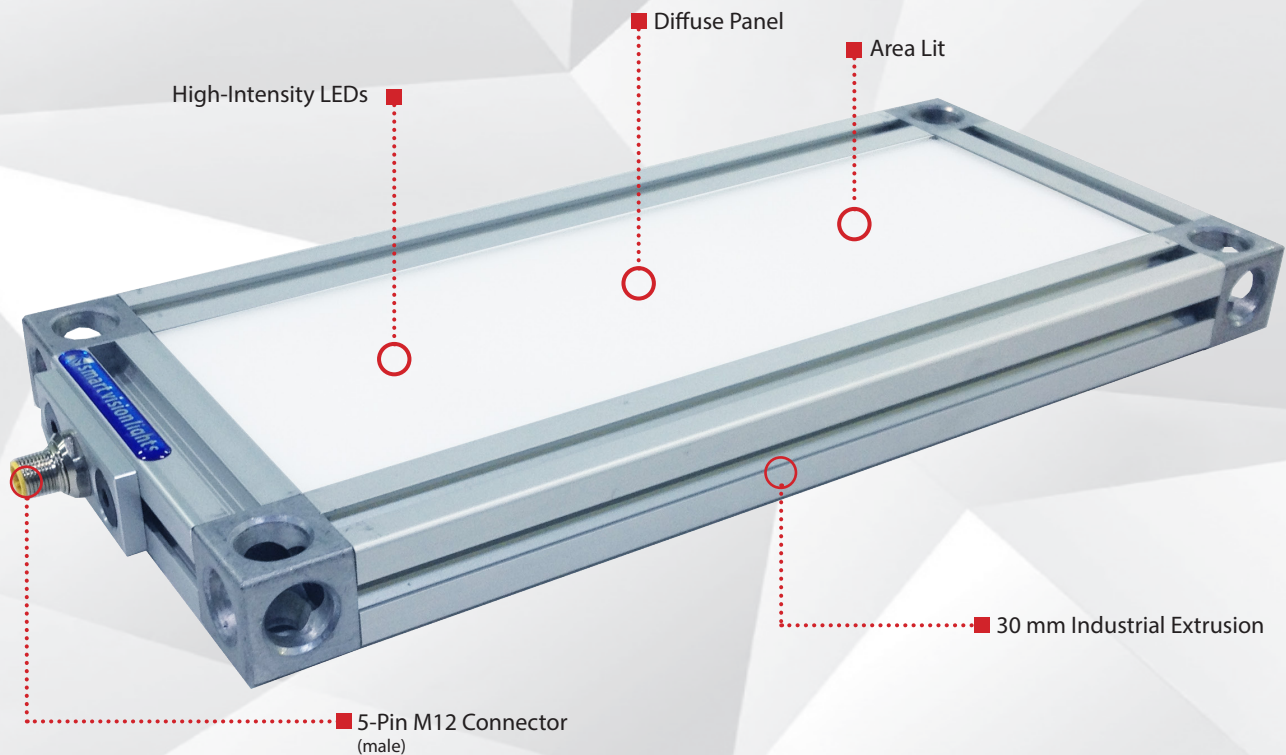


## P R O D U C T   D A T A   S H E E T



Warranty  
**10**  
YEAR

Compliant  
**IEC**  
62471

Compliant  
**CE**  
RoHS

Rated  
**IP**  
**50**

Connector  
**5-PIN**  
**M12**

## 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,



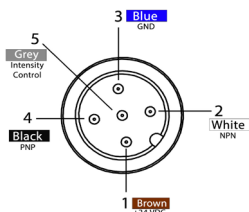
## PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/-5%
On/Off Input	PNP: +4VDC or greater to activate   NPN: GND (<1VDC) to activate
PNP Line	4 mA @ 4VDC   10 mA @ 12VDC   20 mA @ 24VDC
NPN Line	15 mA @ Ground (0VDC)
Continuous Mode	NPN can be tied to ground <b>OR</b> PNP can be tied to 24VDC (not both).
Analog Intensity	The output is adjustable from 10%–100% of brightness by a 1–10VDC signal. (Jumpering pin 5 to pin 1 will provide maximum intensity.)
Connection	5-pin M12 connector
Ambient Temperature	-18°–40° C (0°–104° F)
IP Rating	IP50
Compliances	CE, RoHS, IEC 62471
Warranty	10 year warranty. For complete warranty information, visit <a href="http://smartvisionlights.com/warranty">smartvisionlights.com/warranty</a> .

Standard Light Sizes	Input Current	Wattage	Weight
150 mm x 100 mm	0.30 A	3.6 W	0.94 kg
150 mm x 150 mm	0.45 A	10.8 W	1.14 kg
200 mm x 150 mm	0.60 A	14.4 W	1.32 kg
200 mm x 200 mm	1.20 A	28.8 W	–
300 mm x 150 mm	0.90 A	21.6 W	–
300 mm x 200 mm	1.20 A	28.8 W	–
300 mm x 300 mm	1.80 A	43.2 W	–
450 mm x 450 mm	4.05 A	97.2 W	–



## WIRING CONFIGURATION



Pin layout for light (Male Connector)

Pin	Function	Signal	Wire Color
1	Power In	+24VDC	BROWN
2	NPN	Sinking Signal	WHITE
3	GND	Ground	BLUE
4	PNP	Sourcing Signal	BLACK
5	Intensity Control	1–10VDC	GREY*

\*Some cables use green/yellow for pin 5.

For maximum intensity, tie 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).

### OPTIONAL

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



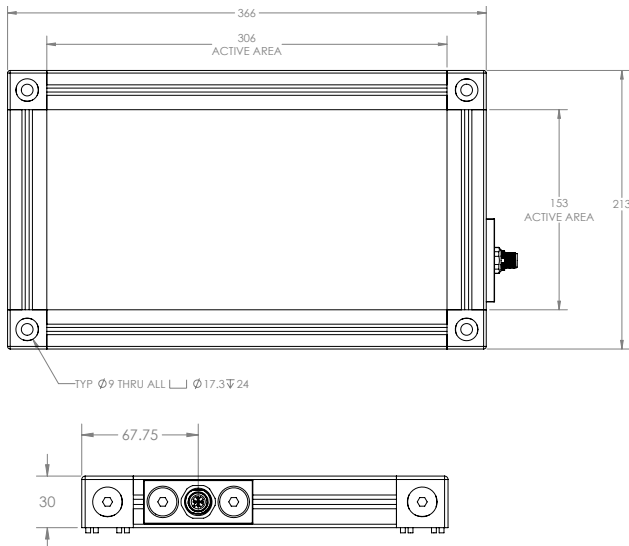
## RESOURCE CORNER

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



## PRODUCT DRAWING

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



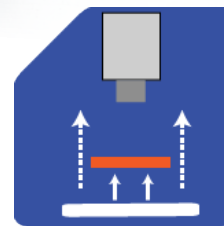
### SOBL-300x150 shown

CAD files for all standard-size SOBL lights  
are available at [smartvisionlights.com](http://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

**SOBL** –     **X**     –     –     **X**     –    

### 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:



### 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-1105x05** 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

### PATTERN AREA LIGHTING:

TYPE	DARK LINE	LIGHT GAP	GRADIENT
1 – Line	01 – 1 mm	01 – 1 mm	Leave blank for no gradient
2 – Grid	02 – 2 mm	02 – 2 mm	10 – 10%
3 – Checker Board	05 – 5 mm	05 – 5 mm	15 – 15%
4 – Circles	10 – 10 mm	10 – 10 mm	20 – 20%
	15 – 15 mm	15 – 15 mm	25 – 25%
	20 – 20 mm	20 – 20 mm	50 – 50%
	25 – 25 mm	25 – 25 mm	

Dark Line – Printed dark line size in millimeters

Light Gap – Light gap width in millimeters

Gradient – Percentage of dark line to be gradient

The 5-pin M12 connector is located on the wide side of the light.

Sizes listed are in millimeters.

Additional wavelengths and sizes available upon request.

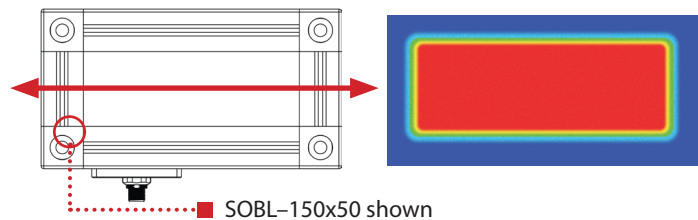


## OPTICAL PERFORMANCE

The SOBL offers a very diffuse light pattern.

### OPTICAL PERFORMANCE FOR THE SOBL

Rating	Illuminance (Lux)
Average Intensity Rating	42,000
Lux measurement taken at surface of SOBL	



SOBL-150x50 shown



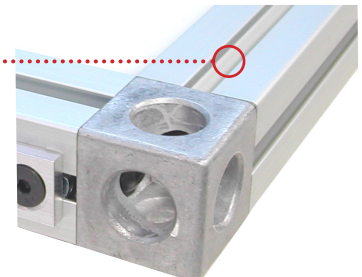
## MOUNTING

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.

Bosch size 8 T-nut channel

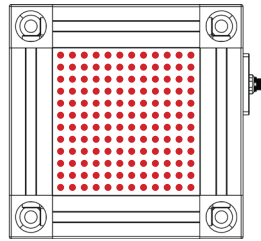




## AREA LIT

LEDs are placed to dispense an even light flow throughout the lighted surface area.

**SOBL-150x150 shown**  
(LED size and spacing not shown to scale)



## CUSTOM SIZE

Smart Vision Lights can customize a SOBL to the size you need. When requesting a custom SOBL include the following: size (length x width) in millimeters, what side the 5-pin M12 connector should be placed on, and desired wavelength (color).

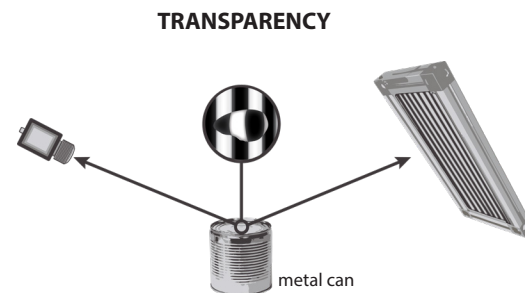
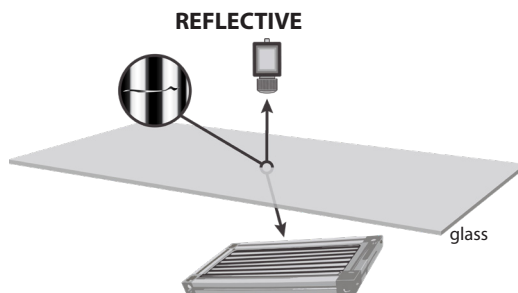


## PATTERNED AREA LIGHTING™

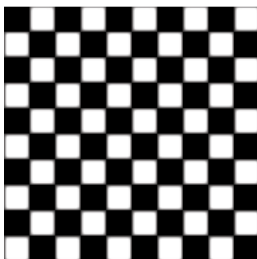
Patterned Area Lighting (PAL) is used for isolating defects on uneven, highly specular, and/or clear surfaces, which can be difficult with standard lighting methods. PAL can be used to isolate a defect in a single image acquisition. With PAL, small defects will reflect off the surface at an equal but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

### How to use PAL

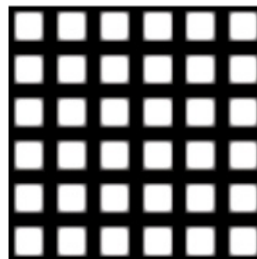
- For backlighting a transparent object, the light is positioned beneath the object.
- For front lighting, position the light where the light pattern will be directed on the surface at an angle.
- A camera is positioned to capture the reflection of the light source.
- The camera lens is adjusted to focus 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 im-



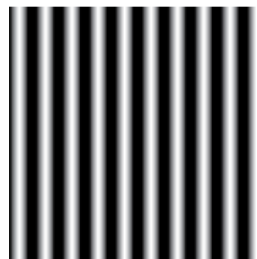
### Patterned Area Lighting Examples



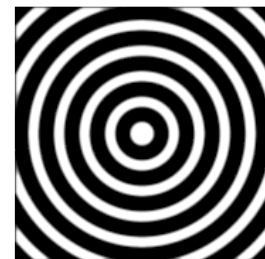
Pattern: Checker Board  
Size: 50 mm x 50 mm box



Grid  
50 mm line width



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



Length	Part Number
5 m	5PM12-5
10 m	5PM12-10
15 m	5PM12-15



## 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.

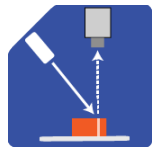
**Built-In Driver** The built-in driver allows full function without the need of an external controller.

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

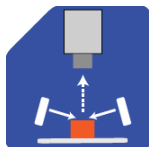
**Polarizers** Filters that reduce reflections on specular surfaces.

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

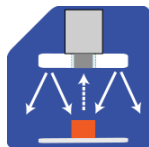
### TYPES OF ILLUMINATION



Projector



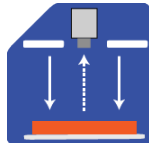
Dark Field



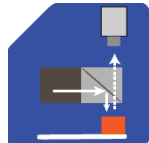
Radial



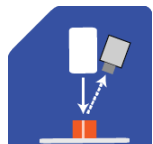
Bright Field



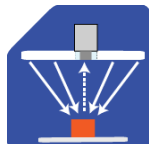
Direct



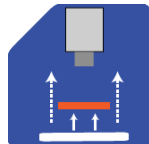
Axial



Line



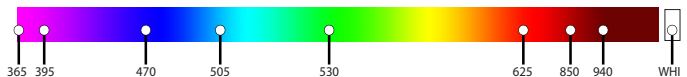
Diffuse Panel



Backlight

### COMMON COLOR/WAVELENGTHS LEGEND

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



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



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.