**LDL-iC-562**

**Tunable White Linear LED Module, LDL-iC Series**

- 560 mm Tunable White module, adjustable colour temperature between 2700K and 6500 K
- High efficacy up to 191 lm/W at Tc = 25 °C
- Ideal solution with LEDiL DAISY-4X1 optics*
- Accurate initial colour consistency of MacAdam (SDCM) 3-step
- Modular product platform for design flexibility
- Designed for easy installation and series connection

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**Electrical specifications**

<table>
<thead>
<tr>
<th>Nominal colour temperature</th>
<th>Luminous flux (Φ_v)</th>
<th>Forward voltage (V_f)</th>
<th>Luminous efficacy</th>
<th>Power consumption</th>
<th>CRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>2700</td>
<td>1330</td>
<td>20.1</td>
<td>165</td>
<td>8.1</td>
<td></td>
</tr>
<tr>
<td>6500</td>
<td>1330</td>
<td>20.1</td>
<td>165</td>
<td>8.1</td>
<td></td>
</tr>
</tbody>
</table>

* See page 5 for details

**Lifetime specifications**

<table>
<thead>
<tr>
<th>Operating current</th>
<th>Temperature</th>
<th>L70B50</th>
<th>L70B10</th>
<th>L80B50</th>
<th>L80B10</th>
<th>L90B50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient 400 mA</td>
<td>Tc = 65 °C</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 46 000</td>
</tr>
<tr>
<td></td>
<td>Tc = 85 °C</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 44 000</td>
</tr>
<tr>
<td>Nominal 600 mA</td>
<td>Tc = 65 °C</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 45 000</td>
</tr>
<tr>
<td></td>
<td>Tc = 85 °C</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 44 000</td>
</tr>
<tr>
<td>Maximum 800 mA</td>
<td>Tc = 65 °C</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 44 000</td>
</tr>
<tr>
<td></td>
<td>Tc = 85 °C</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 50 000</td>
<td>&gt; 42 000</td>
</tr>
</tbody>
</table>

Lumen depreciation estimations in hours

**Operating Conditions and Characteristics**

- Tp point (performance measurements) Tc = 65 °C
- Max. temperature at Tc point: 80 °C
- Ambient temperature range: -20...+50 °C
- Storage temperature: -20...+80 °C
- Humidity: No condensation

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**Product code: 5172**

**600 mA, 19.8 V**

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**Helvar | Helvar Oy Ab, Keilaranta 5 FI-02150 Espoo, Finland. Data is subject to change without notice. www.helvar.com T27 046 1A 09.10.2019 1/5**

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**Photometric specifications**

- Colour consistency at initial time: 3 MacAdam steps
- Colour Rendering Index: > 80
- Beam angle: 120°
- Photobiological risk group: RG1
**Dimensions**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>559.8 ± 0.2 mm</td>
</tr>
<tr>
<td>Width</td>
<td>23.8 ± 0.2 mm</td>
</tr>
<tr>
<td>Thickness of PCB</td>
<td>1.6 ± 0.2 mm</td>
</tr>
<tr>
<td>Height</td>
<td>4.6 ± 0.2 mm</td>
</tr>
</tbody>
</table>

**Packing details**

- 1 Tray
- 1 Box

ESD foam trays, antistatic bag and carton box

**Wiring specifications**

- **Connector type**: Push-in connector
- **Wire size**:
  - 0.20 - 0.80 mm², solid core
  - 0.45 - 0.70 mm², stranded
- **Wire strip length**: 4.5 - 5.5 mm
- **Wire type**: Solid core and fine-stranded

**Thermal Management**

Tc (Tp) Point: See the below red mark.

**Connection examples**

2 x LDL-iC-562 module connected with Helvar With LL50iC-DA-100-1200 LED driver at 600 mA driving current. With LL50iC-DA-100-1200 LED Driver, the selected output current is reached with 600 mA LED-Iset resistor (T90600, resistance value 8.25 kΩ) or via NFC. Nominal lumen output with the following setup is 4000 lm.
LUMINOUS FLUX VS FORWARD CURRENT

FORWARD VOLTAGE VS FORWARD CURRENT

DERATING CURVE
Information and conformity

LDL-iC series modules are basic isolated against ground and protective eye wear! Never look directly into an operational LED module without suitable materials and substances containing:

Avoid materials and substances containing:
• Chemicals causing discoloration, loss of luminous flux or total failure of the modules.
• Sulphuric compounds.
• Chlorine.
• Acetates.
• Sulphuric compounds.

Never look directly into an operational LED module without suitable protective eye wear!

HANDLING OF THE LED MODULES

LED modules contain components (LED packages, chips) that are sensitive to mechanical stress, electrostatic discharge (ESD) and chemical contaminants. Improper handling of the modules might cause damage or even destruction of the LED modules. Damaged LEDs may show unusual characteristics such as increase in leakage current, lowered turn-on voltage, or abnormal lighting of LEDs at low current. Please follow instructions and the precautions given in the product datasheets while handling and assembling Helvar LED modules.

Storage conditions
• Unused LED modules are recommended to be stored carefully in an original sealed ESD package preventing moisture, pollutants or ESD to cause damage to the module.
• Storage temperature range: -20...+80 °C

Opening the package / resealing
• LED modules are kept in stable protected environment in the package. Open the package only when you are ready to use the LED modules. If resealing of the original package is required remove excess air from the packaging and place the moisture absorber (silica-gel bag) in to the packaging and seal the ESD back with adhesive tape.

ESD precautions at luminaire assembly site
The LEDs are sensitive to the electrostatic discharge (ESD) and surge current. If voltage exceeding the absolute maximum rating is applied to LEDs, it may cause damage or even destruction to LED devices.
• IEC / EN 61340-5-1: Protection of electronic devices from electrostatic phenomena – General Requirements describes procedures for protection for damage caused by electrostatic discharge while handling electronic devices, following list lists basic protective measures described in the standard.

ESD protection measures in handling and assembling LED modules
• Employee training for correct handling
• Personnel grounding via wrist band / footwear.
• ESD protective clothing / shoes.
• Handle LED modules only in ESD protected areas and workplaces.

CHEMICAL CONSIDERATIONS
Chemical substances may cause damage the LED module by causing discoloration, loss of luminous flux or total failure of the module.
Avoid materials and substances containing:
• VOCs - Volatile Organic Compounds that may occur in adhesives or sealings, verify that the materials used in the luminaires are not containing VOCs.
• Halogen compounds.
• Chlorine.
• Acetates.
• Sulphuric compounds.

ELECTRIC & THERMAL CONSIDERATIONS

Wiring insulation
• According to recommendations in IEC / EN 60598.

Wire connections
• Please refer to LED driver datasheets connections diagram.
• Wrong polarity might damage the LED modules.

Choosing the LED driver
• To guarantee the safe and reliable operation of the L-iC series LED modules the LED driver must be provided with open and short circuit protection.
• LDL-iC series modules are designed to be used with constant current output type LED driver.

Electrical design, electrical safety
During the design it is luminaire manufacturers responsibility to follow the international and national electric design regulations and recommendations for the electric safety and luminaire protection. Electric safety classification and protection class is depending on:
• Actual luminaire design and safety classification
• LED driver insulation
• LED driver output isolation.
ALWAYS CHECK AND FOLLOW EXACT REGULATIONS FROM LATEST RELEVANT IEC / EN STANDARDS.

Maximum ambient and tc temperature
• The maximum ambient temperature is a guideline given for built-in components such as LED modules. However, integrator must always ensure proper thermal management (i.e. mounting base, possible heatsink, air flow etc.) so that the tc point does not exceed the tc max limit.
• Reliable operation is only guaranteed if the maximum tc point temperature is not exceeded under the conditions of use.
• Lifetime is only guaranteed if the maximum tc point temperature specified for lifetime is not exceeded under the conditions of use.

MECHANICAL CONSIDERATIONS
• While handling the LED modules avoid mechanical stress or pressure applied to the light emitting surface of the LEDs.
• Avoid dropping the modules.
• Bending of the modules is not permitted.
• Avoid touching the light emitting surface.
• Mechanical modifications (e.g. drilling, milling or sawing the module) are not permitted.

INSTALLATION CONSIDERATIONS
The LDL-iC series modules are basic isolated against ground and can be installed on properly insulated metal parts of the luminaria. We recommend using Helvar LMC mounting parts, plastic screws, clips or a combination of M4 metal screws and insulating plastic washers for safe operation. Please follow regulations from IEC/EN 60598-1 for creepage and clearance requirements. More information in LS/LP Series installation guide, available on product website’s Download & Links section.
Information and conformity

Conformity & standards

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Led modules for general lighting - safety specifications</td>
<td>IEC / EN 62031</td>
</tr>
<tr>
<td>Photobiological safety of lamps and lamp systems</td>
<td>IEC / EN 62471</td>
</tr>
<tr>
<td>Compliant with relevant EU directives</td>
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<tr>
<td>CE marked</td>
<td></td>
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<tr>
<td>RoHS / REACH compliant</td>
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</table>

All data were deemed correct at time of creation. Helvar is not liable for errors or omissions.

Compatible LEDiL optics

Following LEDiL optics are compatible with LDL-iC-562 LED module. More information about LEDiL optics is available at www.LEDiL.com.

- DAISY-28X1 (shade)
- DAISY-4X1 (optics)