td>N</td></tr> <tr> <td>Red</td><td>R</td></tr> </table>	Finish	Code	Natural Black	N	Red	R
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Red	R																																											

DB4

8-25 Watt Speaker—Hazardous Locations



Certification UL Listed for:	ATEX Class I, Div 2, Groups A,B,C,D Class I, Zone 1, AExd IIC T4
Certified Temperature	-67°F to +158°F -55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Output	97 dB(A) at 1W at 10 feet 109 dB(A) at 25W at 10 feet
Entries	Up to 2 x 1/2" NPT, 20mm
Weight	11lb/5.0kg
Options: Body color, transformer, certification, power 25W, 15W, 8W	



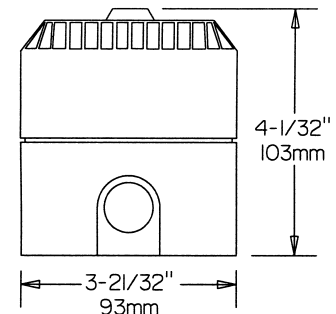
Certification	Power	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed Class I, Div 2, Groups A, B, C, D	25W	869142	DB425ULX(100)N2CNR	100V line transformer, no labels, 2 x 1/2" NPT entries, red finish
UL, cUL Listed Class I, Div 2, Groups A, B, C, D	25W	869144	DB425ULX(70)N2CNR	70V line transformer, no labels, 2 x 1/2" NPT entries, red finish
ATEX Approved ExII 1G	15W	804215	DB415DXN2BNZ	100V line transformer, no labels, 2 x M20, one certified plug, flameproof enclosure, natural black finish
ATEX Approved ExII 1G	25W	804225	DB425DXN2BNZ	

DB5

Up to 93dB(A) @ 10ft Horn—Intrinsically Safe



Certification FM Approved for:	ATEX Class I, Div 1 & 2, Groups A, B, C, D
Certified Temperature	-4°F to +131°F -20°C to +55°C
Ingress Protection	NEMA 4 IP65
Material	Corrosion-free ABS
Entries	Up to 2 x 13/16" via knockouts
Weight	0.7lb/0.3kg
No. of Tones	26
Options: Body color, certification, voltages 12V-240V DC	



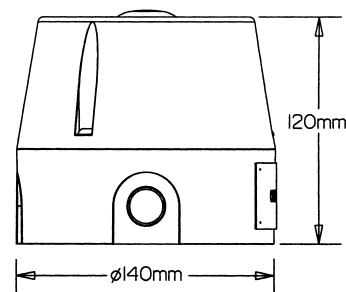
Certification	Voltage	Ordering Code	Catalog #	Standard Product Configuration
ATEX Approved ExII 1G	12V DC	805001	DB5B012NR	Intrinsically safe, up to 3 x M20 entries via knockouts, no labels, natural red finish
ATEX Approved ExII 1G	24V DC	805002	DB5B024NR	
FM Approved for Class I, Div 1 & 2, Groups A, B, C, D	24V DC	869150	DB5FM2NR	Intrinsically safe, 26 tones, 93 dB(A) output, natural red body color, no tag or duty labels, 2 x 13/16" entries via knockouts

DB12

110dB(A) Sounder—Weatherproof & Heavy Duty



Certification UL Listed for:	Weatherproof
Certified Temperature	-55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	Up to 3 x 20mm
Weight	1kg
No. of Tones	27 + 5 programmable
Options: Body color, voltages 12V & 24V DC	



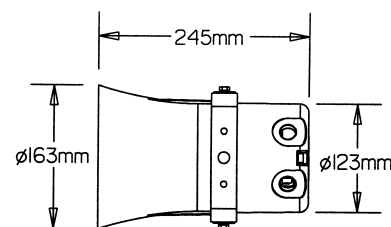
Certification	Voltage	Type	Ordering Code	Catalog #	Standard Product Configuration
CE Certification	115/230V AC	Single Stage	808003	DB12115NN	Weatherproof, dust-tight, no labels, choice of 27 tones, natural red finish, 3 x M20 knockouts
CE Certification	24V DC	Two Stage	869155	DB12P024NN	Weatherproof, choice of 27 tones, natural red finish, 3X M20 knockouts

DB15

110dB(A) Tone Generator—Weatherproof & Heavy Duty



Certification UL Listed for:	Weatherproof
Certified Temperature	-55°C to +70°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Entries	2 x M20
Weight	2.6kg
No. of Tones	27 + 5 programmable
Options: Body color, two stage alarm (DB15P) version, earth continuity, EOL resistor, voltages 12–48V DC, 110–254V AC	




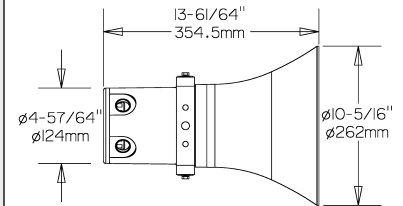
Certification	Voltage	Type	Ordering Code	Catalog #	Standard Product Configuration
CE Certification	12–48V DC	Two Stage	808110	DB15P048NN	Weatherproof, dust-tight, no labels, choice of 27 tones, painted gray finish
CE Certification	12–48V DC	Two Stage	808115	DB15P048NR	Weatherproof, dust-tight, no labels, choice of 27 tones, painted red finish
CE Certification	240V AC	Single Stage	808120	DB15240NN	Weatherproof, dust-tight, choice of 27 tones, natural gray finish
CE Certification	240V AC	Single Stage	808125	DB15240NR	Weatherproof, dust-tight, choice of 27 tones, painted red finish

DB16 UL

30 Watt Speaker — Hazardous & Ordinary Locations

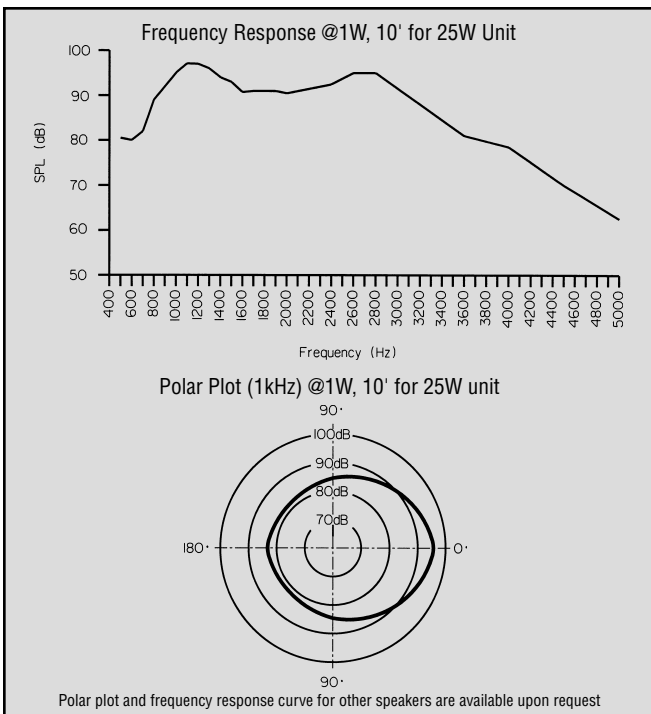
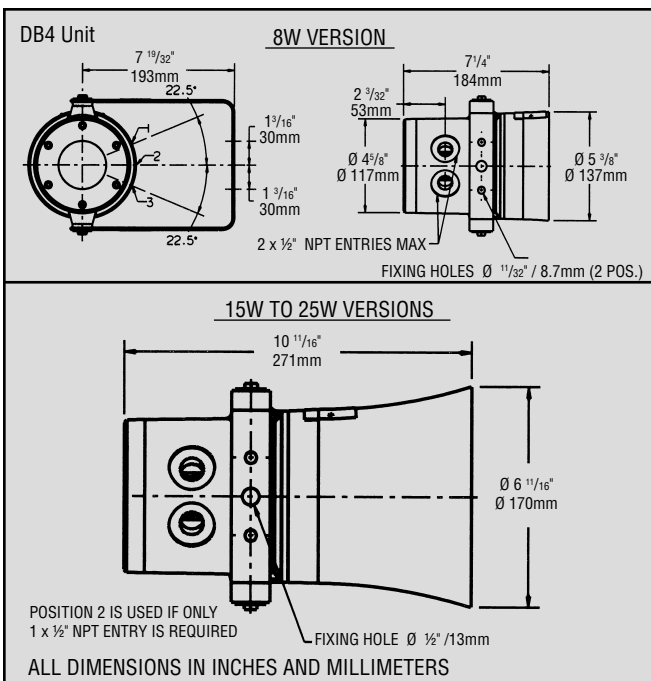


Certification UL Listed for:	 ATEX Class I, Div 2, Groups C & D/A,B,C,D Class I, Zone 1, AExde IIB T3/1IC T110°C
Certified Ambient Temperature	-61°F to +90°F -50°C to +40°C
Ingress Protection	NEMA 4X & 6 IP66 & 67
Material	Corrosion-free GRP
Output	Groups C & D: 100dB(A) at 1Watt at 10 ft. 112dB(A) at 30 Watts at 10 ft. Groups A, B, C, D: 3dB(A) less than C & D versions
Entries	Up to 2 x 1/2" NPT or 2 x 3/4" NPT, 20mm, 25mm
Weight	12.1lb/5.5kg
Tappings @ 30 Watts	30, 25, 12, 6, 4, 2
Options: Body color, transformer	



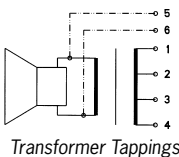
Certification	Ordering Code	Catalog #	Standard Product Configuration
UL, cUL Listed, Class I, Div 2, Groups C & D	28600006	DB16UCXN2MPN	Unit suitable for gas Groups A, B, C, D, 70V line transformer, 2 x 1/2" NPT, one certified plug, natural black finish

MEDC Series Speakers & Tone Generators—Up to 30 Watts Hazardous Locations, Weatherproof



Specification—DB4 Unit

Rated Power:	8, 15 or 25 watts RMS continuous (at 77°F).
Certification:	UL Listed for USA and Canada — Class I, Div 2, Groups A, B, C, D. — Class I, Zone 1, AExd IIC T4. UL Listing No. E203310. ATEX approved: EN50014, 18, 19. Cert. No. BAS00ATEX2097X, EExd IIC T4/T5. Cert. No. BAS00ATEX2098X, EExDC IIC T4/T5. Zones 1 and 2. Not for use in atmospheres containing carbon disulphide.
Material:	Body & horn in anti-static, UV stable, glass reinforced polyester. Swivel bracket in stainless steel. Captive cover screws in stainless steel.
Finish:	Body and horn, natural black or epoxy paint coated to client's color requirements.
Output:	97 dB(A) at 1 watt at 10 feet. 109 dB(A) at 25 watts at 10 feet. Measured in accordance with IEC 268.
Weight:	11lb/5.0kg approx. dependent on model.
Certified Temperature:	-67°F to +158°F. -55°C to +70°C.
Ingress Protection:	NEMA 4X and 6, IP66 & 67.
Frequency Range:	400Hz to 8kHz.
Voice Coil Impedance:	8 ohms.
Transformer:	Used to vary the rated power by selecting different tappings (see table below).



Transformer Tappings	Power		
	25W	15W	8W
1:2	25.0	15.0	8.0
2:3	12.5	7.5	4.0
3:4	6.0	5.0	2.0
1:3	4.0	4.0	1.5
2:4	2.0	2.0	0.7
1:4	1.0	0.8	0.4

- Transformer Options:
- i) Loop in/Loop out: (4 x 2) terminal tap change (8 terminals).
 - ii) Optional Tapping: 4 terminal tap change with 2 terminals (5 & 6) directly connected to driver (8 ohms).

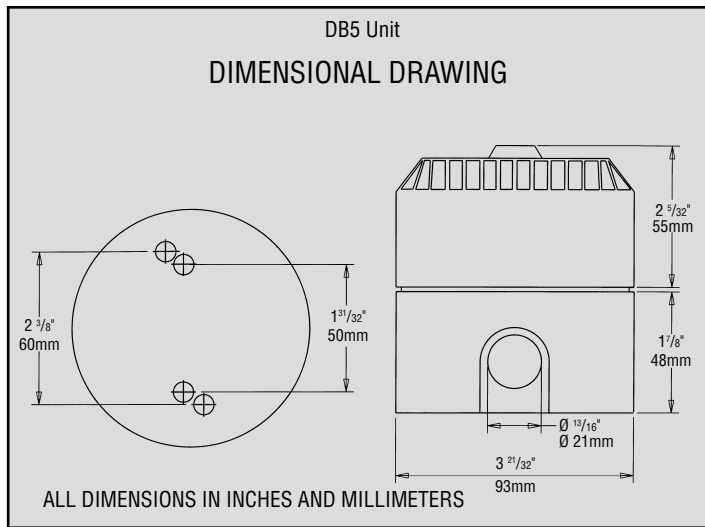
Other tappings & driver impedances available on request.

Terminals:	8 x 14AWG Other terminal arrangements available on request.
Mounting:	Bracket with ratchet facility.
Labels:	Duty and tag labels optional.
Cable Entries:	Up to 2 x 1/2" NPT.

Ordering Requirements

DB4	Max. Rated Power	Certification	Transformer	Labels	Entries	Color
				N		
Power	Code	Type	Code	Transformer	Code	Color
8 watt	8	EExd	D	Yes	1B	Natural Black
15 watt	15	UL listed	UL	None	2B	Red
25 watt	25			*Std 100V Other values available, specify voltage.	1C	
					2C	

To specify certified plug, suffix appropriate code with 'P'.
e.g. 2BP is 2 x M20 entries with one certified plug.



Specification—DB5 Unit

- Certification:**
1. FM approved for Class I, Div 1, Groups A, B, C, D. J.I. 3001835.
 2. CSA certified to C22.2 Nos. 0, 0.4, 0.5, 25, 30, 205, Class I, Groups A, B & D, Cert. No. 79122.
 3. ATEX approved, EN50014 and EN50020 & EN50284 EExia IICT4. 12/24V version Cert. No. BAS00ATEX 1259 (unit) and 01E2024 (system).
 4. HSE(M) to EN50014, EN50020 and EN50303. EExia 1 Cert. No. MECS01ATEX4260 (unit) and 94Y7095 (system).

Material: A.B.S. (Acrylonitrile Butadiene Styrene).

Finish: Available in Red as standard.

Certified Temperature: -4°F to +131°F.

-20°C to +55°C.

Weight: 0.7lb/0.3kg.

Entries: Up to 1 x 1 3/16" on each side via knockouts.

Terminals: 6 off suitable to accept up to 14 AWG.

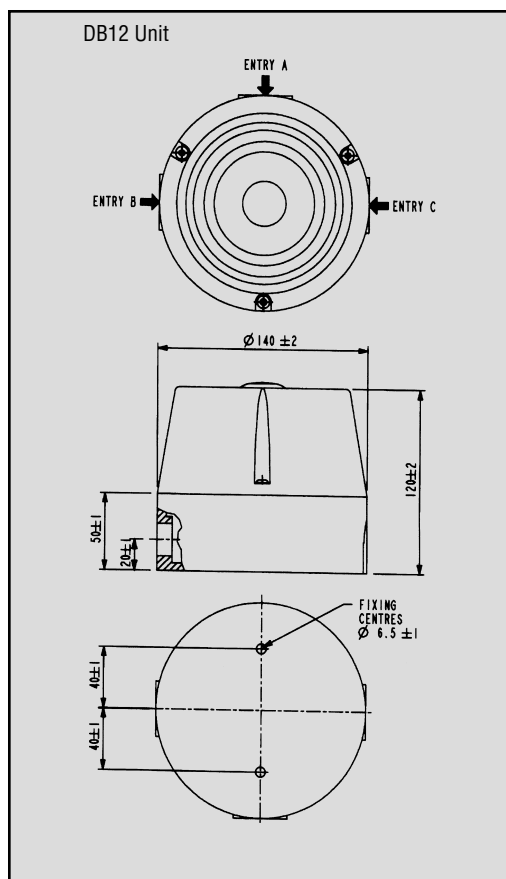
Sound Output: 90± 3dB(A) at 10 feet for 12V and 24V versions.
Typical max value only—variable with tone.

Current Consumption

24V model—14 mA max. nominal.

12V model—12 mA max. nominal.

MEDC Series Speakers & Tone Generators—Up to 30 Watts Hazardous Locations, Weatherproof



Specification—DB12 Unit

Material:	UV stable glass reinforced polyester. Retained stainless steel cover screws.
Finish:	Self colored red as standard or epoxy coated to customer's specification.
Sound Output:	107 ± 3 dB(A) at 1 meter. Typical value only—variable with tone.

Volume Control: Integral volume control.

*Nominal Output (dBa)	Input Current (mA)
92	60
100	70
104	80
109	90

*Output measured with 24V input voltage. Tone set to 2850Hz continuous.

Tone Selection:

Single Stage DB12: 27 user selectable tones.

Two stage Unit DB12P: Switchable between any two tones by either:

- Reversing the polarity of the supply, or
- by a 3 wire common +ve system, switching between the two -ve lines.

Note: Two stage unit available in DC versions only.

Weight: 1.0 kg. DC, 1.2kg AC

Operating Temperature: -55°C to $+70^{\circ}\text{C}$.

Ingress Protection: IP66 & IP67.

Voltage: DC: 12V, 24V AC: 115/230V.

Current Consumption:	24V operation 55mA–100mA.	115V operation 85mA–140mA.
	12V operation 55mA–90mA.	230V operation 45mA–60mA.

Terminals: 6 x 2.5mm².

Labels: Duty and tag labels available.

Cable Entries: Up to 3 x M20 via knockouts.

AFNOR NF S 32 001 compliant version available—contact sales office for details.

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.

Unit Type

Voltage

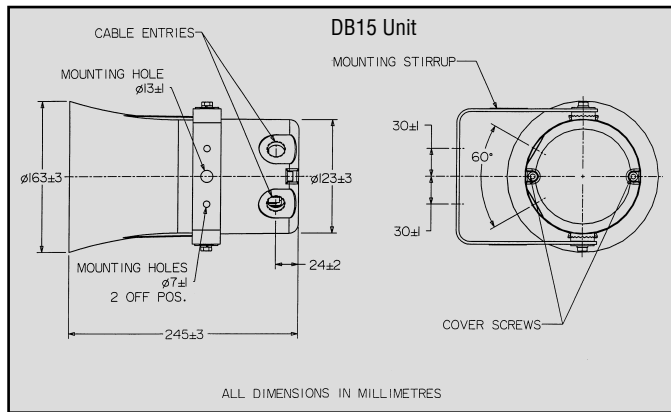
Labels

Color

Type	Details
DB12	Standard Unit
DB12P	Two Stage (DC only)

Voltage	Code
12V DC	012
24V DC	024
115/230V AC	115

MEDC Series Speakers & Tone Generators—Up to 30 Watts Hazardous Locations, Weatherproof



Specification—DB15 Unit

Material:	Body & horn in UV stable, glass reinforced polyester. Swivel bracket in stainless steel. Cover screws in stainless steel.
Finish:	Body and horn, natural gray to RAL 7035 or epoxy paint coated to client's color requirements.
Sound Output:	DB15 117dB(A) Maximum.
Volume Control:	Integral volume control

*Nominal Output (dBa)	Input Current (mA)
100	150
105	250
108	350
110	450
112	550

*Output measured with 24V input voltage. Tone set to 970Hz continuous.

Weight:	2.6kg approx. dependent on model.
Temperature Range:	–55°C to +70°C.
Ingress Protection:	IP66 and IP67.
Voltage:	Up to 48V DC Up to 254V AC
Current Consumption:	

V	I
12V DC	900mA
24V DC	600mA
48V DC	280mA
110V a.c	150mA
120V AC	175mA
220V AC	93mA
240V AC	86mA
254V AC	80mA

Terminals:	4 x 2.5mm ² (AC), 6 x 2.5mm ² (DC).
Earth Continuity:	Available.
Mounting:	Stainless steel bracket with ratchet facility.
Labels:	Duty and tag labels optional.
Cable Entries:	2 x M20 ISO.

Tone Selection

DB15:	27 user selectable tones available. Additional 5 tones may be programmed.
DB15P (Two stage unit):	Switchable between any two of the 27 tones by either: (i) Reversing the polarity of the supply, or (ii) by a 3 wire common +ve system, switching between the two –ve lines. Note: Two stage unit available in <u>DC</u> versions (DB15P) only.

AFNOR NF S 32 001 compliant version available—contact sales office.

Ordering Requirements

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

Unit Type

DB15
DB15P

Voltage

Voltage	Code
12V DC	012
24V–48V DC	048
*110V AC	110
*120V AC	120
*240V AC	240
*DB15P not available in AC version.	

Options

 N

Color

 N

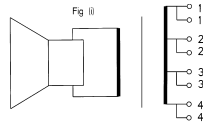
MEDC Series Speakers & Tone Generators—Up to 30 Watts Hazardous Locations, Weatherproof

Specification—DB16 Unit

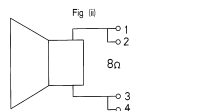
Rated Power:	30 Watts RMS continuous (at 77°F/25°C).
Certification:	UL Listed for USA and Canada – Hazardous locations: Class I, Div 2, Groups C & D, Class I, Zone 1, AExde IIB T3 Class I, Div 2, Groups A, B, C, D, Class I, Zone 1, AExde IIC T110°C UL Listing No. E203310 – Ordinary locations: Signalling Speaker. UL Listing No. 58847 CENELEC EN50014, 18, 19. IIB Version: Cert. No. Baseefa04ATEX0166X ATEX Ex II 2G EExde IIB T3 (Tamb. -50°C to +40°C) IIC Version: Cert. No. Baseefa04ATEX0167X ATEX Ex II 2GD EExde IIC T110°C (Tamb. -50°C to +40°C) Zones 1 and 2.
Material:	Body & horn in anti-static, UV stable, glass reinforced polyester. Mounting stirrup and fixtures in stainless steel.
Finish:	All natural or body and horn can be painted to client's requirements.
Output:	Groups C & D Version: Maximum output at 1W at 10 feet is 100dBA Maximum output at 30W at 10 feet is 112dBA Groups A, B, C, D Version: Maximum output at 1W at 10 feet is 97dBA Maximum output at 30W at 10 feet is 109dBA
Weight:	12lb/5.5kg approx.
Certified Temperature:	-67°F to +104°F (-50°C to +40°C).
Ingress Protection:	NEMA 4X & 6, IP66 & IP67.
Frequency Range:	370Hz to 8kHz.
Voice Coil Impedance:	8 ohms.
Transformer:	Used by combining the rated power tapplings below.

Transformer Tapping Options:

Transformer Tappings	Power (W)
1:2	30
2:3	25
3:4	12
1:3	6
2:4	4
1:4	2

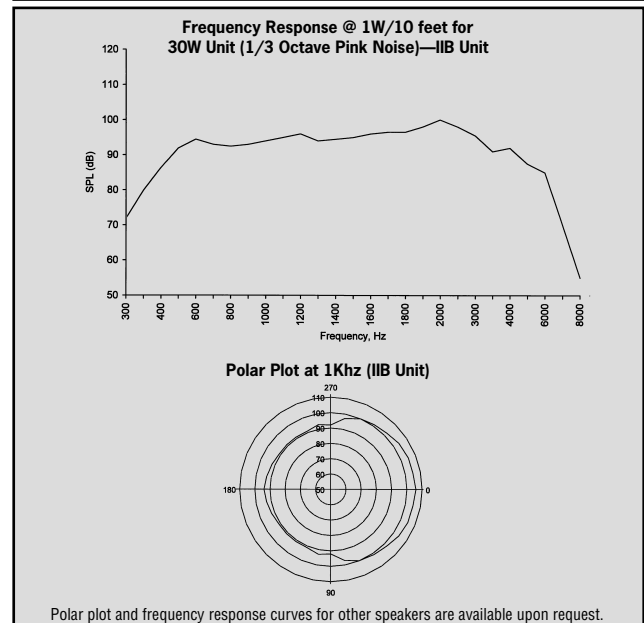
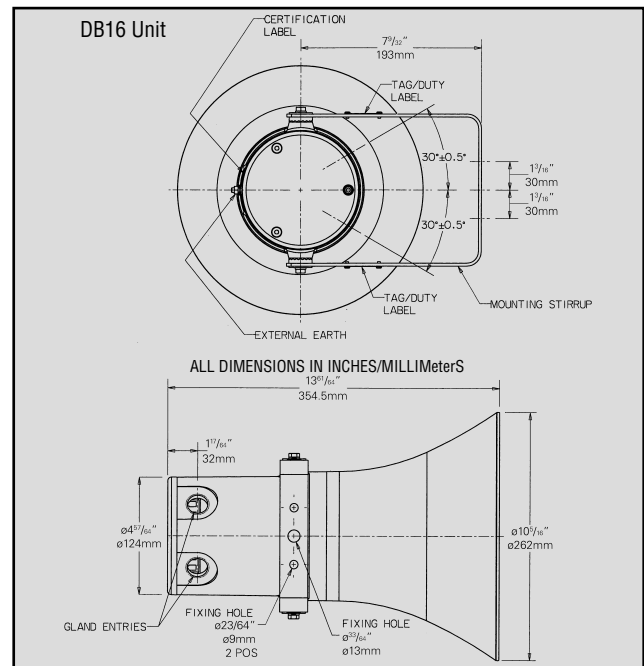


(i) Loop in/loop out (4 x 2) power tap change; 8 terminals



(ii) Loop in/loop out (2 x 2) 8 ohm; 4 terminals.

Terminals:	8 x 2.5mm ² .
Earth Continuity:	Available via optional earthing stud or by internal earth plate.
Mounting:	Via stirrup with ratchet facility.
Labels:	Optional stainless steel tag and duty labels.
Cable Entries:	Up to 2 x ½" NPT or 2 x ¾" NPT into termination chamber, 20mm, 25mm



Ordering Requirements

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

DB16	Certification <input type="text"/>	Transformer <input type="text"/>	Options N	Entries <input type="text"/>	Finish <input type="text"/>																																				
	<table> <tr> <th>Certification</th> <th>Code</th> </tr> <tr> <td>UL (A, B, C, D)</td> <td>UC</td> </tr> <tr> <td>ATEX IIC</td> <td>BC</td> </tr> </table> Unit suitable for gas groups.	Certification	Code	UL (A, B, C, D)	UC	ATEX IIC	BC	<table> <tr> <th>Transformer</th> <th>Code</th> </tr> <tr> <td>Yes</td> <td>X*</td> </tr> <tr> <td>No</td> <td>N</td> </tr> </table> *Std 100V. Other voltages available, specify voltage.	Transformer	Code	Yes	X*	No	N		<table> <tr> <th>Entries</th> <th>Code</th> </tr> <tr> <td>1 x M20</td> <td>1B</td> </tr> <tr> <td>2 x M20</td> <td>2B</td> </tr> <tr> <td>1 x M25</td> <td>1C</td> </tr> <tr> <td>2 x M25</td> <td>2C</td> </tr> <tr> <td>1 x ½" NPT</td> <td>1M</td> </tr> <tr> <td>2 x ½" NPT</td> <td>2M</td> </tr> <tr> <td>1 x ¾" NPT</td> <td>1N</td> </tr> <tr> <td>2 x ¾" NPT</td> <td>2N</td> </tr> </table> To specify certified plug, suffix appropriate code with 'P', e.g. 2BP is 2 x M20 entries with one certified plug.	Entries	Code	1 x M20	1B	2 x M20	2B	1 x M25	1C	2 x M25	2C	1 x ½" NPT	1M	2 x ½" NPT	2M	1 x ¾" NPT	1N	2 x ¾" NPT	2N	<table> <tr> <th>Option</th> <th>Code</th> </tr> <tr> <td>Natural Black</td> <td>N</td> </tr> <tr> <td>Red</td> <td>R</td> </tr> </table>	Option	Code	Natural Black	N	Red	R
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Option	Code																																								
Natural Black	N																																								
Red	R																																								

The Flex-Tone **ETH & ETHD** are heavy-duty, explosionproof tone-selectable signaling devices. Both are designed for Class I, Division 1, Groups B, C & D areas and are ideal for signaling warning or emergency conditions within process or manufacturing facilities.

The **Flex-Tone ETH tone-selectable signalers (ETH655 & ETH855)** are for use on standard electrical circuits and accept up to two contact closures providing two audible output signals selected from 55 tone choices. The ETHD855 tone-selectable signaler is used for applications (e.g., mining, tankers, laboratories) requiring electrical supervision of circuits.

The **Flex-Tone ETH remote speaker amplifier** (ETH645 & ETH845) is a speaker/amplifier for remote mounting and designed for use with the Flex-Tone (ETH640 & ETH840) Panel Control Signal Generator. The Control Panel Generator is mounted in a Division 2 area while the Flex-Tone ETH remote speaker amplifiers are remotely mounted in Division 1 areas. The ETH remote speaker amplifier (ETH645 & ETH845) operates from local available power sources. Because the Flex-Tone ETH remote speaker amplifier is available in multiple AC and DC voltages, your customer can mix and match speakers throughout their facility using available line power.

The **Flex-Tone Panel Control Signal Generator** (ETH640 & ETH840) controls a synchronous signaling sound to all ETH remote speaker amplifiers. It is ideal for applications where simultaneous signaling of a high decibel signal is needed. The Flex-Tone Panel Control Signal Generator generates 27 sounds. Four tones may be activated from field-wired, normally open contacts, or a 24V DC or 120V AC external voltage source such as an output of a PLC.



PRODUCT BREAKDOWN — NEW AUDIBLE PRODUCTS, CLASS I DIVISION 1

Description	Catalog Reference	Operating Voltage	Operating Circuit
Flex-Tone heavy-duty tone-selectable signaling device	ETH655 & ETH855	24V DC, 36V DC, 24AC/DC, 120V AC, 240V AC, 125V DC, 250V DC	Standard electrical circuits, AC or DC operation.
Heavy-duty tone-selectable signaling device, diode polarized	ETHD855	20–31V DC	Standard electrical circuits or auxiliary fire or warning circuits requiring electrical supervision.
Flex-Tone Panel Control Signal Generator <i>Suitable for Div. 2 areas only</i>	ETH640 & ETH840	24V DC, 24AC/DC, 120V AC, 240V AC, 125V DC, 250V DC	Standard electrical circuits, AC or DC operation and communication to remote speaker amplifiers can be connected to a network by RS485 serial protocol.
Flex-Tone remotespeaker/ amplifier for use with Flex-Tone Panel Control Signal Generator	ETH645 & ETH845	24V DC, 24AC/DC, 120V AC, 240V AC, 125V DC, 250V DC	Standard electrical circuits, AC or DC operation.

APPLICATION — FLEX-TONE EXPLOSIONPROOF AUDIBLE SIGNALS ARE USED

Industries

- Offshore platforms and drilling rigs
- Refineries, chemical and petrochemical plants
- Pharmaceutical plants
- Food and Beverage plants
- Waste water and sewage treatment plants
- Pulp and paper mills

Uses

- Communication
- Security alert
- Safety signaling in industrial and process facilities
- Emergency evacuation signaling
- Messaging



**Explosionproof
Electronic Signal
Stand-Alone Unit**

Primary Applications

- For use where a high-decibel sound is required for alert or evacuation in hazardous locations

Key Features & Benefits

- Heavy duty zinc cast construction.
- 55 tone capacity—No additional tone modules needed
- Internal volume control with internal potentiometer.
- Corrosion-resistant heat-flowed epoxy finish
- Supplied with factory sealed ½-inch threaded fitting for quick installation
- Speaker can swivel 180° vertically or horizontally depending on orientation of mounting bracket
- Mounts onto any surface using only three bolts
- 30-inch numbered wire leads

Cooper Crouse-Hinds **Flex-Tone Series Electronic Signals** are explosionproof, heavy-duty, tone-selectable signaling devices capable of producing volume-controlled, high-decibel tones. Certified for use in Class I, Division 1, Group B, C & D applications, the Flex-Tone Series is ideal for signaling warning or emergency conditions.

The **Flex-Tone ETH855** accepts up to two contact closures and delivers two audible output signals selected from 55 available tones. The two tones are selected by setting miniature switches within the unit. One of the tones can be assigned a priority status to override the other tone.

The **Flex-Tone ETHD855** is diode polarized for applications requiring electrical supervision of signaling circuit field wiring. The signal delivers one audible output signal selected from the 55 tones available.

Certifications & Compliances

- Class I, Division 1, Groups B, C & D
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 464 and 1203 Listed

Materials & Finishes

- Body—Heavy-duty zinc cast construction
- External hardware—Stainless steel Ratings
- 24V DC, 36V DC, 125V DC, 250V DC, 24V AC, 120V AC & 240V AC (ETH)
- 20–31V DC (ETHD)

Output Sound Pressure

- 109 decibel (dBA) output

ORDERING INFORMATION

Catalog Number	Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
Explosionproof, TWO OUTPUT			
ETH855/24	24V DC	0.061	0.470
ETH855/36	36V DC	0.077	0.600
ETH655/24	24V AC, 50/60Hz	0.250	1.320
ETH655/120	120V AC	0.088	0.260
ETH655/240	240V AC	0.091	0.190
ETH855/125	125V DC	0.031	0.130
ETH855/250	250V DC	0.019	0.070
DIODE POLARIZED, Explosionproof, SINGLE OUTPUT FOR FIRE ALARM APPLICATIONS			
Meets min. 75 dBA for fire alarm indication			
ETHD855/24	20–31V DC	0.061	0.400



**Explosionproof
Remote Speaker /
Amplifier**

Primary Applications

- For use where simultaneous signaling of a high-decibel sound is required for alert or evacuation in hazardous locations.

Key Features & Benefits

- Heavy duty zinc cast construction.
- Individual volume control.
- Corrosion-resistant heat-flowed epoxy finish.
- Supplied with factory sealed 1/2-inch threaded fitting for quick installation.
- Speaker can swivel 180° vertically or horizontally depending on orientation of mounting bracket.
- Mounts onto any surface using only three bolts.
- 30-inch numbered wire leads.

Cooper Crouse-Hinds **Flex-Tone Series Explosionproof Remote Speaker/Amplifier** is designed for remote mounting in Division 1 areas where simultaneous high-decibel signaling is required.

Used in connection with the Panel Control Signal Generator, the **Flex-Tone ETH845** operates directly from local power sources, allowing remote speaker/amplifiers of different voltages to be connected within the same system. Available in both AC and DC voltages, the Flex-Tone 3 can be mixed and matched throughout an application using the available line power.

ETH845 Series Remote Speaker/Amplifiers must be used with Cooper Crouse-Hinds Flex-Tone Panel Control Signal Generator on the following page.

Certifications & Compliances

- Class I, Division 1, Groups B, C & D
- Class II, Division 1, Groups E, F & G
- Class III
- UL and cUL 464 and 1203 Listed

Materials & Finishes

- Body—Heavy-duty zinc cast construction
- External hardware—Stainless steel

Ratings

- 120V AC, 240V AC, 125V DC and 250V DC Output Sound Pressure
- 109 decibel (dBA) output

ORDERING INFORMATION

Catalog Number	Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
Explosionproof REMOTE SPEAKER/AMP			
ETH845/24	24V DC	0.061	0.470
ETH645/24	24V AC, 50/60Hz	0.250	1.320
ETH645/120	120V AC	0.088	0.260
ETH645/240	240V AC	0.091	0.190
ETH845/125	125V DC	0.031	0.130
ETH845/250	250V DC	0.091	0.070

* ETH845 Series Remote Speaker/Amplifiers must be used with Cooper Crouse-Hinds Flex-Tone Panel Control Signal Generator on the following page.

ETH845 Series Remote Speaker/Amplifiers **accept a 10V AC audio signal** from Flex-Tone Panel Control Signal Generator.



Cooper Crouse-Hind/MEDC **Flex-Tone Series Panel Control Signal Generator** controls and initiates a synchronous signaling sound from all Flex-Tone 3 remote Speaker/Amps installed in a system. The Panel Control Signal Generator is mounted in a Division 2 area, while controlling the Flex-Tone 3 Speaker/Amps that are remotely mounted in Division 1 areas.

The Panel Control Signal Generator produces 27 sounds. Four tones may be activated from field-wired, normally open contacts, or a 24V DC or 120V AC external voltage source such as an output from a PLC.

Primary Applications

- Hazardous area applications calling for high-decibel output with simultaneous signal delivery over all speakers installed in a system
- Emergency warning systems, plant evacuation alarms, security intrusion alarms, process monitoring, shift start and dismissal horns, and paging signals

Key Features & Benefits

- 27 tone capability—No additional tone modules needed
- Centralized programmable tone selection
- PLC compatible
- System-wide priority tone
- 24V DC battery backup terminals
- Short circuit protected

Certifications and Compliances

- Class I, Division 2, Groups A, B, C & D
- Class II, Division 2, Groups F & G
- Class III
- UL 464 and 1604 Listed
- cUL C22.2 No. 205
- CE Marked—Cenelec LV & EMC Directives
- NEMA 3R, IP 44

Materials & Finishes

- Zinc-cast construction with an epoxy powder coat finish

Ratings

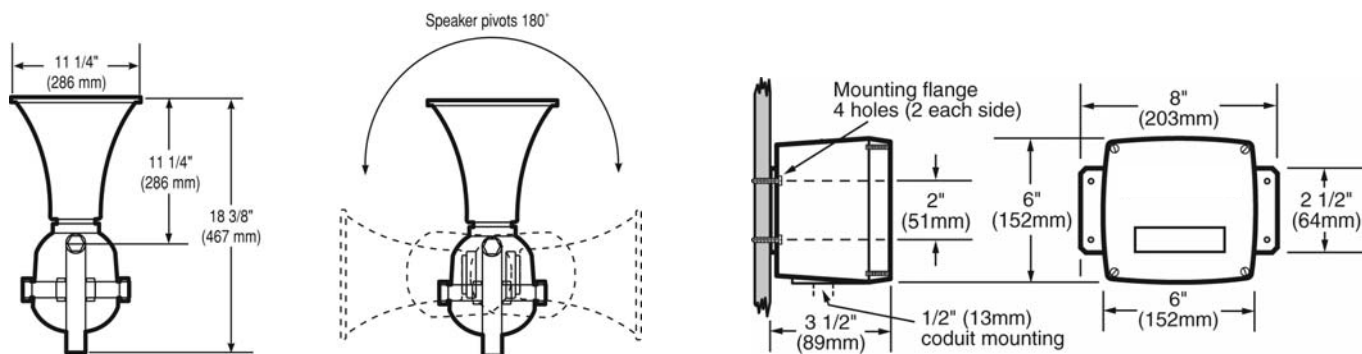
- See table below

ORDERING INFORMATION

Catalog Number	Voltage	Input Card Activation Voltage	Signal OFF Standby Current (Amps)	Signal ON Operating Current (Amps)
PANEL CONTROL SIGNAL GENERATOR				
ETH840/24E74	24V DC	24V DC	0.10	0.74
ETH640/24E13	24V AC, 50/60Hz	24V DC	0.10	1.30
ETH640/120E36	120V AC, 50/60Hz	24V DC	0.10	0.36
ETH640/120M38	120V AC, 50/60Hz	120V AC	0.10	0.38
ETH640/120E32	120V AC, 50/60Hz	24V DC	0.10	0.32
ETH640/240E20	240V AC, 50/60Hz	24V DC	0.10	0.20
ETH840/125E21	125V DC	24V DC	0.10	0.21
ETH840/250E10	250V DC	24V DC	0.02	0.10
ETH640/120M31	120V AC, 50/60Hz	120V AC	0.10	0.31
ETH640/240M20	240V AC, 50/60Hz	120V AC	0.10	0.20
ETH840/125M20	125V DC	120V AC	0.10	0.20
ETH840/250M10	250V DC	120V AC	0.02	0.10
ETH640/120R31	120V AC, 50/60Hz	RS485	0.10	0.31
ETH640/240R20	240V AC, 50/60Hz	RS485	0.10	0.20
ETH840/125R20	125V DC	RS485	0.10	0.20
ETH840/250R10	250V DC	RS485	0.02	0.10

* Flex-Tone Panel Control Signal Generator must be used with Cooper Crouse-Hinds ETH845 Remote Speaker/Amps on page 77.

DIMENSIONS—FLEX-TONE SERIES AUDIBLE SIGNALING DEVICES





Now VNIPO Approved

EExd version (optional guard)



Now UL Listed

EExia/EEExm/UL versions (optional guard)

The MEDC heat detector has been designed for use in hazardous environments. These units are suitable for fire alarm and/or suppression systems in offshore and onshore applications including paint spray booths, flammable material stores, turbine rooms, extract ductwork and other hazardous areas throughout the oil & gas, petrochemical and process industries.

Comprising a Fenwal rate-compensated detector with all-stainless steel external construction, mounted to either a type SM87 marine grade alloy enclosure (EExd version) or JB10 corrosion-free GRP enclosure (EExia, EEExm/UL versions). The contact in the detector CLOSES at alarm temperature.

To select appropriate temperature setting see specification on reverse.

Primary Applications

- Compressor turbine/generator skids
- Switchgear or motor control status rooms
- Process tank areas or transmission lines

Typical Industries

- Power generation
- Nuclear plants
- Chemical processing
- Upstream/downstream oil & gas

Certifications & Compliances

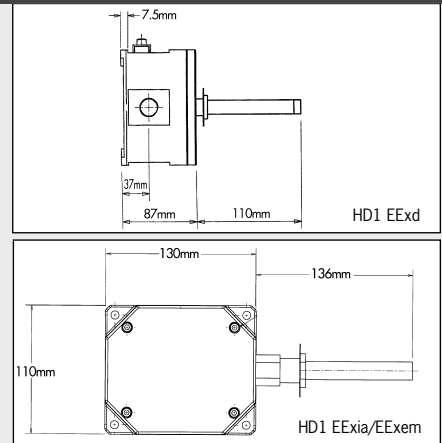
- Zone 0, Zone 1 and Zone 2
- EExia IIC T4/T6, EExd IIB T3/T6 or EEExm II T6
- ATEX approved – Ex II 1G (EExia)
– Ex II 2G (EExd/EEExm)
- BASEEFA certified
- UL listed for USA and Canada
– Class I, Div 2, Groups A, B, C, D
- GOST 'R' & 'K' certified
- Chinese (CQST) certified
- IP66 & IP67
- Certified temperature:
-20°C to +125°C (EExd)*
-20°C to +55°C (EEExm/UL)
-55°C to +55°C (EExia)
- Stainless steel probe
- Detector temperature settings:
60°C to 385°C, (140°F to 725°F)
- Marine grade Alloy or GRP enclosure
- Optional guard
*Model dependent

HD1

Heat Detector — Explosionproof & Intrinsically Safe



Certification	cUL US Ex	ATEX, GOST 'R' & 'K', Chinese ATEX Ex II 2G, EExd IIB T6 ATEX Ex II 2G, EEExem II T6 ATEX Ex II 1G, EExia IIC T6
Flameproof		
Increased Safety		
Intrinsically Safe		
Certified Ambient Temperature		-20°C to +125°C EExd(T3)/ATEX/GOST 'R' -20°C to +55°C EExd(T6)/EEExem -55°C to +55°C EExia
Ingress Protection		IP66 & 67
Material		Marine Grade Alloy (EExd) Corrosion-free GRP (EExia/EEExem)
Temperature Settings		140°F to 725°F (60°C to 385°C)
Entries		2 x M20
Weight		1.1–2.0kg (model dependent)
Options: Enclosures, color, tag and duty labels, temperature setting		

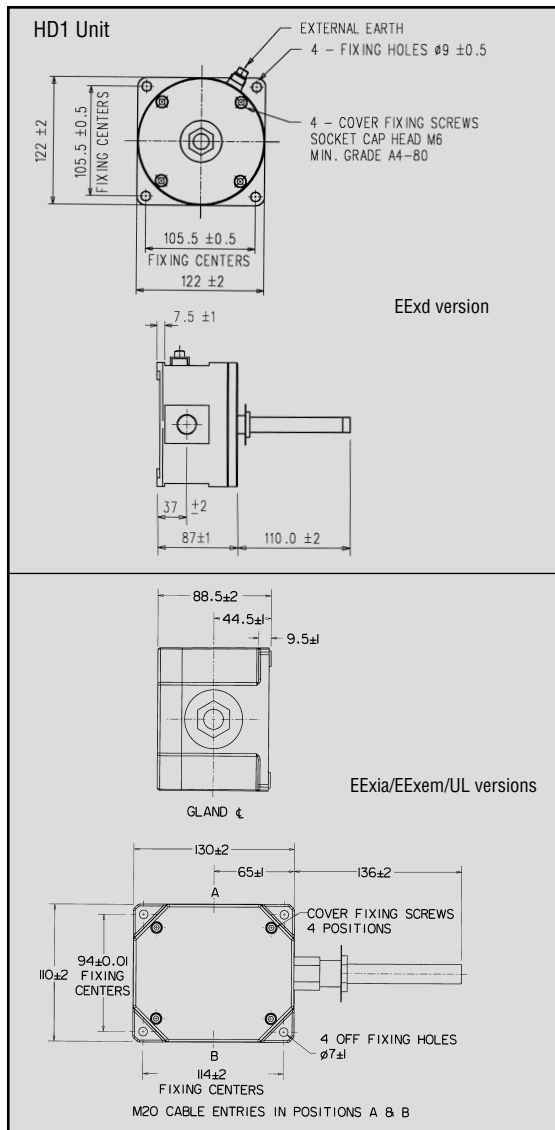


Compensated Heat Detector with Guard Fitted Natural Black Finish

To select appropriate temperature settings, choose detector at 56°C (100°F) above maximum ambient temperature.

Certification	Temperature Setting		Tolerance		Color Code Detector Tip	Ordering Code	Catalog #
(°F)	(°C)	(°F)	(°C)				
UL, cUL, Class I, Div 2, Groups A, B, C, D Class I, Zone 2, IIC	140	60	+7/-8	±4	Black	46500152	HD1ULE140GN
	160	71	+7/-8	±4	Black	46500153	HD1ULE160GN
	190	88	+7/-8	±4	White	46500154	HD1ULE190GN
	225	107	+7/-8	±4	White	46500155	HD1ULE225GN
	275	135	±10	±6	Blue	46500156	HD1ULE275GN
	325	163	±10	±6	Red	46500157	HD1ULE325GN
	360	182	±10	±6	Red	46500158	HD1ULE360GN
	450	232	±15	±8	Green	46500159	HD1ULE450GN

Certification	Standard Product Configuration	Ordering Code	Catalog #
ATEX EExd	140°F detector, marine grade alloy enclosure, painted gray	465607	HD1BD140NG
ATEX EExd	160°F detector, marine grade alloy enclosure, painted gray	465602	HD1BD160NG
ATEX EExd	190°F detector, marine grade alloy enclosure, painted gray	465603	HD1BD190NG
ATEX EExd	225°F detector, marine grade alloy enclosure, painted gray	465614	HD1BD225NG
ATEX EExd	275°F detector, marine grade alloy enclosure, painted gray	465609	HD1BD275NG
ATEX EExd	325°F detector, marine grade alloy enclosure, painted gray	465605	HD1BD325NG
ATEX EExd	360°F detector, marine grade alloy enclosure, painted gray	46500043	HD1BD360NG
ATEX EExd	450°F detector, marine grade alloy enclosure, painted gray	465601	HD1BD450NG
ATEX EExd	600°F detector, marine grade alloy enclosure, painted gray	46500045	HD1BD600NG
ATEX EExd	725°F detector, marine grade alloy enclosure, painted gray	46500104	HD1BD725NG
ATEX EEExem	140°F detector, GRP enclosure, natural black	46500026	HD1BE140NN
ATEX EEExem	160°F detector, GRP enclosure, natural black	465301	HD1BE160NN
ATEX EEExem	190°F detector, GRP enclosure, natural black	465305	HD1BE190NN
ATEX EEExem	225°F detector, GRP enclosure, natural black	465304	HD1BE225NN
ATEX EEExem	275°F detector, GRP enclosure, natural black	46500031	HD1BE275NN
ATEX EEExem	325°F detector, GRP enclosure, natural black	465306	HD1BE325NN
ATEX EEExem	360°F detector, GRP enclosure, natural black	46500072	HD1BE360NN
ATEX EEExem	450°F detector, GRP enclosure, natural black	465303	HD1BE450NN



Specification—HD1 Unit

Certification:	CENELEC EN50014, 19 & 28.																																																				
	EExd IIB T6 (T3 at +125°C), Cert.No. Baseefa 03ATEX0447.																																																				
	EExia IIC T6 (T4 with diodes/resistors), Cert. No. Baseefa 03ATEX0427.																																																				
	EEExm II T6, Cert. No. Baseefa 03ATEX0428.																																																				
	UL listed for USA and Canada – Class I, Div 2, Groups A, B, C & D. UL Listing No. E252920,																																																				
	GOST 'R' & 'K' Certification:		Exd, Exi & Exem versions. Russian Fire Alarm (VNIIP0) approved. CQST – Exd, Exi & Exem versions.																																																		
Material:	Detector:	316 stainless steel																																																			
	Enclosures:	EExd – LM25 marine grade alloy. EExia/EEExm/UL – GRP (anti-static). Stainless steel cover screws.																																																			
	Optional Guard:	316 stainless steel.																																																			
Finish:	Detector:	Sand blasted.																																																			
	Enclosures:	EExd – Epoxy painted gray as standard or to customer's specification. EExia/EEExm/UL – Self colored black or epoxy painted to customer's specification.																																																			
Weight:	EExd, 2kg.																																																				
	EExia/EEExm/UL, 1.1kg.																																																				
Certified:	–20°C to +125°C EExd (T3) ATEX & GOST 'R' only.																																																				
Temperature:	–20°C to +55°C EExd (T6)/EEExm/UL, –55°C to +55°C EExia.																																																				
Ingress Protection:	IP66 & IP67.																																																				
Operation:	The detector contact is normally open and CLOSES at alarm temperature.																																																				
Listed Temperature Settings:	To select appropriate temperature settings, choose detector at 56°C (100°F) above maximum ambient temperature.																																																				
	<table><tr><th colspan="2">Temperature Setting</th></tr><tr><th>(°F)</th><th>(°C)</th></tr><tr><td>140</td><td>60</td></tr><tr><td>160</td><td>71</td></tr><tr><td>190</td><td>88</td></tr><tr><td>225</td><td>107</td></tr><tr><td>275</td><td>135</td></tr><tr><td>325</td><td>163</td></tr><tr><td>360</td><td>182</td></tr><tr><td>450</td><td>232</td></tr><tr><td>600</td><td>316</td></tr><tr><td>725</td><td>385</td></tr></table>		Temperature Setting		(°F)	(°C)	140	60	160	71	190	88	225	107	275	135	325	163	360	182	450	232	600	316	725	385	<table><tr><th colspan="2">Tolerance</th></tr><tr><th>(°F)</th><th>(°C)</th></tr><tr><td>+7/-8</td><td>±4</td></tr><tr><td>+7/-8</td><td>±4</td></tr><tr><td>+7/-8</td><td>±4</td></tr><tr><td>+7/-8</td><td>±4</td></tr><tr><td>±10</td><td>±6</td></tr><tr><td>±10</td><td>±6</td></tr><tr><td>±10</td><td>±6</td></tr><tr><td>±15</td><td>±8</td></tr><tr><td>±20</td><td>±11</td></tr><tr><td>±25</td><td>±14</td></tr></table>		Tolerance		(°F)	(°C)	+7/-8	±4	+7/-8	±4	+7/-8	±4	+7/-8	±4	±10	±6	±10	±6	±10	±6	±15	±8	±20	±11	±25	±14	Color Code Detector Tip
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Contact Rating:	EExd/EEExm/UL: 125V AC – 5A, 125V DC – 0.5A, 48V DC – 1A. EExia: 30V – 300mA.																																																				
Terminals:	6 x 4mm ² (BK6).																																																				
Labels:	Optional stainless steel tag and duty labels.																																																				
Cable Entries:	2 x M20 ISO (ATEX/Exd/Exe/Exi versions) 2 x ½" NPT via adaptors (UL version).																																																				
Resistor:	Series & EOL resistor (maximum total 2) minimum value (each) 470Ω – only available Exd & Exi versions.																																																				
Diodes:	Up to 2 off available in Exd, Exi & UL versions—contact sales office.																																																				

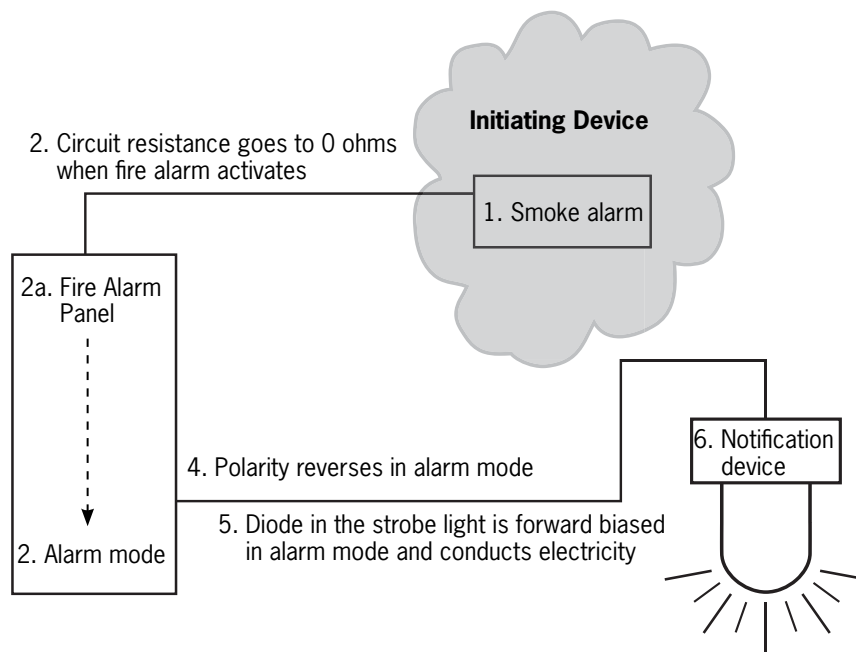
Ordering Requirements

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

Model	Certification	Type	Temp. Settings	Options	Enclosure Finish																																														
HD1																																																			
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Diode Polarized Technology: Also known as supervisory diode circuit for use in fire alarm applications or other critical warning requirements such as industrial hazards and process control emergency indication. Units with a supervisory diode typically have four wires.

In fire alarm technology, when a fire-initiating device such as a smoke alarm is activated, circuit resistance on the initiating circuit goes to zero. The fire alarm panel goes into alarm mode when it senses the resistance at zero. See diagram below.



With the fire alarm panel in alarm mode, voltage polarity is reversed (under normal operation the diode is reversed biased blocking voltage) on the circuit powering the notification device or strobe light. The strobe light is activated (diode is now forward biased allowing voltage through) when it senses a change in polarity. All NFPA approval visual indication for fire alarm must use a clear lens.

Terms used in fire alarm circuits

Initiating Device Circuits (IDC) connect the fire alarm panel to the system components that detect the fire. System components such as smoke detectors, manual pull stations, and water flow switches.

Appliance Circuits connect the fire alarm panel to the signaling devices such as strobe lights, bells, horns and speakers that alert building occupants of a fire.

PROTECTIVE SIGNALING SYSTEM WIRING PRACTICES

INTRODUCTION

The installation of fire alarm system wiring is similar in many respects to any other low-voltage system wiring. Because the nature of the system affects life and property, additional measures are required during installation to ensure the system is operational at all times. The most sophisticated of control panels will not operate properly if the field wiring is installed incorrectly. It is the goal of this section to explain why correctly installed field wiring is vital in the operation of a fire alarm system, and how to recognize proper and improper installations. The process requires four basic steps: **SELECT** the proper cable for the application; **INSTALL** the cable properly; **TEST** the cable to make sure it is free of shorts, opens, and ground faults; and **TERMINATE** the cable properly.

BASIC CIRCUIT SUPERVISION

There are two types of circuit supervision widely used in fire alarm systems today. Direct Current (DC) continuity supervision is used extensively on small systems. Large fire alarm systems use sophisticated electronic multiplex circuitry and “electronic questions and answers” to supervise field wiring and devices.

Figure 1 shows a simplified fire alarm panel supervising a single Initiating Device Circuit or zone using Direct Current (DC) continuity supervision. The supervisory current from the battery flows through terminal #1, the field wiring, the EOL resistor, terminal #2 of the control panel through a second resistor, and returns to the battery. The internal resistor and EOL resistor have equal resistance values. The voltage at the zone test point V_z is measured by voltage sensing circuits. As long as the supervisory current flows through the EOL resistor, the voltage at V_z is one half the supply voltage V_s and the voltage sense circuitry generates a normal panel response.

Figure 2 shows when a smoke detector or pull station operates, it effectively puts a **short** across terminals #1 and #2. This brings the zone test point voltage V_z up to the supply voltage V_s . When the voltage sense circuitry sees $V_z = V_s$, it generates an alarm response, such as ringing a bell.

Figure 1

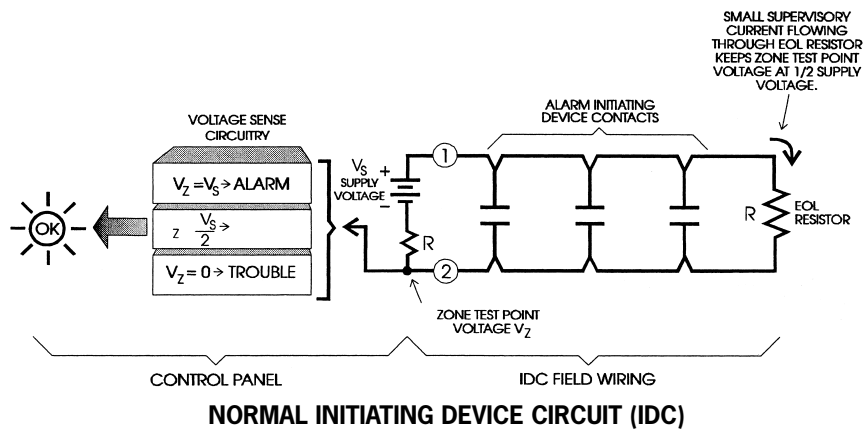


Figure 2

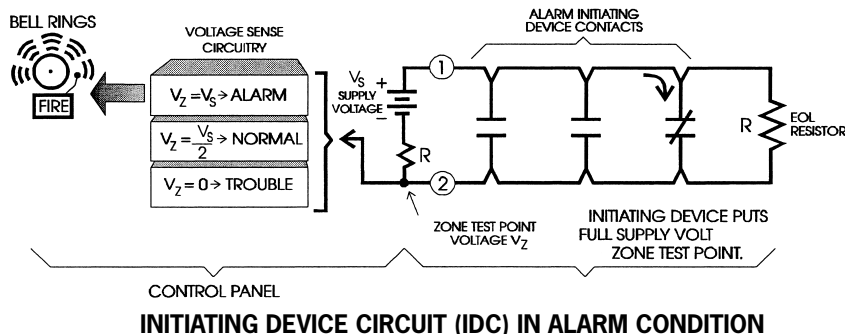


Figure 3 shows should the field wiring **open**, the supervisory current no longer flows through the field wiring and EOL resistor and V_z goes to zero. When the voltage sense circuitry sees $V_z = 0$, it generates a trouble response, such as sounding the trouble buzzer.

Figure 4 shows an improperly wired Initiating Device Circuit. Because the supervisory current is not forced to flow through the top and bottom branches, the break in the top branch doesn't interrupt the supervisory current, and there is no indication of the trouble. Should the top device detect a fire, the signal would never reach the control panel. Note that the lower device would send a fire alarm signal but would not send a trouble signal to the fire alarm panel, a classic symptom of miswiring.

Large multiplex systems use sophisticated electronics that employ a system of "electronic questions and answers" to verify circuit viability. The control panel knows the "names" of all the devices that should be connected to it. After asking a "question" of each name or device on its list, the control panel must receive an answer from that device only. Failure to receive the proper answer causes the panel to generate a trouble signal. Because multiplex systems do not depend on the wiring path for supervision, some multiplex systems permit limited branch wiring or T-taps.

Figure 3

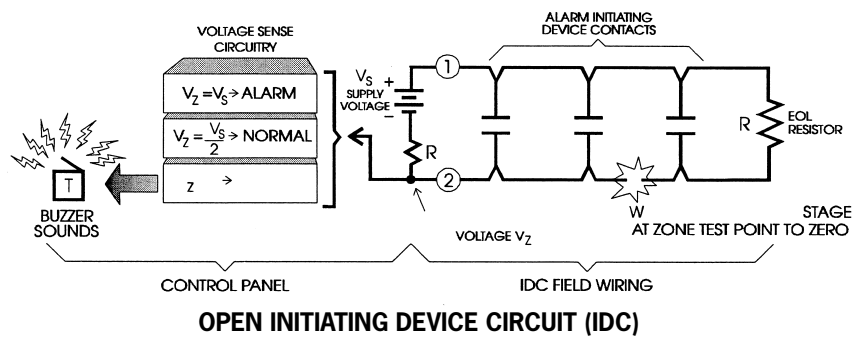
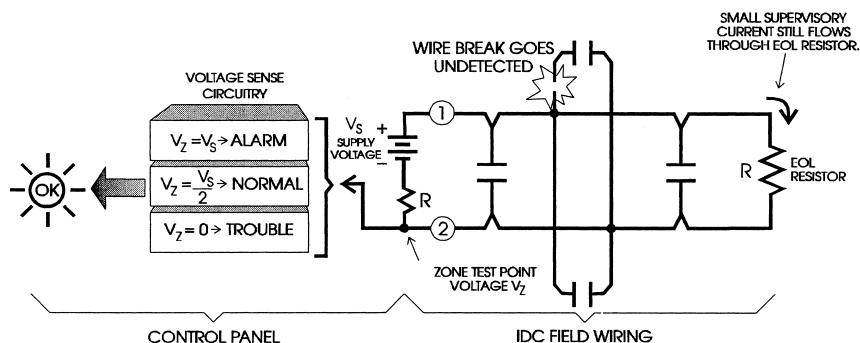


Figure 4



When using decibels, to double the loudness you only have to add 3 dB. For example, if a signal is rated at 85 dB at 10 feet, then a signal twice as powerful would be rated at 88 dB at 10 feet. The table below illustrates how the sound pressure level changes with distance under good conditions.

SOURCE IN dB	FEET FROM SOURCE
100 dB	10
94 dB	20
90 dB	30
88 dB	40
82 dB	80

THINGS TO CONSIDER WHEN SPECIFYING AUDIBLE SIGNALS.

1. Define the function of the signal: For example, general alarm, emergency, shift dismissal, paging, and process indication.
2. Uniform sound distribution: A larger number of smaller devices evenly distributed throughout the signaling area are better than a single large/loud device.
3. Ambient Sound: The signal should exceed the surrounding ambient noise by 6 decibels.
4. Size of the area: Common sense applies here, the larger the area, the louder the signal required and/or the greater the number of signaling devices required.
5. Mounting: As with all our products, consider mounting constraints and choose a suitable device and mount. Horns and speakers perform best when rigidly mounted to the structure.

Candela Seconds: Actual light energy contained in a pulse of light. Used to specify the minimum requirements for light output from a flashing light. Candela seconds is a relative measure of how bright a flash of light will appear to a human eye. (Candela: The intensity base unit for light.) Candela seconds and candela effective (below) are the primary metrics by which to compare flashing warning lights.

Candela Effective or Effective Candlepower: Equates the brightness of a flashing light source to the brightness of a steady burning source. If a flashing light has a candela effective rating of 100 then it will be visible at the same distance as a 100 candela steady burning source. Candela effective is used in specifying intensities of flashing light sources because it compares flashing warning lights with steady burning light sources.

Peak Candela or Peak Candlepower: The maximum light intensity generated by a flashing light during its light pulse.

Strobe, Principle of Operation: A strobe light consists of a xenon strobe lamp, power supply, energy storage capacitor and a trigger circuit.

The strobe bulb consists of a glass tube that has an electrode at either end called an anode (+) and cathode (-). The tube is filled with xenon gas and a trigger element is applied to the outside of the bulb. The trigger element could be a wire wrapped around the tube, a conductive paint stripe along one side of the glass bulb or clear conductive coating over the outside of the tube.

The power supply charges a large capacitor with the voltage needed to “strike” the bulb and is applied to the anode and cathode. The voltage is generally between 200 and 500 VDC depending on the design of the light.

The trigger circuit applies 7,000 to 10,000 volts (low current) to the trigger element of the bulb causing the xenon gas to ionize and discharge the capacitor.

The energy excites the xenon gas and produces a very short burst of high intensity white light.

Watts (Power): joules x flash rate

$$\text{Joules} = \frac{\text{Watts}}{\text{Flash Rate}}$$

$$\text{Joules} = (\text{Capacitance in Microfareds}) \left(\frac{\text{lamp voltage}^2}{1000} \right)$$

2

Things that impact light output:

- Physical shape of the strobe lamp and arrangement within lens
- Efficiency of the strobe lamp—its ability to turn electricity into a bright white light
- Color of the lens
- Size and efficiency of the lens