**PRODUCT HIGHLIGHTS**

- Built-in Multi-Drive™ allows the light to work in continuous operation or OverDrive™ mode
- SafeStrobe™ technology ensures protected operation of LEDs
- Built-in driver; no external wiring needed
- PNP and NPN strobe input
- 5-pin M12 quick connect

**REV. 2019/07/19**

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The DDL-150 is a dome light with a 140 mm viewing area designed for reading barcode, imperfections/rounded/highly reflective products or for inspecting products with an even, uniform, and repeatable light intensity. The DDL-150 has been designed with simplicity and functionality in mind. The DDL-150 features Multi-Drive™, which allows the user to operate the light in continuous operation or OverDrive™ strobe mode, depending on wiring method. NPN and PNP trigger signal input and a built-in 1–10VDC analog intensity control allows for maximum versatility. The industry standard 5-pin M12 connector makes for easy installation.

### PRODUCT SPECIFICATIONS

<table>
<thead>
<tr>
<th>CONTINUOUS OPERATION</th>
<th>OVERDRIVE™ STROBE MODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Input</td>
<td>24VDC +/-5%</td>
</tr>
<tr>
<td>Input Current</td>
<td>Max. 1000 mA</td>
</tr>
<tr>
<td>Wattage</td>
<td>Max. 24 W</td>
</tr>
<tr>
<td>PNP Line</td>
<td>Max. 4.1 A</td>
</tr>
<tr>
<td>NPN Line</td>
<td>Max. 98 W</td>
</tr>
<tr>
<td>OverDrive™ Strobe Mode</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Strobe Duration</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Duty Cycle</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Strobe Input</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Continuous Operation Mode</td>
<td>NPN can be tied to ground OR PNP can be tied to 24VDC (not both)</td>
</tr>
<tr>
<td>On/Off Input</td>
<td>PNP: +4VDC or greater to activate NPN: GND (&lt;1VDC) to activate</td>
</tr>
<tr>
<td>Connection</td>
<td>5-pin M12 connector</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-18°C–50°C (0°F–122°F)</td>
</tr>
<tr>
<td>IP Rating</td>
<td>IP50</td>
</tr>
<tr>
<td>Weight</td>
<td>980 g</td>
</tr>
<tr>
<td>Compliances</td>
<td>CE, RoHS, IEC 62471</td>
</tr>
<tr>
<td>Warranty</td>
<td>10 years. For complete warranty information, visit smartvisionlights.com/warranty.</td>
</tr>
</tbody>
</table>

### RESOURCE CORNER

Additional resources, including CAD files, videos, and application examples, are available on our website.

smartvisionlights.com
**WIRING CONFIGURATION**

**CONTINUOUS OPERATION MODE**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Signal</th>
<th>Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power In</td>
<td>+24VDC</td>
<td>BROWN</td>
</tr>
<tr>
<td>2</td>
<td>NPN Sinking</td>
<td>WHITE</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Ground</td>
<td>BLUE</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>PNP Sourcing</td>
<td>BLACK</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Intensity Control</td>
<td>-10VDC</td>
<td>GREY</td>
</tr>
</tbody>
</table>

For proper function, apply either PNP or NPN signal, not both.

Failure to supply light with correct input current will result in non-repeatable lighting.

(see Product Specifications for requirements)

Some cables use green/yellow for pin 5.

For maximum intensity, tie pin 5 to pin 1 at +24VDC.

For continuous mode, tie PNP (pin 4) to +24VDC (pin 1) or tie NPN (pin 2) to ground (pin 3).

**OVERDRIVE™ OPERATION MODE**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Signal</th>
<th>Wire Color</th>
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<tbody>
<tr>
<td>1</td>
<td>Power In</td>
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<td>BROWN</td>
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<tr>
<td>2</td>
<td>NPN Sinking</td>
<td>WHITE</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Ground</td>
<td>BLUE</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>PNP Sourcing</td>
<td>BLACK</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>OverDrive™ Signal</td>
<td>Ground</td>
<td>GREY</td>
</tr>
</tbody>
</table>

For proper function, apply either PNP or NPN signal, not both.

Failure to supply light with correct input current will result in non-repeatable lighting.

(see Product Specifications for requirements)

Some cables use green/yellow for pin 5.

**LIGHT PATTERNS**

The DDL-150 Dome Light produces a uniform light pattern.

**LIGHTING ILLUMINATION FOR THE DDL-150**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Typical Output Performance</th>
<th>Illumination (Lux)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Operation Mode</td>
<td>Distance = 25 mm</td>
<td>63,000</td>
</tr>
<tr>
<td></td>
<td>Illuminance measurement taken on White Light — 4800K</td>
<td></td>
</tr>
<tr>
<td>OverDrive™ Mode</td>
<td>Typical Output Performance</td>
<td>315,000</td>
</tr>
<tr>
<td></td>
<td>Distance = 25 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Illuminance measurement taken on White Light — 4800K</td>
<td></td>
</tr>
</tbody>
</table>

Smart Vision Lights recommends that the DDL-150 be used at a working distance between 25 mm and 100 mm.
The dome shape gives the product a particular advantage in uniformity when illuminating and reading OCR codes on reflective or round surfaces.

**EYE SAFETY**

According to IEC 6247: 2006. Full documentation available upon request

**Notice**

**Exempt Group:** No photobiological hazard to eyes or skin even for continuous, unrestricted use. Applicable for wavelength 625.

**Caution**

**Risk Group 1:** Possibly hazardous optical radiation emitted from this product. Do not stare at operating lamp. May be harmful to eyes. Safe for most applications except for prolonged exposure. Applicable for wavelengths 470, 530, and WHI.
PART NUMBER

DDL-150 – □□□□

COLOR:
WHI 470
530 625

Part Number Example:
DDL-150-625 (DDL-150, 625 Red Wavelength)

Additional wavelengths available upon request

MOUNTING

Nine standard industrial T-slots for mounting the DDL-150 are included. The DDL-150 has two M4 threaded holes on the back for mounting a camera. See Accessories for camera mounting options.

Hardware included with light:
(2) M4x8 mm screws (hex)
(2) T-nuts

SAFESTROBE™ TECHNOLOGY

SafeStrobe™ technology applies safe working parameters to ensure that high-current LEDs are not damaged by being driven beyond their limits, such as maximum strobe time or duty cycle. SafeStrobe™ is built into the DDL-150.

MULTI-DRIVE™

Multi-Drive™ offers the best of both worlds. Continuous operation and OverDrive™ mode (high-output strobe/pulse) are available in a single driver. Other advantages of Multi-Drive™ include faster imaging and capture/freeze motion on high-speed lines.

With Multi-Drive™ users can run the driver continuously or in OverDrive™ at any allowed intensity by simply setting the product configuration. OverDrive™ operation has up to ten times the power of continuous operation.

DUTY CYCLE (OVERDRIVE™ MODE ONLY)

This section applies only to OverDrive™ Mode.

The duty cycle (D) is related to the strobe time (ST) and the rest time (RT).

Calculating Rest Time
\[
RT = \frac{ST}{D}
\]

Example
\[
RT = \frac{10 \text{ ms}}{0.1} = 100 \text{ ms} = 90 \text{ ms}
\]
Rest Time is 90 ms for 10 ms Strobe Time.

Maximum duty cycle for OverDrive™ light is 10% (0.1).

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This glossary covers all Smart Vision Lights product families; some content in this section may not apply to this specific light.

**TERMINOLOGY**
- **OverDrive™** Light include an integrated high-pulse driver for complete LED light control.
- **Continuous Operation** Light stays on continuously.
- **Multi-Drive™** Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
- **Built-in Driver** Allows full function without the need of an external controller.
- **Camera to Light** Connect the light directly to the camera, without the need for additional controllers or equipment.
- **Polarizers** Filters that reduce reflections on specular surfaces.
- **Diffusers** Used to widen the angle of light emission, reduce reflections, and increase uniformity.

**GLOSSARY**

This glossary covers all Smart Vision Lights product families; some content in this section may not apply to this specific light.

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**TYPES OF ILLUMINATION**

- **Projector**
- **Dark Field**
- **Radial**
- **Bright Field**
- **Direct**
- **Axial**
- **Line**
- **Diffuse Panel**
- **Backlight**

**COLOR/WAVELENGTHS LEGEND**

Wavelength options range from 365 nm to 1550 nm.
Additional wavelengths available for many light families.

* See Part Number section for available standard wavelengths for this light.

Short Wave infrared LEDs are available in 1050 nm, 1200 nm, 1300 nm, 1450 nm, and 1550 nm.