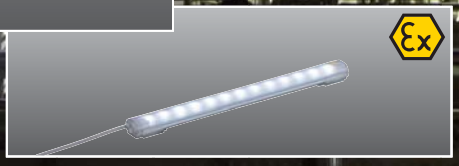
PATLITE®
New Frontiers in Safety, Security and Comfort.

Explosion Protection & Harsh Environment



www.patlite.com

“New Frontiers in Safety, Security and Comfort” is PATLITE`s mission.

PATLITE offers state-of-the-art equipment for process and industrial automation for over 60 years. Our Innovative and robust design, backed by a powerful commitment and years of knowledge, has made PATLITE the world’s best known manufacturer of the visual and audible signaling products.
We are also dedicated to the development of explosive and harsh-environment products to demonstrate our strong commitment to serving the industry with unique and innovative solutions.

In order to identify the diversified needs of our customers, and respond quickly and satisfactorily to those needs, we have implemented the POP (Point of Production) System together with a lean-manufacturing cell-based assembly system (combination, single, and flexible assembly).
These new systems allow us to handle any order rapidly from single items to customized item orders.

We’ ve also reduced development time and production cost by having our own in-house machinery to produce, design and manufacture metal moldings and plastic materials with the use of injection machinery.

From designing to production, from raw material to the finished product, we also manage our quality control throughout the entire process. This is how we maintain our world class quality reputation in the visual, audible signaling and networking information products.

From designing to production, quality control is managed throughout the process

● Design with 3-D CAD

● Manufacturing of metal molding parts

● Electrical discharge machine

● Machining Center

● Injection molding machines

Wide-range of Innovative and World-class Quality Products

World-wide Sales, Marketing and After-sales Support Network

HVS
PRECONISATEUR DE SOLUTIONS DEPUIS 1985

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How Explosion Occurs

An explosion can only occur if there is a combination of the following three factors.

- Source of ignition
- Oxygen
- Combustible substances

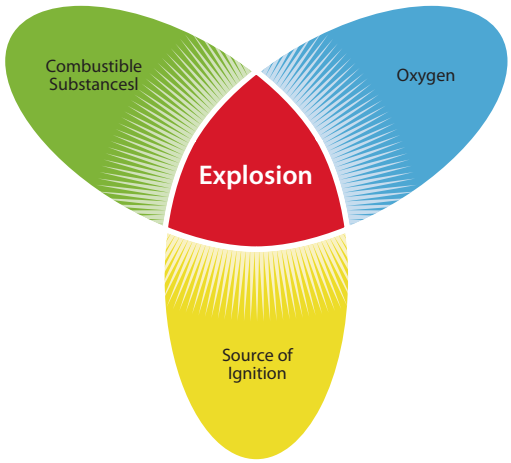
Combustible substances can exist in the form of gases, vapor, mist or dust. If one component is missing, no explosion will take place.

How to minimize an explosion

The following are protective measures to minimize the risk of an explosion.

- Limit concentration to a safe level
- Avoid combustible substances
- Increase ventilation
- Prevent the ignition
- Restrict an explosive effects to a negligible level

Prerequisites for an explosion



An explosive environment is categorized in three segments, Zone 0, Zone 1 and Zone 2, depending on the hazardous level of gases and vapors

Zone 0

An area where an explosive atmosphere consisting of a mixture of air containing flammable substances in the form of gas, liquid, or vapor is continuously present or frequently present or longer period of time.

Zone 1

An area where an explosive atmosphere consisting of a mixture of air containing flammable substances in the form of gas, liquid, or vapor can occasionally occur during normal operating conditions.

Zone 2

An area where an explosive atmosphere consisting of a mixture of air containing flammable substances in the form of gas, liquid, or vapor is not likely to occur under normal conditions. However, if it occurs, it will only be for short periods of time.

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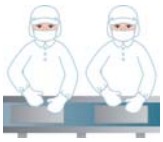
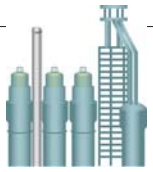
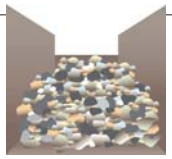
■ Various Applications for Explosion-Safe and Harsh Environments

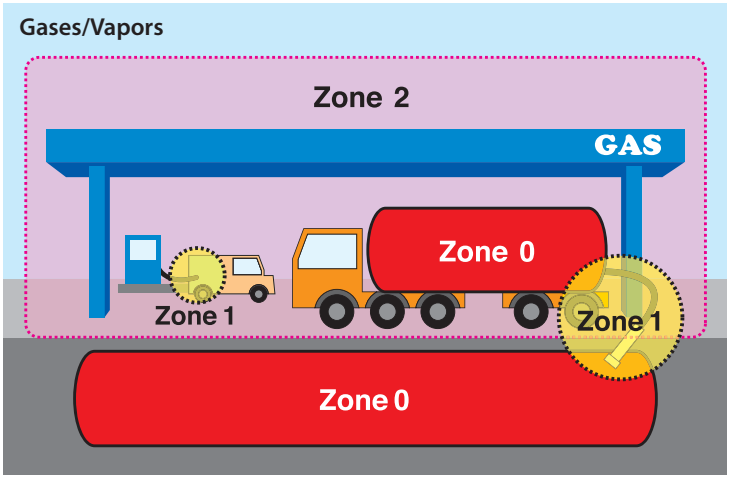
	Branch	Explosion Hazard
	Power Generation Companies	● Lump Coal Dust
	Woodworking Industry	● Saw Dust ● Fine Wood Chips
	Metal-work Operations	● Explosive Metal Dust ● Spark-ignitable Metal Dust
	Food/Beverage Industry	● Ignitable Grain Dust ● Explosive Sugar Dust
	Refinery Industry	● Hydrocarbons close to their flash-points ● Oil Processing Plants
	Waste Disposal Companies	● Waste-water Treatment Gases
	Landfills/Civil Engineering	● Flammable Landfill Gases ● Uncontrolled Gas Emissions ● Flammable Gas from poor ventilation sources
	Pharmaceutical Industry	● Alcohol Solvents ● Materials explosive when mixed
	Gas Suppliers	● Natural Gas Leakage ● Natural Gas Emissions
	Paint-spraying Operations	● Overspray in Spray-paint Bays ● Solvent Vapor Emissions
	Recycling Operations	● Unemptied flammable gas/liquid containers ● Biodegradable Material Emitting Explosive Gases
	Chemical Industry	● Flammable Gases ● Flammable Liquids ● Flammable Solids
	Agriculture	● Bio-gas Production Plants ● Bio-gas Located on Farms

Classification of Hazardous Areas

Gases/Vapors

The tank is filled with flammable liquid. The inside of the tank is defined as zone 0, because the explosive gas/oxygen mixture is continuously present.
Vapor may escape on occasion through the vent on the top of the tank, therefore the area around the vent is categorized as Zone 1.

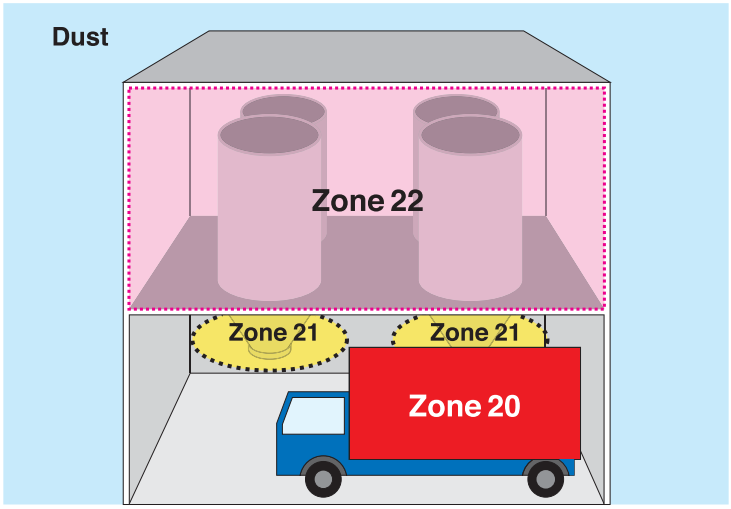
The vapor may also run down the outside of the tank, developing another explosive environment, so the area around the tank is categorized as Zone 2.



		Constant Exposure	Occasional Exposure	Rare and Temporary
ATEX	EN60079-10	Zone 0	Zone 1	Zone 2
IEC	IEC60079-10	Zone 0	Zone 1	Zone 2
US	NEC505	Zone 0 (Class Ⅰ)	Zone 1 (Class Ⅰ)	Zone 2 (Class Ⅰ)
	NEC500	Division 1 (Class Ⅰ)		Division 2 (Class Ⅰ)

Dust

At a mill with a feed hopper and filter: A product, which causes dust particles mixed with sufficient air to cause an inflammable mixture, is loaded into a hopper.
Inside the feed hopper and filter, it is categorized as Zone 20.
While the product is being loaded, the mixture of dust and air causes a potentially explosive compound in the area where the product is loaded into the hopper, so the area outside the hopper is categorized as Zone 21.
Around the hopper where a potential inflammable atmosphere exists temporarily is categorized as Zone 22.



		Constant Exposure	Occasional Exposure	Rare and Temporary
ATEX	EN61241-10	Zone 20	Zone 21	Zone 22
IEC	IEC61241-10	Zone 20	Zone 21	Zone 22
US	NEC505	—	—	—
	NEC500	Division 1 (Class Ⅱ)		Division 2 (Class Ⅱ)

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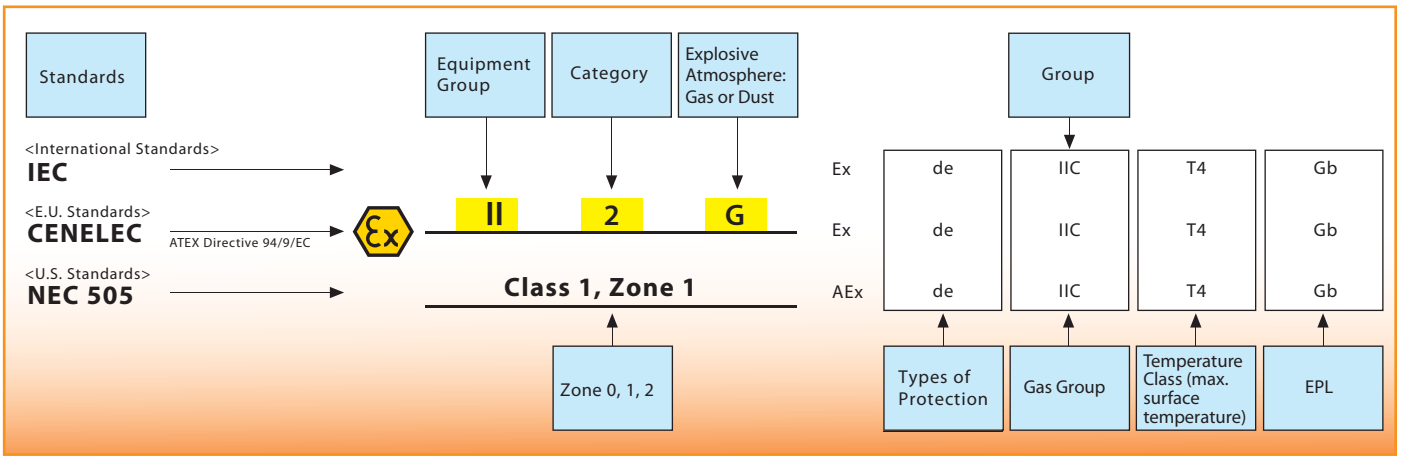
Relationship of IEC, CENELEC, NEC 505 and NEC 500

IEC: International Electrotechnical Commission
CENELEC: European Committee for Electrotechnical Standardization
NEC: National Electrical Code

IEC/CENELEC	Zone 0	Zone 1		Zone 2		
USA:NEC 505	Zone 0	Zone 1		Zone 2		
USA:NEC 500	Division 1			Division 2		
	Explosive Material	Class	Group	Explosive Material	Class	Group
	Gas, Vapor or Liquid	I	A, B, C, D	Gas, Vapor or Liquid	I	A, B, C, D
	Dust	II	E, F, G	Dust	II	E, F, G
	Fibers	III	———	Fibers	III	———



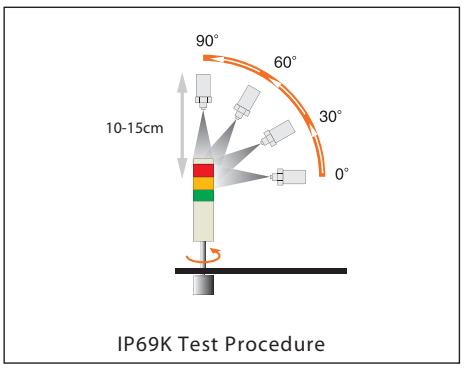
*EPL:Equipment Protection Level

IP Protection Rate: Index of Ingress Protection

IP □□ IEC60529

5	The entrance of dust is not closed completely, but dust may not go into the device in such manner as to impair the optimal operation or safety of the device.	5	No detrimental effect occurs when a jet-stream is applied to the test sample from any direction. (TEST: 12.5 liter/min. of water is sprayed with a jet nozzle, having an internal diameter of 6.3mm, and a distance from the test sample of 2.5m - 3m away)
		6	No detrimental effect occurs when water is sprayed onto the test sample by a jet-stream from any direction. (TEST: 100 liter/min. of water is sprayed with a jet nozzle, having an internal diameter of 12.5mm, with a distance of 2.5m - 4m away from the test sample)
		7	Water must not enter into the device. No detrimental effect occurs when the device is submerged in a depth of 1 meter of water for 30 minutes.
6	No intrusion of dust into the device occurs.	8	Water must not enter into the device. No detrimental effect occurs when the device is continuously submerged. The test conditions are to be mutually agreed upon by the manufacturer and user.

IP69K IP69K is the German DIN 40050 PART9 standard. It is defined as a protection regulation for high temperature and high-pressurized water. Water is heated up to 80 ° C and sprayed at a water pressure in the range from 80 to 100 bars at 14 to 16 liters per minute at the test object. The test object is at a distance of 100 to150 mm from the nozzle and sprayed in all directions at 0, 30, 60, and 90 degrees, then sprayed at a horizontal angle while it is being rotated, all done for a period of 30 seconds without being affected by water penetration.



IP69K Test Procedure

Types of Protection

According to EN Standard Series EN 60079, explosion protected electrical equipment can have various types of protection according to its construction.
The table below for Gas and Dust shows an overview of the standardized protections and describes its basic principal, as well as its practical applications.

Select the suitable PATLITE explosion-safe and intrinsically-safe products according to the specific application and type of protection.

Gas

Type of Protection	Marking	Diagram	Definition	Applications	PATLITE Model
General requirements EN 60079-0 IEC 60079-0					
Flameproof Enclosure "d" EN 60079-1 IEC 60079-1	Ex d		Parts which can cause ignition while in a potentially explosive environment are encased in an enclosure which can withstand the pressure to contain it when the explosive mixture ignites inside so it is not transmitted into the environment.	Switch Gear, Control Gear, Display Units, Control Systems, Motors, Transformers, Heating Equipment, Light Fittings	EDLM Series EDWM Series
Increased Safety "e" EN 60079-7 IEC 60079-7	Ex e		Preventative safety precautions are applied to prevent the possibility of excessive temperatures, the occurance of sparks or electrical arcing within the equipment enclosure or on exposed parts of the equipment that would not be a hazard in conditions where ignition sources are not present.	Terminal Boxes, Connection Boxes, Control Boxes (for installing Ex-components with different types of protection) Squirrel-cage Motors, Light Fittings	
Intrinsic Safety "i□" EN 60079-11 IEC 60079-11	Ex ia Ex ib Ex ic		Equipment used in a potentially explosive environment contains intrinsically safe electrical components only. The electric circuit is intrinsically safe when no sparks or internal heat produced under normal operating conditions and specific fault conditions is not capable of causing ignition in a given explosive atmosphere.	Measurement and Control Technology, Communication Technology, Sensors, Actuators. ia = use in Zone 0, 1, 2 ib = use in Zone 1, 2 [Ex ib] = associated equipment - installation in safe areas	
Oil Immersion "o" EN 60079-6 IEC 60079-6	Ex o		Electrical equipment or parts are immersed in a protective fluid (such as oil), to prevent the ignition of a potentially explosive atmosphere which may be located over or outside the equipment.	Transformers, Starting Resistors	
Pressurized Enclosure "p□" EN 60079-2 IEC 60079-2	Ex p		Inside the enclosure, a positive internal pressure in relation to the surrounding atmosphere is maintained with the supply of a constant flow of protective gas (when necessary) to dilute any combustible mixtures.	Switch Gear, Control Cabinets, Analyzers, Large Motors. px = use in Zone 1, 2 py = use in Zone 1, 2 pz = use in Zone 2	
Powder Filling "q" EN 60079-5 IEC 60079-5	Ex q		The casing of the electrical equipment is packed with fine granular material to make it impossible for any electric arc created inside the casing under certain operating conditions to ignite the potentially explosive environment outside the casing. Ignition cannot be the result from flames or the raised temperature on the surface of the casing.	Sensors, Display Units, Electronic Ballasts, Transmitters	
Encapsulation "m□" EN 60079-18 IEC 60079-18	Ex m		Parts which can cause ignition in a potentially explosive environment by sparking or heating are enclosed in a compound to contain and isolate it from the ignition of an explosive environment.	Switch Gear with small breaking capacities, Control and Signalling Units, Display Units, Sensors. ma = use in Zone 0, 1, 2 mb = use in Zone 1, 2	
Type of Protection "n□" EN 60079-15 IEC 60079-15	Ex nA Ex nR Ex nL		Electrical equipment cannot cause the ignition of a potentially explosive atmosphere (defined under abnormal operating conditions and during normal operation).	All Electrical Equipment for Zone 2 nA = non-sparking equipment nC = sparking equipment in which contacts are conveniently protected nL = energy-limited equipment nR = restricted breathing	AR-070 Series AR-078 Series LKEH-FV-EX Series LKEH-FE-EX Series EWH-24E-J-EX CLN-24-CD-PT-EX CLK-EX Series CLA-EX Series

Dust

Type of Protection	Marking	Diagram	Definition	Applications	PATLITE Model
General requirements EN-IEC 60079-0 IEC 60079-0					
Protection by Enclosures "t" EN-IEC 60079-31 IEC 60079-31	Ex t		Dust is incapable of ingressing the enclosure at all or the quantity is at a safe degeree, which allows the ignitable equipment to be mounted inside. The surface temperature of the enclosure will not cause ignition to the surrounding explosive atmosphere.	Switch Gear, Control Gear, Connections, Terminal Boxes, Motors, Light Fittings. td A21 = According to Method A for Zone 21 td B21 = According to Method B for Zone 21	EDLM Series EDWM Series AR-070 Series AR-078 Series LKEH-FV-EX Series LKEH-FE-EX Series EWH-24E-J-EX CLN-24-CD-PT-EX CLK-EX Series CLA-EX Series
Pressurized Enclosure "pD" EN-IEC 61241-4 IEC 61241-4	Ex pD		Inside the enclosure, a positive internal pressure in relation to the surrounding atmosphere is maintained with the supply of a constant flow of protective gas (when necessary) to dilute any combustible mixtures.	Pumps	
Intrinsically Safe "i" EN-IEC 60079-11 IEC 60079-11	Ex ia Ex ib Ex ic		Equipment used in a potentially explosive environment contains intrinsically safe electrical components only. The electric circuit is intrinsically safe when no sparks or internal heat produced under normal operating conditions and specific fault conditions is not capable of causing ignition in a given explosive atmosphere.	Measurement and Control Technology, Communication Technology, Sensors, Actuators. iaD = use in Zone 20, 21, 22 ibD = use in Zone 21, 22 [Ex ibD] = Associated Electrical Equipment - Installation in Safe Areas	
Encapsulation "m" EN-IEC 60079-18 IEC 60079-18	Ex ma Ex mb		Parts which can cause ignition in a potentially explosive environment by sparking or heating are enclosed in a compound to contain and isolate it from the ignition of a layer of dust or cloud.	Small capacity Switch Gear, Controlling and Signalling Units, Display Units, Sensors. maD = use in Zone 20, 21, 22 mbD = use in Zone 21, 22	

Maintenance Free LED Signal Lights

The EDLM and EDWM series LED signal lights are visual warning and status indicating lights for use in hazardous locations that require compliance with the ATEX Directive 94/9/EC (CENELEC standard) or NEC Article 505 certification.

The EDLM and EDWM series offer wide range of voltages and versatile mounting options to meet various applications.
The following chart explains the comparison between the ATEX Directive 94/9/EC (CENELEC standard) and NEC Article 505 certification. To find the most suitable models, refer to page 9 and 10.

EDLM EDWM

Protection Method (ATEX/IEC)

Flame-proof Enclosure Type "d"
In flame-proof enclosures, an explosion is contained.

Protection Type "t"
Dust-protected and flame-proof enclosure.

Standard Markings

Marking for ATEX Directive (CENELEC Standard)

CE 0000 Ex II 2 G
- CE Marking
- Notified Body Number
- ATEX Directive Marking
- Equipment Group
- Category
- Type of Explosive Environment

Ex d II C T6
- Explosion-Protected
- Type of Protection
- Gas Group
- Temperature Code

Ex tD A21 IP66 T80℃
- Explosion Protection
- Protection Method
- Dust Area Classification
- Dust Protection Codes (only type of Ex tD)
- Temperature Class (only type of Ex tD)

Markings for North America (NEC Standards)

NEC505 (Zone System)

Class I, Zone1, A Ex d II C T6
- Flammable Gas or Vapor
- Area Classification
- American National Standard
- Explosion Protection
- Protection Method
- Gas Group
- Temperature Code

NEC500 (Division System)

Class I, Division1, Groups A,B,C,D, T6
- Flammable Gas or Vapor
- Area Classification
- Gas Group
- Temperature Code

Explosion-safe Protection

	Europe (ATEX Directive / (CENELEC) International (IEC)				North America Class I				
					NEC505			NEC500	
Protection Method	Protection Code	Zone	CENELEC ATEX	IEC IECEx	Protection	Zone	US	Division	US
Flameproof	Ex d	1, 2	EN60079-1	IEC60079-1	AEx d	1, 2	ANSI/ISA 60079-1	1, 2	FM3615 UL1203
Increased Safety	Ex e	1, 2	EN60079-7	IEC60079-7	AEx e	1, 2	ANSI/ISA 60079-7	—	
Intrinsic Safety (2 faults)	Ex ia	0, 1, 2	EN60079-11	IEC60079-11	AEx ia	0, 1, 2	ANSI/ISA 60079-11	1, 2	FM3610 UL913
Intrinsic Safety (1 fault)	Ex ib	1, 2	EN60079-11	IEC60079-11	AEx ib	1, 2	ANSI/ISA 60079-11	—	
Purged/Pressurized	Ex p	1, 2	EN60079-2	IEC60079-2	AEx p	1, 2	ANSI/ISA 60079-2	1, 2	FM3620 NFPA496
Encapsulation	Ex m	1, 2	EN60079-18	IEC60079-18	AEx e	1, 2	ANSI/ISA 60079-18	—	
Non-incendiaries	—		—	—	—			2	FM3611 UL1604
Type-n	Ex n	2	EN60079-15	IEC60079-15	AEx n	2	ANSI/ISA 60079-15	—	

Zone Classification

	CENELEC IEC	NEC505	Hazardous Area Classification
Gases Vapors	Zone 0	Class I Zone 0	An area where the mixture of explosive gas is continuously present or present for long periods.
	Zone 1	Class I Zone 1	An area where the mixture of explosive gas can be present during normal operation.
	Zone 2	Class I Zone 2	An area where the mixture of explosive gas is not normally present, but if it occurs, it will only be for brief periods of time.
Dust	Zone 20	—	An area where the mixture of incendiary dust is continuously present or present for long periods.
	Zone 21		An area where the mixture of incendiary dust can be present during normal operation.
	Zone 22		An area where the mixture of incendiary dust is not normally present, but if it occurs, it will only be for brief periods of time.

ATEX Directive (CENELEC)

Equipment Group	Category-Protection Level	Explosive Environment	Flammable Substances	Hazardous Areas
I -mines	M1- Very High Level	Constant Exposure	Methane Coal Dust	—
	M2- High Level	Ocassional Exposure		—
II-other areas	1- Very High Level	Constant Exposure	Gases Vapors Mists Dust	Zone 0 (Gases) Zone 20 (Dust)
	2- High Level	Ocassional Exposure		Zone 1 (Gases) Zone 21 (Dust)
	3- Normal Level	Rare and Temporary		Zone 2 (Gases) Zone 22 (Dust)

ATEX/IEC Classification for Gases & Temperature Coding

	T1 (450℃)	T2 (300℃)	T3 (200℃)	T4 (135℃)	T5 (100℃)	T6 (85℃)
I	Methane	—	—	—	—	—
IIA	Acetone Ethane Propane	Ethyl Alcohol Cyclohexane n-butane	Gasoline Aircraft fuel Diesel fuel	Acetaldehyde	—	—
IIB	Lighting gas Acrylonitrile	Ethylene Ethylene oxide	Ethylene Glycol Hydrogen sulphide	Ethyl-ether	—	—
IIC	Hydrogen	Acetylene	—	—	—	Carbon bisulfide

Visual/Audible Signaling Products & LED Work Lights

A wide range of visual and audible signaling products, as well as super bright LED light bars, designed for use in hazardous locations that require the ATEX Directive 94/9/EC (CENELEC Standard). These unique and innovative models meet the criteria for Zone 2 (gas) and Zone 22 (dust) atmospheres.

AR-070 Series
AR-078 Series

LKEH-FE-EX
LKEH-FV-EX

EWH-24E-J-EX

CLA-EX Series

CLN-24-CD-PT-EX

CLK-EX Series

LED Signal Towers				Hazardous Area	
Model Selection	Page	CENELEC Standard	Explosion Safety	Gas	Dust
AR-070 Series	11	EN 60079-0, EN 60079-15, EN 60079-31	CE Ex I 3GD Ex nA IIC T4 Gc, Ex tc IIIC T85°C Dc IP65	Zone2	Zone22
AR-078 Series	12	EN 60079-0, EN 60079-15, EN 60079-31	CE Ex 3GD Ex nA IIC T4 Gc, Ex tc IIIC T85°C Dc IP65	Zone2	Zone22

MP3 Field Programmable Annunciator integrated with LED tower				Hazardous Area	
Model Selection	Page	CENELEC Standard	Explosion Safety	Gas	Dust
LKEH-FV-EX Series	13	EN 60079-0, EN 60079-15, EN 60079-31	CE Ex I 3GD Ex nA IIC T4 Gc, Ex tc IIIB T85°C Dc IP54	Zone2	Zone22
LKEH-FE-EX Series	13	EN 60079-0, EN 60079-15, EN 60079-31	CE Ex 3GD Ex nA IIC T4 Gc, Ex tc IIIB T85°C Dc IP54	Zone2	Zone22

Voice Annunciator, Melodies & Chimes Horns				Hazardous Area	
Model Selection	Page	CENELEC Standard	Explosion Safety	Gas	Dust
EWH-24E-J-EX	15	EN 60079-0, EN 60079-15, EN 60079-31	CE Ex 3GD Ex nA IIC T4 Gc, Ex tc IIIC T85°C Dc IP65	Zone2	Zone22

Super Bright LED Work Lights				Hazardous Area	
Model Selection	Page	CENELEC Standard	Explosion Safety	Gas	Dust
CLN-24-CD-PT-EX	15	EN 60079-0, EN 60079-15, EN 60079-31	CE Ex 3GD Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc IP65	Zone2	Zone22
CLK-EX Series	16	EN 60079-0, EN 60079-15, EN 60079-31	CE Ex 3GD Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc IP65	Zone2	Zone22
CLA-EX Series	16	EN 60079-0, EN 60079-15, EN 60079-31	CE Ex 3GD Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc IP65	Zone2	Zone22

* These products are manufactured by PATLITE, converted and certified to explosion-safe by Artidor, and sold by PATLITE.

■ Markings

CE 0123 Ex II 2 G

- G: Type of Ex Atmosphere
  - G ····· Gas
  - D ····· Dust
- 2: Equipment-Category
  - M1 ····· very high safety level (Mines)
  - M2 ····· high safety level (Mines)
  - 1 ····· very high safety level
  - 2 ····· high safety level
  - 3 ····· normal safety level
- II: Equipment-Group
  - I ····· For mining installations
  - II ····· For industrial installations
- Ex: Specific mark for explosion protection
- 0123: Registration number of Notified Body certified the QA system (if applicable).
- CE: Quality mark for compliance with the EU directives, as a product passport to the European Market (not for components).

Ex d IIC T6 Gb

- Gb: EPL
- T6: Temperature Class (Maximum Surface Temperature)
  - T1 ····· 450℃
  - T2 ····· 300℃
  - T3 ····· 200℃
  - T4 ····· 135℃
  - T5 ····· 100℃
  - T6 ····· 85℃
- IIC: Gas Group
  - I ····· Methane(fire damp)
  - IIA ····· Propane & equivalent
  - IIB ····· Ethylene & equivalent
  - IIC ····· Hydrogen & Acetylene
  - IIIA ····· Fiber Flyings
  - IIIB ····· Non-conductive dust
  - IIIC ····· Conductive dust
- d: Protection degree against ignition
  - d ····· Flameproof Enclosure
  - e ····· Increased Safety
  - ia/ib/ic ····· Intrinsic Safe
  - ma/mb/mc···· Moulded Encapsulation
  - nA ····· Non-sparking
  - nC ····· Separated
  - nL ····· Energy Limited
  - nR ····· Restricted Breathing
  - o ····· Oil Immersion
  - px/py/pz ····· Purged/Pressurized
  - q ····· Powder Filling
- Ex: Explosion Safe

EDLM SERIES & EDWM SERIES EXPLOSION-SAFE


Wall Mount


Horizontal Mount


Vertical Mount

Descriptions

The EDLM (3 tiered LED) and EDWM (5 tiered LED) models are innovative LED maintenance-free Explosion-safe Signal Towers. Their robust design, along with pressure and flame-proof housing is ideal for use in potentially flammable and hazardous explosive environments, such as chemical, petrochemical, combustible dust, mineral/natural gas production; as well as for the food and beverage industries.

Features

- Housing: Aluminum alloy
- Glass: Borosilicate glass
- Terminals: Easy wire connection to the Signal Tower by opening the bottom
- Mounting: Upright, Wall Mount, Vertical-mount, and Horizontal Mount
- LED color: Different color configurations are possible to custom-design
- Voltage: 24VAC/DC, 120VAC, 230VAC, 90-250VAC are available.
- Wire core size: 0.5mm²~0.8mm², AWG20~AWG18

EDLM & EDWM are convered by the specifications shown in the shaded areas below

Common Standards for Europe ●The ATEX directive is a CENELEC standard.

Classification	Standard	PATLITE Models	Constant Exposure	Occasional Exposure	Rare and Temporary
ATEX, IEC/EU Directive 94/9/EC	IEC 60079-10 EN 60079-10	EDLM, EDWM	Zone 0	Zone 1	Zone 2

Common Standards for the USA ●NEC is a National Electrical Code standard for North America.

Classification	Standard	PATLITE Models	Constant Exposure	Occasional Exposure	Rare and Temporary
NEC Article 505	ANSI/NFPA 71	EDLM, EDWM	Zone 0	Zone 1	Zone 2
NEC Article 500	ANSI/NFPA 70	—	Division 1		Division 2

CENELEC (ATEX Directive)

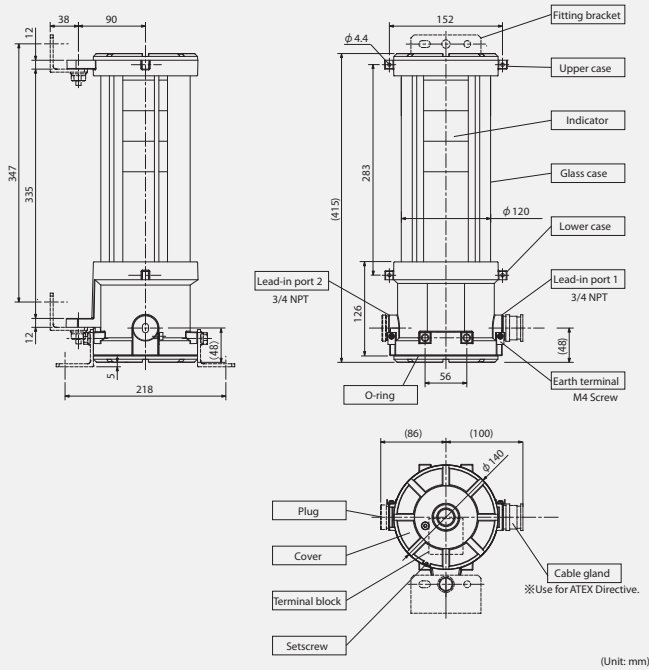
Model	EDLM-302FE	EDLM-312FE	EDLM-323FE	EDWM-502FE	EDWM-5M2FE
Voltage Rating	AC/DC 24V	AC 120V	AC 230V	AC/DC 24V	AC 90～250V
Signal line Current (Per LED Module)	Red/Amber: 52.5mA Green: 20.0mA			Red: 22.6mA, Amber: 26.6mA, Green: 17.5mA Blue/White: 38.9mA	
Explosion Protection Ratings	Ⓔx Ⅱ 2G Ex d ⅡC T6 (Zone1,2) Ⓔx Ⅱ 2D Ex tD A21 IP66 T80℃ (Zone21,22)				
OperatingTemperature	-20℃～+50℃ (No ice)				
Operating Humidity	45%～85%RH (Keep from dew condensation)				
Ambient Pressure	80～110kpa				
Lighting Pattern	Flashing (60±12 flashes per minute) / Continuous Light				
Protection Rating	IP66				
Vibration Resistance	9.8m/s²				
Mounting	Outdoor & Indoor Upright			Outdoor & Indoor Upright & Sideways	
Luminosity	Red: 350mcd, Amber: 580mcd Green: 1300mcd			Red/Green/White: 1000mcd Amber: 700mcd, Blue: 300mcd	
Mass (Main Body)	4.3kg			4.7kg	
Material	Upper & Lower Case : Aluminum Alloy (Housing Finish: Melamine-baked Finish) Glass Case : Borosilicate Glass Fitting Bracket : Stainless Steel (SUS 316) Cable Gland : Brass				

NEC Article 505

Model	EDLM-302FA	EDLM-312FA	EDLM-323FA	EDWM-502FA	EDWM-5M2FA
Voltage Rating	AC/DC 24V	AC 120V	AC 230V	AC/DC 24V	AC 90～250V
Signal line Current (Per LED Module)	Red/Amber: 52.5mA Green: 20.0mA			Red: 22.6mA, Amber: 26.6mA, Green: 17.5mA Blue/White: 38.9mA	
Explosion Protection Ratings	Class Ⅰ, Zone 1 AEx d ⅡC T6				
OperatingTemperature	-25℃～+50℃ (No ice)				
Operating Humidity	45%～85%RH (Keep from dew or condensation)				
Ambient Pressure	80～110kpa				
Lighting Pattern	Flashing (60±12 flashes per minute) / Continuous Lighting				
Protection Rating	IP66				
Vibration Resistance	9.8m/s²				
Mounting	Outdoor & Indoor Upright			Outdoor & Indoor Upright & Sideways	
Luminosity	Red: 350mcd, Amber: 580mcd Green: 1300mcd			Red/Green/White: 1000mcd Amber: 700mcd, Blue: 300mcd	
Mass (Main Body)	4.3kg			4.7kg	
Material	Upper & Lower case : Aluminum Alloy (Housing Finish: Melamine-baked Finish) Glass case : Borosilicate Glass Fitting Bracket : Stainless Steel (SUS 316)				

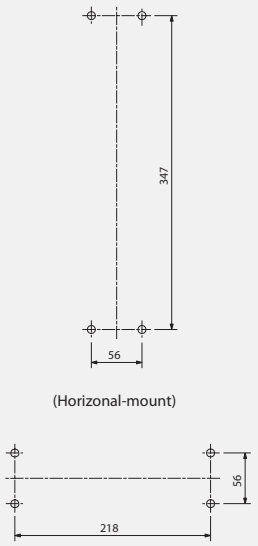
Testing Authority PTB, NEC Article 505 Testing Authority

Dimensions (EDLM, EDWM)



(Unit: mm)

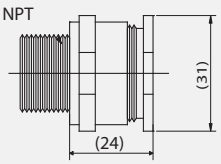
■ Installation (Wall-mount)



(Horizonal-mount)

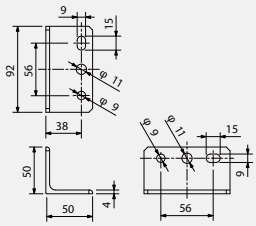
■ Cable Gland*

3/4 NPT



*ATEX Model ... Included
*NEC Model ..... Not Included

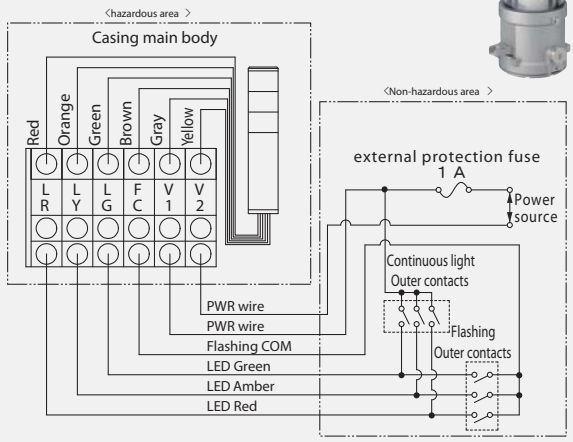
■ Flush-mount Bracket



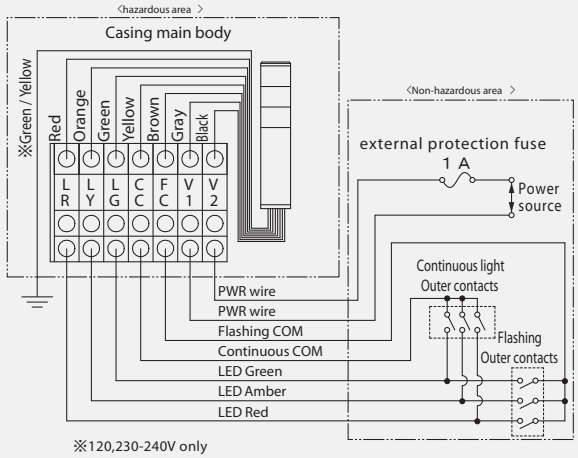
(Unit: mm)

Wiring Diagram
EDLM (3 color LED)

■ EDLM-302FE/ EDLM-302FA



■ EDLM-312FE/ EDLM-312FA
EDLM-323FE/ EDLM-323FA

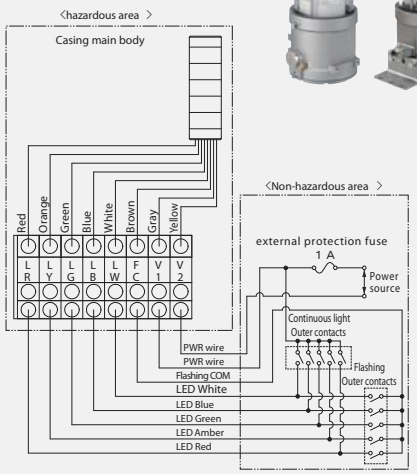


※120,230-240V only

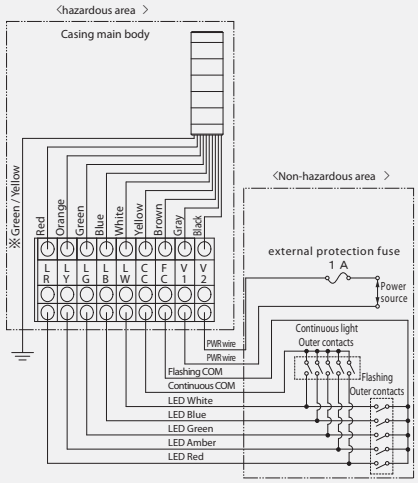
<external protection fuse> All model : 250V 1A

Wiring Diagram
EDWM (5 color LED)

■ EDWM-502FE/ EDWM-502FA



■ EDWM-5M2FE/ EDWM-5M2FA



<external protection fuse> All model : 250V 1A

HVS
2 rue René Laennec 51500 Taissy France
Fax: 03 26 85 19 08, Tel : 03 26 82 49 29
E-mail:hvssystem@hvssystem.com
Site web : www.hvssystem.com

AR-070 SERIES EXPLOSION-SAFE

CE Ex I 3GD Ex nA IIC T4 Gc, Ex tc IIIC T85°C Dc IP65 94/9/EX(ATEX)CENELEC:EN 60079-0, EN 60079-15, EN 60079-31

Explosion-safe Signal Light Ø40mm

RoHS CE

Description

Explosion-safe Signal Light featuring an LED light that is versatile and energy-efficient. The vertical and horizontal cut lenses in combination with a double-reflection system enhances the LED light diffusion to create a unique, full and brilliant light. The lenses and main body are made of strong synthetic materials with characteristics to withstand harsh environments. The Signal Light can be ordered in any combination from 1 to 5 LED units with any color combination. In addition to its "continuous lighting" condition, the Signal Light can also be ordered with flashing / non-flashing functions, as well as with two super-loud alarm sounds with an 85dB (at 1m) output.

Features

- Explosion-safe for gas and dust
- Suitable for Zone 2 and Zone 22
- CE compliance in accordance to ATEX
- Full and brilliant lumination
- LED double reflection lighting system
- Different lens colors available
- 1 to 5 stack are available
- 1/2" NPT adapter for pole mount is available as an option
- Available with "flashing/non flashing" and two audible buzzer alarm sounds
- Ingress protection of IP65
- Wall mount or direct mount

Side mount bracket

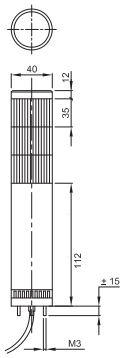
1/2 inch NPT

※1/2 inch NPT adapter is also available

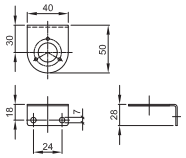
Ex

Dimensions

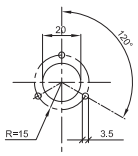
SIGNAL LIGHT



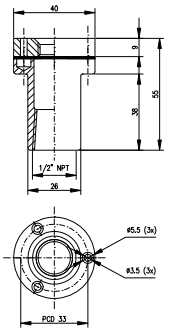
SIDE MOUNT BRACKET



TEMPLATE



1/2" NPT ADAPTER TYPE



Units: mm

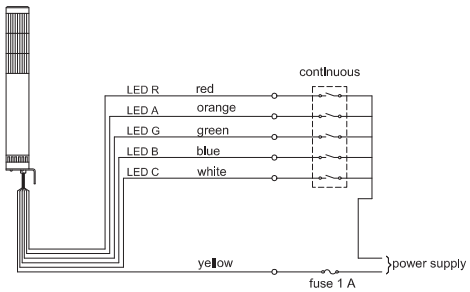
Specifications

Explosion-safety:	CE Ex II 3 GD; Ex nA IIC T4 Gc: Ex tc IIIC T85 ℃ Dc IP65
CE conformities:	EN 60079-0, EN 60079-15, EN 60079-31
Certification:	EC-Declaration of conformity
Ambient Temperature:	-30 °C to +60 °C
Ingress Protection:	IP65 to EN 60529
Material:	ABS towerbody
Lighting Source:	Multiple LEDs with double reflection system
Acoustical Source:	Buzzer 85 dB (1m) with two different tones
Rated Voltage:	24V AC/DC
Assembly position:	As desired
Activation Time:	100%
Module Colors Available:	Red, Amber, Green, Blue, Clear/white
Cable:	Factory sealed cable, Ø 8 mm, length 3 meter

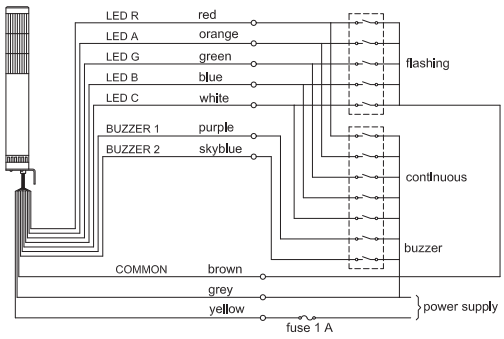
CURRENT RATINGS				
LED		BUZZER		
Signal Line Current		Signal Line Current	Inrush Current	
Red, Amber	Green, Blue, Clear			
approx. 30 mA	approx. 25 mA	approx. 40 mA	approx. 250 mA	

CONNECTION DIAGRAMS

continuous light AC/DC 24V



continuous and flashing light with alarm AC/DC 24V



EXPLOSION-SAFE SIGNAL LIGHT									
How to order	Code	Voltage	Code	No. of Stacks	Code	Bracket	Colors*	Code
Continuous lighting (only)	1	24V AC/DC	1	1-5	1 2 3 4 5	□:L Type N:NPT Type	Red Amber Green Blue Clear/White	R Y G B C
Continuous/Flashing lighting and two Audible alarms	2							

Model Code AR-070- [0] [ ] [1] / [ ] [ ] - [RYGBC]

*Colors are arranged from top to bottom

※ 90~250V AC Version is available by special order.

AR-078 SERIES EXPLOSION-SAFE

CE Ex II 3GD Ex nA IIC T4 Gc, Ex tc IIIC T85°C Dc IP65 94/9/EX(ATEX)CENELEC:EN 60079-0, EN 60079-15, EN 60079-31

Explosion-safe Signal Light Ø60mm

RoHS CE

Description

Explosion-safe Signal Light featuring an LED light that is versatile and energy-efficient. The vertical and horizontal cut lenses in combination with a double-reflection system enhances the LED light diffusion to create a unique, full and brilliant light. The lenses and main body are made of strong synthetic materials with characteristics to withstand harsh environments. The Signal Light can be ordered in any combination from 1 to 5 LED units with any color combination. In addition to its "continuous lighting" condition, the Signal Light can also be ordered with flashing / non-flashing functions, as well as with two super-loud alarm sounds with an 90dB (at 1m) output.

Side mount bracket

3/4 inch NPT

※3/4 inch NPT adapter is also available

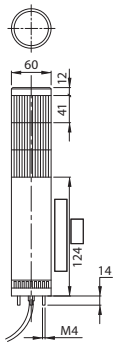
Ex

Features

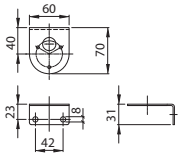
- Explosion-safe for gas and dust
- Suitable for Zone 2 and Zone 22
- CE compliance in accordance to ATEX
- Full and brilliant lumination
- LED double reflection lighting system
- Different lens colors available
- 1 to 5 stack are available
- 3/4" NPT adapter for pole mount is available as an option
- Available with "flashing/non flashing" and two audible buzzer alarm sounds
- Ingress protection of IP65
- Wall mount or direct mount

Dimensions

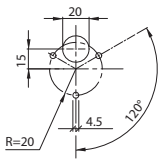
SIGNAL LIGHT



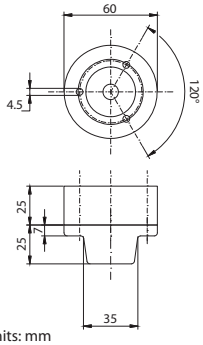
SIDE MOUNT BRACKET



TEMPLATE



3/4" NPT ADAPTER TYPE



Units: mm

Specifications

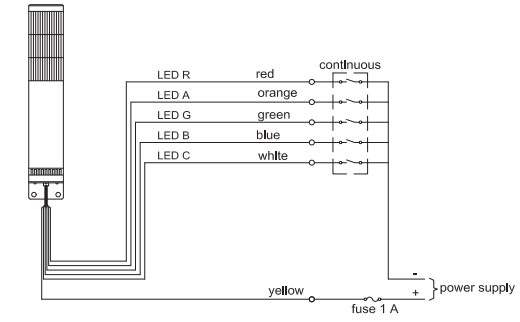
Explosion-safety:	CE Ex II 3 GD; Ex nA II T4; Ex tD A22 IP65 T85°C
CE conformities:	EN 60079-0, EN 60079-15, EN 61241-0, EN 61241-1
Certification:	EC-Declaration of conformity
Ambient Temperature:	-30 °C to +60 °C
Ingress Protection:	IP65 to EN 60529
Material:	ABS towerbody, polyester glassfibre reinforced base
Lighting Source:	Multiple LEDs with double reflection system
Acoustical Source:	Buzzer 90 dB (1m) with two different tones
Rated Voltage:	24V AC/DC
Assembly position:	As desired
Activation Time:	100%
Module Colors Available:	Red, Amber, Green, Blue, Clear/white
Cable:	Factory sealed cable, Ø 8 mm, length 3 meter

CURRENT RATINGS

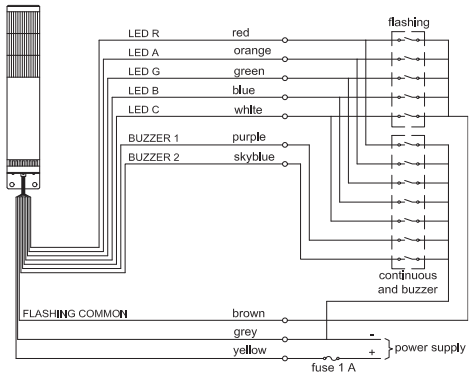
LED		BUZZER	
Signal Line Current		Signal Line Current	Inrush Current
Red, Amber	Green, Blue, Clear		
approx. 30 mA	approx. 25 mA	approx. 40 mA	approx. 250 mA

CONNECTION DIAGRAMS

continuous light AC/DC 24V



continuous and flashing light with alarm AC/DC 24V



EXPLOSION-SAFE SIGNAL LIGHT

How to order	Code	Voltage	Code	No. of Stacks	Code	Bracket	Colors*	Code
Continuous lighting (only)	1	24V AC/DC	1	1-5	1 2 3 4 5	□:L Type N:NPT Type	Red Amber Green Blue Clear/White	R Y G B C
Continuous/Flashing lighting and two Audible alarms	2							

Model Code AR-078- 0 □ 1 / □ □ - RYGBC

*Colors are arranged from top to bottom

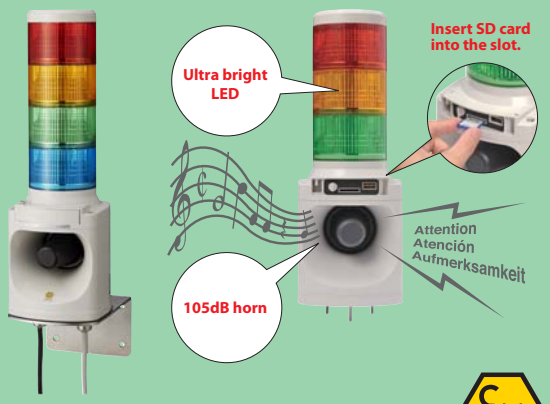
※ 220V AC Version is available by special order.

LKEH-FE-EX, LKEH-FV-EX EXPLOSION-SAFE

CE Ex II 3GD Ex nA IIC T4 Gc, Ex tc IIIB T85°C Dc IP54 94/9/EX(ATEX)CENELEC:EN 60079-0, EN 60079-15, EN 60079-31

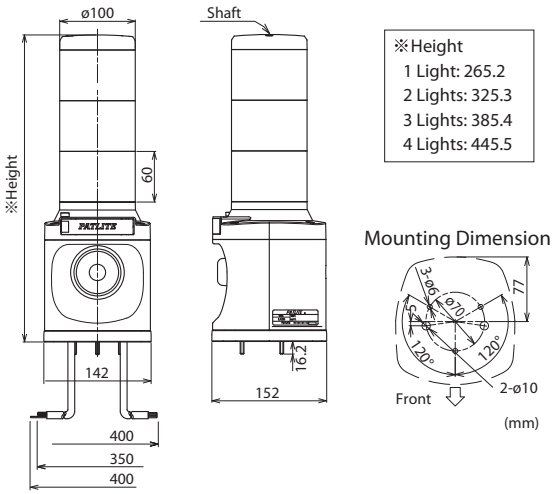
105dB(A)
MP3 Field Programmable Announciator, Melody Horn

- Explosion-safe for gas and dust
- Suitable for Zone 2 and Zone 22
- CE compliance in accordance to ATEX
- Super bright LED colors correspond to different voice, sounds, chimes and melodies.
- Voice alert messages of up to 63 seconds (64kbit/s) with 5 channels can be played back.
- 32 combinations of sounds, chimes and melodies are pre-recorded.
- 8 sounds can be played back by a bit input, and 32 sounds by binary input.
- Volume is adjustable from 0 to 105dB at 1 meter.
- Field programmable with MP3 by SD card for the model LKEH-FV-EX.
- Well visible with the super bright 100mm diameter LED from far distance.
- Robust design to withstand against 2G vibration.
- The body is made of Acrylonitrite-Ethylene-Styrene for weather resistant.
- Easy to control by only one common wire for both LED units and audible signals.
- NPN is standard. PNP open collector type is also available on order.



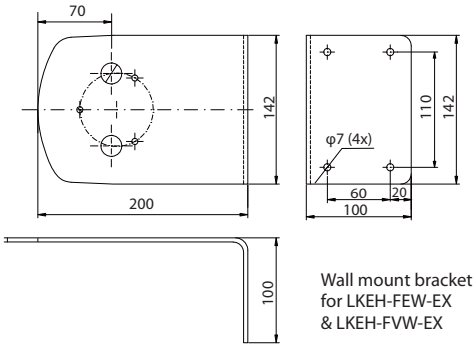
LKEH-FV-EX, LKEH-FE-EX

Dimensions



※Height
1 Light: 265.2
2 Lights: 325.3
3 Lights: 385.4
4 Lights: 445.5

Mounting Dimension



Wall mount bracket
for LKEH-FEW-EX
& LKEH-FVW-EX

Sound Selection Charts

- 32 sounds are pre-recorded in one unit. 4 sound types are available.
- 8 sounds can be played back by a bit input, and 32 sounds by binary input.

Beep	Stutter + Bell	Inverted Revelle	Annie Laurie
Stutter	Synthesized Melody	Galactic Motor	London Bridge
Bell	Chime	Ringing Phone	Mary`s Lamb
Yelp	Call Sign	Two Tone	Camptown Races
Rapid Hi Lo	Train Ride	Alarm Clock	Amaryllis
Melody Chime	Galloping Hi Lo	Ringing Hi Lo	Symphony #40
Synthesized Piano	Alien Chatter	Fur Elise	Ave Maria
Synthesized Bell	Falling Crystals	Minuet	Grandfather's Clock

Model	MP3	Power
LKEH-FEF-EX/LKEH-FEW-EX	———	14.2W
LKEH-FVF-EX/LKEH-FVW-EX	Supports	14.2W

・SD card for the model LKEH-FVF-EX and LKEH-FVW-EX sold separately.

Model Code

LKEH-302FVF-RYG-EX

- Model
- Stack: 1~4
- FV:Voice Synthesizer, FE: 32 sounds
- F: Flush mount, W: Wall mount
- Color: R: Red, Y: Amber, G: Green, B: Blue, C: Clear/White, Top to Bottom

Specifications

Model	Rated Voltage	Voltage Range	MP3, Melody	Operating Temperature	Recordable Duration	Sound Pressure (at 1m)	Mounting Brackets	Messages	Mass
LKEH-FEF-EX	24VDC	24VDC +/-10%	Type-E	-10C to +50C, Humidity 85% or less	Prerecorded	105dB	Flush mount	8ch bit input, 32ch binary input	2.8Kg
LKEH-FEW-EX			Type-E		Prerecorded		Wall mount	8ch bit input, 32ch binary input	3.2Kg
LKEH-FVF-EX			MPEG1-Audio layer III, 64kbit/s		63 sec.		Flush mount	5ch bit input, 31ch binary input	2.8Kg
LKEH-FVW-EX			MPEG1-Audio layer III, 64kbit/s		63 sec.		Wall mount	5ch bit input, 31ch binary input	3.2Kg

The mass indicated is based on a 3 tiered LED Model LKEH. The mass will change in conjunction with the number of tiers.

EWH-24E-J-EX EXPLOSION-SAFE

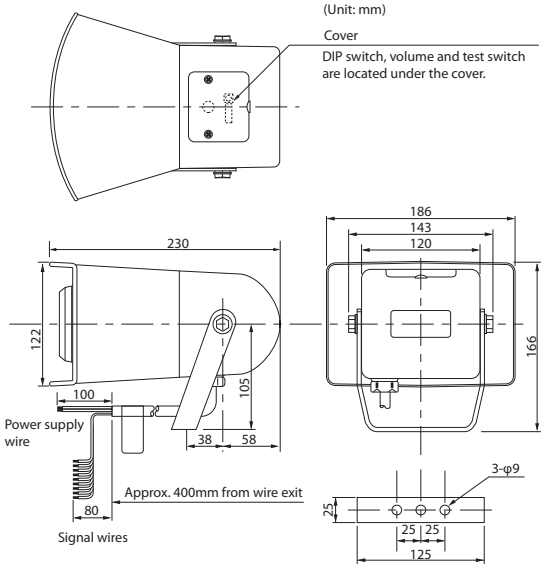
CE Ex 3GD Ex nA IIC T4 Gc, Ex tc IIIC T85°C Dc IP65 94/9/EX(ATEX)CENELEC:EN 60079-0, EN 60079-15, EN 60079-31

105dB (at 1m) Melodies & Chimes Horn

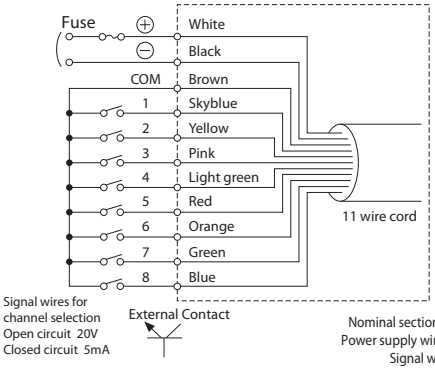
- Explosion-safe for gas and dust
- Suitable for Zone 2 and Zone 22
- CE compliance in accordance to ATEX
- 32 combinations of melodies, chimes and sounds are pre-recorded.
- Adjustable audible sound volume up to 105dB at 1 meter
- Indoor Installation: upright, inverted, and sideways.
  Outdoor: upright installation only.
- Provided with the anti-corrosive stainless steel mounting bracket.
- NPN is standard for the EWH type. PNP open collector is available on order.
- IP65

EWH-24E-J-EX

Dimensions



Wiring Diagram



Nominal sectional area : Cord type
Power supply wire : 0.75mm² : VCTF
Signal wire : 0.3mm² : VCTF

Fuse Capacity

Model	Rated Voltage	Fuse
EWH-24E-J-EX	12-24V	1A (Slow-blow)

Test Switch
The test switch can be used to check the operation or adjust sound volume (Located under the cover).

Channel priority
8 (Blue) > 7 (Green) > 6 (Orange) > 5 (Red) > 4 (Lightgreen) > 3 (Pink) > 2 (Yellow) > 1 (Skyblue)
The greater number has priority when any of the channels are activated simultaneously.

Sound Selection Charts

- Pre-recorded on model EWH-24E-J-EX

Beep	Stutter + Bell	Inverted Revelle	Annie Laurie
Stutter	Synthesized Melody	Galactic Motor	London Bridge
Bell	Chime	Ringing Phone	Mary`s Lamb
Yelp	Call Sign	Two Tone	Camptown Races
Rapid Hi Lo	Train Ride	Alarm Clock	Amaryllis
Melody Chime	Galloping Hi Lo	Ringing Hi Lo	Symphony #40
Synthesized Piano	Alien Chatter	Fur Elise	Ave Maria
Synthesized Bell	Falling Crystals	Minuet	Grandfather's Clock

Specifications

Model	Rated Voltage	Voltage Range	Power Consumption	Volume	Outer Contact Capacity	Operating Temperature Range	Auxiliary Input	Channel	Protection Rating	Mass
EWH-24E -J-EX	12/24V AC/DC	8~28V AC 9~35V DC	8W	Max. 105dB at 1m	No more than 5A	-20°C~+60°C Humidity 85% or less.	EWH: Non-voltage Contact	8ch/1bit or 32ch/binary	IP65	1.2kg

HVS PRECONISATEUR DE SOLUTIONS DEPUIS 1985
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Site web : www.hvssystem.com

Zone 2, Zone 22

CLN-24-CD-PT-EX EXPLOSION-SAFE

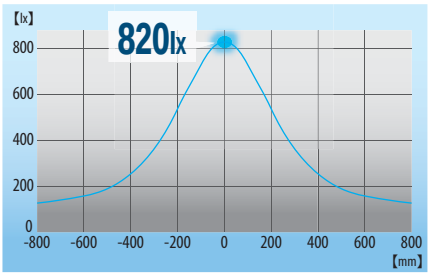
CE Ex 3GD Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc IP65 94/9/EX(ATEX)CENELEC:EN 60079-0, EN 60079-15, EN 60079-31

Water/Oil Resistant LED Work Light

- 820 lx brightness, equivalent to a 40 watt incandescent bulb
- 60,000 hrs., or about 7 years of long service life (*1)
- IP66G, IP67G, IP69K protection (*2)
- 24VDC (Polarized)
- IEC62471 Compliance (Photobiological Safety Standard)
- Daylight Color Temperature (6,500K) suitable for very detailed work
- Comes with a flexible stainless-steel angle bracket for versatile installation (*3)
- Wide operating ambient temperature range (-40°C to +60°C)
- Low current draw of 174mA
- Very compact, light-weight and durable design
- (Thickness) 22.2mm X (Width) 85mm X (Height) 128mm

CLN-24-CD-PT-EX

Light Distribution Characteristics



High power LED with 820 lx provides sufficient illumination with only a 174mA current draw.

Stainless steel flexible angle bracket allows a versatile installation, instantly enabling direct illumination to the work area.

Floor Mount

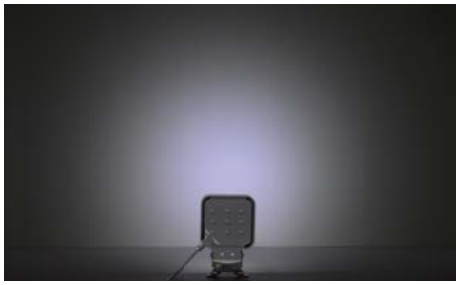
Wall Mount

Ceiling Mount

※ The pan/tilt brackets can also be removed for Rear Attachment applications.

Color temperature of 6,500K is suitable for detailed and fine work, while providing photobiological safety.

Natural light distribution when illuminating a wider work area with an equivalent to a 40W incandescent bulb with 550 lumens.

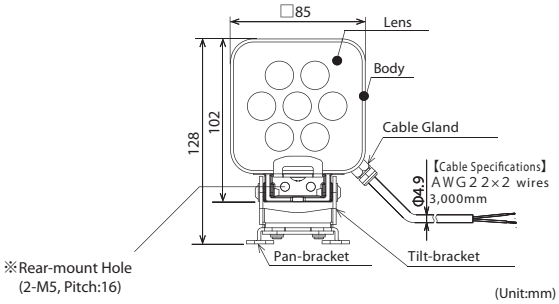


Specifications

Model	CLN-24-CD-PT-EX
Color Code (Color)	CD (Daylight)
Color Temperature (typ.)	6500K
Illumination (typ.) (Centered at 24VDC) 1m	820 lx
Total Luminous Flux (typ.)	550 lm
Rated Voltage	24VDC (Polarized)
Operating Voltage Range	24V DC ±10%
Rated Consumption Current/Power Dissipation	174mA ±10% / 4.2W
Operating Ambient Temperature	-40 °C to +60 °C (90% RH, No Condensation)
Main Unit Material	Body: Aluminum Alloy, Lens: Tempered Glass
Protection Rating	IP66G/67G (JIS C 0920)/69K (DIN 40050 part 9) (excluding cable ends)
Mounting Location/Direction	Indoor / Any Direction
Insulation Resistance	DC 500V 5MΩ or more
Withstand Voltage	500V AC for 1 minute (Between terminals and chassis)
Vibration Resistance	30Hz total amplitude 0.3m m^{P-P} Back and forth, up and down, right and left for 2 hours each Total amplitude 0.3m m^{P-P} (10-57Hz), Acceleration 19.6m/ s^2
Mass (Tolerance ±10%)	430g

*1 : The typical value of LED brightness is 70% of the original specification, but may vary depending on actual applications.
*2 : IP66G and IP67G are Japanese Industrial Standards (JIS C0920-2003), and IP69K is the German DIN 40050 PART9 Standard.
*3 : CLN-24-CD-PT-EX Work Light can only be installed where risk of mechanical danger is limited to 2 Joules of impact energy

Dimensions



Attachment Pitch (2-M6, Pitch:26)

CLK-□□-24□□-□-EX EXPLOSION-SAFE

CE Ex 3GD Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc IP65 94/9/EX(ATEX)CENELEC:EN 60079-0, EN 60079-15, EN 60079-31

Water/Oil Resistant LED Work Light

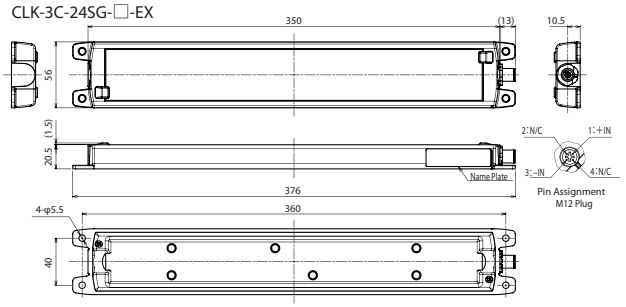
- Explosion-safe for gas and dust
- Suitable for Zone 2 and Zone 22
- CE compliance in accordance to ATEX
- 250mm long (2S), 350mm long (3S/3C), 650mm long (6S)
- 1200 lx (3S/3C), 2100 lx (6S)
- 24VDC, 522mA (3S/3C)
- ED color: CD 6,500K, CN 5,000K
- IP66G, IP67G, IP69K rated
- -40℃ ~ +60℃
- Tempered glass lens
- Aluminum housing
- Stainless steel housing is available for 350mm long model

CLK3S-24AG-CD-EX

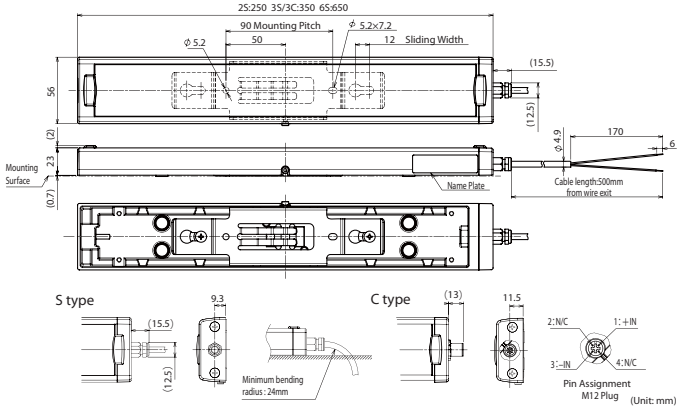
CLK6C-24AG-CD-EX

Dimensions

CLK-3C-24SG-□-EX



CLK-□□-24AG-□-EX



Specifications

Model	CLK-□□-24□□-□-EX
LED Color	Day light(CD) / Natural White(CN)
Rated Voltage	24V DC
Operating Voltage Range	Rated Voltage ± 10%
Current Consumption	522mA ± 40mA (3S/3C type)
Light Source	High intensity LED × 18 elements (3S/3C type)
Luminous Intensity at Optical Center (lx at 1m)	1200 (3S/3C type)
Main Body	Housing: Aluminum, Cover: Tempered glass
Operating Temperature Range	-40℃~+60℃ (No condensation 90%RH or less)
Mounting Direction	Any Direction (for indoor use only)
Protection Rating	IP66G/IP67G (IEC 60529)/IP69K (DIN 40050 part 9)
Vibration Resistance	19.6m/s²
Mass	1490g (3C type)

The LED Worklight may only be installed in places where risk of mechanical danger is limited to an impact energy of 2 Joules (1 Kg mass dropped at 20cm height).

Model Code

CLK-□□-24□□-□-EX

- Model
- Illumination Area Size
  2: 200mm 3: 300mm 6: 600mm
- Wiring Specifications
  S: Side-exiting Cable C: M12 Cable
- Color
  CD: Daylight
  CN: Natural White
- AG: Aluminum & glass
  SG: Stainless steel & glass

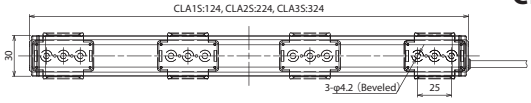
CLA SERIES EXPLOSION-SAFE

CE Ex 3GD Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc IP65 94/9/EX(ATEX)CENELEC:EN 60079-0, EN 60079-15, EN 60079-31

- Explosion-safe for gas and dust
- Suitable for Zone 2 and Zone 22
- CE compliance in accordance to ATEX
- 100mm(140 lx), 200mm(270 lx), 300mm(400 lx), 600mm(650 lx) 900mm(810lx), 1200mm(890lx), 1500mm(945lx)
- 24VDC (polarized)
- Cable Lengs: 3m
- IP66, IP67 and IP69K rated
- -40℃ ~ +60℃
- Polycarbonate Mounting brackets available

CLA3S-24-CD-30-EX

Dimensions



(Unit: mm)

CLA□S-24-□□-30-EX

- LED color
  - CD Daylight 6800K
  - CN Natural white 4800K
- Length
  - 1 100mm
  - 2 200mm
  - 3 300mm
  - 6 600mm
  - 9 900mm
  - 12 1,200mm
  - 15 1,500mm

Options

Rear Attachment (Magnetic Mount) Model SZ-310ARM

Side Attachment (Screw Mount) Model SZ-310AS

Side Attachment Model SZ-310ASB

*Stainless steel brackets are also available.

Specifications

Models	Luminous Color	Length	Rated Voltage	Operating Voltage Range	Rated Current Consumption	Center Radiation (lx/50cm)	Main Body Material	Operating Temperature Range	Mounting Direction	Protection Rating	Vibration Resistance	Mass
CLA1S-24-CD-EX	Daylight	100mm	DC 24V (Polarized)	DC24V±10%	104mA	140	Body: Polycarbonate	−40℃ to +60℃ (RH 90% or less No Condensation)	Any Direction (Indoor Use)	IP66/67/69K	19.6m/s²	80 g
CLA1S-24-CN-EX	Natural White											
CLA2S-24-CD-EX	Daylight	200mm			208mA	270						130 g
CLA2S-24-CN-EX	Natural White											
CLA3S-24-CD-EX	Daylight	300mm			240mA	400						180 g
CLA3S-24-CN-EX	Natural White											
CLA6S-24-CD-EX	Daylight	600mm			480mA	650						340 g
CLA6S-24-CN-EX	Natural White											
CLA9S-24-CD-EX	Daylight	900mm			720mA	810						500 g
CLA9S-24-CN-EX	Natural White											
CLA12S-24-CD-EX	Daylight	1,200mm			960mA	890						660 g
CLA12S-24-CN-EX	Natural White											
CLA15S-24-CD-EX	Daylight	1,500mm			1,200mA	945						820 g
CLA15S-24-CN-EX	Natural White											

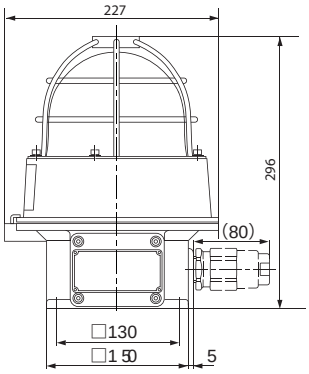
RES-A Heavy Duty Revolving Warning Light for Harsh Environment

Robust Heavy Duty Revolving Warning Light

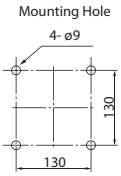
- φ224mm diameter.
- Integral Rotating Parabolic Reflector: For enhanced visibility from a distance.
- Installation: Indoors—upright, inverted, sideways; Outdoors—upright only.
- Main Body: Aluminum alloy die-cast with silver color baked finish.
- Dome: Acrylic resin covered with clear hard-glass, and metal guard.
- Available Colors: Red, Amber, Green and Blue.
- IP66
- The metal cable gland is an optional part. Needs to order separately.

The metal cable gland is only available as an option. Please order it separately.

■ Dimensions



Mounting Dimension



(mm)

■ RES-A Type

Model	Rated Voltage	Current	Rotations per Minute	Bulb	No.	Mass
◎RES-12A	12V DC	0.9A	170	12V10W	9	6.5kg
◎RES-24A	24V DC	0.5A		24V10W	10	
◎RES-48A	48V DC	0.3A	150	48V10W	11	
RES-100A	100~110V AC	0.1A	170	12V5W	12	
◎RES-120A	115~120V AC					
RES-220A	200~220V AC	0.05A				
◎RES-240A	230~240V AC					

Bulb···G18 BA15S

◎: Special Order

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RLR Robust Heavy Duty 11.2G LED Super Bright Beacons for Harsh Environment

- 162mm diameter
- 11.2G Anti-Vibration
- IP66 Protection
- Robust Heavy-duty Design
- Dual LED with Twin Reflector
- Maintenance-free with Brushless Motor
- Strong Polycarbonate Housing
- CE Compliant (12/24VDC)

LED + Brushless Motor + Bearing Mechanism

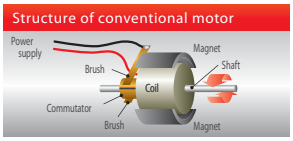
Long Life

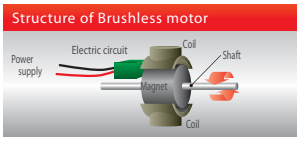
The RLR has many advantages compared to a rotating beacon with incandescent bulb and standard motor. The LEDs last approximately 20 times to 40 times longer than an incandescent bulb. The combination of the brushless motor and bearing mechanism allows the RLR to operate from 8,000 hrs to 10,000 hrs, compared to 5,000 hrs for other rotating beacons.

Vibration Resistance

High Visibility

High Protection





Model Code

RLR-04-P-R

Rated Voltage
04 : 48V DC
M1 : 12/24V DC
M2 : 90V AC~250V AC

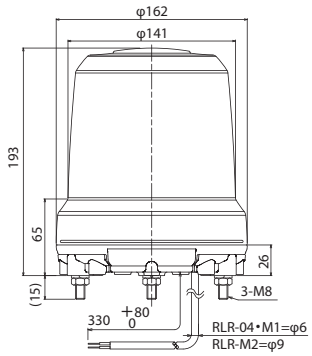
Color
R : Red G : Green
Y : Amber B : Blue

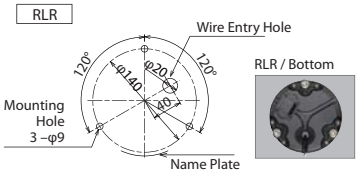
Mounting Dimensions
Blank : f140
P : f120

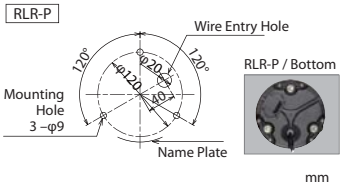
Specification

Model	Rated Voltage	Operating Voltage Range	Vibration Resistance	Operating Temperature Range	Dome	Mass
RLR-M1	12/24V DC	9.5~15V DC	110m/s²(11G)	-30°C~+70°C	-R (Red) -Y (Amber) -G (Green) -B (Blue)	1.0kg
RLR-04	48V DC	20~30V DC				
RLR-M2	90~250V AC	90~250V AC	45m/s²(4.5G)	-10°C~+50°C		1.06kg

Dimensions







mm

2G (19.6m/s2)

Passenger Car

4.5G (44.1m/s2)

Construction Machinery

7G (68.6m/s2)

Emergency Vehicle

11G (107.8m/s2)

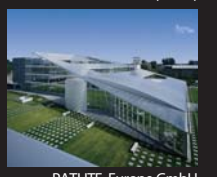
Dump Truck

PATLITE®


Sanda Plant


Headquarters


PATLITE (U.S.A.)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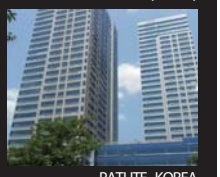
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⚠ CAUTION To ensure correct use of these products, read the Instruction Manual prior to use. Failure to follow all safeguards can result in fire, electric shock, or other accidents. Specifications are subject to change without notice.

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