

## **USER'S MANUAL**

**Explosion-proof LED luminaire  
OREX 2 Ex type  
No. 52-1458/Z  
(ZxEx210031000202r3)**



**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 3x1.0mm<sup>2</sup> 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* $\pm 10\%$	
Power factor	PF $\geq 0.95^{**}$	
ATEX marking	Ⓔ II 3G Ex ec op is IIC T5..T4 Gc	
IECEEx marking	Ex ec op is IIC T5..T4 Gc	
EU-type examination certificate number	OBAC 21 ATEX 0135X	
IECEEx Certificate number	IECEEx 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 $\pm 10\%$ as an option 3000K, 5000K, 6500K $\pm 10\%$	
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) $\pm 10\%$	

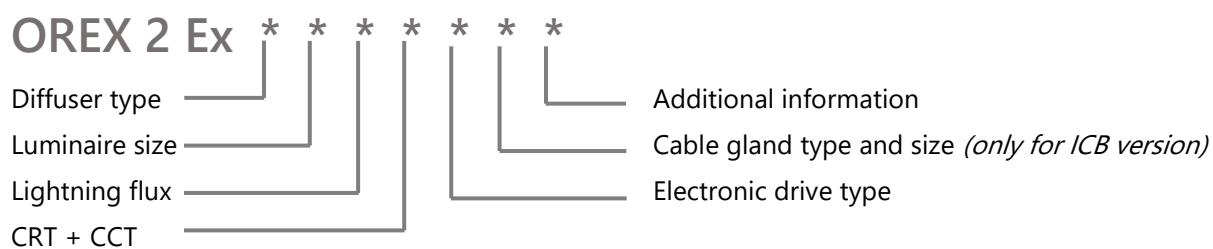
\* According to the table of execution types - point 3.1

\*\* 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
<b>None:</b> standard glass	<b>39:</b> Ø390 mm (max 160 W)	<b>60:</b> 6000 for 40W <b>90:</b> 9000 for 60W	<b>840:</b> CRI 80 and 4000K <b>850:</b> CRI 80 and 5000K Other on request	<b>P:</b> service connector <b>ETDD:</b> Digital diming DALI <b>PDA:</b> service connector and digital dimming DALI <b>10V:</b> analog diming 1-10V <b>P10V:</b> service connector and analog dimming 1-10V <b>ET:</b> power cord	<b>CG:</b> plastic cable gland <b>NiCG:</b> nickel-plated brass cable <b>BCG:</b> brass cable gland <b>ACG:</b> cable gland for armored cable <b>H:</b> 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.	<b>Painting:</b> RAL.. type <b>IPS:</b> external industrial power supply equipped with integrated connected cable (increased service live) <b>SD:</b> power supply assembly and lighting assembly separated, connected with cable (max 160W) <b>ICB:</b> version with industrial power supply and connection box (max 160W)  ... other on request
<b>G1:</b> milky glass <b>G...:</b> other glass on request	<b>46:</b> Ø460 mm	<b>120:</b> 12000 for 80W <b>150:</b> 15000 for 100W <b>180:</b> 18000 for 120W <b>210:</b> 21000 for 140 W <b>225:</b> 22500 for 150 W <b>240:</b> 24000 for 160W <b>270:</b> 27000 for 180W <b>300:</b> 30000 for 200W <b>330:</b> 33000 for 220W <b>360:</b> 36000 for 240W <b>390:</b> 39000 for 260W <b>405:</b> 40500 for 270 W  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
<b>None:</b> standard glass  <b>G1:</b> milky glass  <b>G..:</b> other glass on request	<b>39:</b> Ø390 mm	<b>60:</b> 6000 for 40W <b>90:</b> 9000 for 60W <b>120:</b> 12000 for 80W Tolerance ± 10%	<b>840:</b> CRI 80 and 4000K <b>850:</b> CRI 80 and 5000K Other on request	<b>P:</b> service connector  <b>ETDD:</b> Digital diming DALI  <b>PDA:</b> service connector and digital dimming DALI  <b>10V:</b> analog diming 1-10V  <b>P10V:</b> service connector and analog dimming 1-10V  <b>ET:</b> power cord	<b>CG:</b> plastic cable gland  <b>NiCG:</b> nickel-plated brass cable  <b>BCG:</b> brass cable gland  <b>ACG:</b> cable gland for armored cable  <b>H:</b> 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.	<b>Painting:</b> RAL.. type  <b>HT:</b> industrial power supply with an additional heat sink  <b>SDHT:</b> power supply assembly and lighting assembly separated, connected with cable  <b>ICBHT:</b> version with industrial power supply and connection box  ... other on request

### Additional accessories:

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

Examples of type designation:

- **OREX 2 Ex 39 90-840 P** – OREX 2 Ex, 40 W 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.

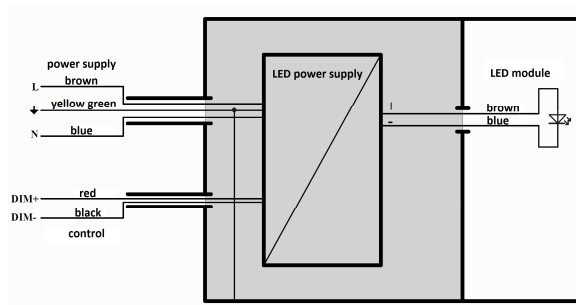
For the **ICB** variant, the luminaire is equipped with an additional integrated connection chamber. This enables the connection of through-flow, end-of-line power or simultaneous connection to the luminaire of a power line and a dimming line through cable glands placed on the top cover. The list of 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 10m 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.

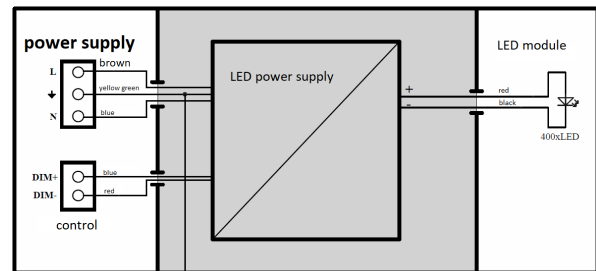
**Due to the explosion-proof design, it is not allowed to switch on the power supply unit when the lighting assembly unit is disconnected**

## Luminaire diagram

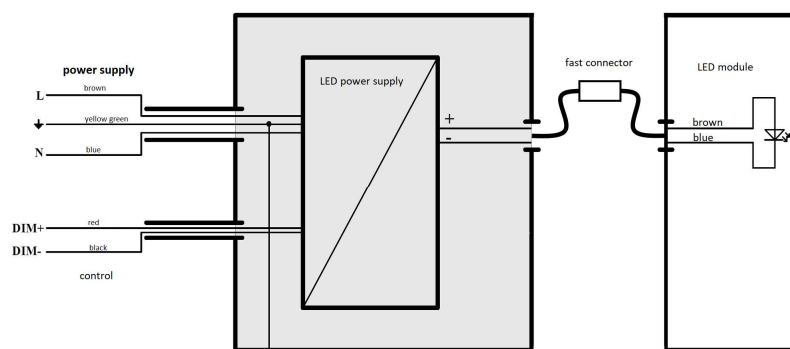
Standard and IPS version:



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, eg 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			
	$-32^{\circ}\text{C} \leq T_a \leq +45^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq T_a \leq +55^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$
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 ****				
	$-32^{\circ}\text{C} \leq T_a \leq +55^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq T_a \leq +65^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$	$-32^{\circ}\text{C} \leq T_a \leq +75^{\circ}\text{C}$
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

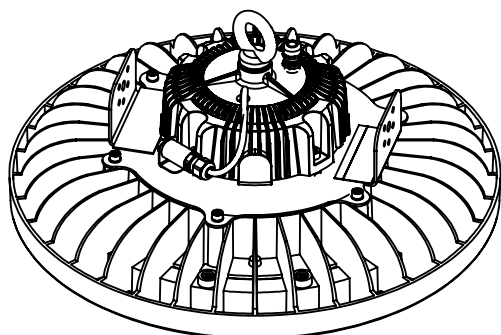
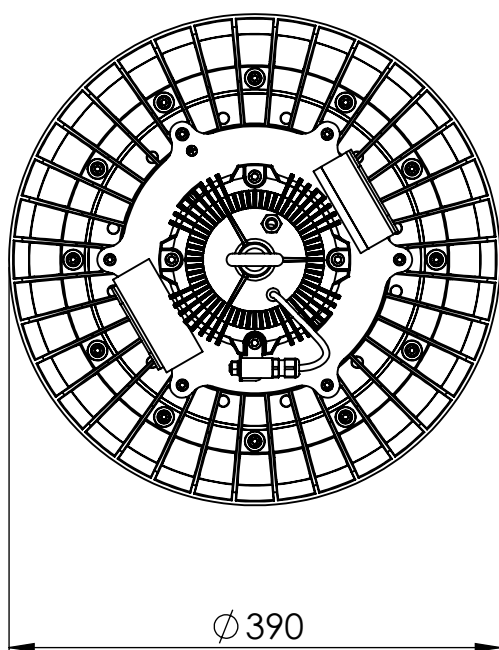
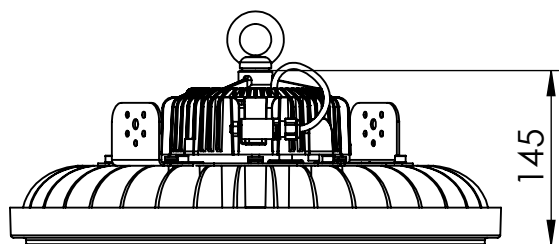
No.	Part name	Position	Index number
1.	Protective glass (up to 160W)	-	34-1008
2.	Gasket under glass (version up to 160W)	-	35-1037
3.	Protective glass (from 180W)	-	34-1009
4.	Gasket under glass (from 180W)	-	35-1038
5.	PSEHB2 power supply assembly	according to tab. 9.1	
6.	Lighting assembly (up to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

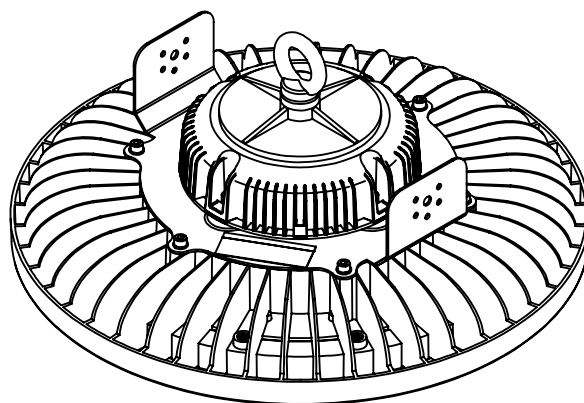
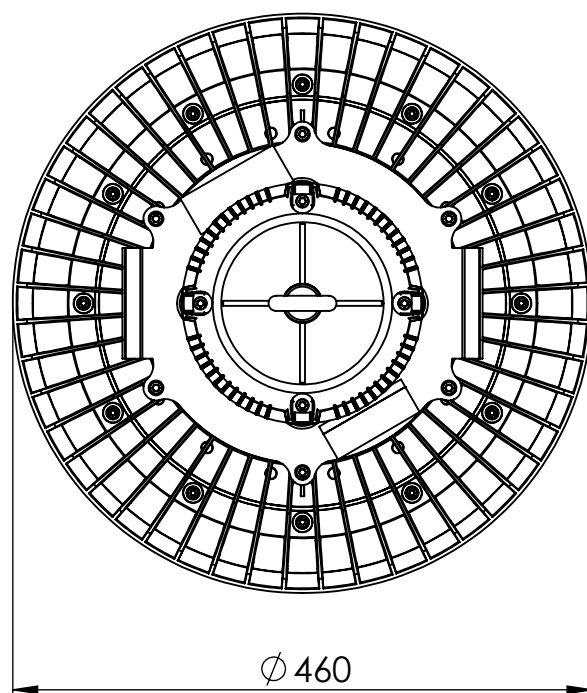
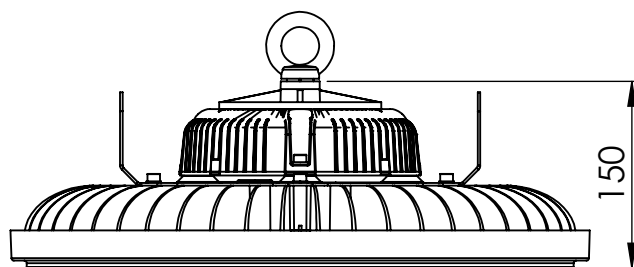
## 9.1. PSEHB2 power supply unit:

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;	<b>P</b> – diagnostic connector	<b>NONE</b> – Round high-bay power supply with an integrated power cord			
	<b>Variants on request:</b>				
	<b>ETDD</b> – digital dimming DALI	<b>IPS</b> – external power supply industrial equipped with an integrated power cord (increased service life)			
		<b>ICB</b> – variant with an industrial power supply and a connection chamber (max. 160W)			
	<b>PDA</b> – service connector and digital dimming DALI				
	<b>10V</b> – analog dimming 1-10V				
	<b>P10V</b> – service connector and analog dimming 1-10V				
	<b>ET</b> – power cord	<b>Cable Gland</b>			<b>Painting</b>
		<b>Quantity</b>	<b>Type</b>	<b>Size</b>	
<b>1</b> – one cable gland and plug  <b>2</b> – two cable glands  ...		<b>CG</b> – plastic cable gland	<b>20</b> – M20  <b>25</b> – M25	<b>NONE</b> – RAL1003;  RAL... ****	
		<b>NiCG</b> – nickel-plated brass cable gland	<b>1"</b>  <b>¾ "</b>		
		<b>BCG</b> – brass cable gland	... – other size		
		<b>ACG</b> – cable gland for armored cable			
	<b>H</b> – housing with a hole for cable gland				

POWER. 60-160W:



POWER. 180-270W:



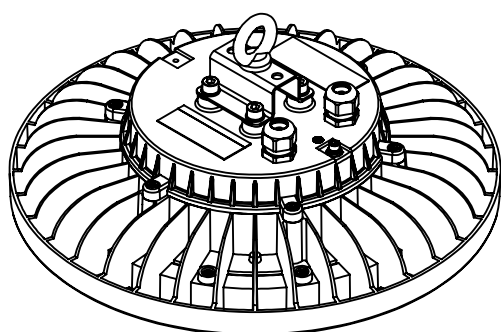
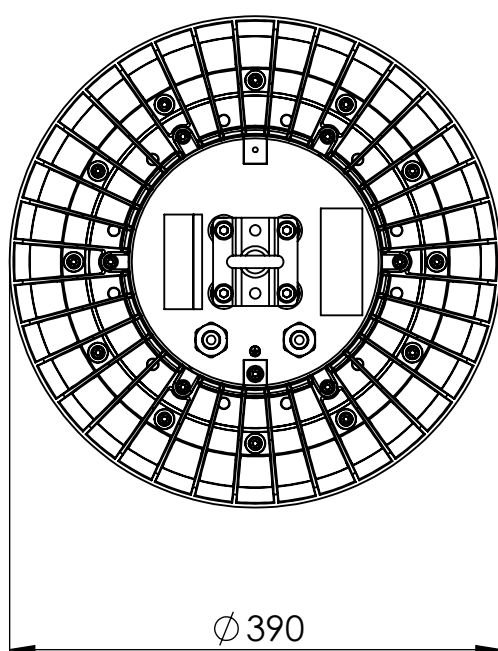
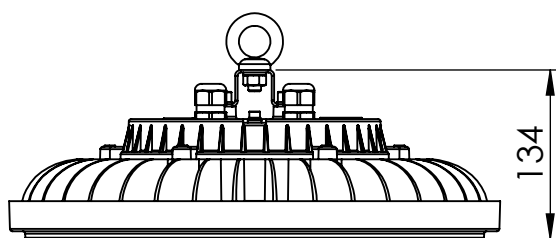
Name:

*OREX 2 Ex standard version*

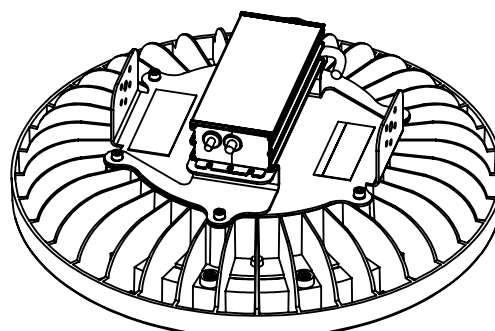
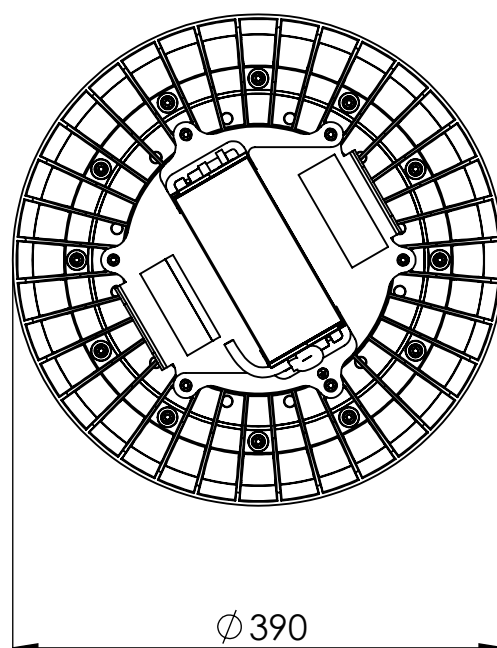
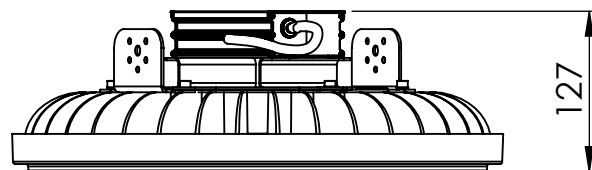
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*Fig. 1*

ICB (ICBHT) version:



IPS version



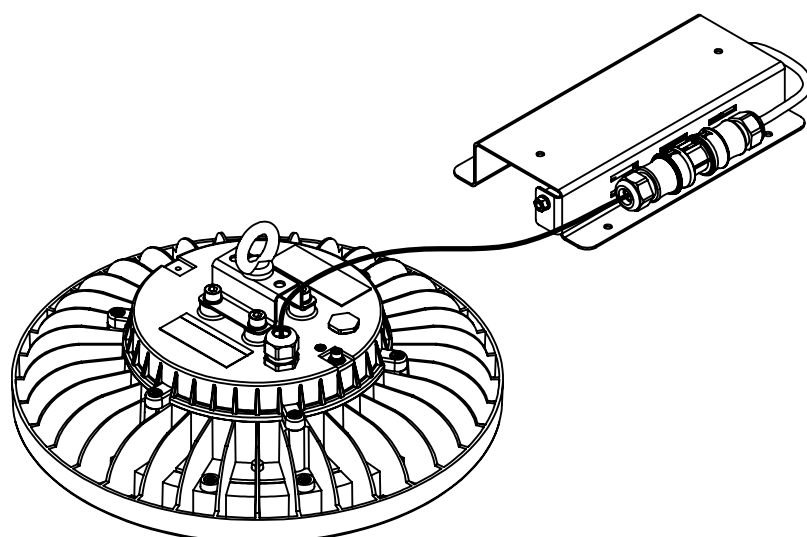
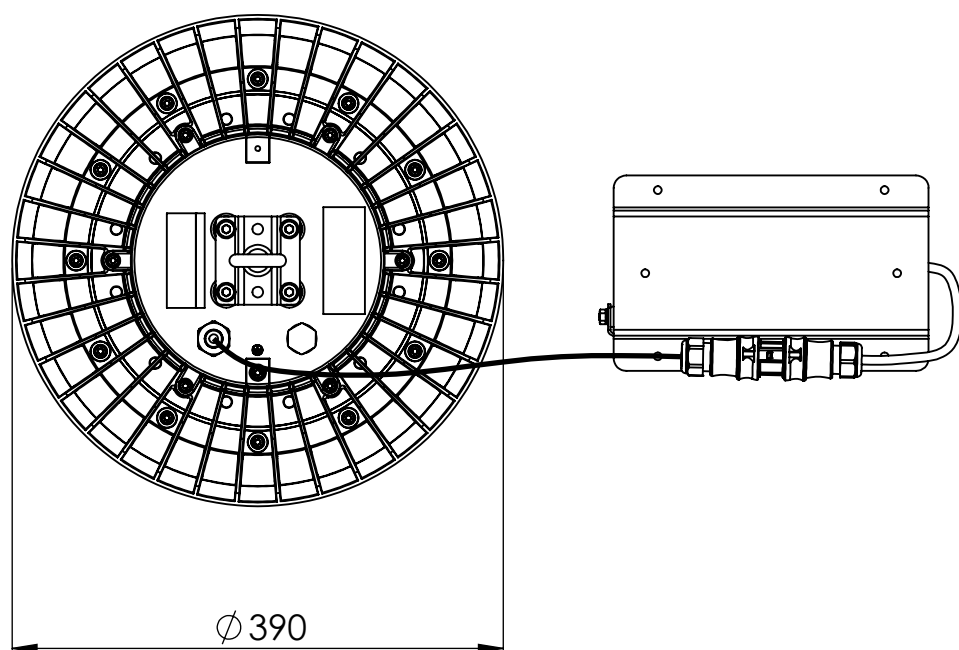
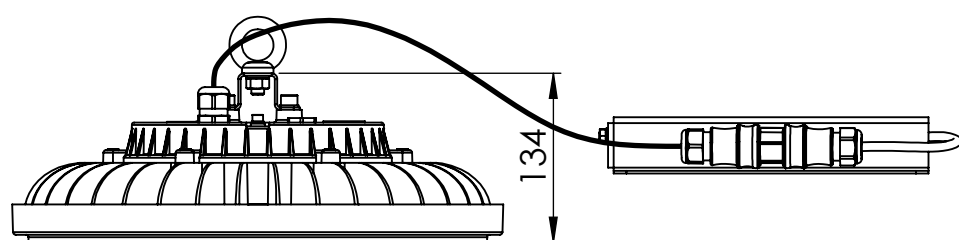
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*OREX 2 Ex  
ICB (ICBHT), IPS version*

No:

*Fig. 2*

SD (SDHT) version



Name:

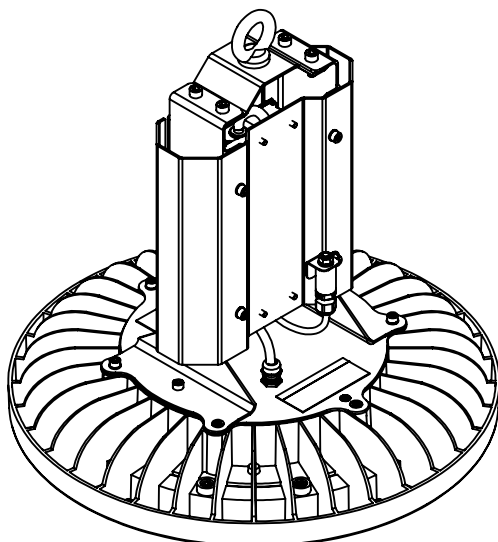
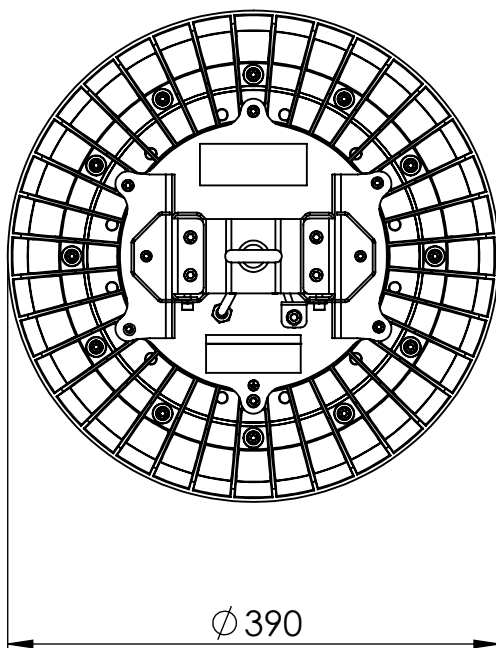
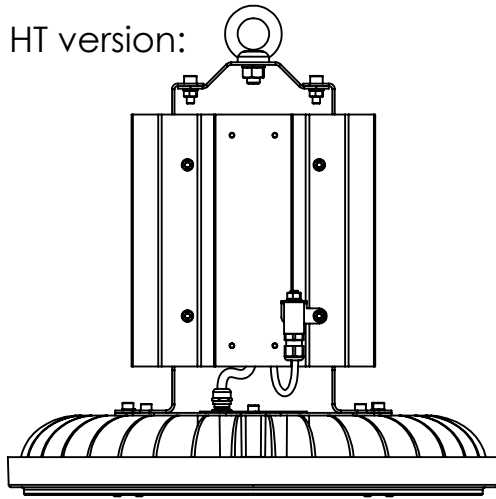
*OREX 2 Ex  
SD (SDHT) version*

No:

*Fig. 3*



HT version:

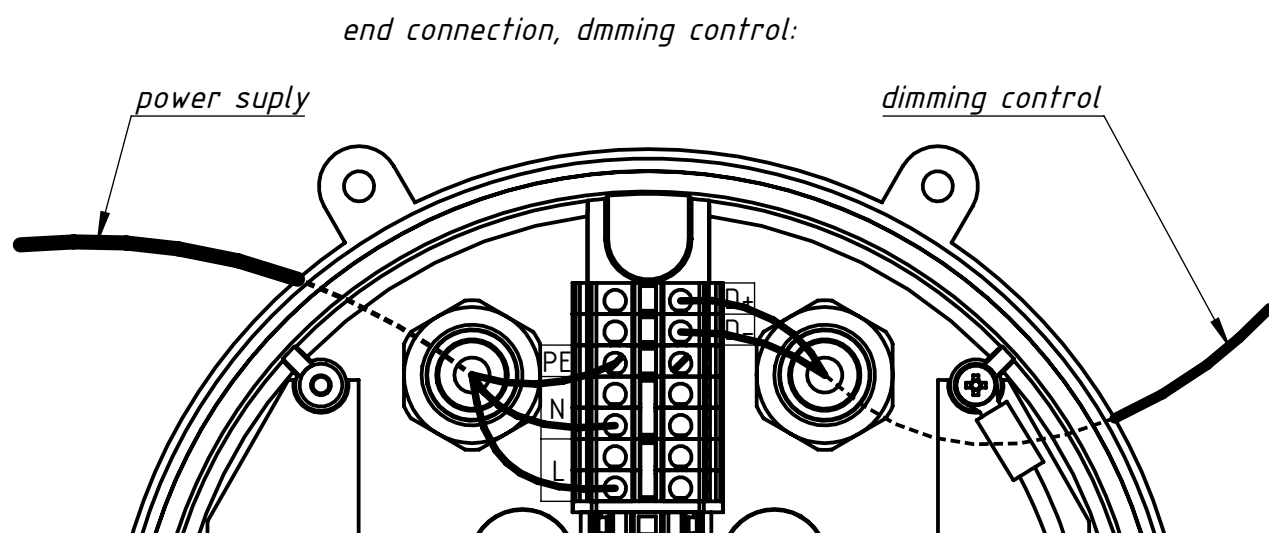
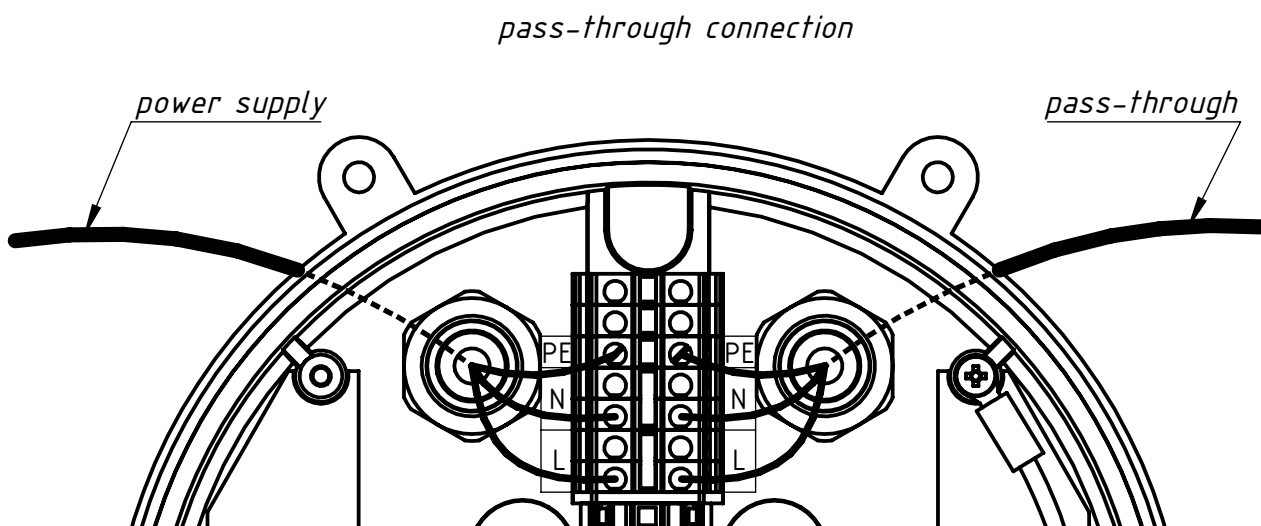
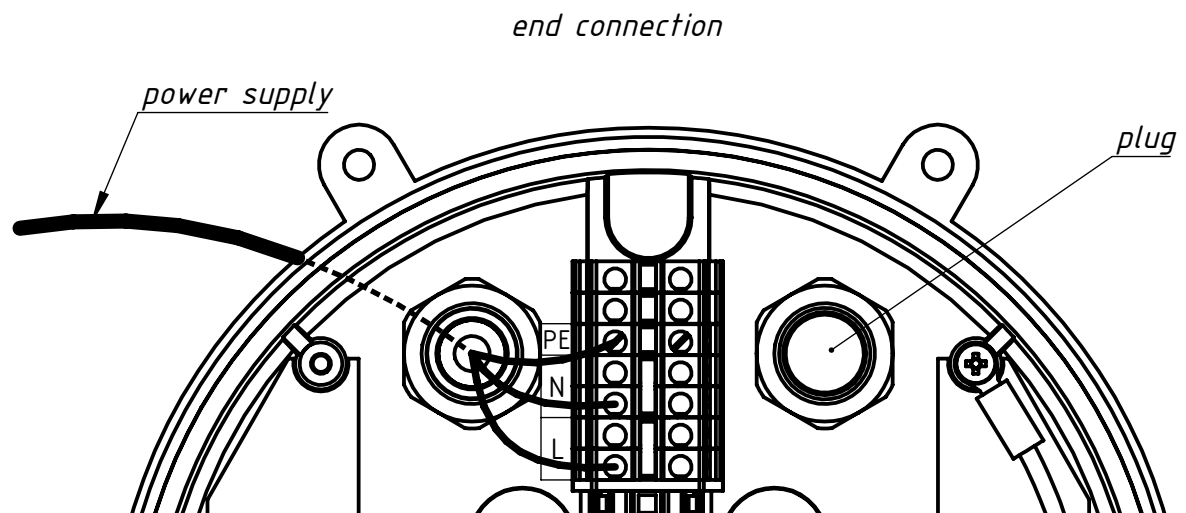


Name:

*OREX 2 Ex  
HT version*

No:

*Fig. 4*



Name:

*Luminaire connection diagram*

No:

*Fig. 5*