

Product Family: **STRATOS**

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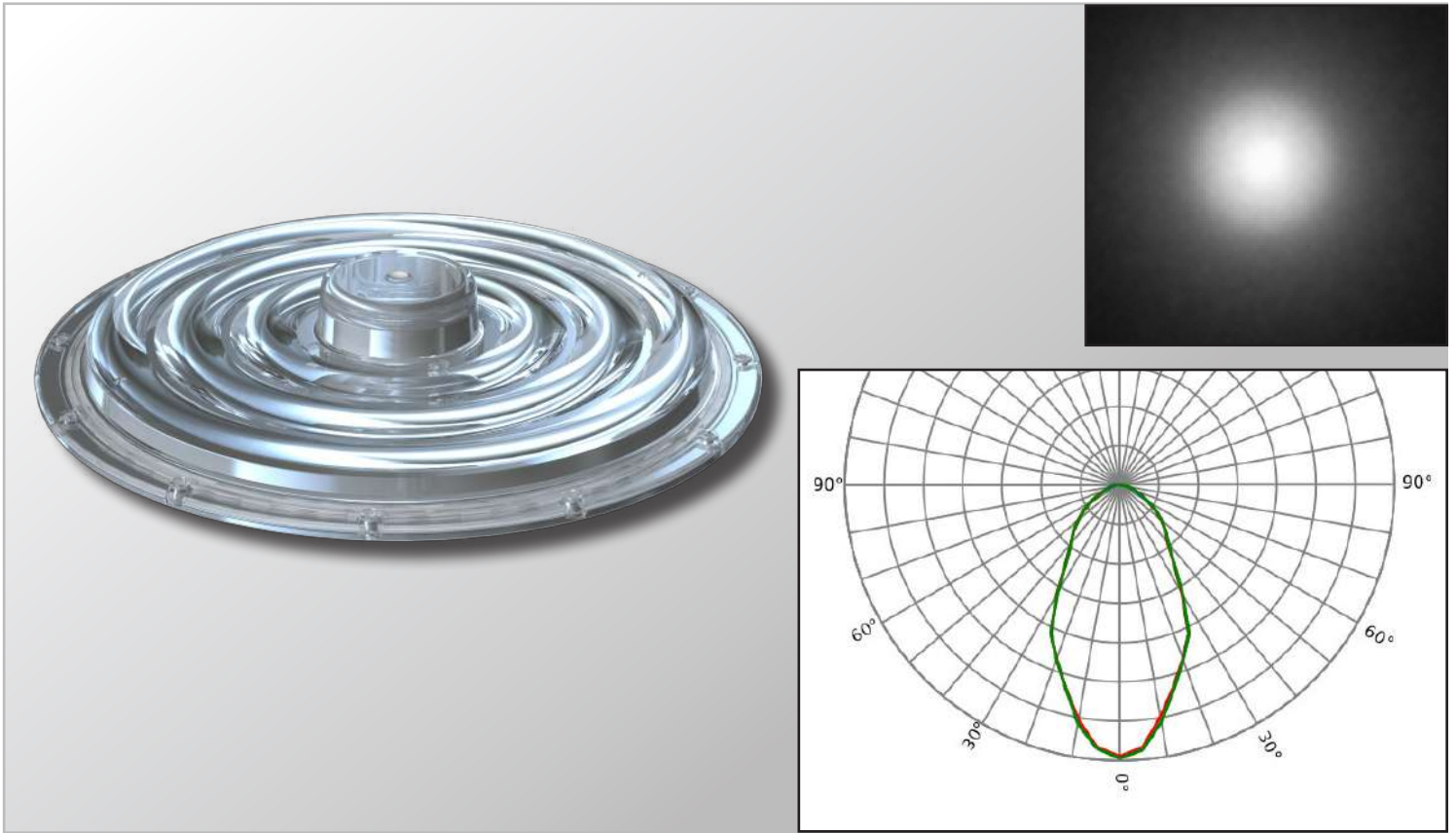
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New STRATOS are high-tech lenses designed for low and mid bay applications, with a special focus on Warehouses, safety and IoT. Beam angles available: Extra Wide and Ultra Wide. Space for Zhaga standard sensors or additional warning light is granted. Highly resistant Polycarbonate for sensitive and work-intensive areas.

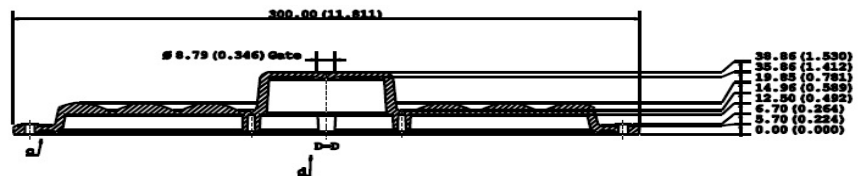
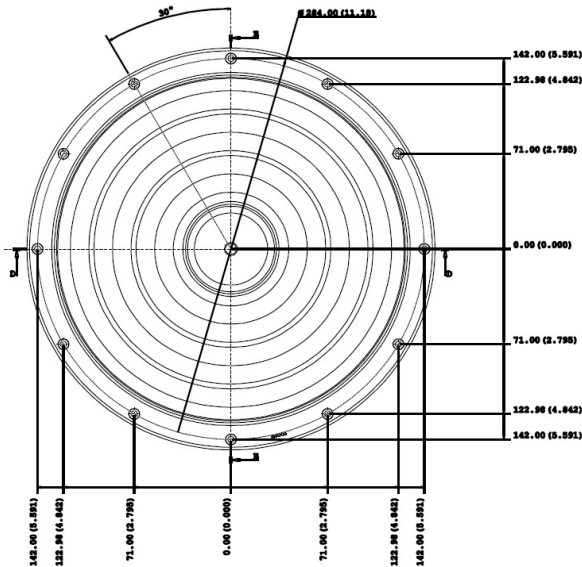
These lenses can be integrated with a **filter protection** which is optional:

- **IR Filter** to protect electronic sensors for IoT and Bluetooth applications.
- **Yellow Filter** to signal warnings in sensitive areas.
- **Red Filter** to signal danger in safety areas.

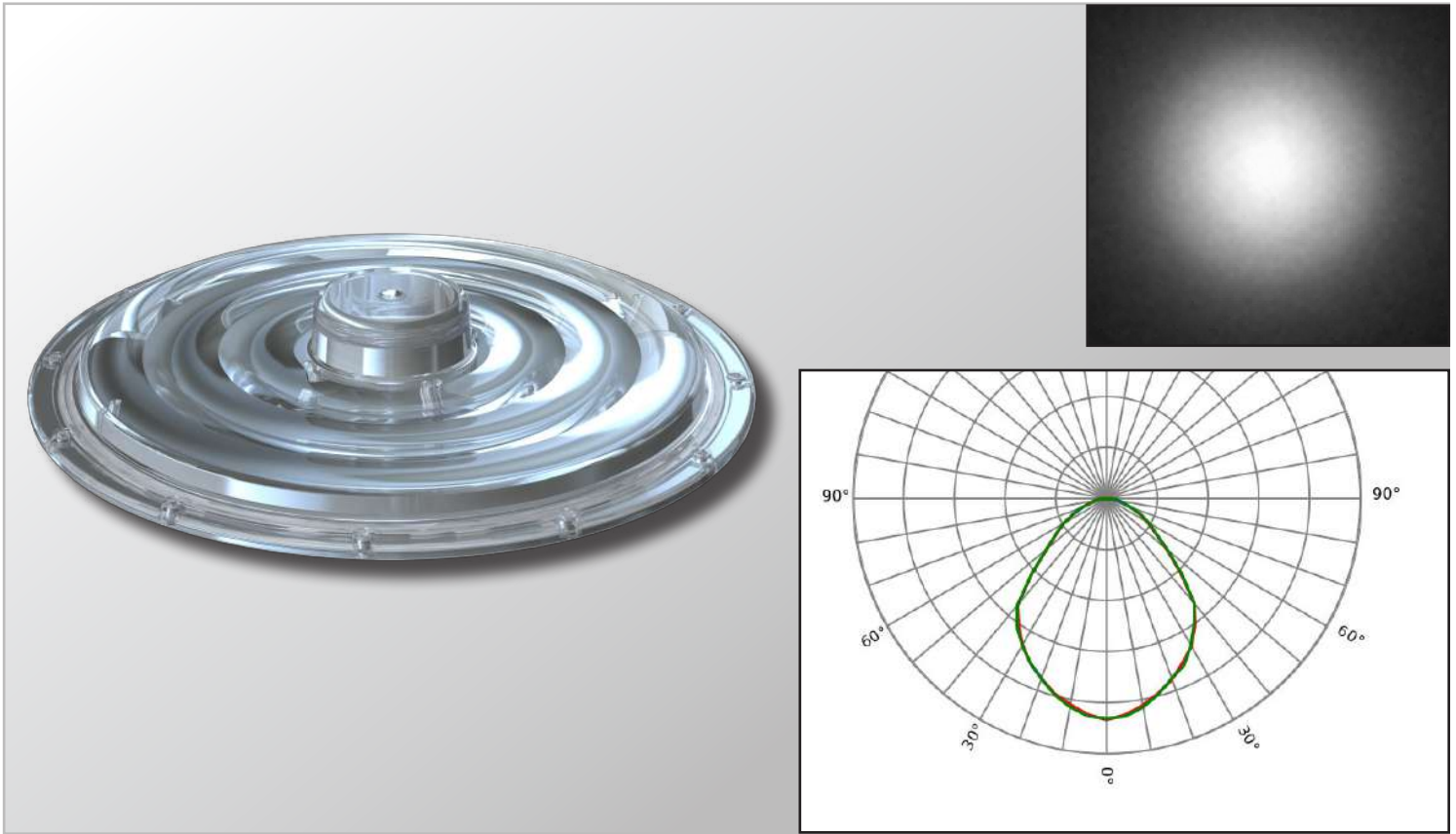
PLL2331EW - 60° FWHM for High-Bay Applications



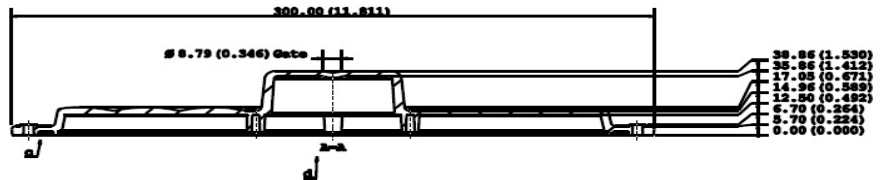
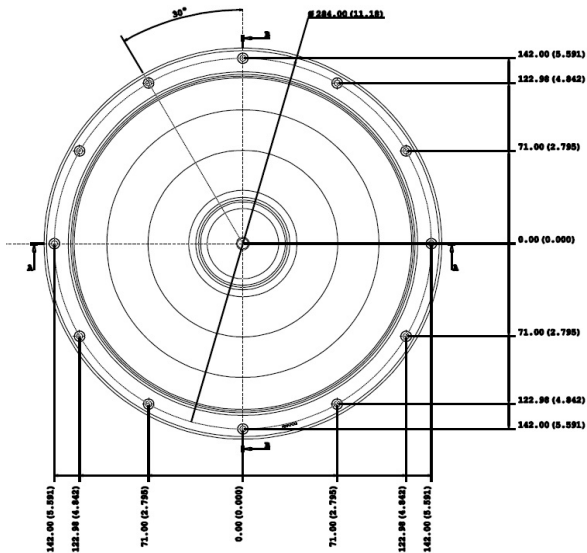
Dimensions	Type of fixing	Material	Beams	LED
300.00mm diameter - 38.86mm height	Screw Fixing: [~ 0.8/1.2 Nm] for M4 screws	PC 5.0 Clear, Non-yellowing, (UL 94V0 on Request)	<ul style="list-style-type: none"> Full angle C0-C180 at 50% from maximum: ~ 60° Full angle C0-C180 at 10% from maximum: ~ 120° 	150 LEDs 3x3mm size, and ~18.750Lumen@ ~ 150Watt



PLL2331UW - 90° FWHM for High-Bay Applications



Dimensions	Type of fixing	Material	Beams	LED
300.00mm diameter - 38.86mm height	Screw Fixing: [~ 0.8/1.2 Nm] for M4 screws	PC 5.0 Clear, Non-yellowing, (UL 94V0 on Request)	<ul style="list-style-type: none"> Full angle C0-C180 at 50% from maximum: ~ 87° Full angle C0-C180 at 10% from maximum: ~ 145° 	150 LEDs 3x3mm size, and ~18.750Lumen@ ~ 150Watt



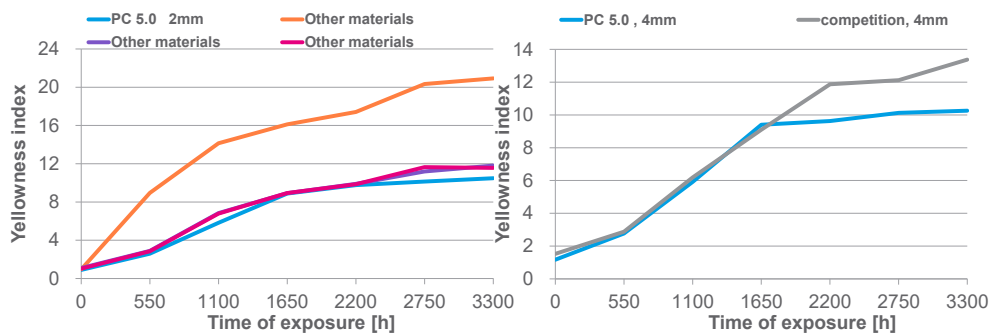
PC 5.0 - Specifications

Property	Test Condition	Unit	Standard	Typical Value**
Rheological Properties				
Melt volume-flow rate (MVR)	300 °C / 1.2 kg	cm ³ /10 min	ISO 1133	34
Molding shrinkage, parallel	60x60x2; 500 bar	%	b.o. ISO 2577	0,65
Molding shrinkage, normal	60x60x2; 500 bar	%	b.o. ISO 2577	
Mechanical properties (23 °C, 50 % r. F.)				
Tensile modulus	1 mm/min	MPa	ISO 527-1,-2	2350
Yield stress	50 mm/min	MPa	ISO 527-1,-2	63
Yield strain	50 mm/min	%	ISO 527-1,-2	6
Nominal strain at break	50 mm/min	%	ISO 527-1,-2	>50
Stress at break	50 mm/min	MPa	ISO 527-1,-2	60
Strain at break	50 mm/min	%	ISO 527-1,-2	125
Flexural modulus	2 mm/min	MPa	ISO 178	2350
Flexural strength	2 mm/min	MPa	ISO 178	97
Flexural strain at flexural strength	2 mm/min	%	ISO 178	7,1
Flexural stress at 3.5 % strain	2 mm/min	MPa	ISO 178	73
Izod notched impact strength	23 °C; 3 mm	kJ/m ²	ISO 7391	55
Izod notched impact strength	-30 °C; 3 mm	kJ/m ²	ISO 7391	12
Thermal properties				
Temperature of deflection under load	1.80 MPa	°C	ISO 75-1,-2	123
Temperature of deflection under load	0.45 MPa	°C	ISO 75-1,-2	136
Vicat softening temperature	50 N; 50 °C/h	°C	ISO 306	143
Vicat softening temperature	50 N; 120 °C/h	°C	ISO 306	145
Coefficient of linear thermal exp., parallel	23-55 °C	10 ⁻⁴ /K	ISO 11359-1,-2	0,65
Coefficient of linear thermal exp., transverse	23-55 °C	10 ⁻⁴ /K	ISO 11359-1,-2	0,65
Oxygen index	Method A	%	ISO 4589-2	28
Glow wire test (GWFI)	1,0 mm	°C	EC 60695-2-12	850
Glow wire test (GWIT)	0,75 mm	°C	EC 60695-2-13	875
Optical Properties				
Luminous transmittance (clear transparent materials)	2 mm	%	ISO 13468-2	90
Luminous transmittance (clear transparent materials)	4 mm	%	ISO 13468-2	>89
Other properties (23 °C)				
Density	-	kg/m ³	ISO 1183	1,19
Material specific properties				
Refractive index	Procedure A		ISO 489	1,584
Haze for transparent materials	3mm		ISO 14782	<0,5
Processing conditions				
Injection molding mold temperature		°C		80
Injection molding melt temperature		°C		280
Injection speed		mm/s		200

Disclaimer

Weatherability / UV resistance

ISO 4892-2A Cycle 1



3300 h ~ 2 years Florida ~ 4 years Europe (directly facing the sunlight)

KE2331 - PROTECTION



KE2331IR - IR PROTECTION

IR Filter to protect electronic sensors for IoT and Bluetooth applications.



KE2331OR - ORANGE PROTECTION

Yellow Filter to signal warnings in sensitive areas.



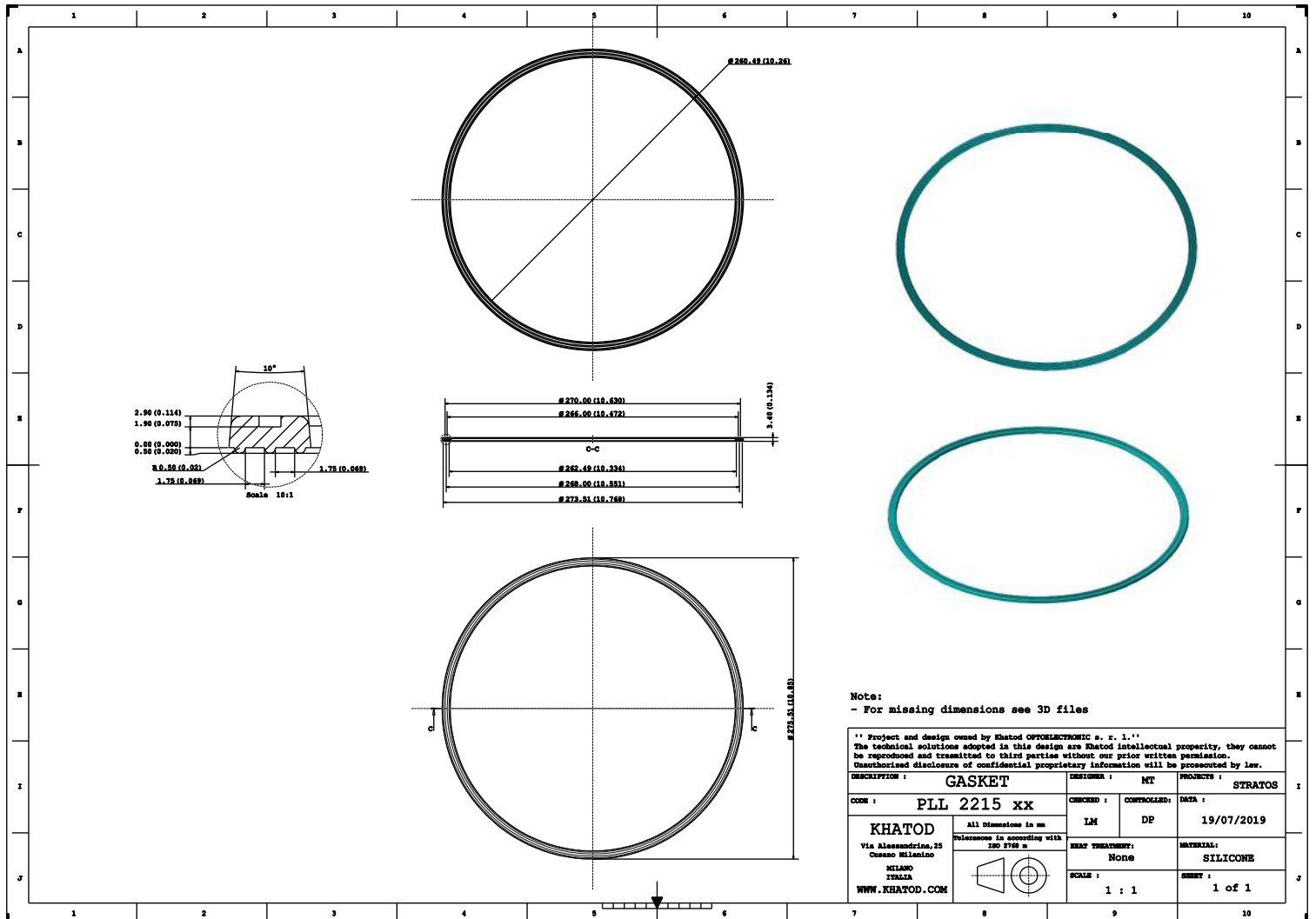
KE2331RD - RED PROTECTION

Red Filter to signal danger in safety areas.

Silicone Gasket



Silicone Gasket already applied, IPX7



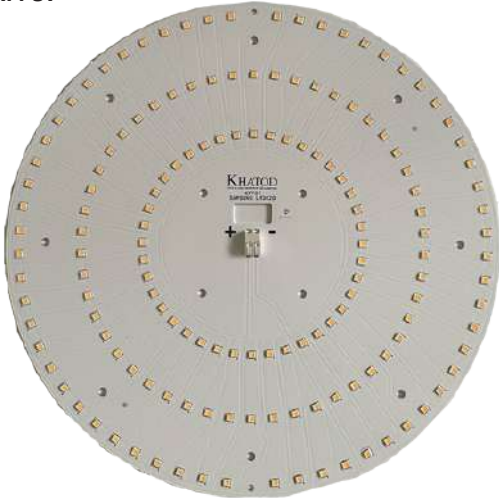
Note:
- For missing dimensions see 3D files

** Project and design owned by Khatod OPTOELETTRONIC s. r. l. **			
The technical solutions adopted in this design are Khatod intellectual property, they cannot be reproduced and transmitted to third parties without our prior written permission. Unauthorized disclosure of confidential proprietary information will be prosecuted by law.			
DESCRIPTION :	GASKET	DESIGNER :	NT
CODE :	PLL 2215 xx	PROJECT :	STRATOS
KHATOD Via Alessandrina, 25 Cusano Milanino MILANO ITALIA WWW.KHATOD.COM	All dimensions in mm Tolerances in accordance with ISO 2768 m	CHECKED :	IM
		CONTROLLED:	DP
	DATE TREATMENT:	DATA :	19/07/2019
	None	MATERIAL:	SILICONE
	SCALE :	SHEET :	1 of 1
	1 : 1		

KFP57 - PCB for Testing

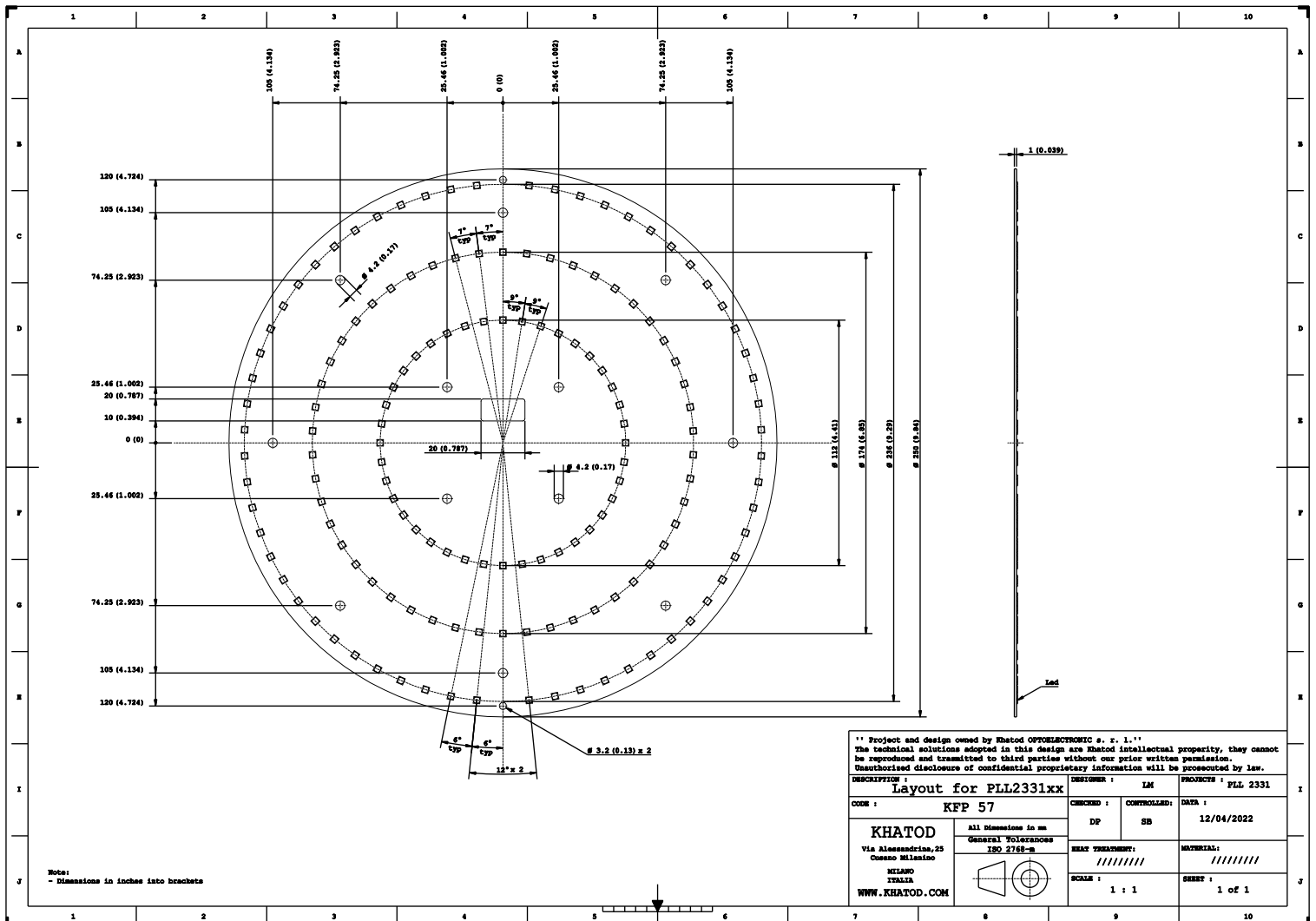
To make Stratos lenses testing easier for the customers, Khatod has created a ready-to-use PCB: KFP57. PCB diagrams and photos are shown below.

KFP57

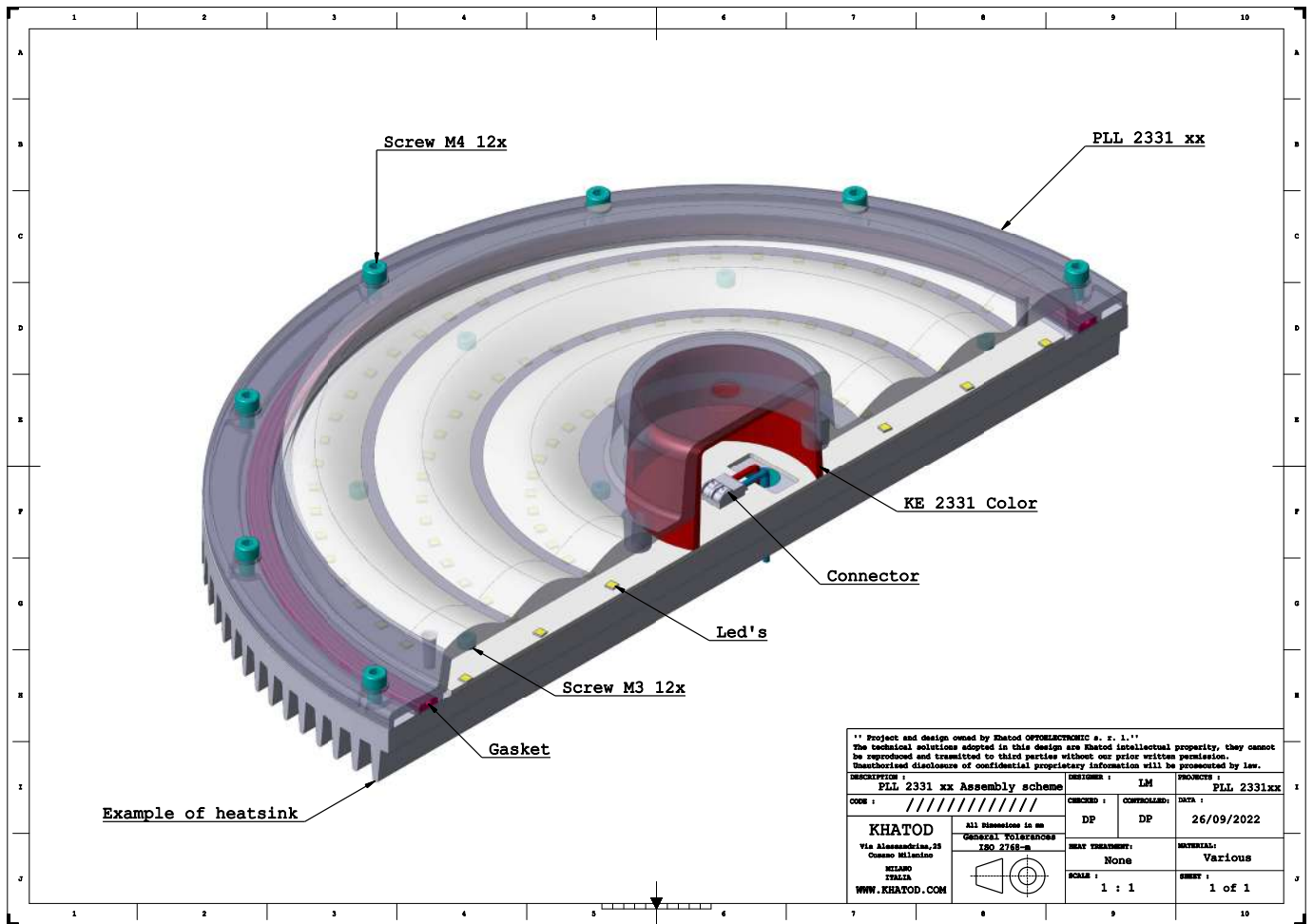


Example using 150 Samsung LM302D LEDs
 ~ 150Watt
 ~ 18.750 Lumen

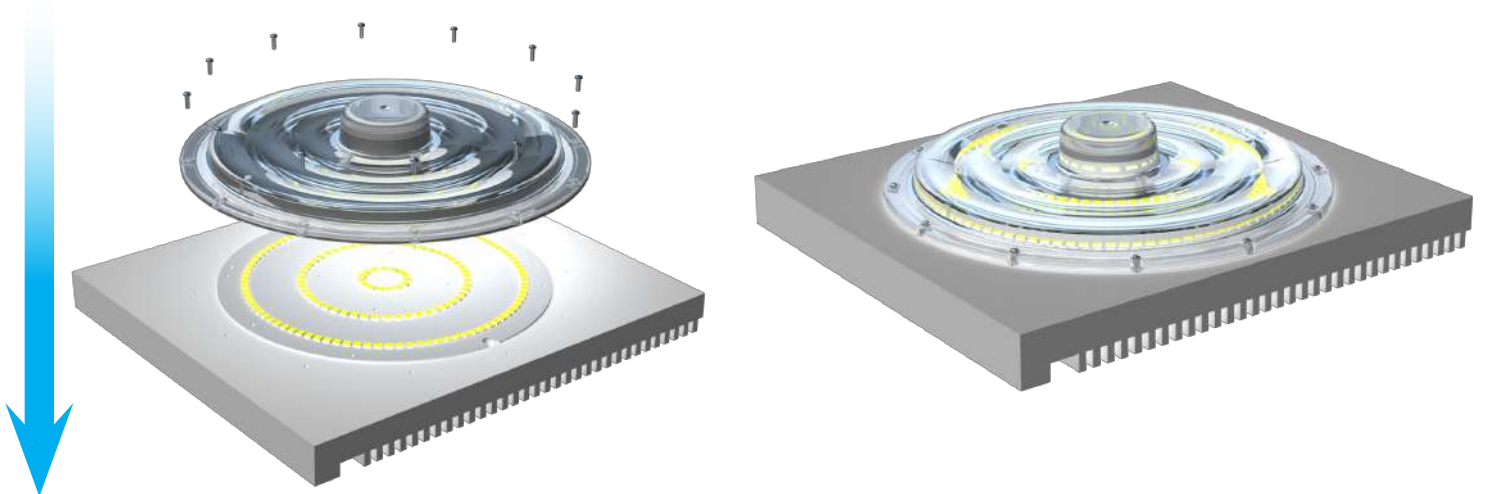
The PCB can hold a variable number of LEDs, provided the overall power output is within 50W to 200W. You can use LEDs of different type, colors and packages - 2835, 3030, 3535, 5050, 7070 -



Assembly Specifications



M4: Maximum tightening torque
~ 0.8/1.2 Nm



Packaging

Item	Quantity	Total Parts	Size (L*W*H)	G.W.
Multi-pocket plastic bag	1 piece per multi-pocket plastic bag	1 pcs	30*30 cm	0.371 Kg
Outer Box	20 multi-pocket plastic bags per Outer Box	20 pcs	58*33*33 cm	8,0 Kg



20 Lenses / Multi-pocket plastic bags



20 Multi-pocket plastic bags per Outer Box

Materials



Material	Temperatures
PC 5.0	-40° / + 120°C
• Temperature resistance: long-term	-40° / + 90°C
• Temperature resistance: short exposure	up to + 108°C

Tests

The present document is an internal document showing the tests carried out by Khatod in its laboratory.

The tests, photos and videos presented in this document are made available for demonstration purposes only. Khatod, with its laboratory, is not a certification body.

If customers need IP and IK accredited certifications, they have to apply to the appointed Certification Bodies, under their sole care and responsibility.

Test	Link
IP X7 Test 	Click here
IK Test 	Click here

Notes:

- The optical values shown are the result of optical simulations carried out with LIGHTTOOLS, ASAP and ZEMAX software systems. The optical simulations are carried out on the basis of the typical values provided in the LED manufacturers' official datasheets. The photometric analysis has been carried out on physical samples. On request, by supplying your PCB, we can provide the measurement photometric file.

Use and Maintenance

- DO NOT HANDLE OR INSTALL LENSES WITHOUT WEARING GLOVES, SKIN OILS MAY DAMAGE LENS OR LIGHT TRANSMISSION;
- CLEAN LENSES WITH MILD SOAP AND WATER AND A SOFT CLOTH;
- DO NOT USE ANY COMMERCIAL CLEANING SOLVENTS ON LENSES.

Disclaimer

Please note that flow lines and weld lines on the external surfaces of the lenses are acceptable if the optical performance of the lens is within the specifications.

Should you require further information, please contact Khatod for advice. All lens testing must be subject to identical conditions as Khatod test condition. Khatod Optoelectronic, Milan, Italy, manufactures lenses for LEDs. Any other use of the lens shall void our liability and warranty. The lenses are an inert component to be used in the manufacture of

various products. Our warranty and liability are limited only to the manufacture of the lens. You may not modify, copy, distribute reproduce, license or alter the lens and related materials of Khatod. Khatod does not warrant against damages or defects arising out of the use or misuse of the products; against defects or damage arising from improper installation, or against defects in the product or in its components. No warranty of any kind, expressed or implied, is made regarding the safety of the products. The entire risk as to the quality or performance of the product is with the buyer. In no event

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