PRODUCT HIGHLIGHTS

- Built-in driver
- PNP and NPN trigger signal input
- 30 mm industrial extrusion
- 5-pin M12 quick connect
- Custom sizes available
PRODUCT DESCRIPTION

The SOBL Backlight Series is an innovative and highly versatile lights. SOBL Backlights are area lit for a more intense and highly diffuse lighting output. Lights have built-in drivers, so no external driver is needed. At just 30 mm in depth, the lights can be easily mounted in tight locations. Active area dimensions (in millimeters) include but are not limited to 150 x 100, 150 x 150, 200 x 150, 200 x 200, 300 x 150, 300 x 200, 300 x 300, and 450 x 450.

PRODUCT SPECIFICATIONS

<table>
<thead>
<tr>
<th>Electrical Input</th>
<th>24VDC +/-5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>On/Off Input</td>
<td>PNP: +4VDC or greater to activate</td>
</tr>
<tr>
<td>PNP Line</td>
<td>4 mA @ 4VDC</td>
</tr>
<tr>
<td>NPN Line</td>
<td>15 mA @ Ground (0VDC)</td>
</tr>
<tr>
<td>Continuous Mode</td>
<td>NPN can be tied to ground OR PNP can be tied to 24VDC (not both).</td>
</tr>
<tr>
<td>Analog Intensity</td>
<td>The output is adjustable from 10%–100% of brightness by a 1–10VDC signal. (Jumpering pin 5 to pin 1 will provide maximum intensity.)</td>
</tr>
<tr>
<td>Connection</td>
<td>5-pin M12 connector</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-18º–40º C (0º–104º F)</td>
</tr>
<tr>
<td>IP Rating</td>
<td>IP50</td>
</tr>
<tr>
<td>Compliances</td>
<td>CE, RoHS, IEC 62471</td>
</tr>
<tr>
<td>Warranty</td>
<td>10 year warranty. For complete warranty information, visit smartvisionlights.com/warranty.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Light Sizes</th>
<th>Input Current</th>
<th>Wattage</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 mm x 100 mm</td>
<td>0.30 A</td>
<td>3.6 W</td>
<td>0.94 kg</td>
</tr>
<tr>
<td>150 mm x 150 mm</td>
<td>0.45 A</td>
<td>10.8 W</td>
<td>1.14 kg</td>
</tr>
<tr>
<td>200 mm x 150 mm</td>
<td>0.60 A</td>
<td>14.4 W</td>
<td>1.32 kg</td>
</tr>
<tr>
<td>200 mm x 200 mm</td>
<td>1.20 A</td>
<td>28.8 W</td>
<td>–</td>
</tr>
<tr>
<td>300 mm x 150 mm</td>
<td>0.90 A</td>
<td>21.6 W</td>
<td>–</td>
</tr>
<tr>
<td>300 mm x 200 mm</td>
<td>1.20 A</td>
<td>28.8 W</td>
<td>–</td>
</tr>
<tr>
<td>300 mm x 300 mm</td>
<td>1.80 A</td>
<td>43.2 W</td>
<td>–</td>
</tr>
<tr>
<td>450 mm x 450 mm</td>
<td>4.05 A</td>
<td>97.2 W</td>
<td>–</td>
</tr>
</tbody>
</table>

WIRING CONFIGURATION

Pin layout for light (Male Connector)

<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</td>
<td>Sinking Signal</td>
<td>WHITE</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>Ground</td>
<td>BLUE</td>
</tr>
<tr>
<td>4</td>
<td>PNP</td>
<td>Sourcing Signal</td>
<td>BLACK</td>
</tr>
<tr>
<td>5</td>
<td>Intensity Control</td>
<td>1–10VDC</td>
<td>GREY</td>
</tr>
</tbody>
</table>

*Some cables use green/yellow for pin 5. For maximum intensity, connect pin 5 to pin 1 at +24VDC.
For continuous mode, PNP (pin 4) can be tied to +24VDC (pin 1) OR NPN (pin 2) can be tied to Ground (pin 3).

RESOURCE CORNER

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

smartvisionlights.com
CAD files available on our website.
Dimensions are in mm.

SOBL–300x150 shown
CAD files for all standard-size SOBL lights are available at smartvisionlights.com.

ILLUMINATION
SOBL Series of Backlights works best for:

Backlight

EYE SAFETY
According to IEC 62471: 2006. Full documentation available upon request.

Notice
Exempt Group: No photobiological hazard to eyes or skin even for continuous, unrestricted use. Applicable for wavelengths 625, 850, 940, 1050, 1200, 1300, 1450, and 1550.

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, 505, 530, and WHI.
Part Number Examples:

SOBL-150x150-625  SOBL, 150 x 150 mm, 625 nm Red Wavelength
SOBL-300x150-WHI-110Sx05 SOBL 300 x 150 mm, white, Patterned Area Light with 5 mm gradient lines and 5 mm gap
SOBL-450x150-WHI-215x15-10 SOBL 450 x 150 mm, white, Patterned Area Light with 15 mm grid (dark lines), 15 mm light gap and 10% gradient

OPTICAL PERFORMANCE

The SOBL offers a very diffuse light pattern.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Illuminance (Lux)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Intensity Rating</td>
<td>42,000</td>
</tr>
</tbody>
</table>

Lux measurement taken at surface of SOBL.

PART NUMBER

SOBL - [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

SIZE (L x W):
- 150 x 100
- 150 x 150
- 200 x 200
- 300 x 150
- 300 x 200
- 300 x 300
- 450 x 450

Custom sizes upon request

COLOR:
- WHI
- 470
- 505

PATTERN AREA LIGHTING:
Leave blank for no pattern

Part Number Examples:

SOBL-150x150-625  SOBL, 150 x 150 mm, 625 nm Red Wavelength
SOBL-300x150-WHI-110Sx05 SOBL 300 x 150 mm, white, Patterned Area Light with 5 mm gradient lines and 5 mm gap
SOBL-450x150-WHI-215x15-10 SOBL 450 x 150 mm, white, Patterned Area Light with 15 mm grid (dark lines), 15 mm light gap and 10% gradient

OPTICAL PERFORMANCE FOR THE SOBL

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</table>

Lux measurement taken at surface of SOBL.

MOUNTING

Smart Vision Lights recommends using drop-in T-nuts for mounting a SOBL backlight. The SOBL extrusion has a Bosch size 8 T-nut channel.

NOTE

Removing cover cubes of light may result in voiding of warranty.

PART NUMBER

SOBL - [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

SIZE (L x W):
- 150 x 100
- 150 x 150
- 200 x 200
- 300 x 150
- 300 x 200
- 300 x 300
- 450 x 450

Custom sizes upon request

COLOR:
- WHI
- 470
- 505

PATTERN AREA LIGHTING:
Leave blank for no pattern

Part Number Examples:

SOBL-150x150-625  SOBL, 150 x 150 mm, 625 nm Red Wavelength
SOBL-300x150-WHI-110Sx05 SOBL 300 x 150 mm, white, Patterned Area Light with 5 mm gradient lines and 5 mm gap
SOBL-450x150-WHI-215x15-10 SOBL 450 x 150 mm, white, Patterned Area Light with 15 mm grid (dark lines), 15 mm light gap and 10% gradient

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Lux measurement taken at surface of SOBL.

PATTERN AREA LIGHTING:

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DARK LINE</th>
<th>LIGHT GAP</th>
<th>GRADIENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01 – 1 mm</td>
<td>01 – 1 mm</td>
<td>10 – 10%</td>
</tr>
<tr>
<td>2</td>
<td>02 – 2 mm</td>
<td>02 – 2 mm</td>
<td>15 – 15%</td>
</tr>
<tr>
<td>3</td>
<td>05 – 5 mm</td>
<td>05 – 5 mm</td>
<td>20 – 20%</td>
</tr>
<tr>
<td>4</td>
<td>10 – 10 mm</td>
<td>10 – 10 mm</td>
<td>25 – 25%</td>
</tr>
</tbody>
</table>

The S-pin M12 connector is located on the wide side of the light. Sizes listed are in millimeters. Additional wavelengths and sizes available upon request.

NOTE

Removing cover cubes of light may result in voiding of warranty.
Patterned Area Lighting (PAL) is used for isolating defects on uneven, highly specular, and/or clear surfaces, which can be difficult with standard lighting methods. PAL can be used to isolate a defect in a single image acquisition. With PAL, small defects will reflect off the surface at an equal but opposite angle. Distortion of the reflected image can also reveal surface deformations.

**How to use PAL**
- For backlighting a transparent object, the light is positioned beneath the object.
- For front lighting, position the light where the light pattern will be directed on the surface at an angle.
- A camera is positioned to capture the reflection of the light source.
- The camera lens is adjusted to focus on the surface defect.
- The camera should also image the light source pattern, but the pattern does not need to be in tight focus.
- The depth of field for the lens should be adjusted to include both the light source pattern and the defect in one image.

**Patterned Area Lighting Examples**
- **REFLECTIVE**
  - Checker Board: 50 mm x 50 mm box
  - Grid: 50 mm line width
- **TRANSPARENCY**
  - Gradient Lines: 50 mm line width
  - Circles: 50 mm circle width

Customized pattern sizes available upon request.

**NOTE**
Smart Vision Lights can customize just about any pattern needed to meet application requirements.
**ACCESSORIES**

**Power Cables**

<table>
<thead>
<tr>
<th>Length</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 m</td>
<td>5PM12-5</td>
</tr>
<tr>
<td>10 m</td>
<td>5PM12-10</td>
</tr>
<tr>
<td>15 m</td>
<td>5PM12-15</td>
</tr>
</tbody>
</table>

**GLOSSARY**

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

**TERMINOLOGY**

**OverDrive™** Lights include an integrated high-pulse driver for complete LED light control.

**Continuous Operation** Lights stay on continuously.

**Multi-Drive™** Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.

**Built-In Driver** The built-in driver allows full function without the need of an external controller.

**Camera to Light** Connecting the light directly to the camera, without the need for additional controllers or equipment.

**Polarizers** Filters that reduce reflections on specular surfaces.

**Diffuser** Used to widen the angle of light emission, reduce reflections, and increase uniformity.

**TYPES OF ILLUMINATION**

**COMMON COLOR/WAVELENGTHS LEGEND**

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

![Color/Wavelength Legend](image)

Shortwave infrared LEDs are available in 1050 nm, 1200 nm, 1300 nm, 1450 nm, and 1550 nm. Check Part Number section to see if this light is available in SWIR wavelengths.

![SWIR Infrared](image)

See Part Number section for this light's available standard wavelengths.