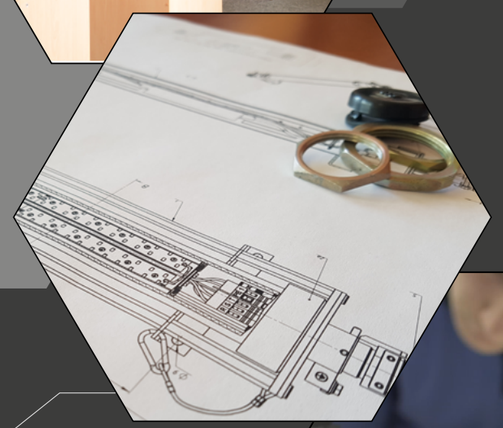
Explosion Proof Lighting

for

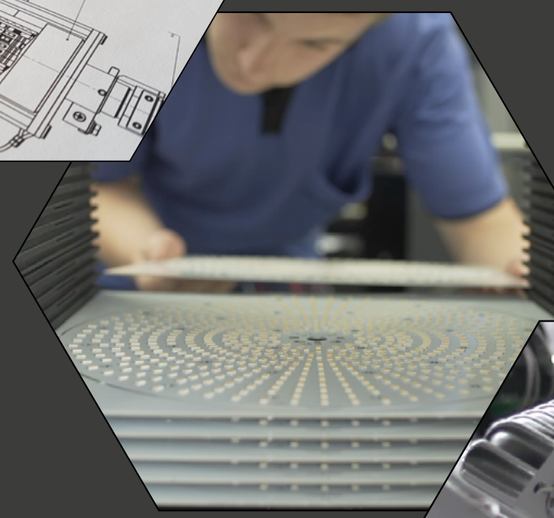
harsh & hazardous areas

Elektrometal SA®

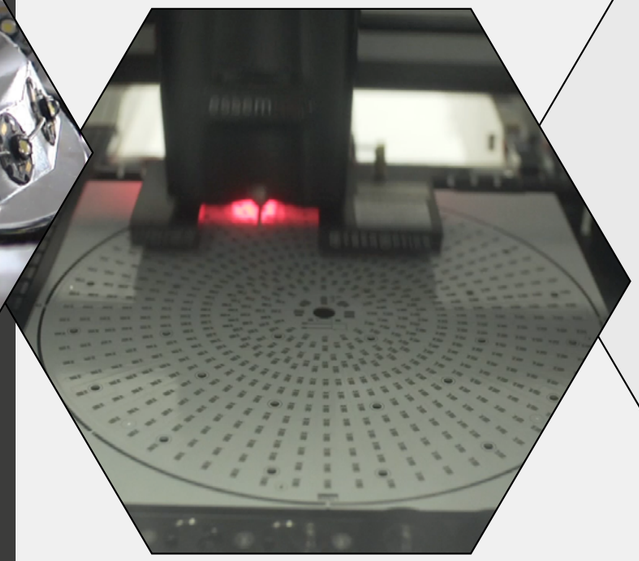
project analisis
& consultancy



design
& engineering



production



quality
control

after sale
support

Dear Customer,

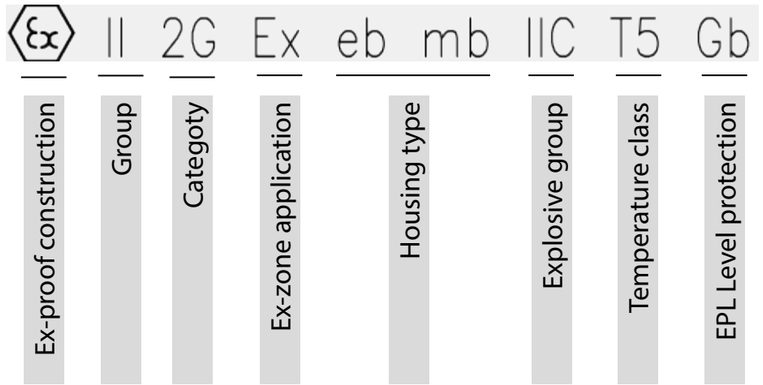
We present you OUR NEW CATALOG with the latest innovations of products designed for modern, efficient and first of all safe luminaires for explosion endangered areas.

The experience and knowledge gained through 70 years of our company's activities, production potential and a well-prepared personal enable us to offer you the products of the highest quality.

The Management Board

- GUIDE

Sample of ATEX certificate marking



Groups of explosion risk

I	II
mining	other than mining

Category

		ATEX		IEC & CENELEC	
Group	**Hazard**	**Category**	**Ex Zone**	**EPL**	**Potentially explosive atmosphere**
II	„GAS" inflammable gases vapors or mists	1G	0	Ga	constantly, for long periods or frequently
		2G	1	Gb	may occasionally occur
		3G	2	Gc	is not expected or it will occur rarely and for short period of time
	„DUST" dust and combustible fibres	1D	20	Da	constantly, for long periods or frequently
		2D	21	Db	may occasionally occur
		3D	22	Dc	is not expected or it will occur rarely and for short period of time

Temperature class

T1 class is the lowest temperature class while the T6 is the highest one.
The devices of higher temperature class, can replace the ones classified with the lower classes.

Temperature class	T1	T2	T3	T4	T5	T6
Maximum surface temperature	450ºC	300ºC	200ºC	135ºC	100ºC	85ºC

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Housing type

Types of Ex-protection for GAS

Housing type	Description	Ex Zone
op is	safe optical radiation	0, 1, 2
op pr		1, 2
op sh		2
da	flameproof housing „d"	0, 1, 2
db		1, 2
dc		2
eb	reinforced housing „e"	1, 2
ec		2
ia	intrinsically safe construction	0, 1, 2
ib		1, 2
ic		2
ma	encapsulation	0, 1, 2
mb		1, 2
mc		2
nA	non-sparking construction „n"	2
nC		2
nR		2
ob	oil inmersion	1, 2
oc		2

Types of Ex-protection for DUST

Housing type	Description	Ex Zone
op is	safe optical radiation	20, 21, 22
op pr		21, 22
op sh		22
ia	intrinsic safety	20, 21, 22
ib		21, 22
ic		22
ma	encapsulation „m"	20, 21, 22
mb		21, 22
mc		22
ta	protection by housing of „t type"	20, 21, 22
tb		21, 22
tc		22
px, pxb	protection by hypertension	20, 21, 22
py, pyb		21, 22
pz, pzc		22

Explosive group

The subgroups are divided according to the maximum experimental safe gap (MESG) with refference to the flame-proof enclosures or the minimum ignition current (MIC) for the intrisincally safe devices. The subsequent subgroups include the previous ones. Ie. subgroup C, include subtances from subgroup C, B and A.

Group	Explosive group	Standard reference	Examples of the most common substances
GAS	IIA	propane	propane, acetone, benzene, butane, methane, acetic acid, methanol, diesel oil, petrol, aviation fuel, hexane, carbon monoxide, heating oil
	IIB	ethylen	ethylene, ethylene oxide, propylen oxide, city gas, hydrogen sulphide, butadiene, cyclopropane, ethyl ether
	IIC	hydrogen	hydrogen, acetylene, carbon disulphide
DUST	IIIA	volatile combustible dusts	paper, wood, cotton, fibers
	IIIB	volatile non-conductive dusts	coal
	IIIC	volatile conductive dusts	metal

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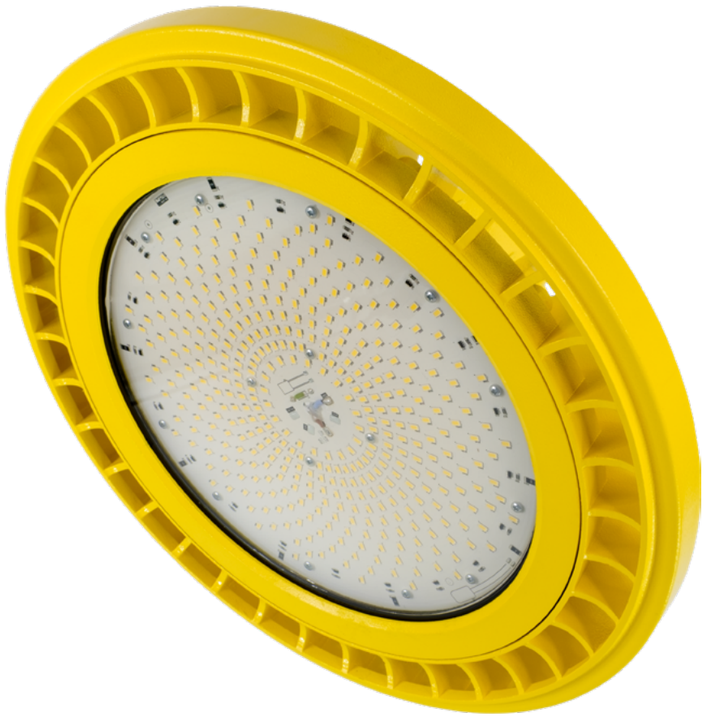
Contents:

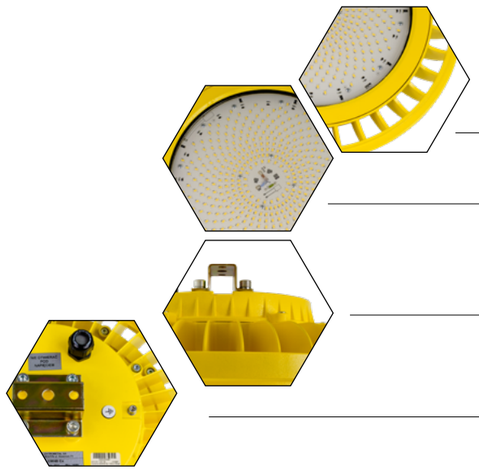
1. EMHB Ex

Zones 1 & 21

High bay type luminaire

II 2G Ex eb mb IIC T5 Gb
II 2D Ex tb IIIC T105°C Db





up to 132 lm / W

lampshade made of hardened glass
(as option lampshade made of polycarbonate (PC))

body made of casting aluminium alloy with surface protection against impact of corrosive environment

power supply unit with wide voltage range adapted for operation in industrial environment (cooperating with DALI as an option)

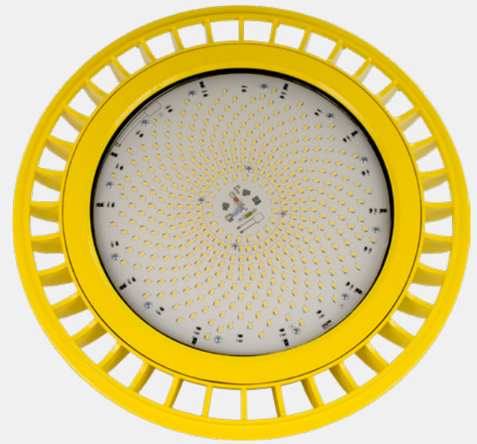
highlights

power up to 160 W

luminous flux adjustment in 10-100% range

various mounting options

dedicated lampshades



application

EMHB Ex luminaire is intended for lighting:

- industrial facilities and areas classified to the zones 1 and 21 of explosion hazard of dust, gases, vapours and vapours of flammable liquids
- auxiliary rooms with high dust concentration and a possibility of the occurrence of water splashes that is: boiler rooms, pumping wells with observation wells, washrooms, garages, sheds, warehouses in open and restricted areas
- process lines for the chemical, petroleum, gas, wood--working loose mining, construction and foodstuff material processing industry

design

The EMHB Ex luminaire consists of the following components:

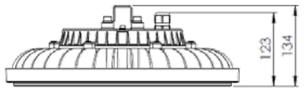
- tempered glass pane
- body - powder-coated aluminium alloy
- back cover - powder-coated aluminium alloy
- compression ring - powder-coated aluminium alloy
- cable gland 2 x M20x1.5 (2 x M25x1.5 as an option)
- terminals 3x2.5mm2, 3(4) x max. 6 mm2 as an option
- power supply unit
- clamp
- optional DALI control

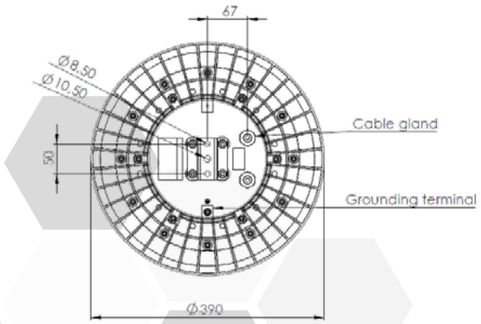
advantages

- robust and compact design
- quick, simple and easy installation
- high resistance to a corrosive industrial environment
- very high luminous efficacy
- high-quality power supply unit and LEDs
- very high tightness IP66/67
- UV-resistant

technical characteristics

Parameter	Value (unit)
Supply voltage	90-305 VAC, 127-431 VDC, 50-60(0) Hz
ATEX marking for zones 1 and 21	Ex II 2G Ex eb mb IIC T5 Gb Ex II 2D Ex tb IIIC T105°C Db
Certificate number	TEST 17 ATEX 0011X
Standards	EN 60079-0:2013, EN 60079-7:2016, EN 60079-18, EN 60079-31:2014
Power factor	PF ≥0.98 115 VAC, PF≥ 0.95 230 V AC
Current draw	1.7A 115 VAC, 0.78A 230 V AC
Protection class	I
Ingress protection	IP 66/67 IK 08
Allowable ambient temperature	-32°C to +55°C – (versions up to 100 W) -32°C to +50°C – (versions between 100 W and 160 W)
Source of light	ultra-bright LEDs
Power	60 W - 160 W
Colour temperature	4500K (optionally 5000K, 6500K)
External dimensions	Ø390x134





optional features

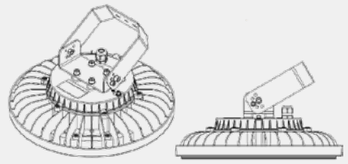
- ../M25 – cable gland M25
- ../ST – mounting on a tube, max. 44 mm
- ../DF – mounting with spacers for a tube
- ../WM – wall mount
- ../EH – eye mount
- ../S – additional protective screen - steel wire mesh
- ../R1 – external symmetrical reflector type 16-1655
- ../R2 – external symmetrical reflector type 16-1655-2
- ../AR1 - external symmetrical reflector
- ../AR2 – external symmetrical reflector
- ../R90 – colour rendering index Ra>90
- ../R70 – colour rendering index Ra>70
- ../5K – colour temperature 5000K
- ../6K – colour temperature 6500K
- ../10V – luminaire version with a luminous flux adjustment from 10% to 100%

Explosion-proof LED luminaire of an EMHB Ex type, characterised by high luminous flux and power of up to 160 W. It is a compact light source with ultra-bright LEDs installed for high intensity of lighting from high heights. LEDs are enclosed in a corrosion-resistant housing made of high-quality aluminium. LEDs do not emit UV light.

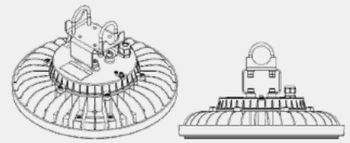
power versions

Order code	Optional code	Optional code	Weight [kg]	Power [W]	Luminous flux [lm]
EMHB Ex/60	-	../M25	7.0	60	9,530
EMHB Ex/80	-	../ST or ../DF or ../ WM or ../EH	7.0	80	12,700
EMHB Ex/100	../10 V	../S	7.0	max. 100	15,700
EMHB Ex/120	-	../R1 or ../R2 or ../AR1 or ../AR2	7.5	120	18,400
EMHB Ex/150	-	../R90 or ../R70	7.5	150	22,100
EMHB Ex/160	../10 V	../3K or ../5K or ../6K	7.5	max 160	23,300

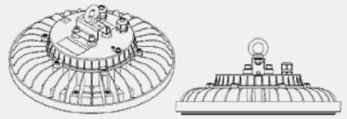
mounting versions



Wall mounting .../WM

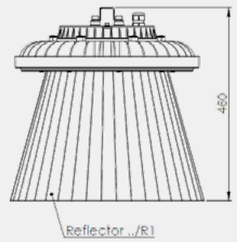


Mounting on a tube .../ST

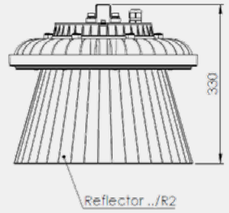


Eye mount .../EH

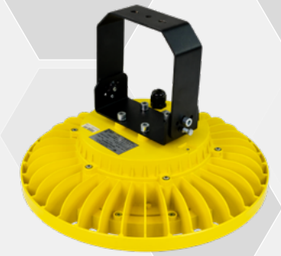
lampshades



R1 type reflector



R2 type reflector



packing box dimensions

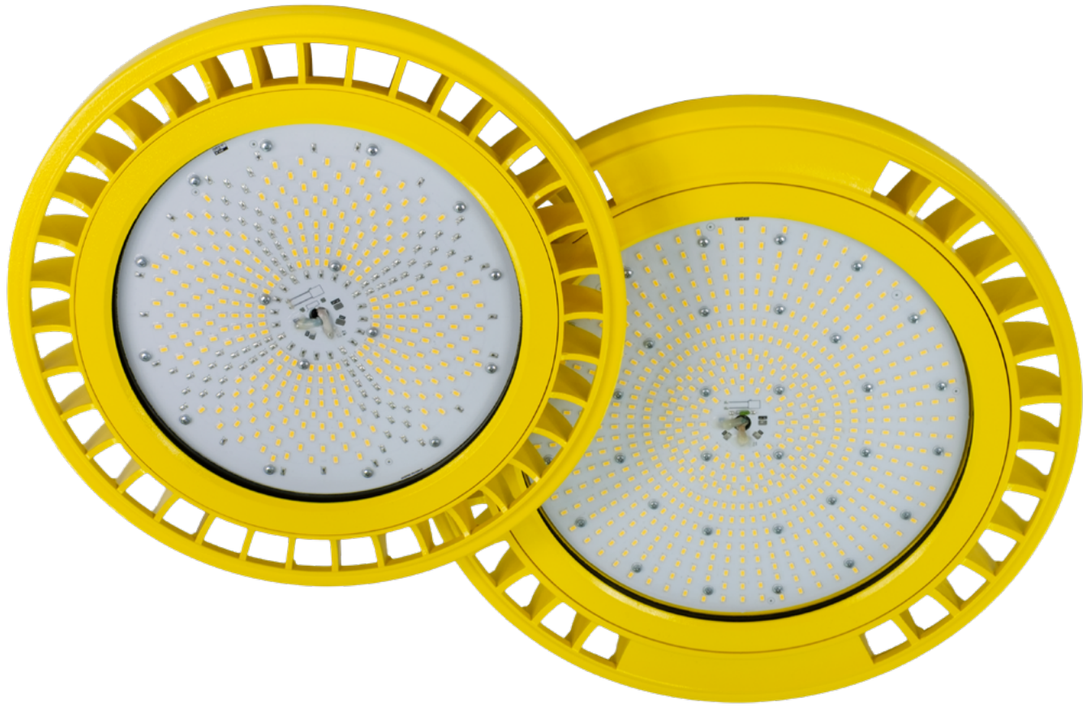
Dimensions LxWxH (cm)	Gross weight (kg)
47 x 42 x 18	7.6 - 8.1 (depending on version)

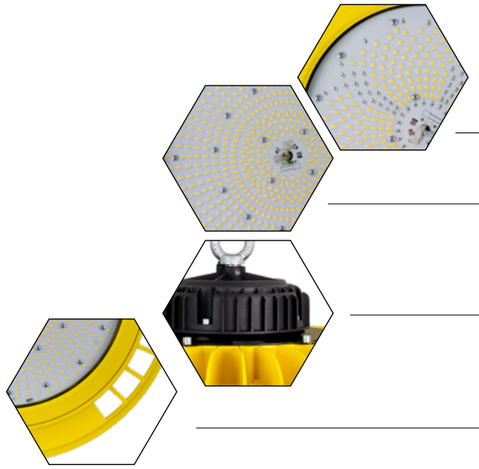
2. EMHB II Ex

Zones 2 & 21 or 2 & 22

High bay type luminaire

II 3G Ex ex op is IIC T3/T4/T5 Gc
II 2D Ex tb op is IIIC Tx°C Db
II 3G Ex ec op is IIC T3/T4/T5 Gc
II 3D Ex tc op is IIIC Tx°C Dc





versions from 9,480 to 39,000 lm

lampshade made of hardened glass

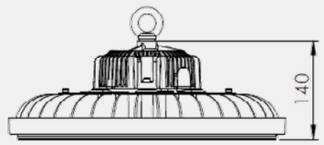
power supply unit with wide voltage range adapted for operation in industrial environment (optionally, cooperating with DALI)

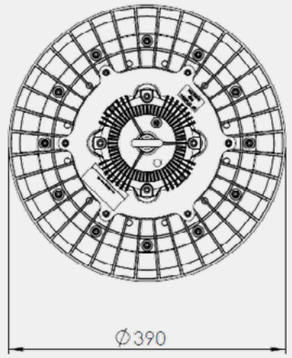
body made of casting aluminium alloy with surface protection against impact of corrosive environment

application

EMHB II Ex luminaire is intended for lighting:

- industrial facilities and areas classified to zone 2 of gas, vapour, vapour of flammable liquid explosion hazard and zone 21 and 22 of flammable dust explosion hazard
- auxiliary rooms with high dust concentration and a possibility of the occurrence of water splashes that is: boiler rooms, pumping wells with observation wells, washrooms, garages, sheds, warehouses in open and restricted areas
- process lines for the chemical, petroleum, gas, wood-working loose mining, construction and foodstuff material processing industry





versions 60W-160W

advantages

- robust and compact design
- quick, simple and easy installation
- high resistance to a corrosive industrial environment
- very high luminous efficacy
- high-quality power supply unit and LEDs
- UV-resistant

highlights

up to 158 lm from 1W

luminous flux adjustment in 10-100% range

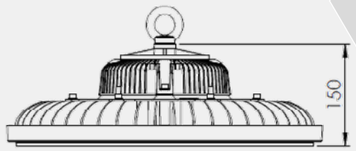
various mounting options

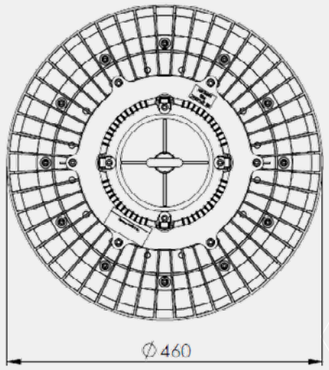
dedicated lampshades providing UGR ≤ 22

design

The EMHB II Ex luminaire consists of the following components

- body - powder-coated aluminium alloy
- compression ring - powder-coated aluminium alloy
- tempered glass pane
- LED light module
- power supply unit with a lead-out connection conductor 3x1.0mm2 (300 mm in length)
- eye clamp
- optional DALI control





versions 180W -270W

technical characteristics

Parameter	Value (unit)
Supply voltage	90-275VAC, 140-250 VDC, 50-60(0) Hz
ATEX marking for zones 2 and 21	Ex II 3G Ex ec op is IIC T3/T4/T5 Gc Ex II 2D Ex tb op is IIIC Tx°C Db
ATEX marking for zones 2 and 22	Ex II 3G Ex ec op is IIC T3/T4/T5 Gc Ex II 3D Ex tc op is IIIC Tx°C Dc
Certificate number	JSHP 18 ATEX 0020X
Standards	EN 60079-0:2013, EN 60079-7:2016, EN 60079-28:2015, EN 60079-31:2014
Power factor	PF ≥0.96 115 VAC, PF≥ 0.95 230 V AC
Protection class	I
Ingress protection	IP 66/67 IK 08
Allowable ambient temperature	-32°C to +55°C – 60-100 W versions – temp. class T4 -32°C to +50°C – 120-160 W versions – temp. class T4 -32°C to +50°C – 180-220 W versions – temp. class T4 -32°C to +45°C – 240-270 W versions – temp. class T4
Source of light	ultra-bright LEDs
Power	60 W - 270 W
Colour temperature	4000K (optionally 3000K, 5000K, 6500K)
External dimensions	Ø390x140 (versions 60W - 160 W) Ø460x150 (versions 180 W- 270 W)

optional features

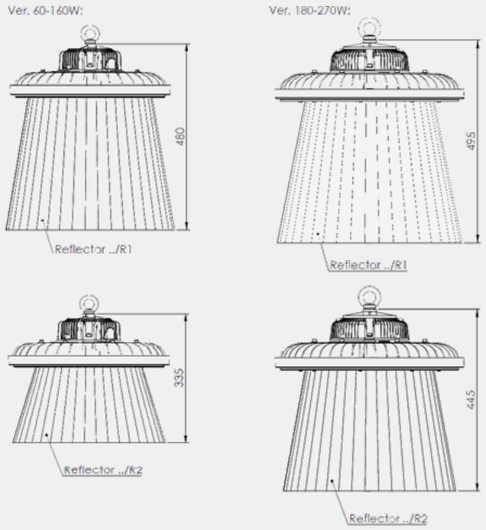
- ../EH - eye mounting
- ./ST – mounting on a tube, max. 44 mm
- ../WM – wall mount
- ../S – additional protective screen - steel wire mesh
- ../R1 – external symmetrical reflector type
- ../R2 – external symmetrical reflector type
- ../AR1 - external symmetrical reflector
- ../AR2 – external symmetrical reflector
- ../R90 – colour rendering index Ra>90
- ../R70 – colour rendering index Ra>70
- ../3K – colour temperature 3000K
- ../5K – colour temperature 5000K
- ../6K – colour temperature 6500K
- ../T5 – T5 temperature class
- ../T4 – T4 temperature class
- ../T3 – T3 temperature class
- ../221 – luminaire version approved for operation in zone 2 and 21
- ../222 – luminaire version approved for operation in zone 2 and 21
- ../10V – luminaire version with a luminous flux adjustment from 10% to 100%

Explosion-proof LED luminaire of an EMHB II Ex type, which is characterised by high luminous flux and power of up to 270 W. It is a compact light source with ultra-bright LEDs installed for high intensity of lighting from high heights. LEDs are enclosed in a corrosion-resistant housing made of high-quality aluminium. LEDs do not emit UV light.

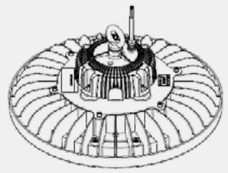
power versions

Order code	Temp. class	Zone	Optional code	Optional code	Weight [kg]	Power [W]	Luminous flux [lm]
EMHB II Ex/60	../T5 or ../T4	../221 or ../222	-	../ST or ../WM ../S ../R1 or ../R2 or ../AR1 or ../AR2 ../R90 or ../R70 ../3K or ../5K or ../6K	6.0	60	9,480
EMHB II Ex/80			-		6.0	80	12,260
EMHB II Ex/100			../10 V		6.0	max. 100	15,090
EMHB II Ex/120			-		6.5	120	18,420
EMHB II Ex/150			-		6.5	150	22,140
EMHB II Ex/160			../10 V		6.5	max. 160	23,320
EMHB II Ex/180	../T5 or ../T4 or ../T3		-		9	180	27,720
EMHB II Ex/200			-		9	200	30,200
EMHB II Ex/220			-		9	220	33,200
EMHB II Ex/240			-		9	240	36,240
EMHB II Ex/260			-		9	260	36,900
EMHB II Ex/270			../10 V		9	max. 270	39,500

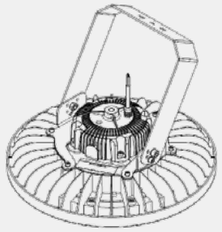
lampshades



mounting versions



Eye mounting .../EH



Wall mounting .../WM

packing box dimensions

Dimensions LxWxH (cm)	Gross weight (kg)
45 x 45 x 28	7.0 - 10.5 (depending on version)

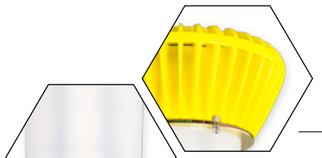
3. EMLB Ex

Zones 2 & 21

Low bay type luminaire

II 3G Ex ec IIC T4 Gc

II 2D Ex tb IIIC T85°C Db



body made of casting aluminium alloy with surface protection against impact of corrosive environment

lampshade made of UV stabilized polycarbonate (PC)

power supply unit with wide voltage range adapted for operation in industrial environment (cooperating with DALI as an option)

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application

EMLB Ex luminaire is intended for lighting:

- industrial facilities and areas classified to zones 2, 21 and 22 of explosion hazard of dust, gases, vapours, and vapours of flammable liquids
- auxiliary rooms with high dust concentration and with a possibility of the occurrence of water splashes that is: boiler rooms, pumping wells with observation wells, washrooms, garages, sheds, warehouses in open and restricted areas
- process lines for the chemical, petroleum, gas, wood-working, loose mining, construction and foodstuff material processing industry

design

The EMLB Ex luminaire consists of the following components:

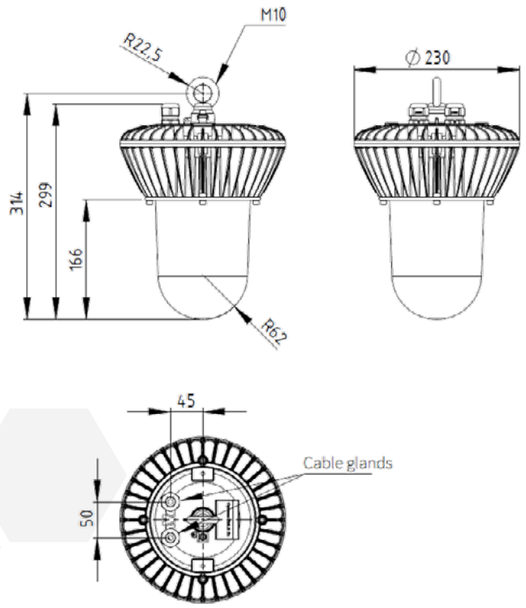
- anti-glare lampshade made of polycarbonate
- body - powder-coated aluminium alloy
- back cover - powder-coated aluminium alloy
- Ex cable gland M20x1.5 (M25x1.5), straight- through supply as an option 2x M20x1.5 (M25x1.5)
- terminals 3x2.5mm2
- power supply unit
- clamp, acc. to the versions
- optional DALI control

advantages

- robust and compact design
- quick, simple and easy installation
- high resistance to a corrosive industrial environment
- very high luminous efficacy
- high-quality power supply unit and LEDs
- very high tightness IP66
- UV-resistant

technical characteristics

Parameter	Value (unit)
Supply voltage	90-305 VAC, 127-431 VDC, 50-60(0) Hz
ATEX marking	Ⓔx II 3G Ex ec IIC T4 Gc Ⓔx II 2D Ex tb IIIC T85°C Db
Certificate number	TEST 16 ATEX 0041X
Standards	EN 60079-0:2013, EN 60079-7:2016 EN 60079-31:2014
Power factor	PF ≥0.96 115 VAC, PF≥ 0.96 230 V AC
Starting current	0.7A 115 VAC, 0.35A 230 V AC
Protection class	I
Ingress protection	IP 66
Allowable ambient temperature	-32°C to +55°C – (versions up to 50 W) -32°C to +50°C – (version 80 W)
Source of light	ultra-bright LEDs
Power	10 W - 80 W
External dimensions	Ø314x230
Weight	4.5 kg



Explosion-proof LED luminaire of an ELHB Ex type is characterised by high luminous flux. It is a compact light source with ultra-bright LEDs installed for high intensity of lighting and with a wide angle of light distribution. Diodes are enclosed in a corrosion-resistant housing made of high-quality aluminium and a lampshade made of suitable plastic. LEDs do not emit UV light or heat.

power versions

Order code	Power [W]	Luminous flux [lm]
EMLB Ex/10	10	1,300
EMLB Ex/25	25	3,500
EMLB Ex/50	50	6,500
EMLB Ex/65	65	8,500
EMLB Ex/80	80	9,500

packing box dimensions

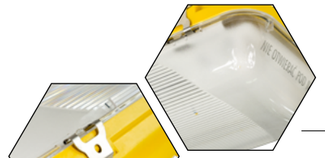
Dimensions LxWxH (cm)	Gross weight (kg)
57 x 28 x 28	aprox. 5.5 (depending on version)

4. Wodniak Ex

Zones 2 & 21or 2 & 22

Linear type luminaire

II 3G Ex nA IIC T6 Gc
II 2D Ex t IIIC T85°C Db
II 3D Ex t IIIC T85°C Dc



anti-glare lampshade made of UV resistant fiber glass polycarbonate (PC), mounted with hinges

increased safety body made of polyester reinforced with glass fibre (GRP)

optional DALI control

mounting accessories made of stainless steel (plastic as option)

Elektrometal SA®

highlights

up to 5,500 lm at 44 W

GRP reinforced body

emergency battery back-up

DALI control available

application

Wodniak Ex LED luminaire is inteded for general lighting industrial high bays and:

- spaces clasiffied to zone 2,22 (optionally 21) hazardous by dust, gas, vapour and mist of flammable liquids explosion in temperature class up to T6
- luminaire for indoor use
- additional spaces where occurence of high dust concentration and water splashes are possible, i.a: boiler-rooms, wash-rooms, garrages, island station roofs, warehouses, processing lines for chemical industry, oil and gas industry,loose mining and building material industry

design

The Wodniak Ex LED luminaire consists of the following components:

- anti-glare lampshade, lenticularly grooved from inside, made of polycarbonate PC, fire behaviour class in compliance with the UL94 safety standard: HB, test with glowing wire in accordance with (EN 60695-11-2): 850°C
- body of reinforced housing made of polyester reinforced with GRP (glass-reinforced plastic), of fire behaviour class in accordance with the UL94 safety standard: V2, test with glowing wire in accordance with (EN 60695-11-2): 650°C,
- components fixing the lampshade (lampshade suspended on hinges) and components fixing the luminaire are made of stainless steel or plastic
- plastic cable gland M20x1.5 (M25x1.5 on request)
- terminals max. 6x4mm2 (other terminals as an option on request)
- LED module
- EM emergency supply module (for luminaire versions with a possibility of operation after power failure)
- fuse (3.15A) as an option
- service interrupter as an option
- vent valves as an option
- conductor 3x1.5 mm2 installed in a vapour-tight, non-dismountable version (../OUT2).

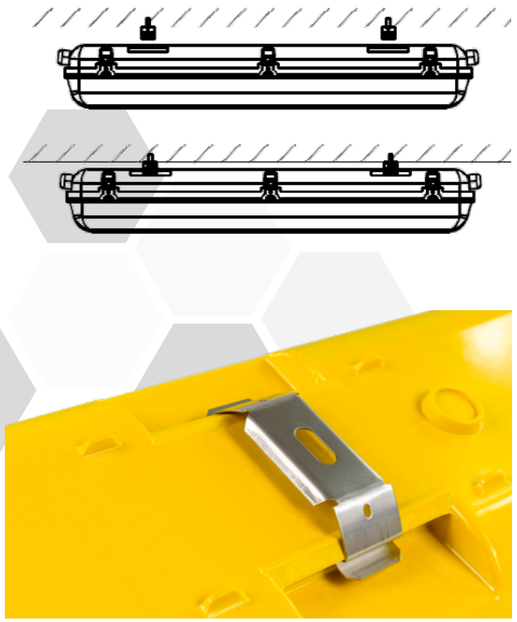
advantages

- robust and compact design
- quick, simple and easy installation
- optional installation of lampshade on hinges during fluorescent lamp replacement
- high resistance to a corrosive industrial environment,
- high luminous efficacy- 0.7
- high-quality ignition systems
- UV-resistant

technical characteristics

Parameter	Value (unit)
Supply voltage	230 V AC/DC 50-60(0) Hz, 110 V (acc. to versions) 230 V AC 50-60 Hz – versions with a battery
ATEX marking for zones 21	Ex II 3G Ex nA IIC T6 Gc Ex II 2D Ex tb IIIC T85°C D
ATEX marking for zones 22	Ex II 3G Ex nA IIC T6 Gc Ex II 3D Ex tc IIIC T85°C Dc
Certificate number	OBAC 14 ATEX 0351X
Standards	EN 60079-0:2013, EN 60079-15:2010, EN 60079-31:201414
Protection class	I (II option)
Ingress protection	IP 66/67
Allowable ambient temperature	-20°C to +50°C – versions without a battery 0°C to +50°C – versions with a battery
Source of light	ultra-bright LEDs
Power	21 W - 44 W
Cable gland	M20 or M25 in accordance with luminaire marking
Connecting terminals (max)	4 mm2
Colour temperature	4000K (optionally 3000K, 5000K, 6500K)
External dimensions	660 x 145 x 101 (mm) 1277 x 145 x 101 (mm) 1573 x 145 x 101 (mm)

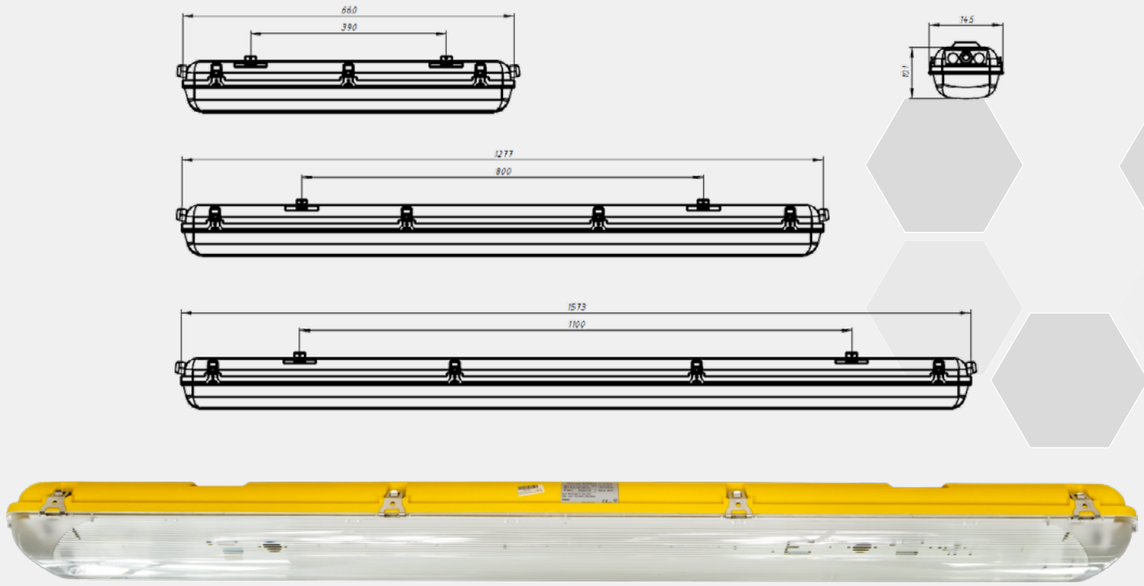
mounting



optional features

- **Battery in an emergency luminaire 3 hours**: ../3H
- Installed fuse: ../B
- Version with a double ballast EVG: ../2E
- Version with an address module: ../ADR or ../ADS. The luminaire is identified by an external supervisory system.
- Emergency version with self-test: ../AT The luminaire performs an automatic test, signalling of the luminaire operating mode by the installed LED
- Version with DALI control (on request)
- Service interrupter: ../RS. The service interrupter makes it possible to disassemble the reflector quickly
- 110 V power supply of the luminaires: ../110
- Version with an EPDM gasket: ../OUT1
- Vapour-tight version: ../OUT2 – (non-dismountable version with a led-out connecting conductor 3x1.5mm2)
- Version with a vent valve: ../DR
- ../Z21 – luminaire version approved for operation in Z21 zone.
- ../Z22 - luminaire version approved for operation in the zone Z22

dimensions



power versions

Order code	Optional code	Zone	Power [W]	Weight [kg]	Dimensions [mm]	Power supply
WODNIAK Ex LED 600	../B ../ADR or ../ADS ../RS ../110 ../OUT1 or ../OUT2 ../DR	..Z21 or ../Z22	21	2.0	665x145x101	Electronic 230 V AC/DC
WODNIAK Ex LED 1200			36	2.5	1,282x145x101	
WODNIAK Ex LED 1500			44	2.9	1,578x145x101	
WODNIAK Ex LED 600 EM	../B ../AT ../RS ../OUT1 ../DR		21	2.2	665x145x101	230 V AC Emergency luminaire with a co-nverter and battery for 3 hours
WODNIAK Ex LED 1200 EM			36	2.7	1,282x145x101	
WODNIAK Ex LED 1500 EM			44	3.1	1,578x145x101	

packing box dimensions

For subsequent above given versions:

Dimensions LxWxH (cm)	Gross weight (kg)
71 x 15.5 x 11 132 x 15.5 x 11 162 x 15.5 x 11	2.0 - 3,1 (depending on version)

ELEKTROMETAL SA was created in 1948 in response of the industrialization needs in Poland and central Europe. Nowadays, as a result of many years of specialisation in mining and gas industries, Elektrometal has got strong and leading position in both local and regional markets.

ELEKTROMETAL SA central offices are located in Cieszyn, in its own factory field of 4,53 with over 23.000 m^2 of premises, located in suburbs of city of Cieszyn, near to the international route which drives to the border with Czech Republic.

The base of our success relays in our corporate culture, permanently going a step ahead in real life needs, with a strong and flexible engineering team ready to design, improve and implement all kind of solutions to collaborate in customer success in all areas.

Tradition means experience and that´s the baseline of our strategy, always looking to provide state of the art technology as well as the best customer support.

Elektrometal SA®

Elektrometal SA
ul. Stawowa 71
43-400 Cieszyn, Poland
export@elektrometal.com.pl
tel: +48 33 8575 338
www.elektrometal.eu
company/elektrometal-sa

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