1x70 W **Constant Current** LED driver

- Short & open circuit protection
- Overload protection
- Suitable for class I luminaires
- Adjustable constant current output: 350 (default) to 700 mA
- Maximum 70 W load
- Accept DC mains in case of central emergency battery
- High efficiency > 0.91
- Protected up to 4 kV power network fast transients
- Current setting resistor input

### Mains Characteristics

<table>
<thead>
<tr>
<th>Voltage range</th>
<th>198 - 264 VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC range</td>
<td>176 - 280 VDC, starting voltage &gt; 195 VDC</td>
</tr>
<tr>
<td>Max mains current at full load</td>
<td>0.32 - 0.41 A</td>
</tr>
<tr>
<td>Frequency</td>
<td>0 / 50 - 60 Hz</td>
</tr>
<tr>
<td>U-OUT&lt;sub&gt;max&lt;/sub&gt; (abnormal)</td>
<td>250 V</td>
</tr>
</tbody>
</table>

### Load Output

<table>
<thead>
<tr>
<th>Output current (I-OUT)</th>
<th>350 (default) to 700 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max output power</td>
<td>70 W</td>
</tr>
<tr>
<td>Efficiency, at full load, typical</td>
<td>&gt; 0.91</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I-OUT</th>
<th>350 mA</th>
<th>700 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-out (max)</td>
<td>70 W</td>
<td>70 W</td>
</tr>
<tr>
<td>U-OUT</td>
<td>50 - 200 V</td>
<td>50 - 100 V</td>
</tr>
<tr>
<td>λ</td>
<td>0.98</td>
<td>0.98</td>
</tr>
<tr>
<td>η @ max</td>
<td>0.91</td>
<td>0.89</td>
</tr>
</tbody>
</table>

### Operating Conditions and Characteristics

- Max. temperature at tc point: 75 °C
- Ambient temperature range: -20...+50 °C
- Storage temperature range: -40...+80 °C
- Maximum relative humidity: no condensation
- Life time: 50 000 h, at TC max [90 % survival rate]

### Connections and Mechanical Data

- Wire size: 0.5 - 1.5 mm²
- Wire type: solid core and fine-stranded
- Wiring insulation: According to EN 60598
- Maximum driver to LED wire length: 5 m
- Weight: 227 g
- IP rating: IP20

### Conformity & Standards

- General and safety requirements: EN 61347-1
- Particular safety requirements for d.c. or a.c. supplied electronic controlgear for LED modules, acc. to: EN 61347-2-13
- Thermal protection class: EN61347, C5e
- Mains current harmonics, acc. to: EN61000-3-2
- Limits for Voltage Fluctuations and Flicker, acc. to: EN 61000-3-3
- Radio Frequency Interference, acc. to: EN 55015
- Immunity standard, acc. to: EN 61547
- Performance requirements, acc. to: EN 62384

Compliant with relevant EU directives
- ENEC & CE marked
Load output

Current setting resistor values LL1x70-E-CC

| R (Ω) | 0 | 1k | 1k2 | 1k5 | 1k8 | 2k | 2k2 | 2k7 | 3k | 3k3 | 4k7 | 5k6 | 6k8 | 8k2 | 10k | 12k | 15k | 22k | 27k | 33k | 39k | 47k | 56k | 68k | 82k | 100k | 150k | 330k | 1M | ∞ |
|-------|---|----|-----|-----|-----|----|-----|-----|---|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| I_{out} (mA) | 700 | 650 | 640 | 630 | 620 | 610 | 600 | 580 | 570 | 550 | 530 | 520 | 500 | 480 | 470 | 450 | 430 | 420 | 410 | 400 | 390 | 385 | 380 | 375 | 370 | 365 | 360 | 355 | 350 |
Installation & operation

LL1x70-E-CC is designed for in-built luminaire use in class I luminaires. In order to have safe and reliable LED driver operation, the LED luminaires will need to comply with the relevant standards and regulations (e.g. IEC/EN 60598-1). The LED luminaire shall be designed to adequately protect the LED drivers from dust, moisture and pollution. The luminaire manufacturer is responsible for the correct choice and installation of the LED drivers according to the application and product datasheet. Operating conditions of the LED drivers may never exceed the specifications as per the product datasheets.

Installation & operational considerations

Maximum tc temperature
- Reliable operation and lifetime is only guaranteed if the maximum tc point temperature is not exceeded under the conditions of use.

Current setting resistor
The Helvar LL1x70-E-CC driver feature an adjustable constant current output.
- An external resistor can be inserted in to the current setting terminal, allowing the user to adjust the LED driver output current.
- When no external resistor is connected, then the LED drivers will operate at their default lowest current level.
- A standard through-hole resistor can be used for the current setting. To achieve the most accurate output current it is recommended to select a quality low tolerance resistor.
- For the resistor / current value selection, please refer to the table on page 2.

Miniature Circuit Breakers (MCB)
- Type-C MCB’s with trip characteristics in according to EN 60898 are recommended.

LED driver earthing
- For Helvar LED drivers to have a reliable operation and EMC performance, the luminaires are expected to have an earth connection.

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