SIGHTGLASS LED LUMINAIRE SL60s

GELEC

INDUSTRIAL ELECTRONICS

CONTENTS

PRECAUTIONS!

There are no serviceable parts inside the **SL60s** unit. Not to be opened by any unauthorized person. All repairs to the device must be carried out by the manufacturer, or a qualified service engineer.

Improper handling may result in serious personal injury and considerable material damage. All connection and maintenance work must be carried out by qualified personnel.

RISK OF ELECTRIC SHOCK!

Use the correct voltage. The SL60s is designed for use with specific voltage only. Connection to a different voltage may cause fire, electric shock or other damage.

Do not touch the plug and the connectors with wet hands.

Disconnect the SL60s before cleaning it, to avoid the risk of electric shock.

Attempting to use a malfunctioning SL60s can be dangerous.

Keep liquids away from the SL60s.
This luminaire is waterproof (IP65 when correctly mounted), though if you notice liquid or any small object into the SL60s body, unplug it immediately. Spillage into the unit may result to fire, electric shock, or equipment damage. Have the unit checked by a qualified service engineer before using it again.

Be careful when touching the luminaire.
The unit may have high surface temperature under certain circumstances. Always check when grabbing with bare hands.

Do not look directly at the light source.
The incorporated LED module emits a very powerful light beam. Take care not to look directly at it when powering the luminaire or during operation.

I. MANUFACTURER'S WARRANTY, GENERAL TERMS AND CONDITIONS

Thank you for purchasing this product.

Our products have been manufactured with the latest technology, the highest quality components and have gone through rigorous quality control tests at the factory, before shipment. Make sure that the part number and type indicated in the identification label and pack correspond to the part number or type of your order. After receiving, inspect the unit to ensure that no damage have been caused during transportation.

GELEC and GELEC's authorized distributors warrant to the original purchaser that the product shall be free from defect in material and/or workmanship. The warranty period begins on the purchase date (proof of purchase by invoice or delivery note) and is valid for one (1) year.

In the event of malfunction during the warranty period attributable directly to faulty material and/or faulty construction and functional defects, GELEC and authorized distributors will, at their option, either repair or replace the faulty product with the same or similar model.

GELEC and authorized distributors shall have no obligation under this warranty, however, in the following cases:

- ‣ Any defect caused by freight damage, accident, disaster, faulty maintenance or improper handling.
- ‣ Any defect caused by modification, alteration, abuse, misuse or incorrect installation.
- ‣ Any defect of the product caused by improper repair by third party other than GELEC and GELEC's authorized distributors.
- ‣ Any incompatibility of the products with subsequent technical innovations or regulations.
- ‣ Any defect of the product caused by external equipment.
- ‣ Any defect of the product on which the original manufacturer's labeling has been altered or removed.

In case of complaint please contact our company or send the unit un-dismantled to your local dealer. Any necessary replacement parts and necessary repair work are totally covered free of charge.

All products are designed and produced by the manufacturer GELEC Co. LP to be in compliance with the EU norms applying to them. GELEC is not responsible for direct or indirect damages or malfunction caused by improper use or installation of the SL60s.

2.   DISPOSAL OF OLD ELECTRICAL & ELECTRONIC EQUIPMENT
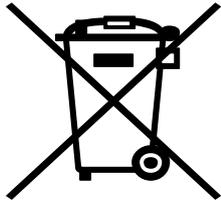
This product should not be treated as household waste when you wish to dispose it.

It should be handed over to an applicable collection point for the recycling of electrical and electronic equipment.

By ensuring this product is disposed of correctly, you will prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product.

The recycling of materials will help to preserve natural resources.

3.   SIGHTGLASS LED LUMINAIRE SL60s

This operator's manual explains the functions and operation of the **SL60s**. It also gives some troubleshooting tips as well as general precautions to be taken when operating the unit. In order to ensure the best performance and effective use of the SL60s, we recommend that you read the information in this manual carefully and follow the instructions contained.

This manual is a complete guide to the SL60s with information on unit user maintenance, unit installation and instructions on how to operate it. Do not touch any part of the SL60s the manual does not cover. Keep the manual for immediate reference. It should help in solving any operational questions you may have.

No part of this manual may be quoted, reproduced, stored in a retrieval system, transmitted, transcribed or translated into any other language in any form or by any means, electronic, mechanical, or otherwise, without prior written permission of **"Gelec Co. LP"**.

Although every effort has been made to ensure that this manual provides up to date information, please note that the contents in this manual and the unit specifications are subject to change without notice.

Do not forget to refer the exact type and version of your SL60s whenever you contact the manufacturer, asking for any further information. You can find this information on the identification label on top of the luminaire. A corresponding mark defines the type of your luminaire (100 / 200 / 300 lm).

4. GENERAL DESCRIPTION

SL60s is a powerful and compact LED luminaire with an onboard time switch, for sightglasses to DIN28120 / 28121 / 11851 in safe areas. The optimum solution for the internal illumination of tanks, pipelines, silos, mixers and any closed vessel in industry that requires visual inspection during process stages.

The incorporated LED module with a 50° lens provides efficient and high intensity illumination with low power consumption and can be power supplied with either alternative or direct current (AC/DC). It is equipped with an overheating protective function through an internal temperature sensor, which leads in intensity decrement or even in deactivation of the luminaire. Incorrect polarity and overcurrent protections are also available.

Manufactured from sandblasted stainless steel, it is designed to fit in any sightglass with the appropriate adapting flange and has a variety of mounting positions according your needs (position on the sight glass, cable gland direction, different or customized types of adapting flanges). It is dust and waterjet proof (IP65) and appropriate for high temperature applications, having a specific *'heatsink'* design for better heat dissipation.

OPERATING MODES

The SL60s has an onboard tactile time switch with two operating modes available, **Continuous Mode** and **Timing Mode**. After initial power supply, SL60s always activates in Timing mode, which is the default mode of the device.

In *Continuous Mode* the luminaire lights continuously. In *Timing Mode*, the operator lights the luminaire for a given time range of 5 minutes and then it switches off automatically. In this way the LED module life time is being extended, resulting also an economic benefit from the reduced power consumption of the luminaire.

Timing Mode is enabled with an instant press of the button, while *Continuous mode* is enabled with a continuous press of the button for 3 seconds. To confirm that *Continuous Mode* is enabled, the luminaire flashes 3 times.

MAIN FEATURES

- High intensity illumination with low power consumption.
- Appropriate for high temperature applications and IP65 protection.
- Customized solutions and material alternations according your needs.
- Independent of vessel's internal pressure/vacuum.
- Numerous mounting options about the position on the sightglass
  and the cable gland direction.
- Compact design providing the maximum space for visual inspection.
- Two operating modes available, *Timing Mode* and *Continuous Mode*.
- *Timing Mode* minimizes power consumption and increases life time.
- Customization of *Timing Mode* is available upon request (default 5min).
- Overheating protection with internal temperature sensor.
- Incorrect polarity and overcurrent protective functions.

APPLICATIONS

- Appropriate for combined sight/light glass units, or separate flanged ports
  in non hazardous areas.

    On sight glasses acc. to DIN28120,   DN 50 – DN200
    On sight glasses acc. to DIN28121,   DN 50 – DN200
    On sight glasses acc. to DIN11851,   DN 50 – DN125

- Flow indicator sightglasses and rectangular or D-ended sight glasses.
- Suitable for pharmaceutical, cosmetic and food processing industries.
- Appropriate for general and architectural lighting.

5.   ADAPTING FLANGES

The sandblasted stainless steel (AISI 304) adapting flanges are the mounting component between the luminaire and the sightglass. Permanite sealing gaskets waterproof the luminaire housing and provide thermal insulation from the vessel's temperature, giving the ability to use the luminaire in difficult industrial conditions. A countersunk hole allows the proper light emission.

There are several types of adapting flanges available. Find below the appropriate for each sightglass and their detailed drawings. These adapting flanges can also be used at numerous applications and for different DIN standards (flow indicator sightglasses, rectangular or D-ended sight glasses etc.). Customized adapting flanges are also available.

TYPE A - DIN28120/28121 (DN50-DN200)

This flange is appropriate for DIN28120/28121 sightglasses. It maximizes the free space for the visual inspection, as it extends 45-60mm above the glass, depending on your sightglass dimensions and your application needs. Use a pin at the 3mm hole in order to firm the mounting if needed.
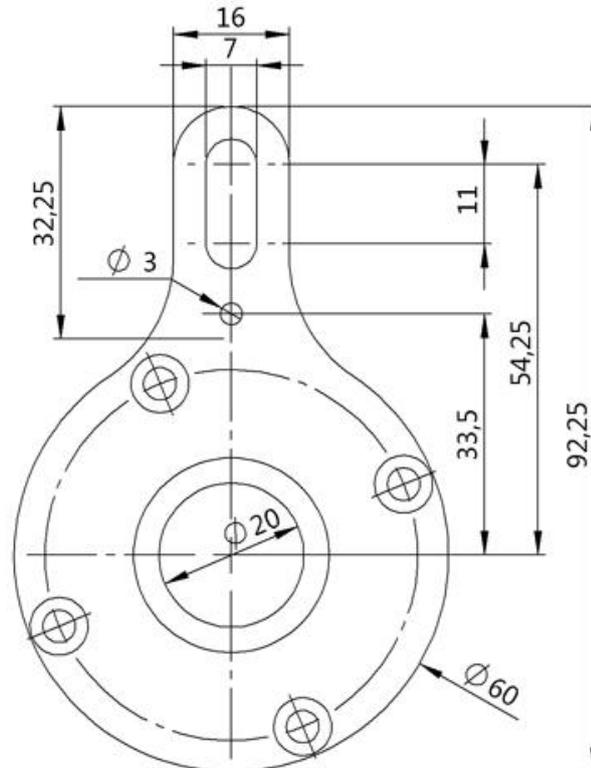
TYPE Bxx* - DIN28120 (DN80-DN200)

This flange is appropriate only for DIN28120 sightglasses. It has a common shape for these applications and with two mounting fins provides extra stability in vibrating environment. It has extra space around the luminaire body for possible drawings, additional information about the internal of the vessel, or safety precautions that may be needed throughout the visual inspection.
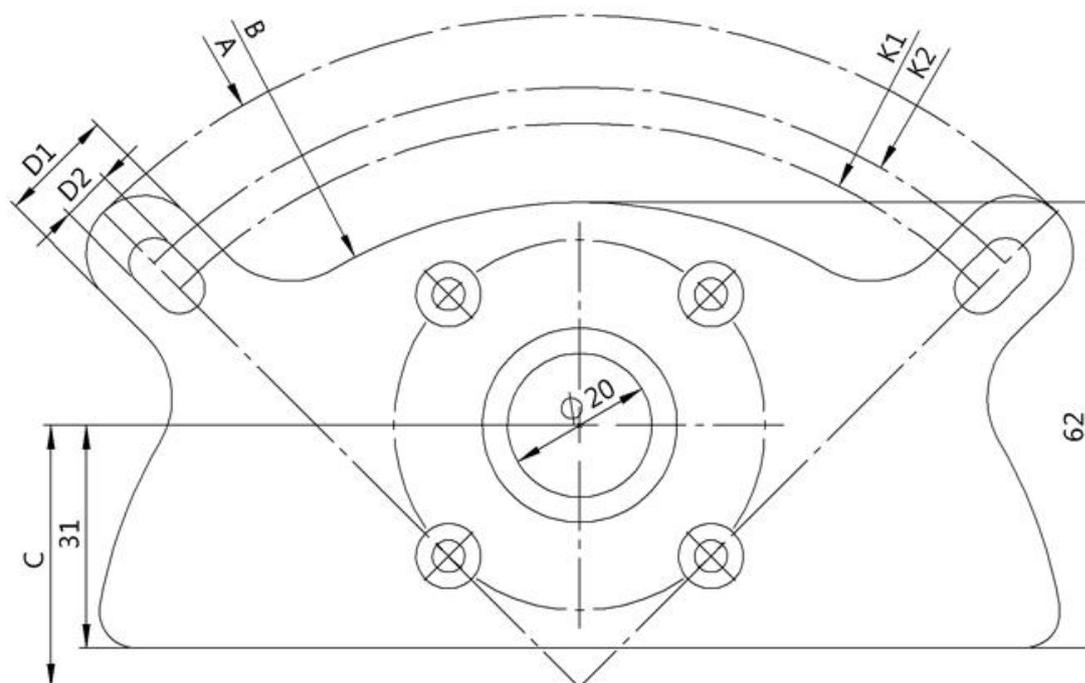
Type B flange dimensions (mm)					
	B80	**B100**	**B125**	**B150**	**B200**
A	158	187	212	245	306
B	110	135	160	185	235
C	24	36.5	49	61.5	86.5
D1	13	16	16	20	20
D2	7	7	7	9	9
K1	128	157	182	210	270
K2	138	167	192	220	280

* xx according your sightglass nominal diameter (DN).
 E.g. if your sightglass is DIN28120/DN150, the appropriate flange type is the B150.

TYPE Cxx* - DIN11851 (DN50 & DN65)

Flange appropriate for DIN11851 sightglasses with nominal diameter DN50 and DN65. Note that this flange covers the whole glass and it is appropriate for sightglasses used only for lighting.
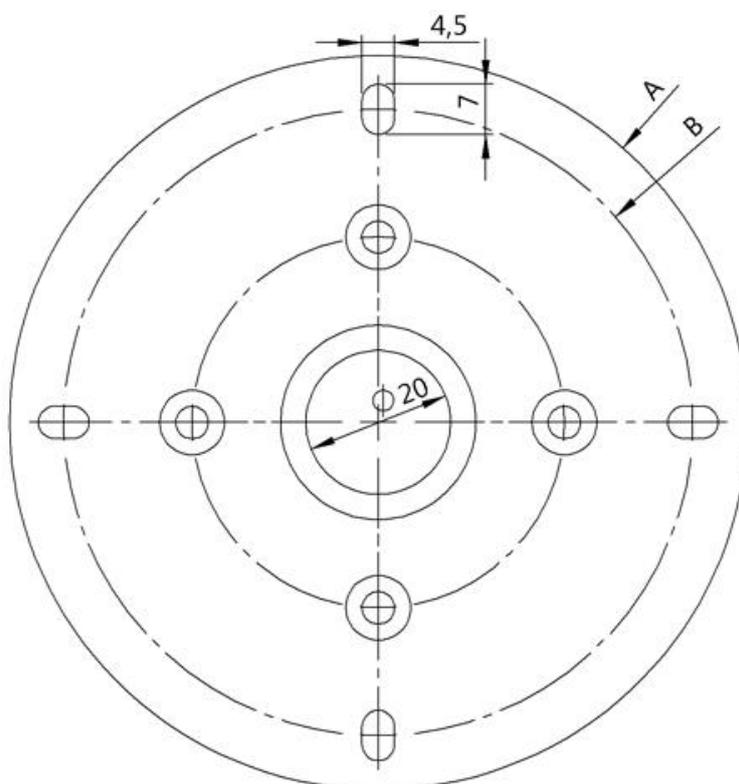
| Type C flange dimensions (mm)		
	C50	**C65**
A	84	102
B	72	87

* *xx* according your sightglass nominal diameter (DN).
  E.g. if your sightglass is DIN11851/DN50, the appropriate flange type is the C50.

TYPE D - DIN11851 (DN80-DN150)

Flange appropriate for DIN11851 sightglasses, which maximizes the space for visual inspection as it extends up to 60mm above the glass, depending on your sightglass dimensions and your application needs.
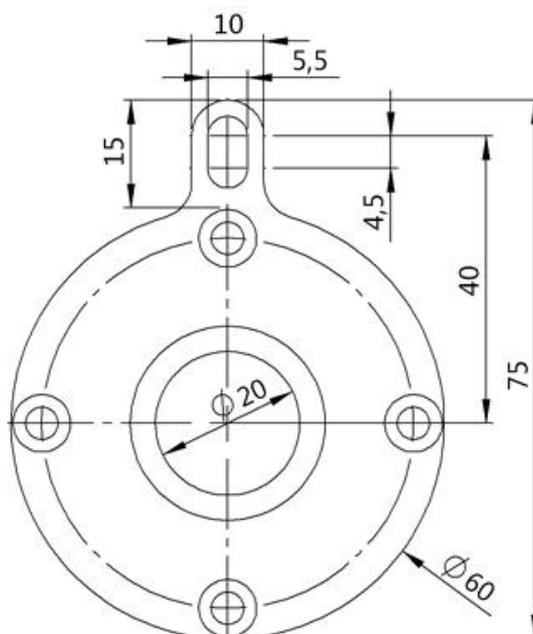
Advise the below tables to find which SL60s adapting flange type, matches each sightglass standard and its nominal diameter.

CUSTOMIZED TYPES

If your application requires a specific adapting flange for the mounting of the SL60s luminaire, you can provide us a detailed mechanical drawing and we will manufacture it for you. The variations may refer to dimensions, shape, material etc.

For further information, just contact Gelec and describe your application.

6.   SL60s VERSIONS AND ORDERING

Below are the main versions of SL60s, which combine with one of the adapting flanges.

- SL60s MAIN VERSIONS -

	SL60s-WW100	SL60s-WW200	SL60s-WW300
Operating voltage	15..27 V AC , 12..40 V DC		
LED specifications	Warm White (CCT 3000K)		
Emission angle	50°		
Luminus Flux	100 Lumen	200 Lumen	300 Lumen
Power drain	1,7 W	3,6 W	5,7 W

- SL60s ADAPTINGFLANGES -

Advise the below tables to find which SL60s adapting flange type, matches each sightglass standard and its nominal diameter.

	DIN28120 sightglasses					
Nominal Diameter (DN)	DN50	DN80	DN100	DN125	DN150	DN200
Adapting Flange Type	A	A / B80	A / B100	A / B125	A / B150	A / B200

	DIN28121 sightglasses					
Nominal Diameter (DN)	DN50	DN80	DN100	DN125	DN150	DN200
Adapting Flange Type	A	A	A	A	A	A

	DIN11851 sightglasses					
Nominal Diameter (DN)	DN50	DN65	DN80	DN100	DN125	DN150
Adapting Flange Type	C50	D65	D	D	D	D

Material alternations for the main parts of the luminaire are available upon request, so you can select the material which matches your application needs. Different LED colors, emission angle, housing materials, cable glands and adapting flanges are available. For customized versions send us a detailed description or contact us to discuss your application.

When ordering a luminaire it is necessary to include both luminaire and adapting flange type in your order. We recommend you to advise carefully the related drawings to ensure that the adapting flange you chose is the proper for your application.

7. INSTALLATION

If any liquid spills into the SL60s cabinet, disconnect the unit immediately. Have the unit checked by a qualified service engineer before using it again. Always follow the instructions given by the manufacturer and use the SL60s in accordance to its specifications.
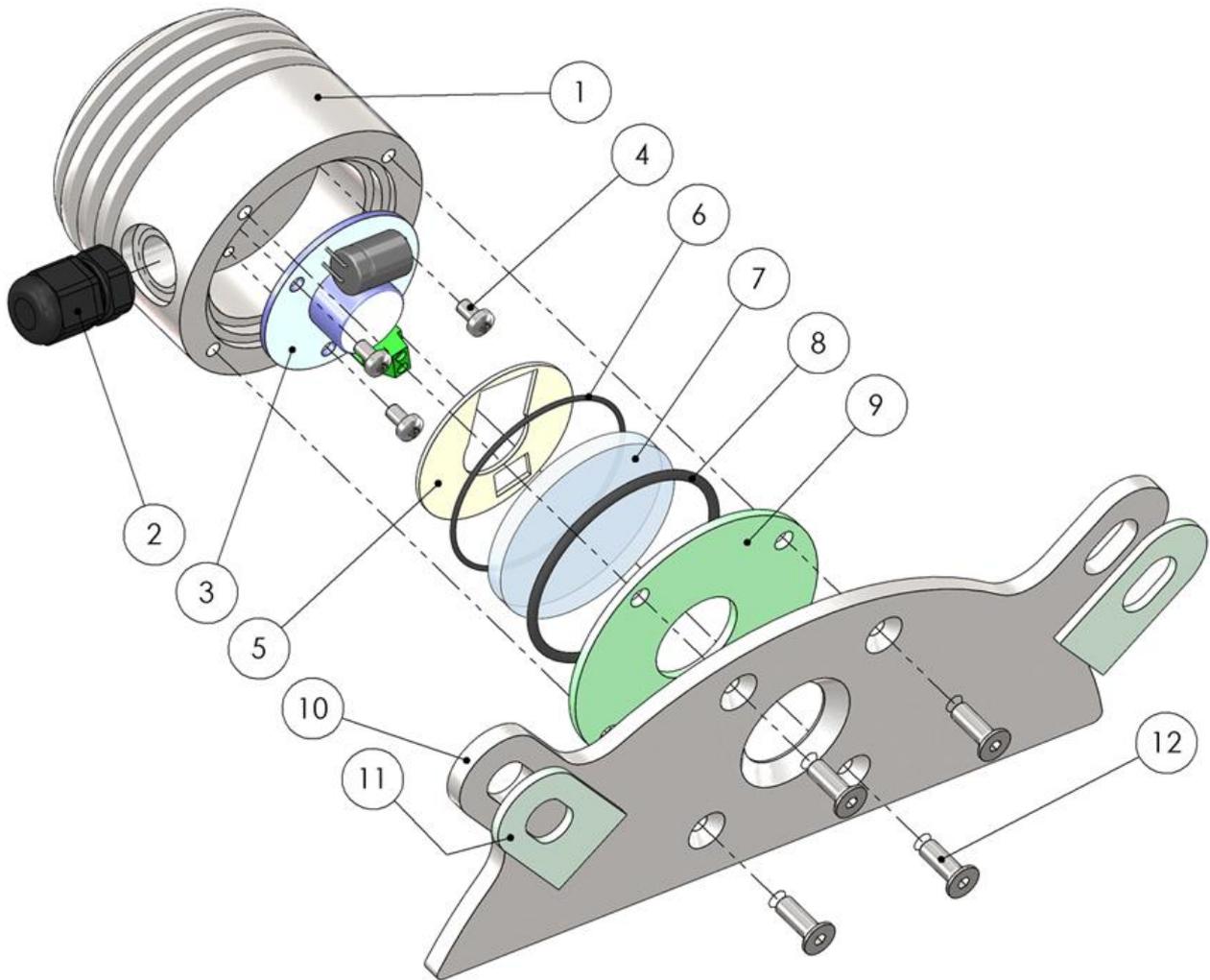
SL60s Exploded view

Follow the below steps for the correct mounting of the SL60s luminaire.

Ensure that you have all parts of the package as shown at the exploded view of the luminaire. Note that some steps of this procedure may have already been done from the manufacturer.

1. Normally, the **PG7 cable gland (2)** is already fitted on the luminaire. If not, you should use a thread sealing adhesive to seal up the thread, in order to keep the device within its specifications (IP65).
2. Clean the inner surface of the **luminaire body (1)** and apply thermal paste on the surface that the **LED module (3)** will be screwed. This step is important in order to improve the efficiency of the heatsink and have the appropriate heat dissipation during operation. Inadequate heat dissipation will affect the luminaire's proper function.
3. Place the LED module as shown and screw firmly with the **screws (4)**.
4. Adapt the **protecting paper (5)** accordingly.
5. Use an appropriate cable for the PG7 cable gland and screw firmly to have a waterproof assembly. Afterwards, screw the wires ($1.0mm^2$ / 16AWG) at the terminal block without a specific polarity.
6. Place the **thin o-ring (6)** at the inner circular edge and then the **glass disc (7)** above it. Ensure that the glass disc is clean and in good condition.
7. Place firmly the **thick o-ring (8)** at the outer circular edge between the glass disc and the luminaire body.
8. Use the M4x10mm **countersunk screws (12)** to mount the luminaire on the **adapting flange (10)** with the orientation which matches your application needs. The **permanite gaskets (9) / (11)** are already on the adapting flange.

ELECTRICAL CONNECTIONS

The power supply voltage can be between **15 – 27 VAC** or **12 – 40 VDC** and polarity is not important. Connection to lower or higher of the specified voltage may cause fire, electric shock or damage. There is not an electrical safety fuse in the internal power circuit.

Use a cable with diameter 3,5-7mm to have a proper connection with the cable gland and ensure that it is appropriate for your application's temperature limits.

The unit is equipped with one M2x3.50mm pitch connector located at the LED module (3).
The wires may be rigid solid or flexible stranded up to $1.0mm^2$ / 16AWG, and stripped properly. Insert and screw only one wire in each terminal in order to be in compliance with VDE norms. Be careful when (un)screwing, large tightening torque may damage the connector.

Always follow the instructions given by the manufacturer and use the SL60s according to its specifications.

INSTALLATION ON THE SIGHTGLASS

- The drawings are according to DIN standards, but consider them as indicative. There may be differences between different sightglass manufacturers.

- Always advise the manufacturer's mechanical drawings of your sightglass before drilling a sightglass and ensure that any modifications will not affect its safety and operating standards.

- Although you have many options about the final fitting on the sightglass, avoid the positions that the cable gland faces up, to protect the luminaire from possible liquid insertion.

- Notice that the adapting flange has only a Ø20 hole for the light emission and not the whole surface. You can maximize the space for visual inspection and mount accordingly on the sightglass, though ensure that after the mounting this hole is not partly covered and you exploit all the light emission.

- When having adapting flanges with one fin in vibrating environments, to prevent possible fastening loosening and firm the mounting, you could use a lock washer or a pin at the relevant 3mm hole.

8.   SIGHTGLASS FITTINGS

SIGHTGLASS DIN 11851 ADAPTER - 1FIN
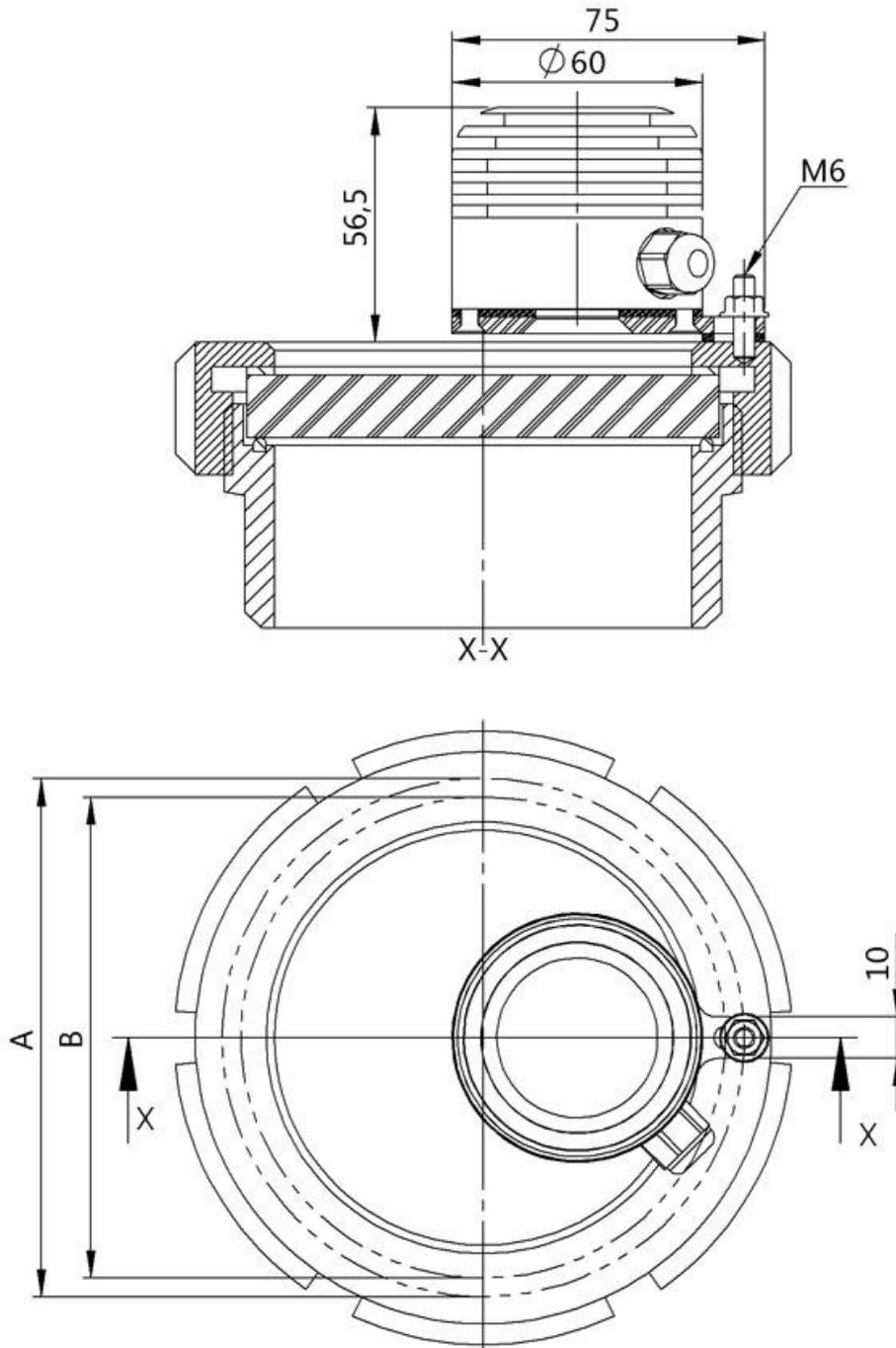
DN	A	B
80	103	94
100	125	116
125	155	146
150	184	175

SIGHTGLASS DIN 28121 ADAPTER - 1FIN
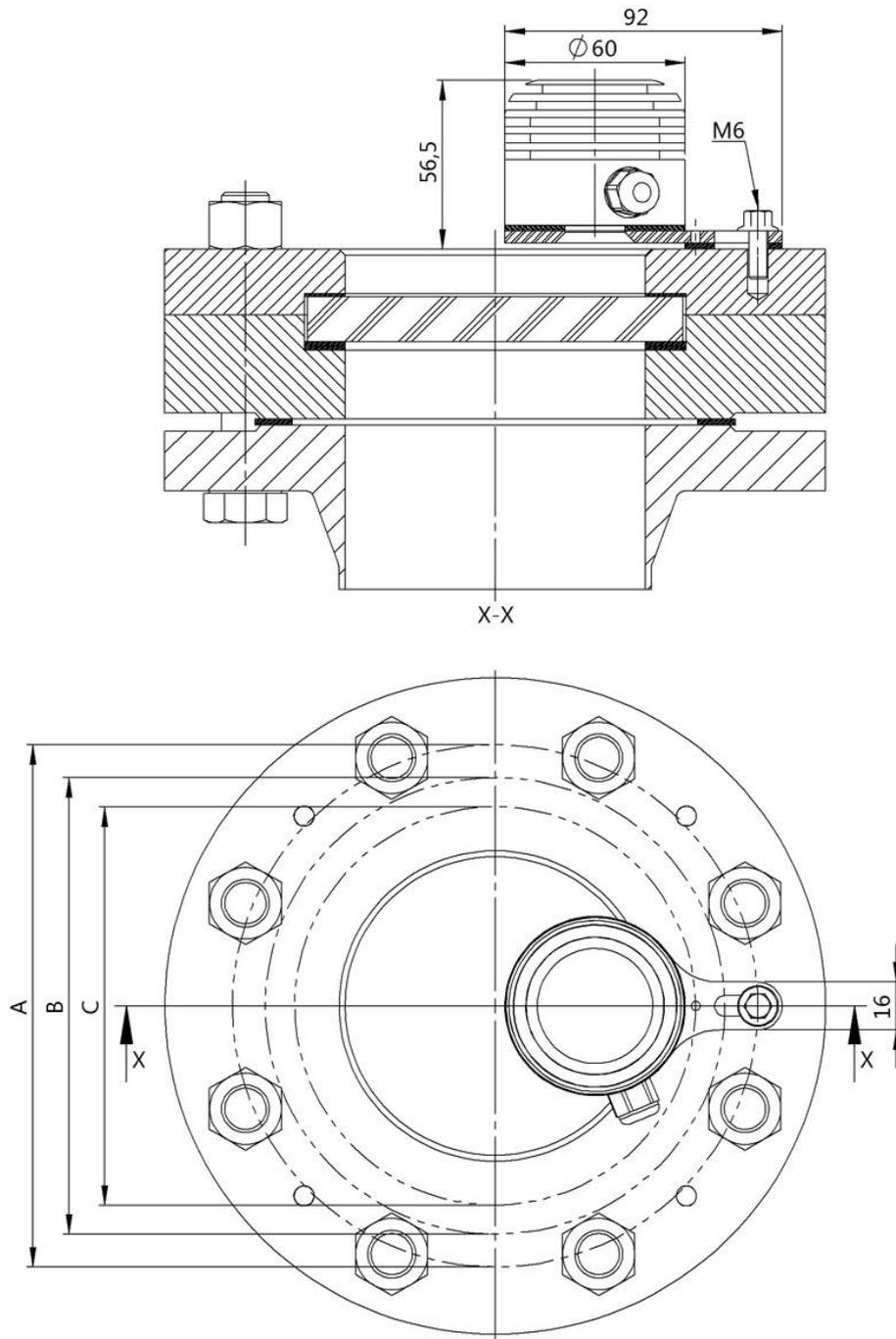
DN	A	B	C
50	140	118	104
80	152	130	116
100	175	153	139
125	199	177	163
150	200	178	164
200	224	202	188

SIGHTGLASS DIN 28120 ADAPTER - 1FIN
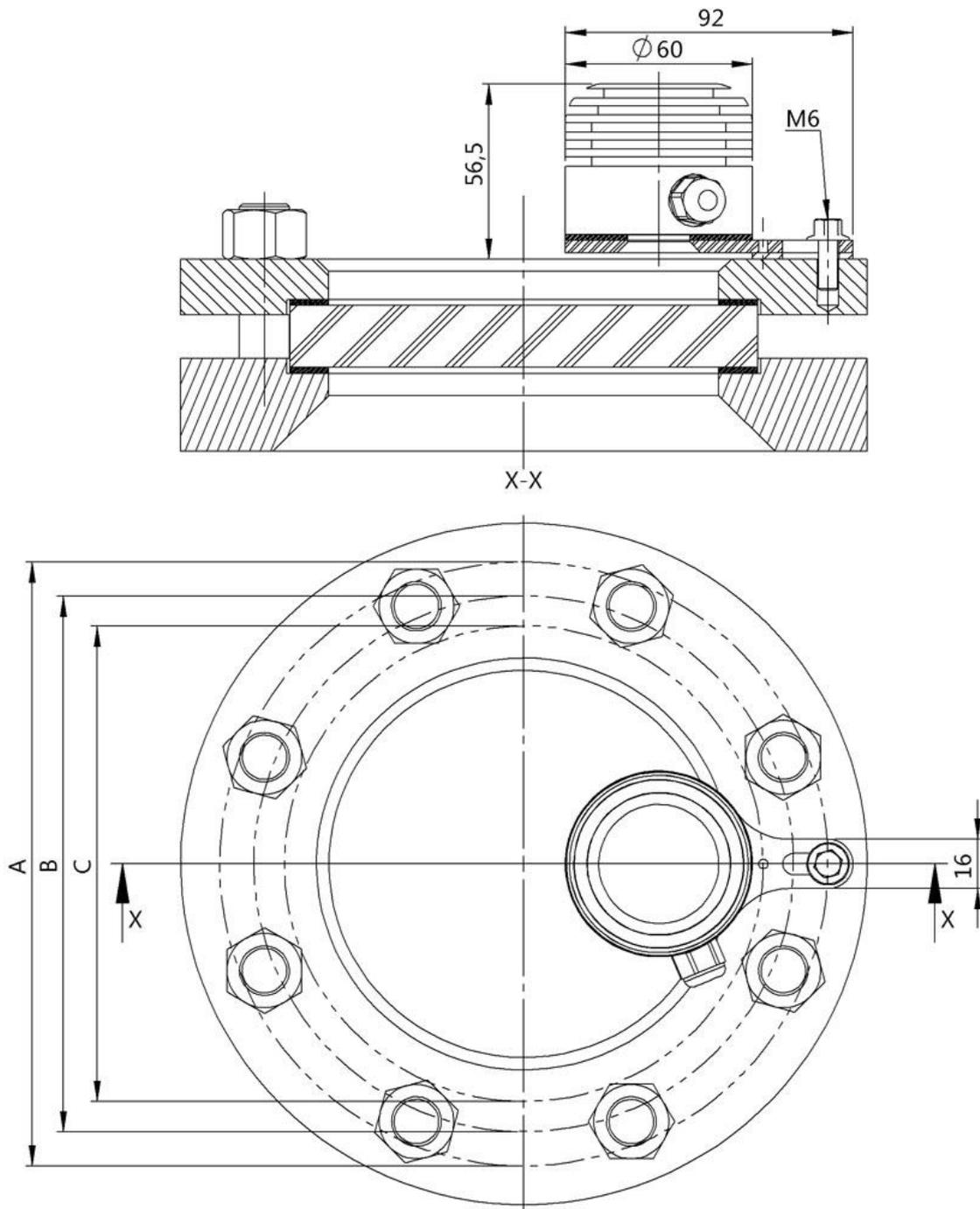
DN	A	B	C
50	149	127	113
80	172	150	136
100	195	173	159
125	219	197	183
150	245	223	209
200	295	273	259

9. PHOTOMETRIC DATA

Sightglass LED Luminaire SL60s-WW100

Lamp:	Warm White 2600-3700 K
Lamp Output:	1 lamp, rated Lumens: 100
Input Wattage:	1.7
Photometry:	Type C
CIE Class:	Direct
Cutoff Class:	n/a
Nema Type:	5 x 5

Illuminance at a Distance

	Center Beam LUX	Beam Width	
0.5M	460.0 LUX	0.5 M	0.5 M
1.0M	115.0 LUX	1.0 M	1.0 M
1.5M	51.1 LUX	1.4 M	1.4 M
2.0M	28.8 LUX	1.9 M	1.9 M
2.5M	18.4 LUX	2.4 M	2.4 M
3.0M	12.8 LUX	2.9 M	2.9 M

Vert. Spread: 51.5°
Horiz. Spread: 51.5°

Polar Candela Distribution

- 0° H
- 45° H
- 90° H

Isolux Plot

20 LUX   2.5 LUX   0.2 LUX
10 LUX   1 LUX   0.1 LUX   Total LLF: 0.69
5 LUX   0.5 LUX   50% Max Cd

Distance in units of mount height (3M)   --- Max Cd
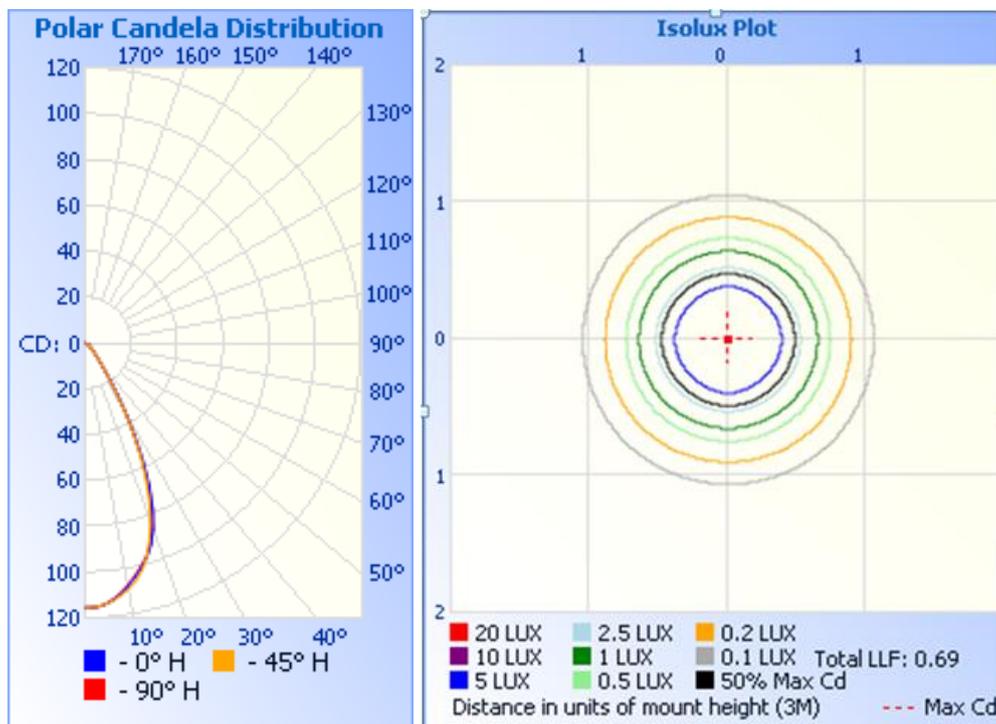
Sightglass LED Luminaire SL60s-WW200

Lamp:	Warm White 2600-3700 K
Lamp Output:	1 lamp, rated Lumens: 200
Input Wattage:	3.6
Photometry:	Type C
CIE Class:	Direct
Cutoff Class:	n/a
Nema Type:	5 x 5

Illuminance at a Distance

	Center Beam LUX	Beam Width	
0.5M	920.1 LUX	0.5 M	0.5 M
1.0M	230.0 LUX	1.0 M	1.0 M
1.5M	102.2 LUX	1.4 M	1.4 M
2.0M	57.5 LUX	1.9 M	1.9 M
2.5M	36.8 LUX	2.4 M	2.4 M
3.0M	25.6 LUX	2.9 M	2.9 M

■ Vert. Spread: 51.5°
■ Horiz. Spread: 51.5°

Polar Candela Distribution

■ - 0° H
■ - 45° H
■ - 90° H

Isolux Plot

■ 20 LUX ■ 2.5 LUX ■ 0.2 LUX
■ 10 LUX ■ 1 LUX ■ 0.1 LUX   Total LLF: 0.69
■ 5 LUX ■ 0.5 LUX ■ 50% Max Cd

Distance in units of mount height (3M)   --- Max Cd
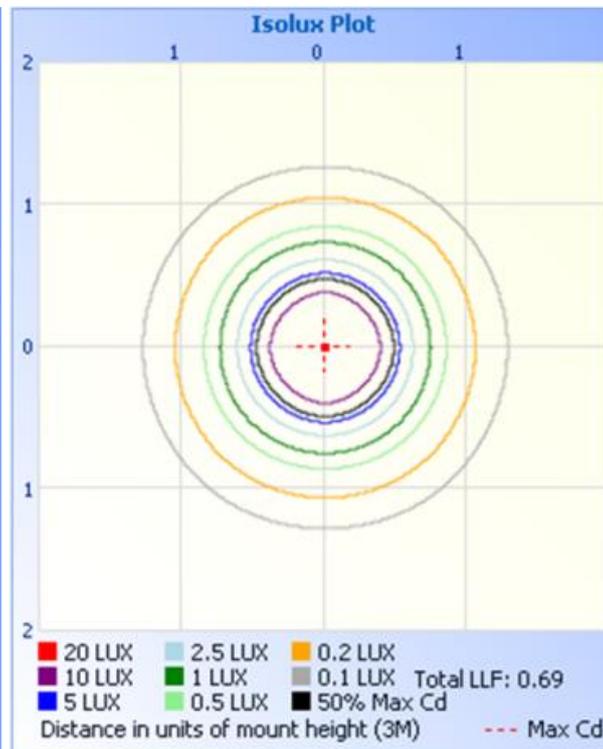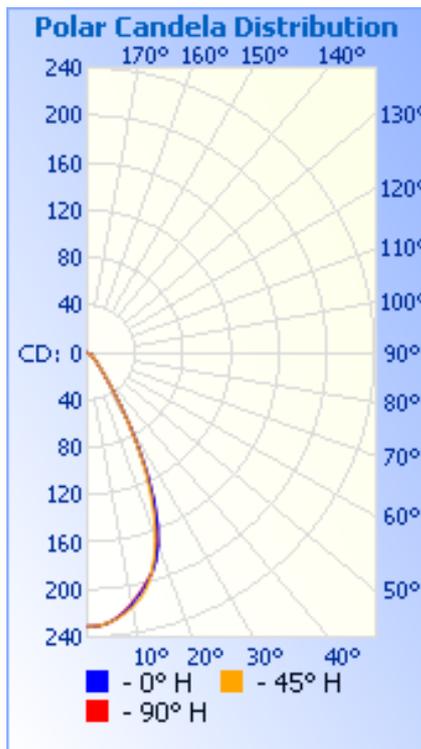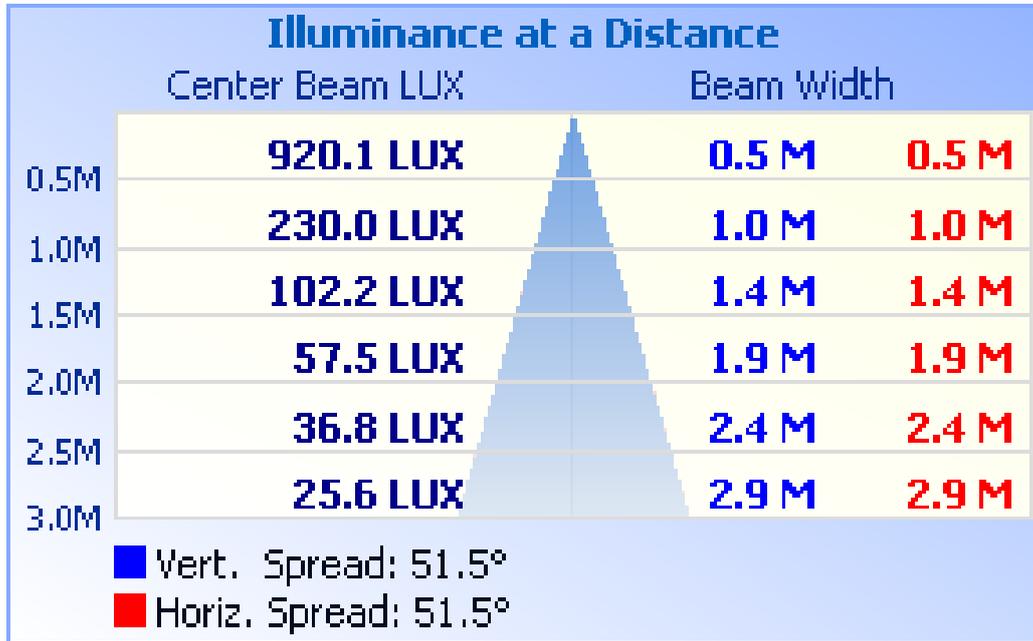
Sightglass LED Luminaire SL60s-WW300

Lamp:	Warm White 2600-3700 K
Lamp Output:	1 lamp, rated Lumens : 300
Input Wattage:	5.7
Photometry:	Type C
CIE Class:	Direct
Cutoff Class:	n/a
Nema Type:	5 x 5

Illuminance at a Distance

	Center Beam LUX	Beam Width	
0.5M	1,564.1 LUX	0.5 M	0.5 M
1.0M	391.0 LUX	1.0 M	1.0 M
1.5M	173.8 LUX	1.4 M	1.4 M
2.0M	97.8 LUX	1.9 M	1.9 M
2.5M	62.6 LUX	2.4 M	2.4 M
3.0M	43.4 LUX	2.9 M	2.9 M

■ Vert. Spread: 51.5°
■ Horiz. Spread: 51.5°

Polar Candela Distribution

■ - 0° H
■ - 45° H
■ - 90° H

Isolux Plot

■ 20 LUX ■ 2.5 LUX ■ 0.2 LUX
■ 10 LUX ■ 1 LUX   ■ 0.1 LUX   Total LLF: 0.69
■ 5 LUX   ■ 0.5 LUX ■ 50% Max Cd
Distance in units of mount height (3M)   --- Max Cd
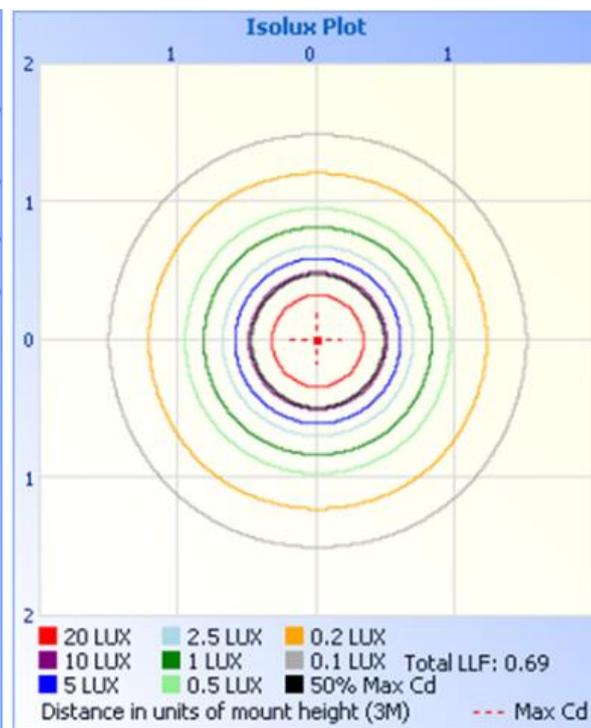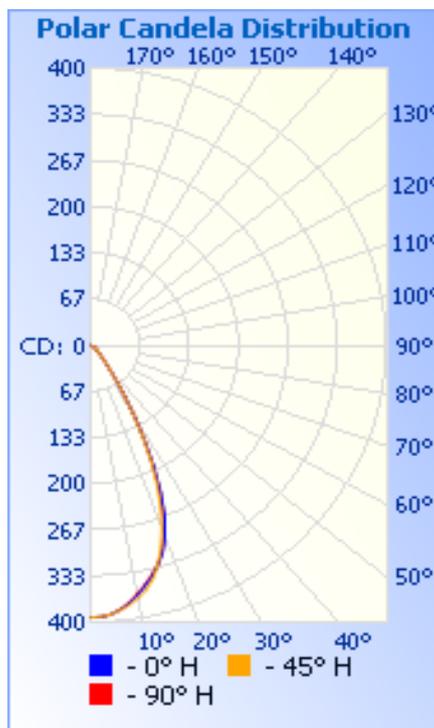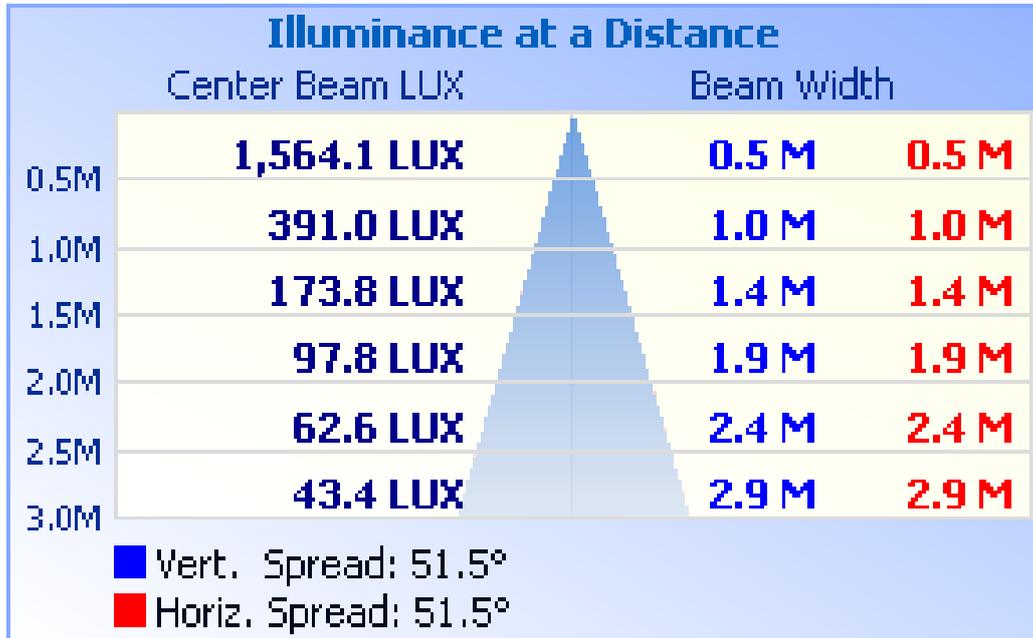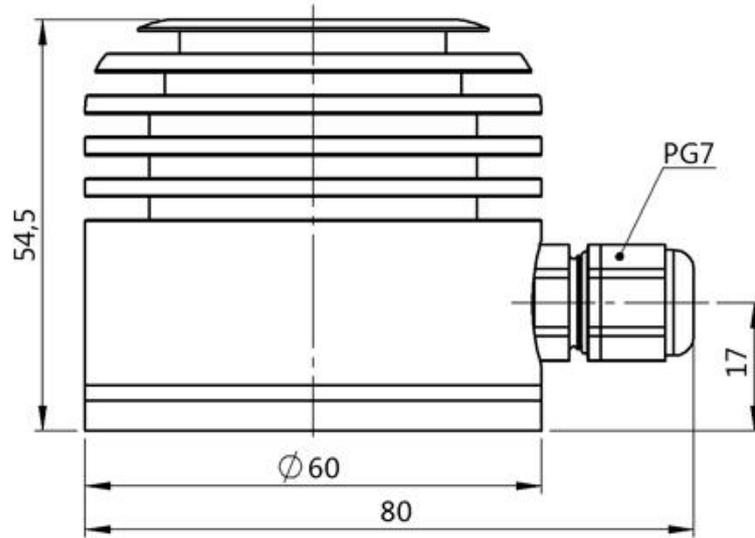
10. DIMENSIONS

II.   TECHNICAL SPECIFICATIONS

TECHNICAL DATA	
Dimensions L x W x H (mm)	60 x 60 x 50 / (2.36 x 2.36 x 1,96 in)
Weight (depending on adapting flange)	725 / 905 gr.
Electrical data	
Operating voltage (AC values at 50/60 Hz):	15..27 V AC , 12..40 V DC
Power drain	1.7, 3.6, or 5.7 W (depending on type)
Mechanical data	
Degree of protection	IP65 when correctly mounted
Cooling type	Convection cooling
Operating conditions	
Ambient temperature	-20°C to 60°C
Temperature of mounted surface	-20° to 135°C
Storage temperature	-30° to 90°C
General data	
Housing Materials [1]	Stainless steel 304, sandblasted Viton O-rings and permanite sealing gaskets Glass disc
Luminous Flux	100, 200 or 300 Lumen (depending on type)
Light emission angle[1]	50°
LED color[1]	Warm white (CCT 3000 K)
Lifetime	35.000 operating hours
Cable gland[1]	M 12x1.5mm - Clamping range Ø3,5-7mm
Protective functions	Overheating protection (intensity decrement or deactivation) Incorrect polarity protection Overcurrent protection
Standards	
In conformance with the following standards:	CE, EN60598

[1] Material alternation available upon request

Specifications are subject to change without prior notice.

12. DECLARATION OF CONFORMITY

DECLARATION OF CONFORMITY

THE MANUFACTURER:	Gelec Co. LP
ADDRESS:	4 Kikladon Str. 151 25 Marousi Athens - Greece
DECLARES THAT THE PRODUCT:	SIGHTGLASS LED LUMINAIRE
TYPE:	SL60s
OPTIONS AND VERSIONS:	This Declaration covers all options and versions of this product.

Complies with the requirements of the European Directives:
89/336/EC - 92/31/EEC - 73/23/EC - 93/68/EEC

And the following European Harmonized Standards have been applied:
CE, EN60598

EEC NORMS

The product "Sightglass LED Luminaire" type "SL60s" is designed and produced by the manufacturer "GELEC Co. LP" to be in compliance with the EEC norms applying to it.

GELEC

INDUSTRIAL ELECTRONICS

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