

USER'S MANUAL

**Explosion-proof LED luminaire
OREX 2 Ex type
No. 52-1458/Z
(ZxEx210031000202r4)**



January 2022

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1. Introduction

The subject of this manual is an explosion-proof, energy-saving lighting fitting, type OREX 2 Ex, up to 270W, equipped with LED diodes of high luminous efficiency.

1.1. Intended use

The OREX 2 Ex luminaire is designed to illuminate:

- industrial halls and spaces classified as zones 2, gases, vapors and mists of flammable liquids,
- auxiliary rooms with high dustiness with the possibility of water splashes, i.e. boiler houses, hydro nodes, baths, garages, shelters, open and closed warehouses,
- workstation process lines, among others: chemical, petroleum, petrochemical, gas, wood, mining, construction and food loose materials,
- rooms with increased temperature.

1.2. Functional properties

The wide power range allows the luminaire to be used in high, medium and low buildings. Optional additional increase in energy efficiency possible by external control via 1-10.

2. Design

The OREX 2 Ex luminaire consists of the following elements:

- body – aluminum alloy,
- pressure ring – aluminum alloy,
- tempered glass,
- LED light module,
- power supply with an integrated 3x1.0mm² power cord (length 300mm),
- luminous flux adjustment via 1-10V according to versions,
- mounting eyelet.

Optionally, the luminaire can be:

- equipped with a connection chamber (ICB variant) with two openings for inserting power cables. The holes are equipped with M20, M25 cable gland or can be blind,
- equipped with an industrial power supply (IPS variant),
- adapted to work at elevated temperatures (HT variant),
- led driver is separated from the light unit (SD variant).

3. Technical data

Technical parameters	
Parameter name	Value (unit)
Supply voltage	90-305 VAC 140-250 VDC 50-60/0Hz
Power	40-270W *
Power factor	PF ≥ 0.95 **
ATEX marking	⊕ II 3G Ex ec op is IIC T5..T4 Gc
IECEX marking	Ex ec op is IIC T5..T4 Gc
EU-type examination certificate number	OBAC 21 ATEX 0135X
IECEX Certificate number	IECEX OBAC 21.0003X
Standards	EN IEC 60079-0:2018; EN 60079-7:2015+A1:2018 EN 60079-28:2015 EN 60079-31:2014
Source of light	ultra-bright LED lights
Color temperature	4000K ±10% as an option 3000K, 5000K, 6500K ±10%
Protection class	I
Degree of protection	IP 66/67 *** IK 10
Ambient temperature range	in accordance with the table, point 8.2 – special conditions of use
Weight	6,5 kg – for version 40-160W 9,5 kg – for version 180-270W
External dimensions	Ø390x145 mm – for version 40-160W Ø460x150 mm – for version 180-270W
CRT	80 (other on request) ±10%

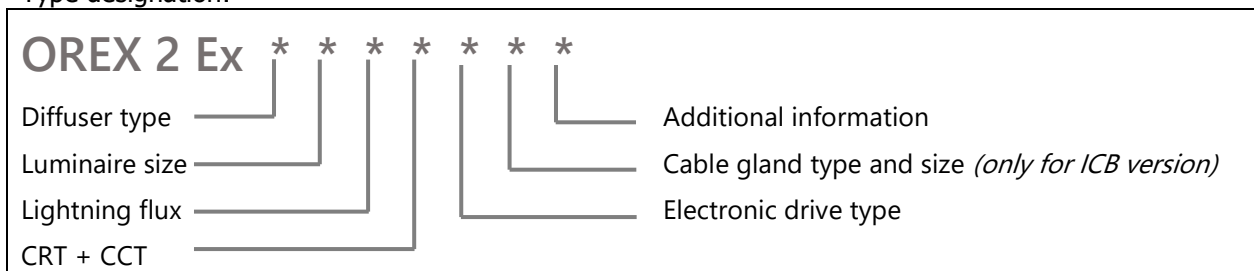
* According to the table of execution types – point 3.1. Rated power with a tolerance of ±5%

** At 230VAC and 160W power

*** When using a cable gland with a lower IP, the degree of protection of the entire luminaire is reduced – see pt. 8.2

3.1. Version types

Type designation:



Diffuser type	Luminaire size	Lighting flux	CRT + CCT	Electronic driver type	Cable gland type and size (only for ICB version)	Additional information
None: standard glass G1: milky glass G...: other glass on request	39: Ø390 mm (max 160 W) 46: Ø460 mm	60: 6000 for 40W 90: 9000 for 60W	840: CRI 80 and 4000K 850: CRI 80 and 5000K Other on request	P: service connector ETDD: Digital diming DALI PDA: service connector and digital dimming DALI 10V: analog diming 1-10V P10V: service connector and analog dimming 1-10V ET: power cord	CG: plastic cable gland NiCG: nickel-plated brass cable BCG: brass cable gland ACG: cable gland for armored cable H: housing with a hole for cable gland Standard size cable/hole M20 and one cable gland. Other size and quantity of cable gland on request.	Painting: RAL.. type IPS: external industrial power supply equipped with integrated connected cable (increased service live) SD: power supply assembly and lighting assembly separated, connected with cable (max 160W) ICB: version with industrial power supply and connection box (max 160W) ... other on request
		120: 12000 for 80W 150: 15000 for 100W 180: 18000 for 120W 210: 21000 for 140W 225: 22500 for 150W 240: 24000 for 160W 270: 27000 for 180W 300: 30000 for 200W 330: 33000 for 220W 360: 36000 for 240W 390: 39000 for 260W 405: 40500 for 270W Tolerance ± 10%				

HT versions - adapted to work at elevated temperatures:

Diffuser type	Luminaire size	Lighting flux	CRT + CCT	Electronic driver type	Cable gland type and size (only for ICBHT version)	Additional information
<p>None: standard glass</p> <p>G1: milky glass</p> <p>G..: other glass on request</p>	<p>39: Ø390 mm</p>	<p>60: 6000 for 40W</p> <p>90: 9000 for 60W</p> <p>120: 12000 for 80W</p> <p>Tolerance ± 10%</p>	<p>840: CRI 80 and 4000K</p> <p>850: CRI 80 and 5000K</p> <p>Other on request</p>	<p>P: service connector</p> <p>ETDD: Digital diming DALI</p> <p>PDA: service connector and digital dimming DALI</p> <p>10V: analog diming 1-10V</p> <p>P10V: service connector and analog dimming 1-10V</p> <p>ET: power cord</p>	<p>CG: plastic cable gland</p> <p>NiCG: nickel-plated brass cable</p> <p>BCG: brass cable gland</p> <p>ACG: cable gland for armored cable</p> <p>H: housing with a hole for cable gland</p> <p>Standard size cable/hole M20 and one cable gland. Other size and quantity of cable gland on request.</p>	<p>Painting: RAL.. type</p> <p>HT: industrial power supply with an additional heat sink</p> <p>SDHT: power supply assembly and lighting assembly separated, connected with cable</p> <p>ICBHT: version with industrial power supply and connection box</p> <p>... other on request</p>

Additional accessories:

Accessories		
Lighting system	Mounting accessories	Others
<p>None – no reflector;</p> <p>R – symmetrical reflector;</p> <p>AR – asymmetrical reflector;</p> <p>WG – steel mesh;</p> <p>... – other on request;</p>	<p>None – single eyebolt;</p> <p>WM – wall mount;</p> <p>ST – pipe mount;</p> <p>WU – universal mounting;</p> <p>NA – luminaire without mounting accessories</p> <p>.. – other on request;</p>	<p>JB.. – junction box;</p> <p>CR – power cords with an Ex connector;</p> <p>... – other on request;</p>

Examples of type designation:

- **OREX 2 Ex 39 90-840 P** – OREX 2 Ex, 40W power, 4000K CRI80 LED matrix and with diagnostic connector.
- **OREX 2 Ex G1 39 150-930 P10V 2NiCG20 ICB AR WM** – OREX 2 Ex milk glass 100W fitting, 4000K CRI 80 LED matrix. Equipped with a diagnostic connector with analog 1-10V dimming, with an integrated connection chamber with two cable glands made of nickel-plated brass, size M20. Additional accessories asymmetrical reflector and wall mount.

3.2. Advantages of the luminaire

- 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.

4. Operation, service and use

Turning on the power causes the luminaire to light up automatically. The variants equipped with a control connector (DIMMING) have the option of adjusting the output power in the range from 10% to 100% of the nominal power.

5. Installation, mounting, disassembling

Note!

The equipment should be installed taking into consideration all recommendations given in this manual and should be carried out by a fitter, professional installer with necessary knowledge, tools and qualifications.

Electrical installation

For standard and **IPS** versions, the luminaire is equipped with a three-core power cable (L, N, PE). The PE protective conductor (grounding) is internally connected to the metal body. Optionally, a cable for brightness control (dimming) is led out of the luminaire. All cables should be connected in an appropriate manner, compliant with ATEX requirements, and with the appropriate IP degree, not less than IP 54. The brightness control cables (dimming) are not protected with an intrinsically safe structure, therefore, if they are not used, they must be properly secured (e.g. in a Ex junction box with reinforced construction joints or through a dedicated end cap). Cable connections must be made securely so that they cannot become disconnected or loosened spontaneously.

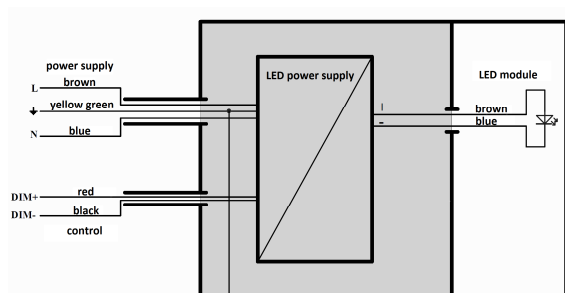
For the **ICB** variant, the luminaire is equipped with an additional integrated connection chamber. This enables the connection of through-flow, end-of-line power or simultaneous connection to the luminaire of a power line and a dimming line through cable glands placed on the top cover. The list of cable glands approved for use in the luminaire in point 8.2.

For the **SD** variant, as for the standard versions, the power supply is equipped with a three-wire power cable (L, N, PE) and an optional brightness control cable. The electrical installation is analogous. The power supply unit and the lighting unit are separated and connected by a 5m long power cord (others on request). It is permissible to shorten the cable. It is suggested to carry out this operation from the side of the lighting unit, inside which the terminal strip is built-in. On the side of the power supply, the connection cable is terminated with a fast connector.

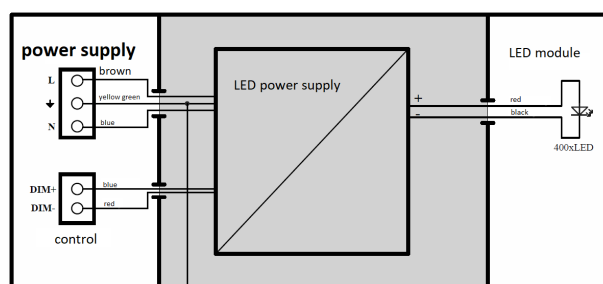
Due to the explosion-proof design, it is not allowed to switch on the power supply unit when the lighting assembly unit is disconnected.

Luminaire diagram

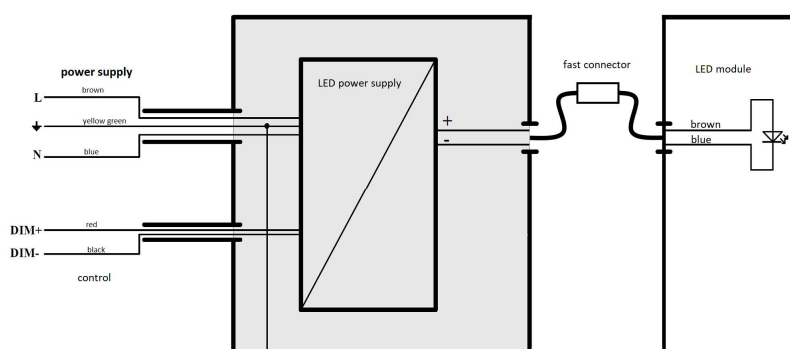
Standard and IPS version:



Version with an additional chamber connection terminal (ICB):



SD version:



Mechanical assembly

For standard variants, **IPS** and **ICB**, the luminaire should be mounted using the provided mounting eye, which should be screwed into the housing and properly secured against loosening with the use of a spring washer and a side locking screw. There are also additional accessories available for mounting the luminaire, e.g. to a wall, on a pipe / mast.

If mounting accessory is disassembled for transport, at the assembly stage, fix it using the included screws and spring washers.

For the **SD** variant, the lighting unit should be mounted in the same way as for the ICB variant. It is suggested that the power supply unit should be mounted in a place with the lowest possible available temperature and low exposure to mechanical damage.

It is possible to order the luminaire without mounting accessories, then proper mounting of the luminaire should be ensured. The elements used for mounting the luminaires (adapters, lugs) should be properly secured against loosening, e.g. with thread glue, spring washers, self-locking nuts, etc. Fastening the luminaire should take the entire load so that the power cable is not stressed.

In the case of installation in the vicinity of machines or devices that may cause excessive heating of the luminaire, the use of additional thermal shields should be considered.

Using the luminaire in a place exposed to direct sunlight may cause excessive heating of the luminaire, which may reduce its lifetime and even damage it. It is recommended that the luminaire installed in such places is turned off during the day.

6. Maintenance and repairs

Observe the laws and regulations in your country when using the lamp.

During periodic inspections, check:

- The housing is not mechanically damaged.
- Check the housing for ingress of water and dust into the housing.
- Condition of the paint coating, especially when using a C5 category paint coating (on request).
- Correctness of choking of supply cables in cable glands for ICB and SD variants.
- For the ICB and SD variants, the correct fastening of the wires in the terminal strip.
- For the SD variant, the technical condition of the fast connector connecting the power supply unit with the lighting unit.

In the event of heavy soiling, the luminaire should be cleaned with a damp cloth.

In the case of using a luminaire with a special paint coating in category C5, a coating control plan should be introduced in accordance with EN ISO 12944-8. The control plan is adapted to the specific operating conditions of the luminaire. It should contain a description of the control tasks and the scope of the work performed. The coating corrosion assessment should be made on the basis of the ISO 4628 standard. Failure to follow the above procedure may result in the loss of the paint coating warranty.

The lifetime of the light source depends on the ambient temperature of the luminaire and its power. During operation, LEDs gradually reduce their luminous flux - this is a natural process, characteristic of all white LEDs. The degree of LED wear does not affect the luminaire's operational safety.

Due to the explosion-proof design, service repairs may only be performed by the manufacturer's service or an authorized unit with appropriate service documentation.

Before opening the fitting, disconnect the power supply.

For the ICB version, before opening the connection chamber, disconnect the power supply and wait for min. 30 minutes.

If the luminaire is dirty, clean it with a damp cloth only.

When replacing the power supply unit, pay special attention to the correct electrical connection with the LED matrix.

7. Transport and storage

7.1. Transport

The originally packed devices should be transported using covered means of transport. The packaging should be secured against shifting and sudden shocks. Devices should be transported at a temperature not lower than -20°C and not higher than +50°C.

7.2. Storage

The equipment should be stored in closed areas at a temperature not lower than -20°C and not higher than +50°C and away from heaters.

8. Additional information

8.1. CE marking



The CE marking has been affixed under the following regulations:

Explosion-proof equipment – Directive 2014/34/EU (ATEX)

Electromagnetic compatibility – Directive 2014/30/EU (EMC)

Restriction of hazardous substances – Directive 2011/65/EU (RoHS II)

Information on the obtained certificates and standards applied to the equipment evaluation has been specified in the declaration of conformity attached to every copy of the device.

The harmonised standards applied to demonstrate the compliance with the relevant directive are set out in the EU declaration of conformity supplied together with the device.

8.2. Special conditions for safe use

- Due to the risk of electrostatic charge, the luminaire should be cleaned with a damp cloth only.
- The ambient temperature range depends on the temperature class / max. surface temperature and the power of the luminaire.
- For the **ICB** variant, during operation, the maximum operating temperature inside the cable gland depends on the power of the luminaire and the maximum ambient temperature – this should be taken into account when selecting power cables. The exact values for the maximum cable gland temperature can be found in the table below.
- For the **ICB** variant, the luminaire is available without cable entries (with factory-made holes). Before installation in the facility, it should be equipped with cable gland and / or plugs that meet the following criteria:
 - The cable gland and / or the stopping plug must be listed in table 2 in the appendix to the operating manual,
 - If you want to use a cable gland and / or a stopping plug that is not included in Table 2, please contact the manufacturer for a conformity assessment,
 - For HT / ICB luminaires, the maximum operating temperature of the groove must be at least 100°C,
 - The change of the cable gland type along with its basic parameters should be recorded in table 1 - appendix.
- The ambient temperature range and the temperature class of the OREX 2 Ex luminaire are determined in accordance with the table below:

Luminaire power [W]	The temperature class of the OREX 2 Ex luminaire – standard version, ICB, IPS and SD Ambient temperature range			
	$-32^{\circ}\text{C} \leq \text{Ta} \leq +45^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq \text{Ta} \leq +50^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq \text{Ta} \leq +55^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$
40 - 80	T5 / T85°C	T5 / T90°C	T5 / T95°C	T4 / T100°C ****
81 - 120	T5 / T85°C	T5 / T90°C	T5 / T95°C	T4 / T100°C ****
121 - 160	T5 / T90°C	T5 / T95°C	T4 / T100°C ****	–
161 - 200	T5 / T90°C	T5 / T95°C	T4 / T100°C ****	–
201 – 240	T5 / T90°C	T5 / T95°C	T4 / T100°C ****	–
241 - 270	T5 / T95°C	T4 / T100°C ****	–	–

Luminaire power [W]	Luminaire temperature class OREX 2 Ex – HT version **** Ambient temperature range				
	$-32^{\circ}\text{C} \leq \text{Ta} \leq +55^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq \text{Ta} \leq +65^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq \text{Ta} \leq +70^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq \text{Ta} \leq +75^{\circ}\text{C}$
40 - 80	T5 / T95°C	T4 / T100°C	T4 / T105°C	T4 / T110°C	T4 / T115°C

8.3. Basic safety principles

- Before attempting any works related to the equipment, the provisions of this manual should be read thoroughly.
- Follow good engineering practices during the selection of the equipment for a given application, during installation and during operation.
- The device should only be operated by personnel trained for this purpose.
- The safety rules of this type of equipment should be observed.
- Prior to the installation, check whether the marking on the rating plate satisfies requirements for a given application.
- Compliance with the instructions in this manual is a condition for warranty claims.

**** Operating the luminaire at elevated temperature shortens its service life

8.4. Recycling and disposal



The symbol of a crossed-out waste container that appears on a product indicates that it is subject to the provisions of European Directive 2012/19/EU (WEEE) and the Waste Electrical and Electronic Equipment Act (Journal of Laws of 2015, item 1688 as amended). The worn-out device together with a battery (if included) may not be disposed of jointly with other waste. The worn-out equipment should be handed to the manufacturer or to a point collecting discarded electronic and electric equipment to ensure its proper disposal. The requirements for the management and disposal of other waste are specified in the Waste Law (Journal of Laws of 2013, item 21 as amended). In order to obtain more detailed information on product recycling, please contact the manufacturer, a local government unit, or waste management services. The packaging consists of a cardboard box and a polyurethane foam or cardboard filling.

9. List of spare parts

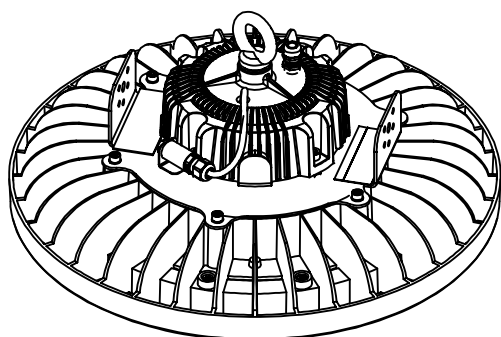
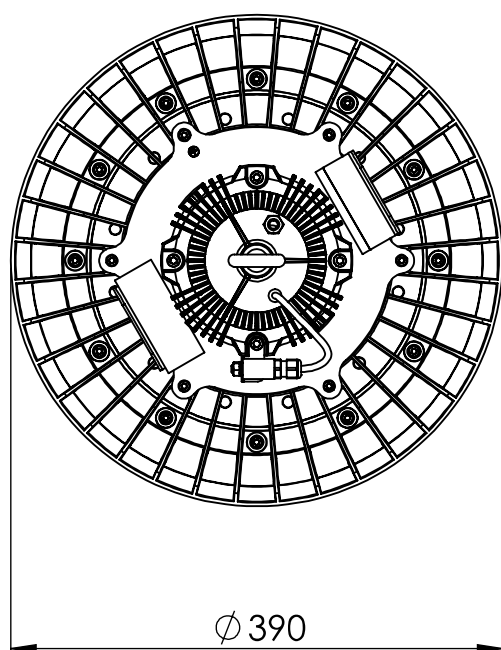
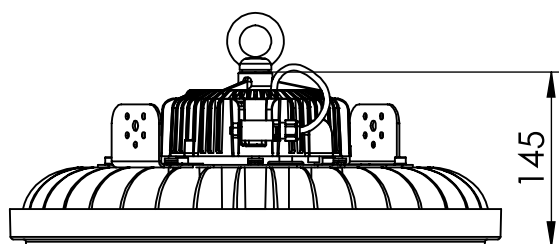
No.	Part name	Position	Index number
1.	Protective glass (up to 160W)	-	34-1008
2.	Gasket under glass (version up to 160W)	-	35-1037
3.	Protective glass (from 180W)	-	34-1009
4.	Gasket under glass (from 180W)	-	35-1038
5.	PSEHB2 power supply assembly	according to tab. 9.1	
6.	Lighting assembly (up to 160W)	-	...
7.	Lighting assembly (from 180W)	-	...
8.	Cover gasket (ICB version)	-	...9316

Parts for luminaires are available only to authorized service or authorized persons and trained in the servicing of luminaires

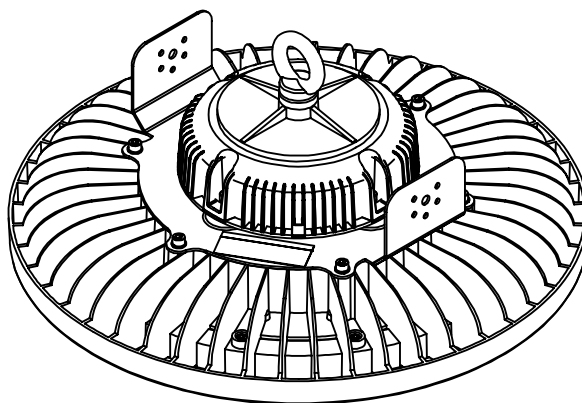
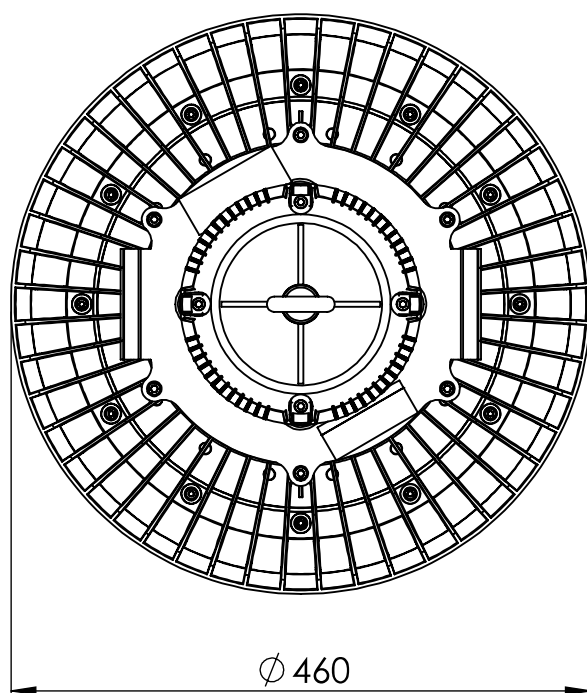
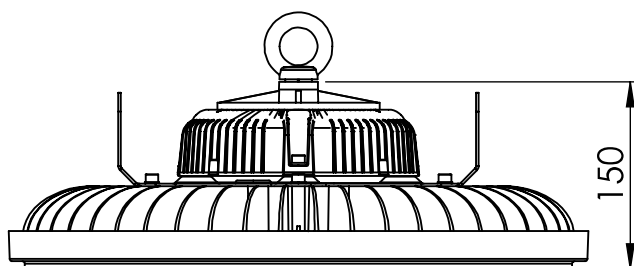
9.1. PSEHB2 power supply unit:

Power	Control	Additional information				
40; 60; 80; 100; 120; 140; 150; 160; 180; 200; 220; 240; 250; 260; 270; 40 HT; 60 HT; 80 HT;	P – diagnostic connector	NONE – Round high-bay power supply with an integrated power cord				
	Variants on request:					
	ETDD – digital dimming DALI	IPS – external power supply industrial equipped with an integrated power cord (increased service life)				
	PDA – service connector and digital dimming DALI	ICB – variant with an industrial power supply and a connection chamber (max. 160W)				
	10V – analog dimming 1-10V	Cable Gland				
	P10V – service connector and analog dimming 1-10V	Quantity		Type		Painting
		1 – one cable gland and plug 2 – two cable glands ...		CG – plastic cable gland NiCG – nickel-plated brass cable gland BCG – brass cable gland ACG – cable gland for armored cable H – housing with a hole for cable gland		
				20 – M20 25 – M25 1" 3/4 " ... – other size		
				NONE – RAL1003; RAL...		
ET – power cord						

POWER 40-160W:



POWER 180-270W:



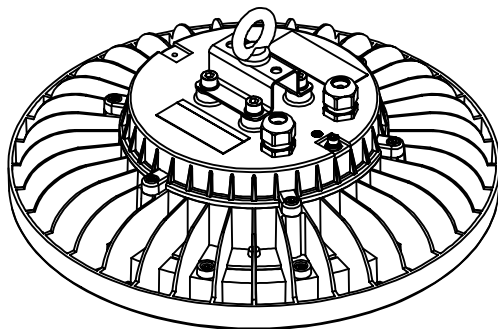
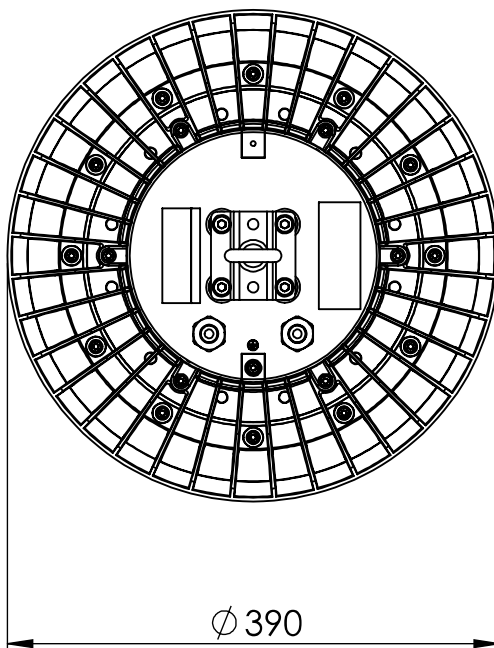
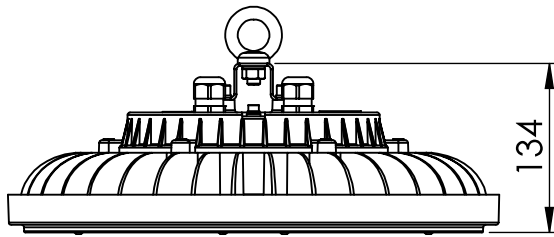
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OREX 2 Ex standard version

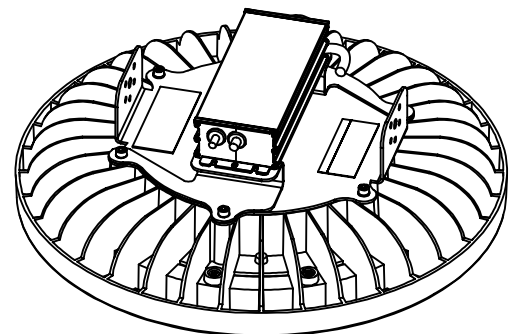
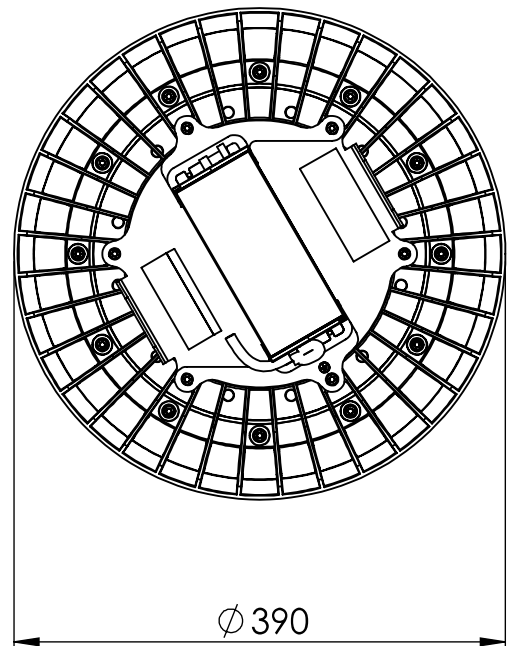
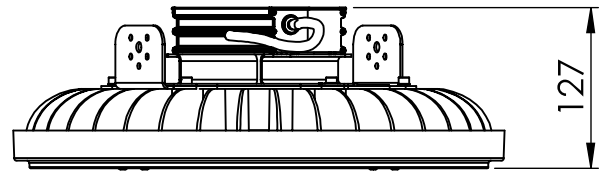
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Fig. 1

ICB (ICBHT) version:



IPS version



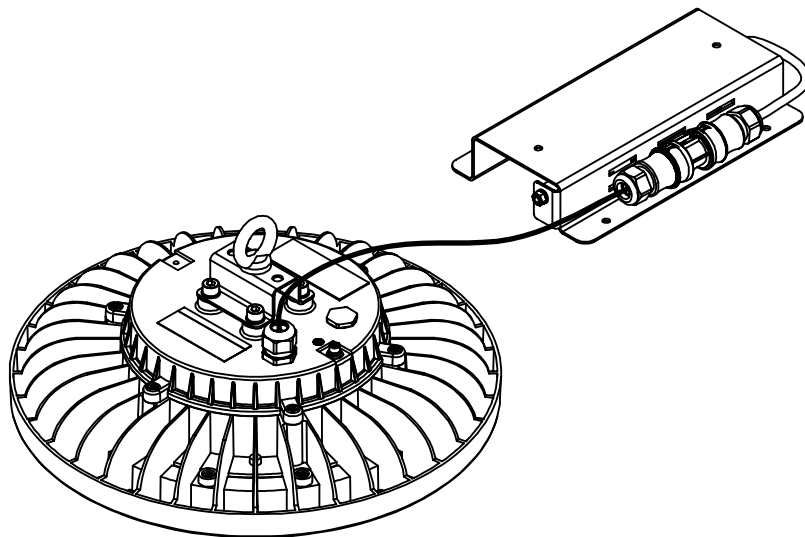
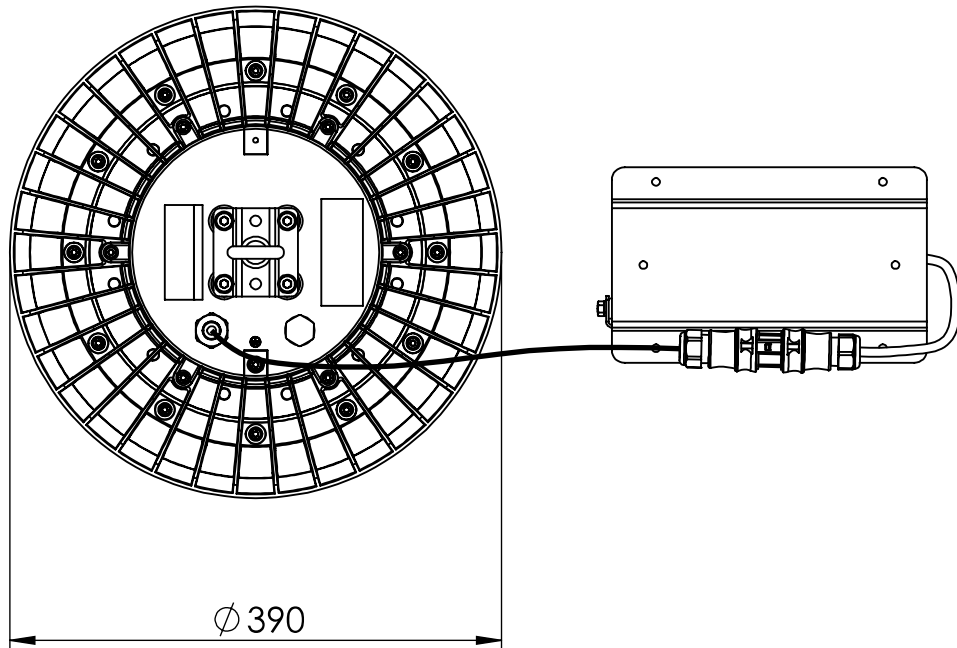
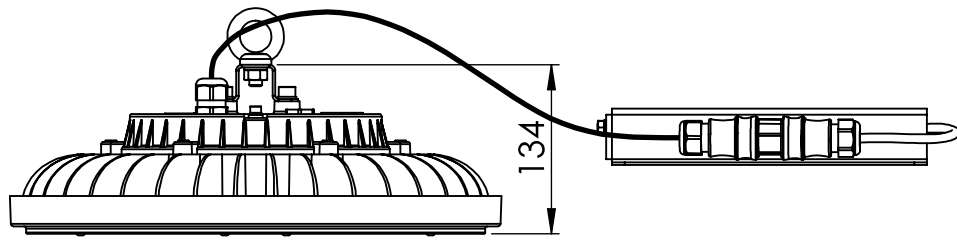
Name:

*OREX 2 Ex
ICB (ICBHT), IPS version*

No:

Fig. 2

SD (SDHT) version



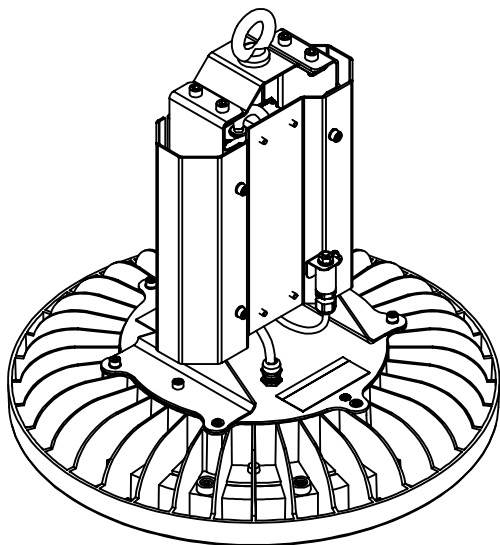
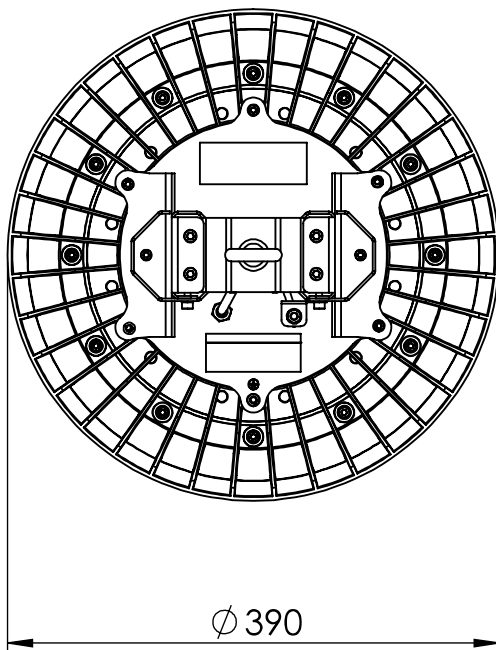
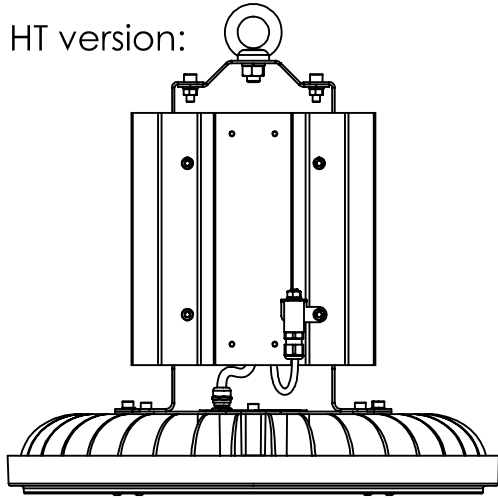
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*OREX 2 Ex
SD (SDHT) version*

No:

Fig. 3

HT version:



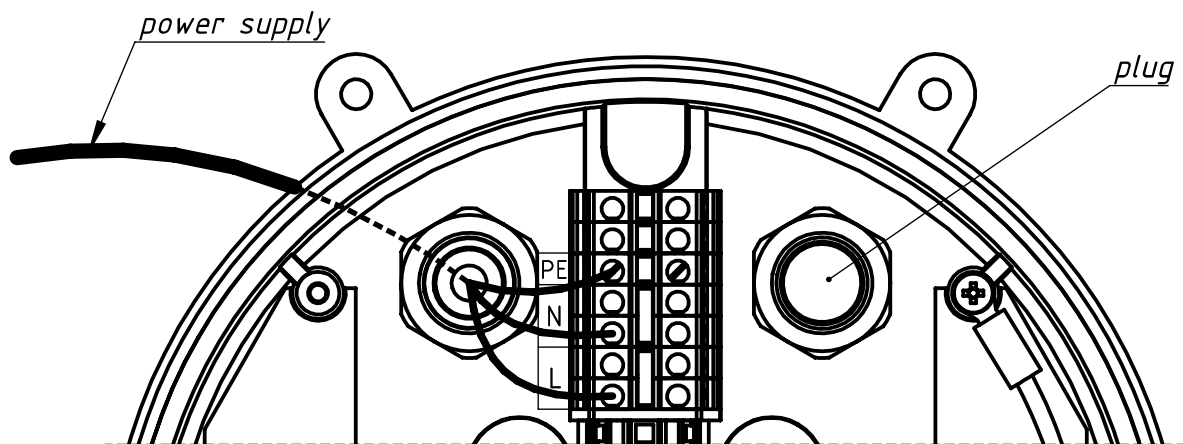
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*OREX 2 Ex
HT version*

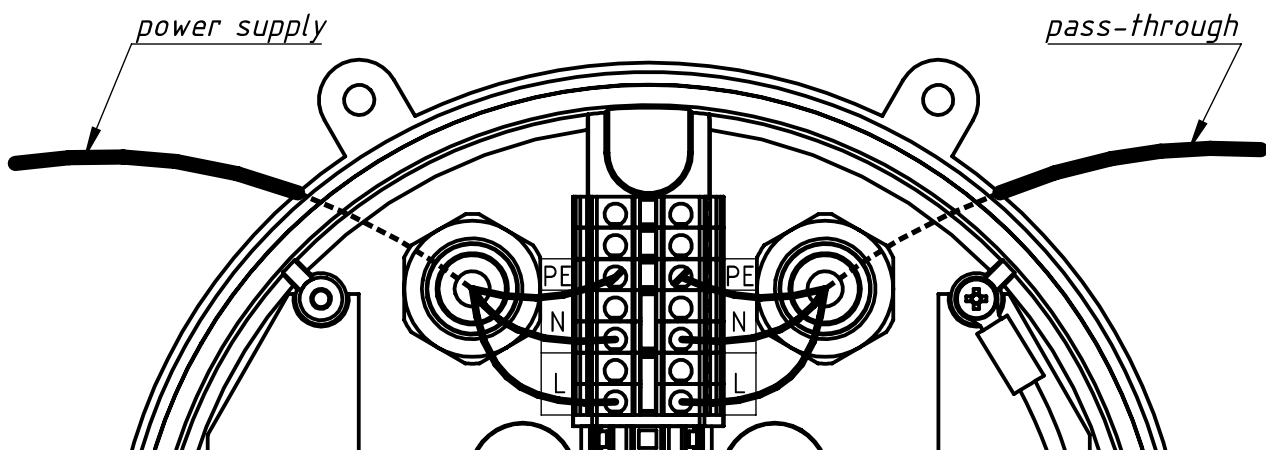
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Fig. 4

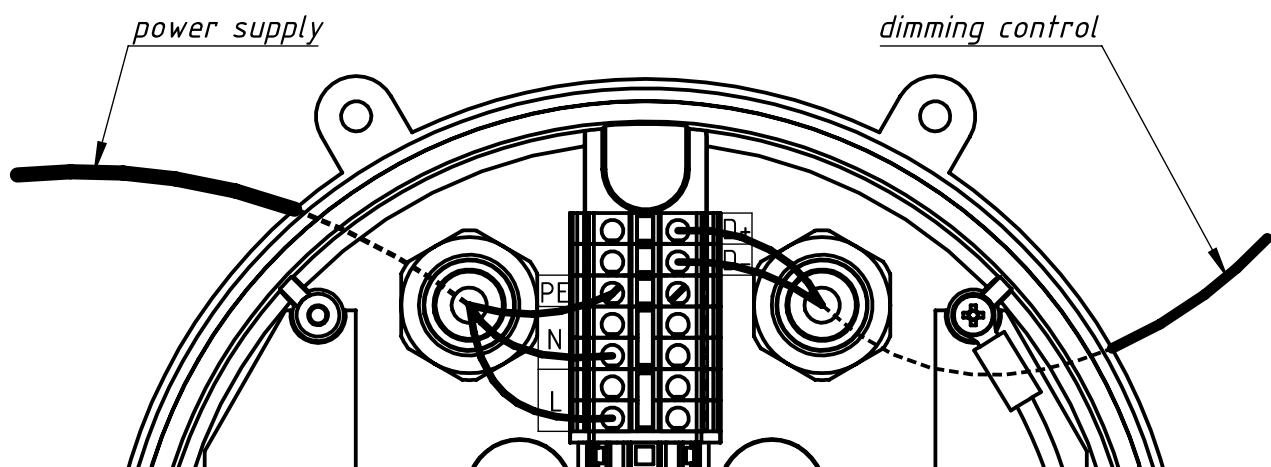
end connection



pass-through connection



end connection, dimming control



Name:

Luminaire connection diagram

No.:

Fig. 5

Table 1:

In the case of using a cable gland/fast connector with a protection degree lower than IP66 / 67 or a temperature range narrower than specified in point 8.2 the parameters of the entire luminaire are reduced. Changes should be noted in the table below, specifying the actual degree of protection and the operating temperature range.

No.	Luminaire serial number or range	Type of cable gland/fast connector unit used	Working temperature range	Degree of protection	Date	Responsible person	Signature
1							
2							
3							
4							
5							
6							
7							

Table 2:

List of additional accessories

No.	Producer	Type	Choke diameter	Material	Order code	Comments
1	HAWKE	Cable gland 501/421/O M20	6,5 - 11,9 [mm]	Brass	005795	for unshielded cable
2				Nickel-plated brass	006079	
3				316 stainless steel	006072	
4		Cable gland 501/421/B M25	13,0 - 20,0 [mm]	Brass	005797	for unshielded cable
5				Nickel-plated brass	008332	
6				316 stainless steel	008323	
7		Cable gland 501/421/Os M20	3,2 - 8,0 [mm]	Brass	005319	for unshielded cable
8				Nickel-plated brass	008539	
9				316 stainless steel	008111	
10		Cable gland 501/421/A M20	10,0 - 14,3 [mm]	Brass	005796	for unshielded cable
11				Nickel-plated brass	003795	
12				316 stainless steel	0013059	
13		Cable gland 501/423/O M20	6,5 - 11,9 [mm]	Brass	005806	for unshielded cable, double seal
14				Nickel-plated brass	010516	
15		Cable gland 501/423/B M25	13,0 - 20,2[mm]	Brass	005808	for unshielded cable, double seal
16				Nickel-plated brass	010572	
17		Cable gland 501/453/UNIV O M20	9,5 - 16,0 [mm]	Brass	005786	for shielded cable
18				Nickel-plated brass	008622	
19				316 stainless steel	011272	
20		Cable gland 501/453/UNIV B M25	11,1 - 19,7 [mm]	Brass	005788	for shielded cable
21				Nickel-plated brass	003770	
22		Stopping plug Ex M20 487		Brass	009946	Ex d, Ex e
23				Nickel-plated brass	003777	
24				316 stainless steel	009638	
25		Stopping plug Ex M25 487		Brass	008524	Ex d, Ex e
26				Nickel-plated brass	003776	
27				316 stainless steel	010277	
28		Stopping plug Ex M20 375		Plastic	006476	Ex e
29		Stopping plug Ex M25 375		Plastic	006477	Ex e
30		Nut M20		Brass	005824	-
31				Nickel-plated brass	008571	
32				316 stainless steel	009639	
33		Nut M25		Brass	005826	-
34				Nickel-plated brass	008519	
35				316 stainless steel	006680	
36		Cable gland cover SHROUD		Plastic	006942	
37		Cable gland cover SHROUD/B		Plastic	006943	
38	HUMMEL	O-ring sealing M20		VMQ (silicone)	14168	
39		O-ring sealing M25		NBR	03151	
40		Cable gland type HSK-M-Ex, M20	7,0 - 12,0 [mm]	Nickel-plated brass	3517	
41	Cable gland type HSK-M-Ex, M25	10,0-16,0 [mm]	Nickel-plated brass	2372		
42	WISKA	Cable gland Ex M20 no. 10103365	7,0 - 13,0 [mm]	Plastic	13456	
43		Cable gland Ex M25 no. 10103366	10,0-17,0 [mm]	Plastic	13524	