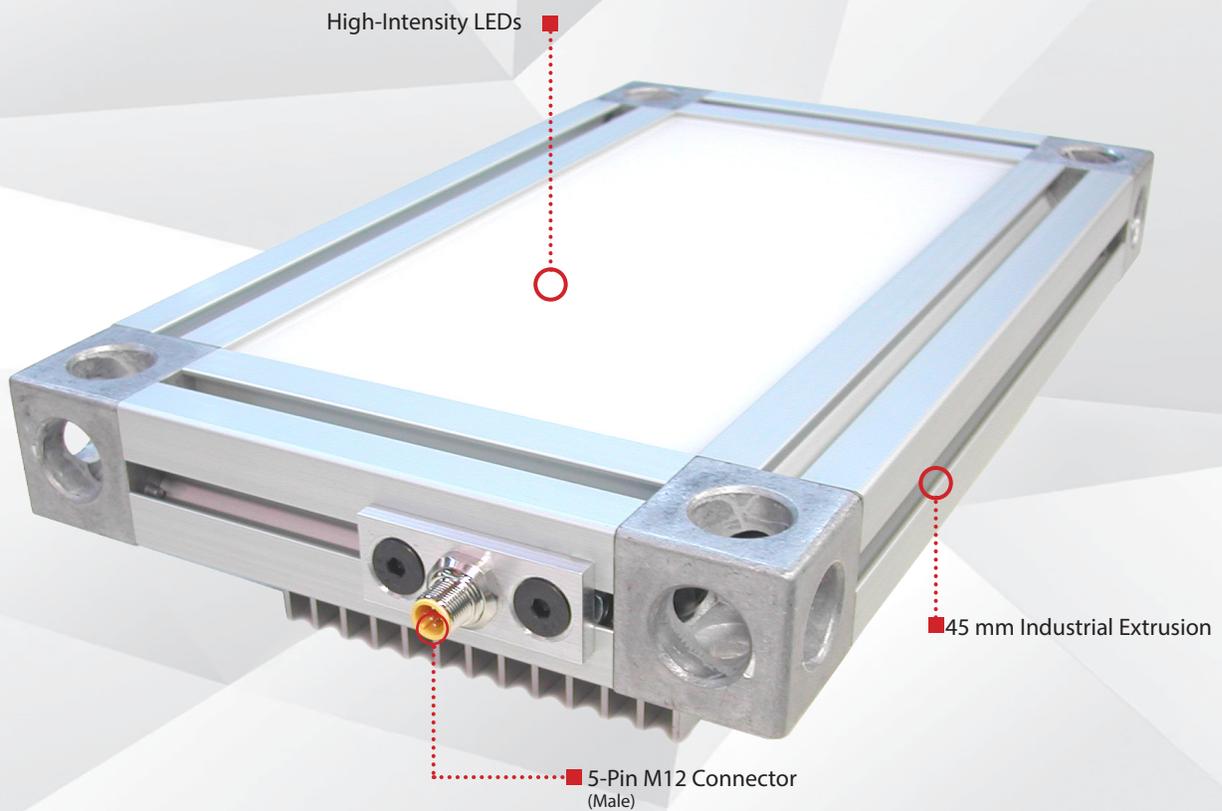


P R O D U C T D A T A S H E E T



Warranty
10
YEAR

Compliant
IEC
62471

Compliant
CE
RoHS

Rated
IP
50

Connector
5-PIN
M12

PRODUCT HIGHLIGHTS

- ✓ 45mm industrial extrusion
- ✓ 5-pin M12 quick connect
- ✓ Driver built-in
- ✓ Most intense and diffuse area light available



PRODUCT DESCRIPTION

The AL Area Light connects directly to an external controller. Features an industry standard 5-pin M12 connector. Heat is dissipated through the aluminum heat-sinks which allows the AL Series to be run at a higher current allowing for greater intensity.

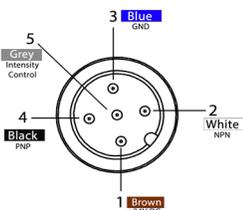


PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/-5%
Input Current	150x150: Max. 0.82 A 300x150: Max. 1.62 A 300x300: Max. 3.35 A
Wattage	150x150: Max. 19.68 W 300x150: Max. 38.88 W 300x300: Max. 80.4 W
On/Off Input	PNP : +3VDC or greater to activate NPN : GND (<1VDC) to activate
PNP Line	3.7 mA @ 3VDC 6.2 mA @ 5VDC 12.6 mA @ 10VDC 30.4 mA @ 24VDC
NPN Line	22 mA @ Ground (0VDC)
Continuous Mode	NPN can be tied to ground OR 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	-20°C–50°C (-4°F–122°F)
IP Rating	IP50
Weight	150x150: 2.22kg 300x150: 3.06kg 300x300: 4.76kg
Compliances	CE, RoHS, IEC 62471
Warranty	10 years. For complete warranty information, visit smartvisionlights.com/warranty .



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: Tie PNP (pin 4) can be tied to +24VDC (pin 1) **or** tie NPN (pin 2) can be tied to Ground (pin 3).

OPTIONAL

For maximum intensity, connect pin 5 to pin 1 at 24VDC. Potentiometer intensity needs to be set to 100%.



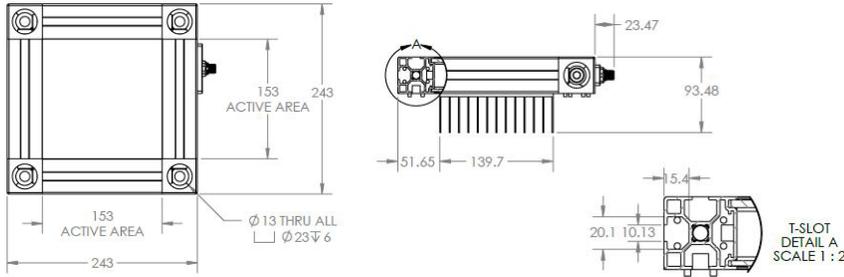
RESOURCE CORNER

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

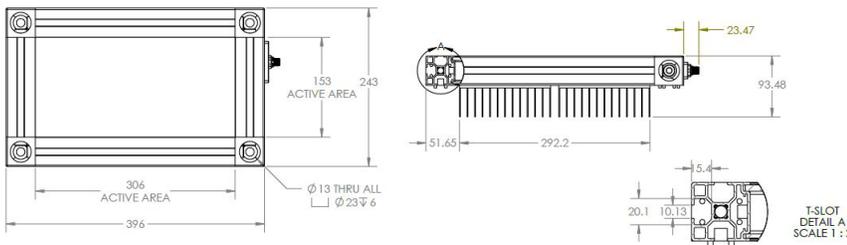


PRODUCT DRAWING

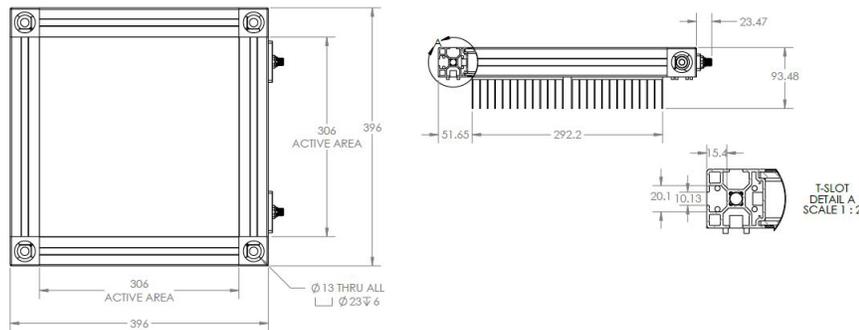
AL 150x150



AL 300x150



AL 300x300



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



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, and 940.

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 prolonged exposure. Applicable for wavelengths: 470, 505, 530, and WHI.

Notice

Risk Group 1: UV emitted from this product. Minimize exposure to eyes and skin. Use appropriate shielding. Safe for most applications except prolonged exposures. Applicable for wavelengths: 395

Caution

Risk Group 2: UV emitted from this product. Eye or skin irritation may result from exposure. Use appropriate shielding. Does not pose optical hazard if aversion responses limit exposure. Applicable for wavelengths: 365

PART NUMBER

AL - - -

SIZE:
(L x W)
150 x 150
300 x 150
300 x 300

COLOR:

Part Number Examples:

AL-150x150-625 AL, 150 x 150 mm, 625 nm Red Wavelength

AL-300x150-WHI AL, 300 x 150 mm, White

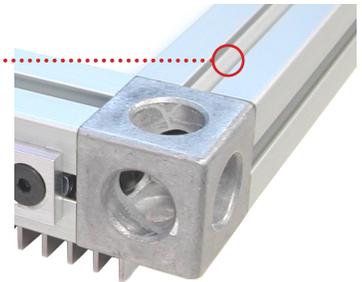
AL-300x300-470 AL, 300 x 300 mm, 470 nm Blue Wavelength

* The 5-pin M12 Connector is located on the width side of the light.
Additional Wavelengths available upon request.

MOUNTING

Smart Vision Lights recommends using drop-in T-nuts for mounting a AL Area Light. T-Slot size on AL extrusion is Bosch size 10 T-nut channel.

Bosch size 10 T-nut channel

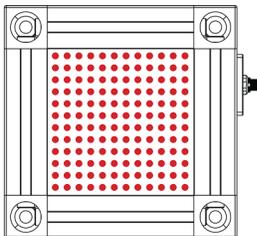


NOTE

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

AREA LIT

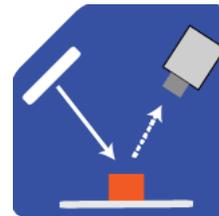
Each AL has LEDs placed to dispense an even light flow throughout the lighted surface area.



150 mm x 150 mm shown
(LED size and spacing not shown to scale)

ILLUMINATION

AL Series of Area Lights works best for:



Bright Field



ACCESSORIES

Power Cables	
	
Lengths	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.

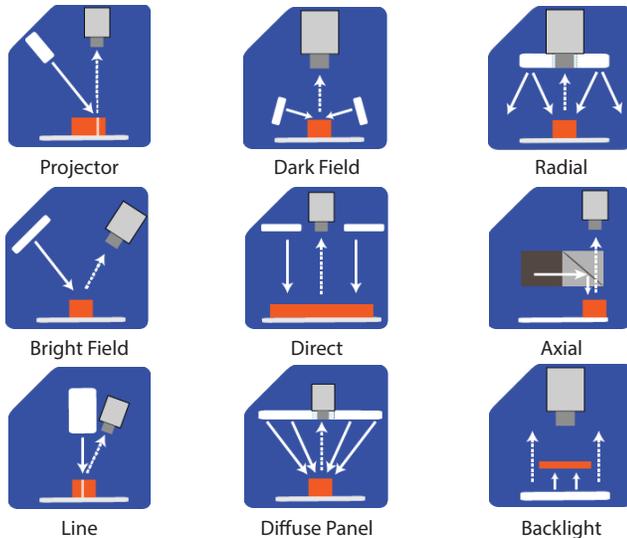
Built-In Driver The built-in driver allows full function without the need of an external controller.

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.

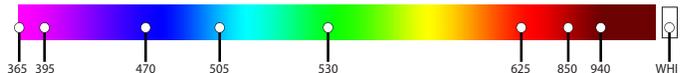
Diffuser Used to widen the angle of light emission, reduce reflections, and increase uniformity.

TYPES OF ILLUMINATION



COMMON COLOR/WAVELENGTHS LEGEND

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



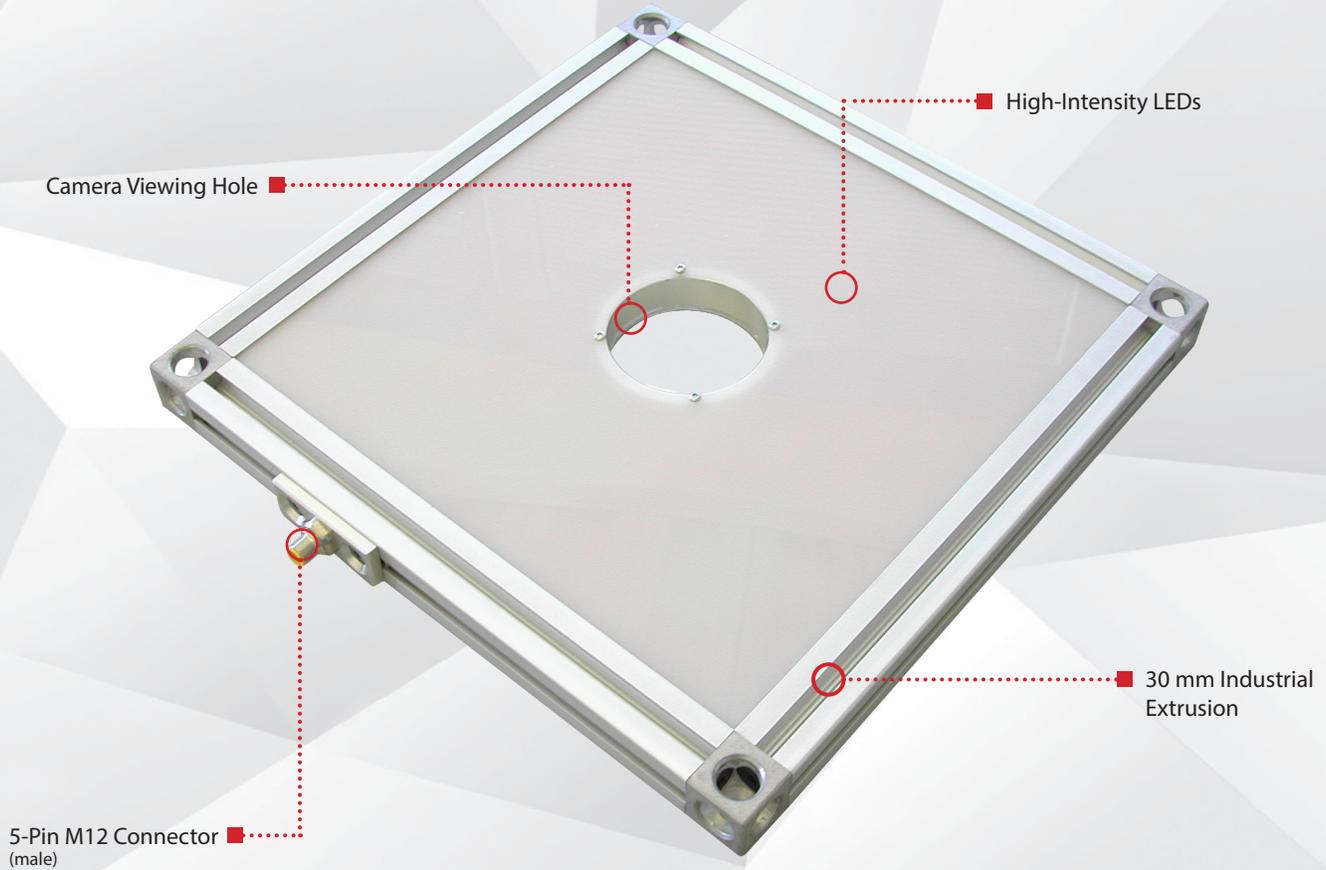
*See Part Number section for **this light's** available standard wavelengths.



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.

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

* see page 2 for details.

PRODUCT HIGHLIGHTS

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



PRODUCT DESCRIPTION

The DLP Diffused Panel Light Series is designed for front lighting. The innovative and highly versatile lights can be customized for different sizes and wavelength options. The series provides intense and highly diffuse area lighting. The narrow 30 mm depth allows for mounting in tight locations. The 190 x 190 mm lights have a 53 mm camera viewing hole in the center. Lights measuring 300 x 300 mm and larger have a 78 mm viewing hole.



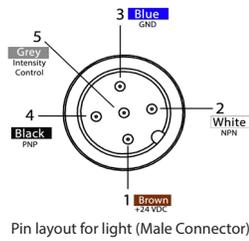
PRODUCT SPECIFICATIONS

Electrical Input	24 V DC +/- 5%
On/Off Input	PNP: +4 V DC or greater to activate NPN: GND (<1 V DC) to activate
PNP Line	4 mA @ 4 V DC 10 mA @ 12 V DC 20 mA @ 24 V DC
NPN Line	15 mA @ ground (0V DC)
Continuous Mode	NPN can be tied to ground OR PNP can be tied to 24 V DC (not both)
Analog Intensity	The output is adjustable from 10–100% of brightness by a 1–10 V DC 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 smartvisionlights.com/warranty

Standard Light Sizes	Input Current	Wattage	Weight	Camera Hole
190 mm x 190 mm	1.25 A	30 W	~1.54 kg	53 mm
300 mm x 300 mm	1.8 A	43.2 W	~2.66 kg	78 mm
450 mm x 450 mm	4.1 A	98.4 W	~4.88 kg	78 mm
600 mm x 600 mm	3.6 A (per connector)	86.4 W (per connector)	-	78 mm



WIRING CONFIGURATION



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

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

OPTIONAL

For maximum intensity, connect pin 5 to pin 1 at +24 V DC.

RESOURCE CORNER



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

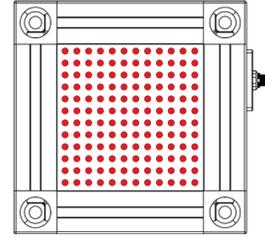
Smart Vision Lights

2359 Holton Road
Muskegon, MI 49445
P: +1 231.722.1199 | F: +1 231.722.9922
smartvisionlights.com
techsupport@smartvisionlights.com
Open: Monday – Friday | 8am–5pm ET



AREA LIT

LEDs are placed to produce uniform intensity throughout the lighted surface area.



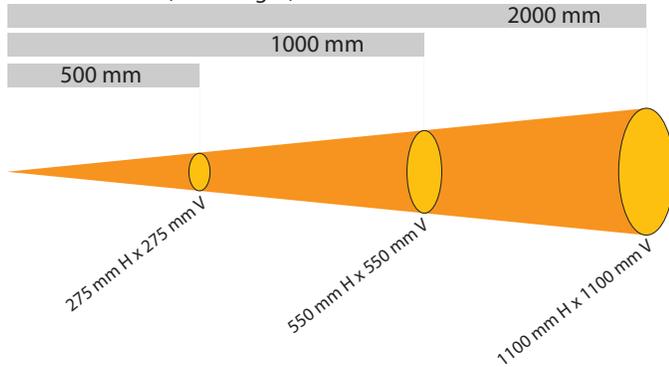
(LED size and spacing not shown to scale)



LIGHT PATTERNS

Smart Vision Lights recommends that the DLP be used at a working distance between 200 mm and 600 mm.

Beam Diameter (White Light)



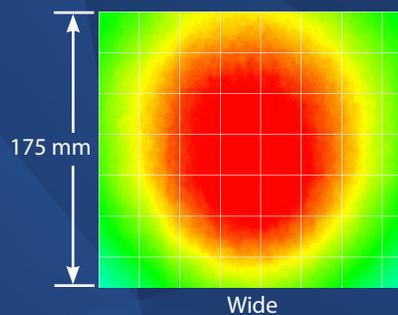
LIGHTING PATTERN FOR THE DLP-190x190

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	80 mm (~3.1")
1000 mm (39.4")	90 mm (~3.54")
2000 mm (78.8")	135 mm (~5.3")

Typical Output Performance	Illuminance (Lux)
190 mm x 190 mm	44,000
<i>DLP-190x190-WHL used with a 500 mm working distance. Illumination measurement taken on White Lights – 5700K.</i>	

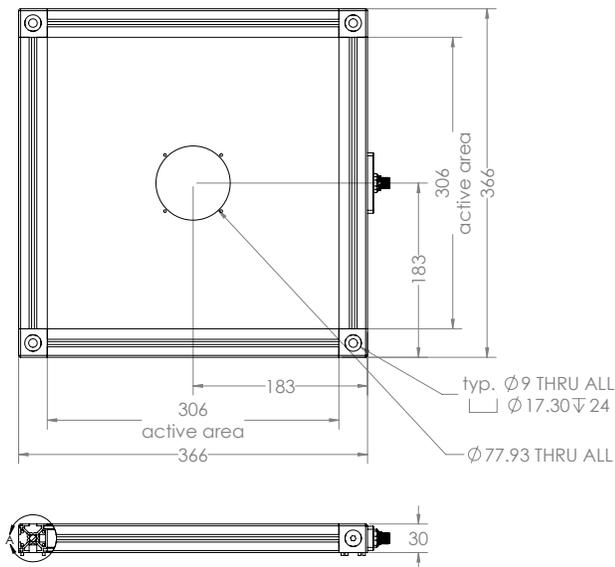
The DLP Ring Light produces a uniform light pattern.

Working distance = 500 mm Grid set to 25 mm x 25 mm

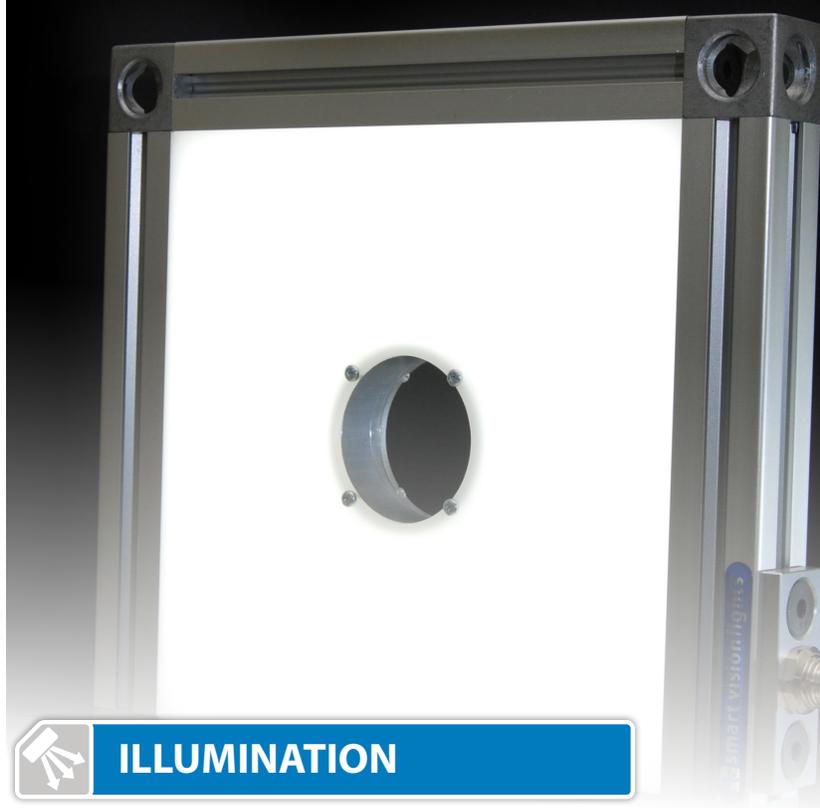


PRODUCT DRAWING

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

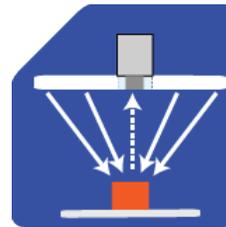


DPL 300 x 300 shown.
CAD files for all standard-size DLP lights are available at smartvisionlights.com.

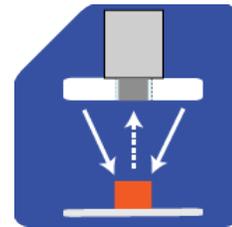


ILLUMINATION

DLP Series of Linear Lights works best for:



Diffuse Panel



Radial

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, and 940.

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.

Notice

Risk Group 1: UV emitted from this product. Minimize exposure to eyes and skin. Use appropriate shielding. Safe for most applications except for prolonged exposures. Applicable for wavelength 395

Caution

Risk Group 2: UV emitted from this product. Eye or skin irritation may result from exposure. Use appropriate shielding. Does not pose optical hazard if aversion responses limit exposure. Applicable for wavelength 365



PART NUMBER

DLP - X - - X -

SIZE (L x W):

- 190 x 190
- 300 x 300
- 450 x 450
- 600 x 600

Custom sizes upon request

COLOR:



PATTERN AREA LIGHTING:
Leave blank for no pattern

PATTERN AREA LIGHTING:

X -

TYPE
1 - Line
2 - Grid

DARK LINE

- 01 - 1 mm
- 02 - 2 mm
- 05 - 5 mm
- 10 - 10 mm
- 15 - 15 mm
- 20 - 20 mm
- 25 - 25 mm

LIGHT GAP

- 01 - 1 mm
- 02 - 2 mm
- 05 - 5 mm
- 10 - 10 mm
- 15 - 15 mm
- 20 - 20 mm
- 25 - 25 mm

GRADIENT

- Leave blank for no gradient
- 10 - 10%
- 15 - 15%
- 20 - 20%
- 25 - 25%
- 50 - 50%

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.

Part Number Examples:

- DLP-190x190-625** DLP 190 x 190mm, 625 red wavelength
- DLP-300x300-WHI-1105x05** DLP 300 x 300 mm, white, Patterned Area Light with 5 mm gradient lines and 5 mm gap
- DLP-450x450-WHI-215x15-10** DLP 450 x 450 mm, white, Patterned Area Light with 15 mm grid (dark lines), 15 mm light gap and 10% gradient.

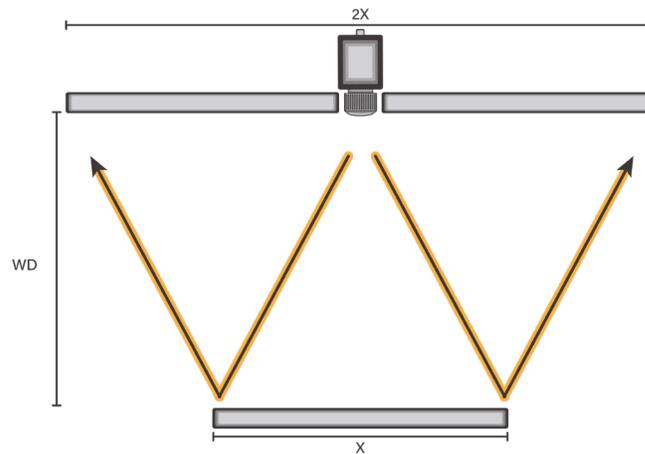


SIZING A LIGHT

When sizing a light for the most consistent/homogeneous illumination, best practice is to follow the W Rule. The W Rule states: The working distance (WD) is equal to the size of the part (X) and the size of the light is twice the size of the part.

THE W RULE:
The working distance is equal to the size of the part.
The size of the light is twice the size of the part.

If the working distances needs to be increases, the light also needs to increase in size to remain homogeneous.



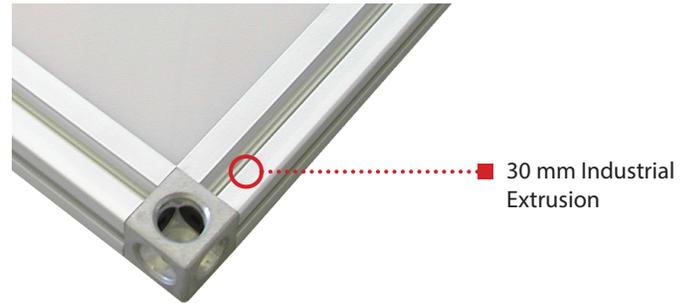
CUSTOM SIZE

Smart Vision Lights can customize a DLP. When requesting a custom DLP, include the following: size (Length x Width) in millimeter, what side the 5-pin M12 connectors should be placed on, and desired wavelength (color).



MOUNTING

The DLP includes four 30 mm industrial extrusions for mounting. Smart Vision Lights recommends using drop-in T-nuts for mounting a DLP.



NOTE

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

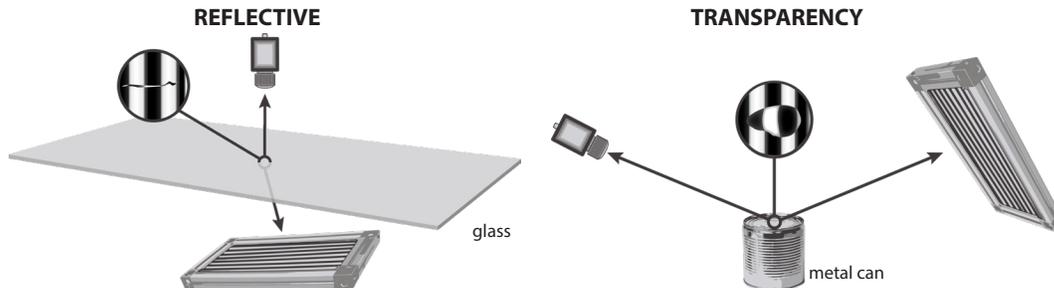


PATTERNED AREA LIGHTING™

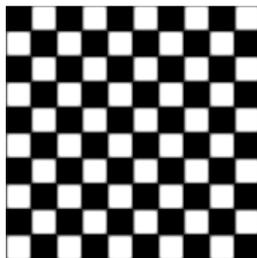
Patterned Area Lighting (PAL) is used for isolating defects on uneven, highly specular, and/or clear surfaces, which can be difficult with standard lighting methods. PAL can be used to isolate a defect in a single image acquisition. With PAL, small defects will reflect off the surface at an equal but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

How to use PAL

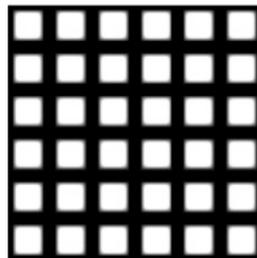
- For backlighting a transparent object, the light is positioned beneath the object.
- For front lighting, position the light where the light pattern will be directed on the surface at an angle.
- A camera is positioned to capture the reflection of the light source.
- The camera lens is adjusted to focus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



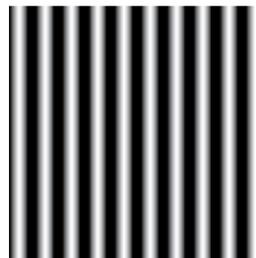
Patterned Area Lighting Examples



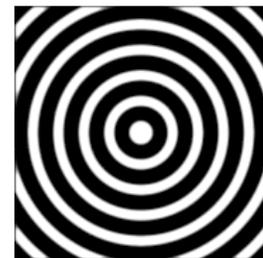
Pattern: Checkerboard
Size: 50 mm x 50 mm square



Grid
50 mm line width



Gradient Lines
50 mm line width



Circles
50 mm circle thickness

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

Camera Mount



Description	Part Number
DLP-190x190	BKT0005
DLP-300x300	BKT0006
DLP-450x450	BKT0013
DLP-600x600	BKT0014

Variable Control Pot



Description	Part Number
Variable Control Pot	IVP-C1



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.

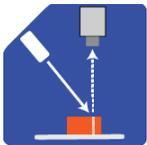
Built-In Driver The built-in driver allows full function without the need of an external controller.

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

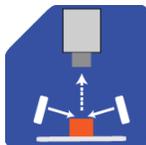
Polarizers Filters that reduce reflections on specular surfaces.

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

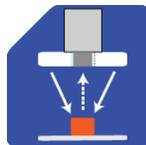
TYPES OF ILLUMINATION



Projector



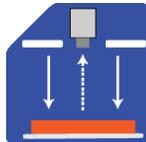
Dark Field



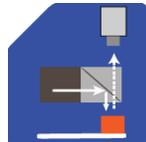
Radial



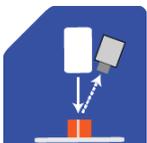
Bright Field



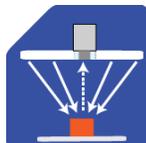
Direct



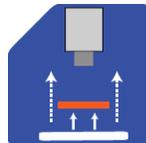
Axial



Line



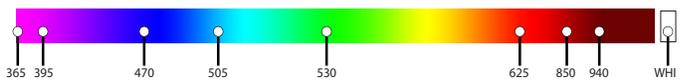
Diffuse Panel



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.

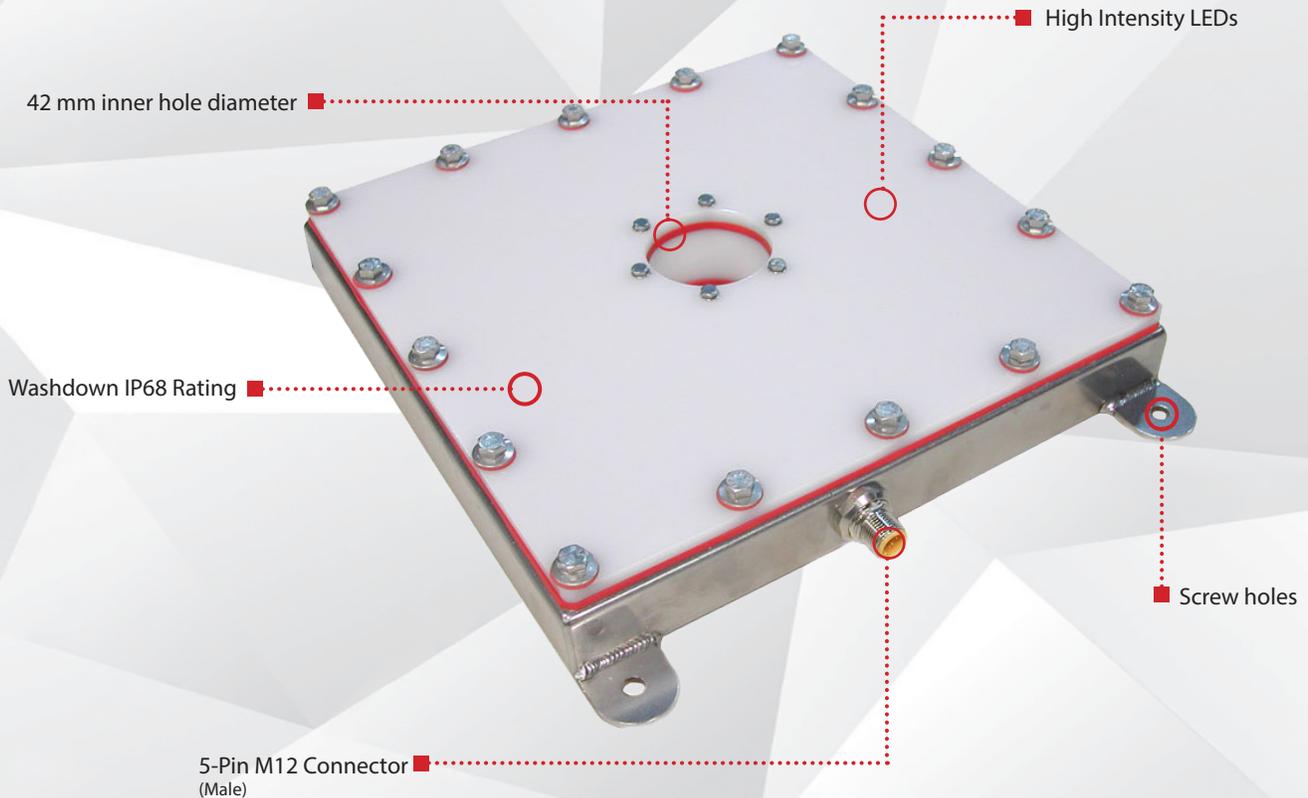
Check Part Number section to see if **this light** is available in SWIR wavelengths.



smart
vision lights

DLPW Diffuse Panel RING LIGHT WASHDOWN

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
68

Connector
5-PIN
M12

PRODUCT HIGHLIGHTS

- ✓ 5-pin M12 quick connect
- ✓ Built-in driver, no external wiring needed
- ✓ PNP and NPN strobe input
- ✓ Washdown IP68 rating
- ✓ 30mm Industrial extrusion





PRODUCT DESCRIPTION

The DLPW Diffused Light Panel Washdown Series is designed for front lighting and harsh environment applications. The innovative and highly versatile lights can be customized for wavelength options. The series provides intense and highly diffuse area lighting. The DFLW has a 65 mm camera hole in the center for easy viewing. Active area measurements include 190 mm x 190 mm, 300 mm x 300 mm, and 600 mm x 600 mm.

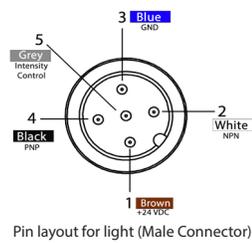


PRODUCT SPECIFICATIONS

Electrical Input	24 V DC +/- 5%
Input Current	Max. 300 mA
Wattage	Max. 7.5 W
On / Off Input	PNP > +4VDC or greater to activate NPN > GND (<VDC) to activate
PNP Line	4 mA @ 4VDC 10 mA @ 12VDC 20 mA @ 24VDC
NPN Line	15 mA @ Ground (0V DC)
Yellow Indicator LED	LED Strobe Indicator ON = Light Active
Green Indicator LED	ON = Power
Continuous Mode	NPN can be tied to ground OR PNP can be tied to 24VDC (not both)
Potentiometer	270° turn pot – Intensity control of 10% to 100%. Turn clockwise to increases intensity
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	IP68
Weight	Based on size. Contact Smart Vision Lights.
Compliances	CE, RoHS, IEC-62471
Warranty	10 year warranty. For complete warranty information, visit smartvisionlights.com/warranty .



WIRING CONFIGURATION



Pins	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, it is possible to tie pin 5 to pin 1 at +24VDC.
 For continuous mode: PNP (pin 4) can be tied to +24 V DC (pin 1) **or** NPN (pin 2) can be tied to Ground (pin 3).

OPTIONAL

For maximum intensity, analog intensity may be connected to +VDC (24VDC) - Jumper pin 5 to pin 1



RESOURCE CORNER

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



PART NUMBER

DLPW— X —

SIZE:
190x190
300x300
600x600

COLOR:

Part Number Examples:

DLPW-190x190-625 DLPW, 190 mm x 190 mm, 625 Red Wavelength

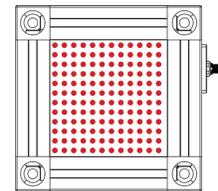
Additional wavelengths options available upon request.



AREA LIT

LEDs are placed to produce uniform intensity throughout the lighted surface area.

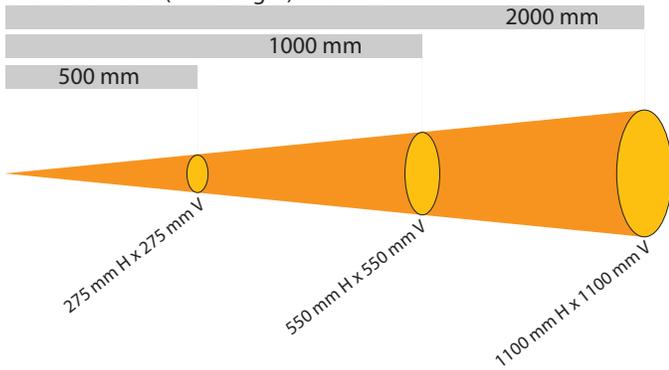
(LED size and spacing not shown to scale)



LIGHT PATTERNS

Smart Vision Lights recommends the DLPW be used at a working distance between 500 mm to 4000 mm.

Beam Diameter (White Light) – 6500 K



LIGHTING PATTERN FOR THE DLPW -190x190

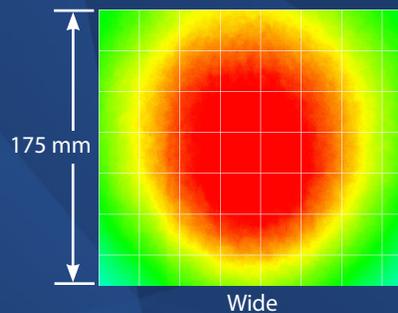
Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
500 mm (19.7")	80mm (~3.1")
1000 mm (39.4")	90mm (~3.54")
2000 mm (78.8")	135mm (~5.3")

Typical Output Performance	Illuminance (Lux)
190x190	44,000
300x300	32,000
450x450	32,000
600x600	32,000

Illumination measurement taken on White Lights - 6500K

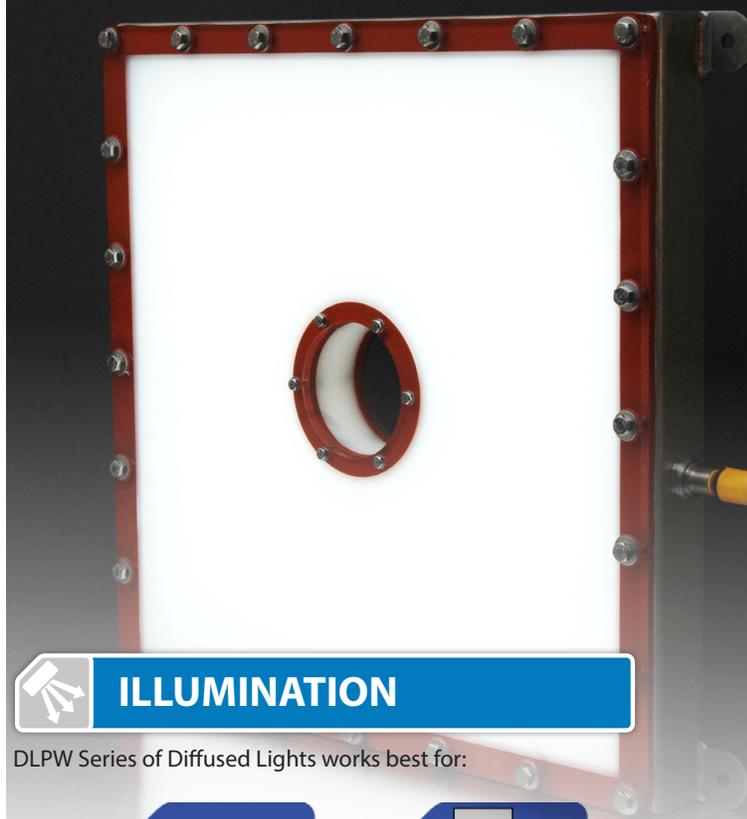
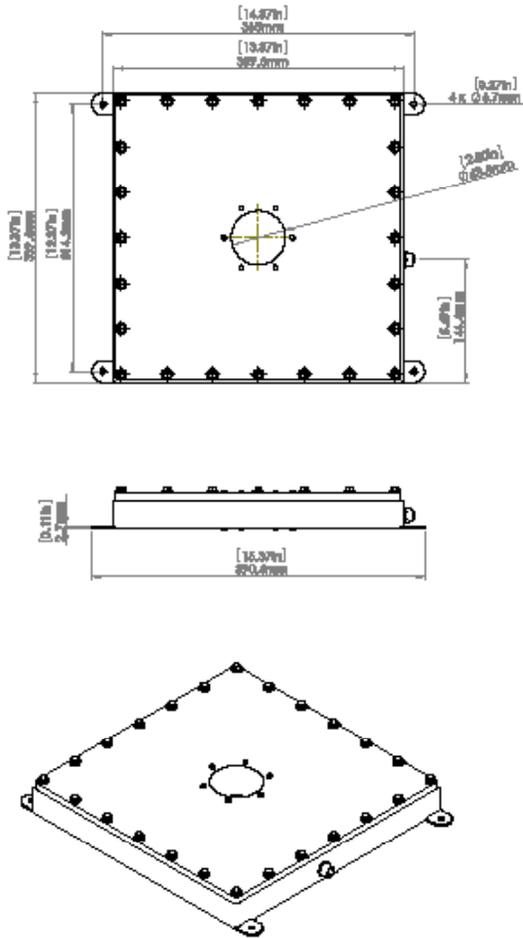
The DLPW Ring Light produces a uniform light pattern.

Working Distance = 500 mm Grid set to 25 mm x 25 mm



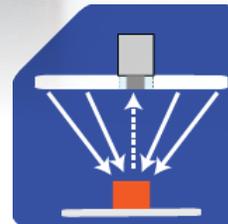
PRODUCT DRAWING

CAD files available on our website.
Dimensic

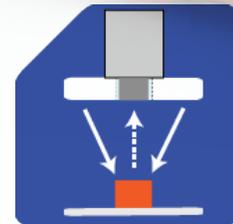


ILLUMINATION

DLPW Series of Diffused Lights works best for:



Diffuse Panel



Radial

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, and 940.

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 prolonged exposure. Applicable for wavelengths: 470, 505, 530, and WHI.

Notice

Risk Group 1: UV emitted from this product. Minimize exposure to eyes and skin. Use appropriate shielding. Safe for most applications except prolonged exposures. Applicable for wavelengths: 395

Caution

Risk Group 2: UV emitted from this product. Eye or skin irritation may result from exposure. Use appropriate shielding. Does not pose optical hazard if aversion responses limit exposure. Applicable for wavelengths: 365

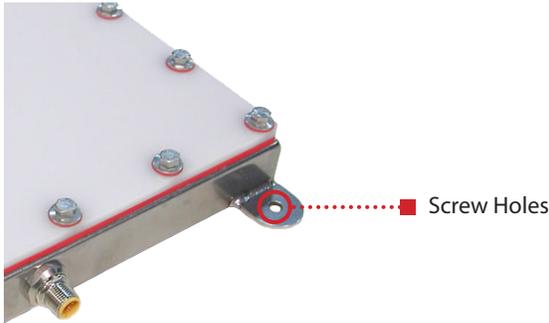
MOUNTING

Mounting options include four 30 mm industrial extrusions on the DLPW diffuse ring light pan.

Optional Mounting Hardware:

T-Slots = M5 x 0.8 mm T-Nut

Threaded screw Holes = M4 screws



ACCESSORIES

Power Cables



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

Camera Mount



Description	Part Number
DLPW-190	BKT0005
DLPW-300	BKT0006
DLPW-450	BKT0013
DLPW-600	BKT0014

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 Light stays on continuously.

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

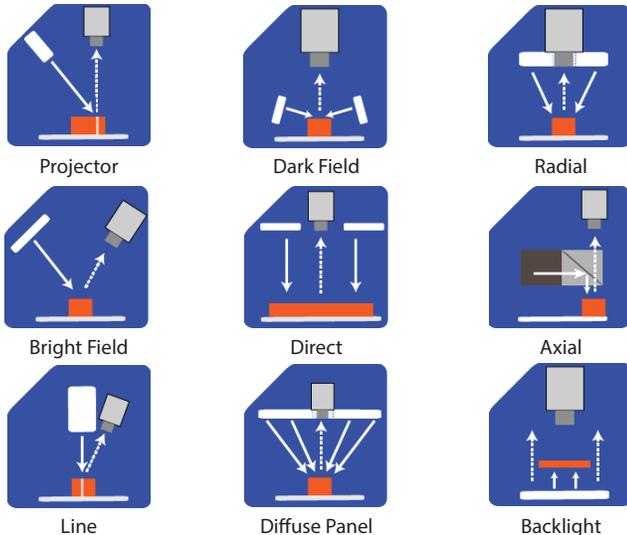
Built-in Driver The built-in driver allows full function without the need of an external controller.

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.

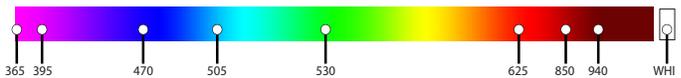
Diffuser Used to widen the angle of light emission, reduce reflections, and increase uniformity.

TYPES OF ILLUMINATION



COMMON COLOR/WAVELENGTHS LEGEND

Wavelengths 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's** is available in SWIR wavelengths.

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

LLPX Series backlights offer a homogeneous light pattern with the same familiar ease of mounting found on other Smart Vision Lights backlights. With the optically clear internal light dispersion grid and the matte-white-finished backing plate, more light is reflected up and out through the diffusion acrylic. The LLPX Series features Multi-Drive™, which allows the light to operate in continuous operation or OverDrive™ strobe mode, depending on wiring.



PRODUCT SPECIFICATIONS

	CONTINUOUS OPERATION	OVERDRIVE™ STROBE MODE
Electrical Input	24VDC +/-5%	
PNP Line	4 mA @ 5VDC 8 mA @ 10VDC 15 mA @ 24VDC	
NPN Line	15 mA @ ground (0VDC)	
OverDrive™ Strobe Mode	Not applicable	Connect pin 5 to GND (see Wiring Configuration for more information)
Strobe Duration	Not applicable	Min. 10 µs Max. 50 ms (see SafeStrobe™ Technology for more information)
Duty Cycle	Not applicable	Max. 10%
Strobe Input	Not applicable	PNP: +4VDC or greater to activate NPN: GND (<1VDC) to activate
Continuous Operation Mode	NPN can be tied to ground OR PNP can be tied to 24VDC (not both)	Not applicable
On/Off Input	PNP: +4VDC or greater to activate NPN: GND (<1VDC) to activate	Not applicable
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 smartvisionlights.com/warranty .	

Standard Light Sizes	Input Current	Wattage	Weight
306 mm x 306 mm	1.26 A	30.24 W	3.08 kg
459mm x 459 mm	1.98 A	47.52 W	5.74 kg

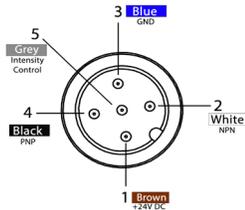


RESOURCE CORNER

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

WIRING CONFIGURATION

CONTINUOUS OPERATION MODE



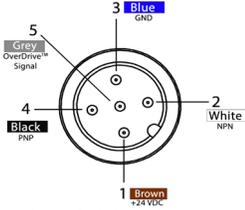
Pin layout for light (male connector)

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

For the light to function properly, apply either a 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)

OVERDRIVE™ OPERATION MODE



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	OverDrive™ Signal	Ground	GREY*

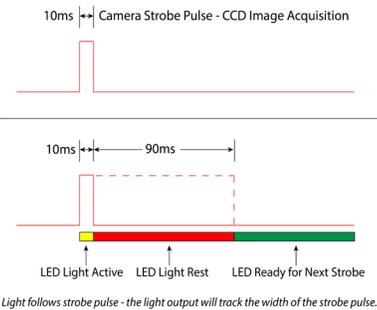
*Some cables use green/yellow for pin 5.
 For maximum intensity tie pin 5 to pin 1 at +24 VDC.
 For continuous mode, PNP (pin 4) can be tied to +24 VDC (pin 1) or NPN (pin 2) can be tied to ground (pin 3).

Failure to supply light with correct input current will result in **non-repeatable lighting**.
 (see Product Specifications for requirements)

DUTY CYCLE (OVERDRIVE™ MODE ONLY)

This section applies only to OverDrive™ strobe mode.

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



Light follows strobe pulse - the light output will track the width of the strobe pulse.

Calculating Rest Time

$$RT = \frac{ST}{D} - ST$$

RT = Rest Time
 ST = Strobe Time
 D = Duty Cycle

Example

$$90 \text{ ms} = \frac{10 \text{ ms}}{.1} - 10 \text{ ms}$$

Rest Time is 90 ms for 10 ms Strobe Time

Calculating Strobe Rate

$$SR = \frac{D}{ST}$$

SR = Strobe Rate (strokes per second)
 ST = Strobe Time (seconds)
 D = Duty Cycle

Example

$$1000 = \frac{0.1}{0.0001}$$

Strobe Rate is 1000 strokes per second

Calculating Duty Cycle

$$D = ST \times SR$$

SR = Strobe Rate (strokes per second)
 ST = Strobe Time (seconds)
 D = Duty Cycle

Example

$$0.1 = 0.0001 \times 1000$$

Duty Cycle is 10% (0.1)

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

Note: Strobe time is limited by the strobe rate.

MULTI-DRIVE

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



The Multi-Drive™ feature allows the user to run the light continuously or in OverDrive™ at the maximum allowed intensity by simply setting the product configuration. OverDrive™ operation has **up to eight times** the power of continuous operation.

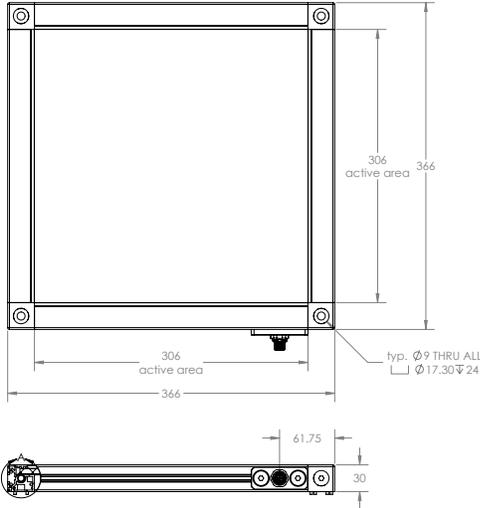
SAFESTROBE™ TECHNOLOGY

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. This is especially beneficial for overdriving our high-current LEDs.

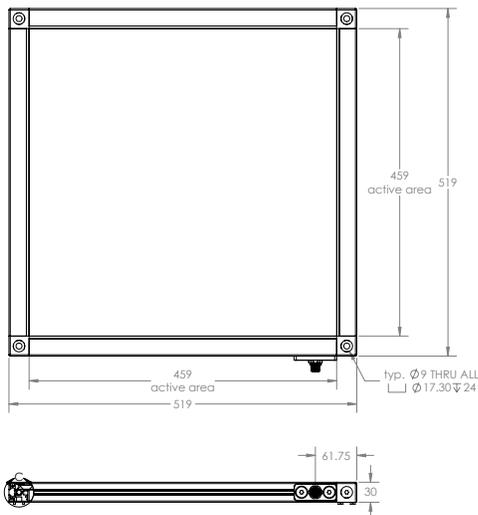
PRODUCT DRAWING

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

306 mm x 306 mm

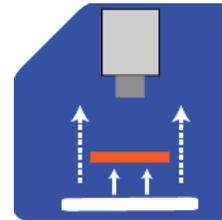


459 mm x 459 mm



ILLUMINATION

LLPX Series of Backlights works best for:



Backlight

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 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

LLPX – X – – X –

SIZE (L x W):

306 x 306

459 x 459

Custom sizes upon request

COLOR:



PATTERN AREA LIGHTING™:

Leave blank for no pattern

Part Number Examples:

LLPX-306x306-625 LLPX, 306 x 306 mm, 625 nm Red Wavelength

LLPX-459x459-WHI LLPX, 459 x 459 mm, White

LLPX-306x306-470-215x15-10 LLPX, 306 x 306 mm, 470 nm Blue Wavelength, Pattern 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.



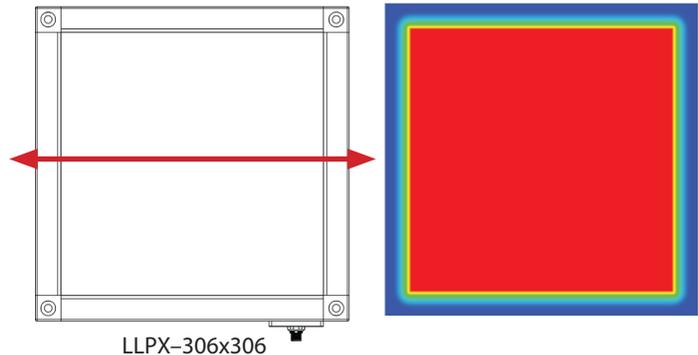
OPTICAL PERFORMANCE

The LLPX offers a highly diffuse light pattern.

OPTICAL PERFORMANCE FOR THE LLPX

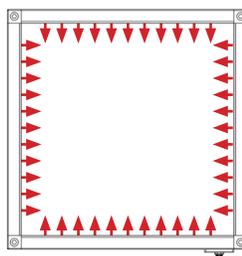
Operation	Distance	Illuminance (Lux)
Continuous Mode	Surface	6600
OverDrive™ Mode	Surface	53,000

Illuminance measurement taken on White Lights, 5700K at the surface of light.



AREA LIT

The LLPX is edge lit, which means the light comes from each of the four edges. This produces a very homogeneous light output.



LLPX-459x459 shown (LED size and spacing not shown to scale)



CUSTOM SIZE

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



MOUNTING

Smart Vision Lights recommends using **drop-in T-nuts** for mounting an LLPX backlight.

Hardware included with light:

- (2) M5 x 10 mm screws (hex)
- (2) Drop-in T-nuts

NOTE

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

T-nut channel

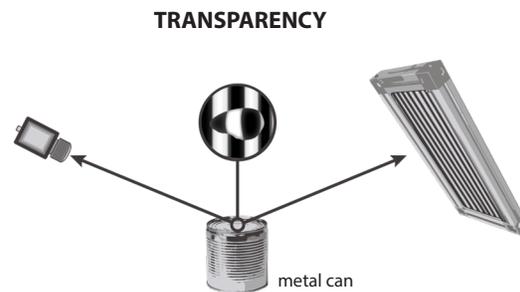
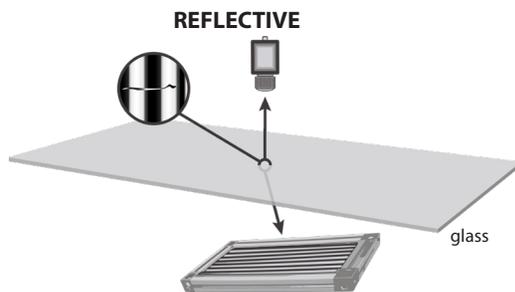


PATTERNED AREA LIGHTING™

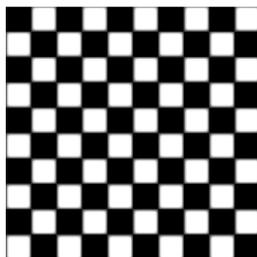
Patterned Area Lighting (PAL) is used for isolating defects on uneven, highly specular, and/or clear surfaces, which can be difficult with standard lighting methods. PAL can be used to isolate a defect in a single image acquisition. With PAL, small defects will reflect off the surface at an equal but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

How to use PAL

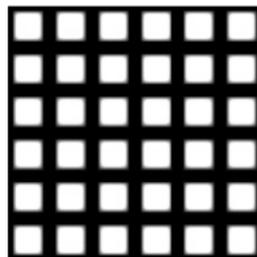
- For backlighting a transparent object, the light is positioned beneath the object.
- For front lighting, position the light where the light pattern will be directed on the surface at an angle.
- A camera is positioned to capture the reflection of the light source.
- The camera lens is adjusted to focus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



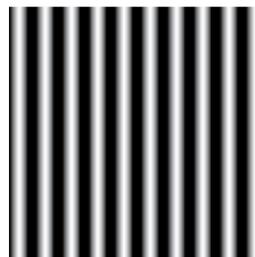
Pattern Area Lighting Examples



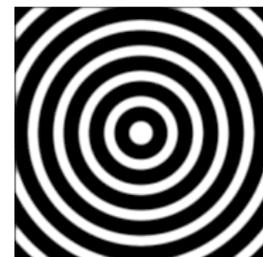
Pattern: Checker Board
Size: 50 mm x 50 mm square



Grid
50 mm line width



Gradient Lines
50 mm line width



Circles
50 mm circle thickness

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.

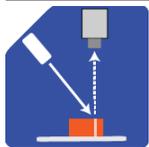
Built-In Driver The built-in driver allows full function without the need of an external controller.

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

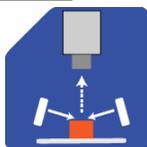
Polarizers Filters that reduce reflections on specular surfaces.

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

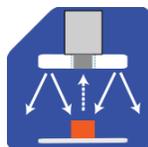
TYPES OF ILLUMINATION



Projector



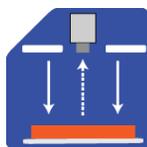
Dark Field



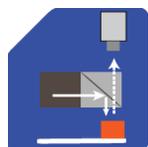
Radial



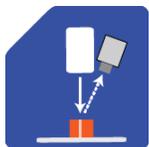
Bright Field



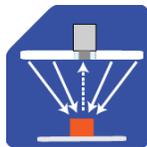
Direct



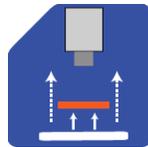
Axial



Line



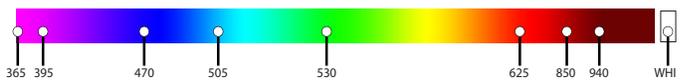
Diffuse Panel



Backlight

COMMON COLOR/WAVELENGTHS LEGEND

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



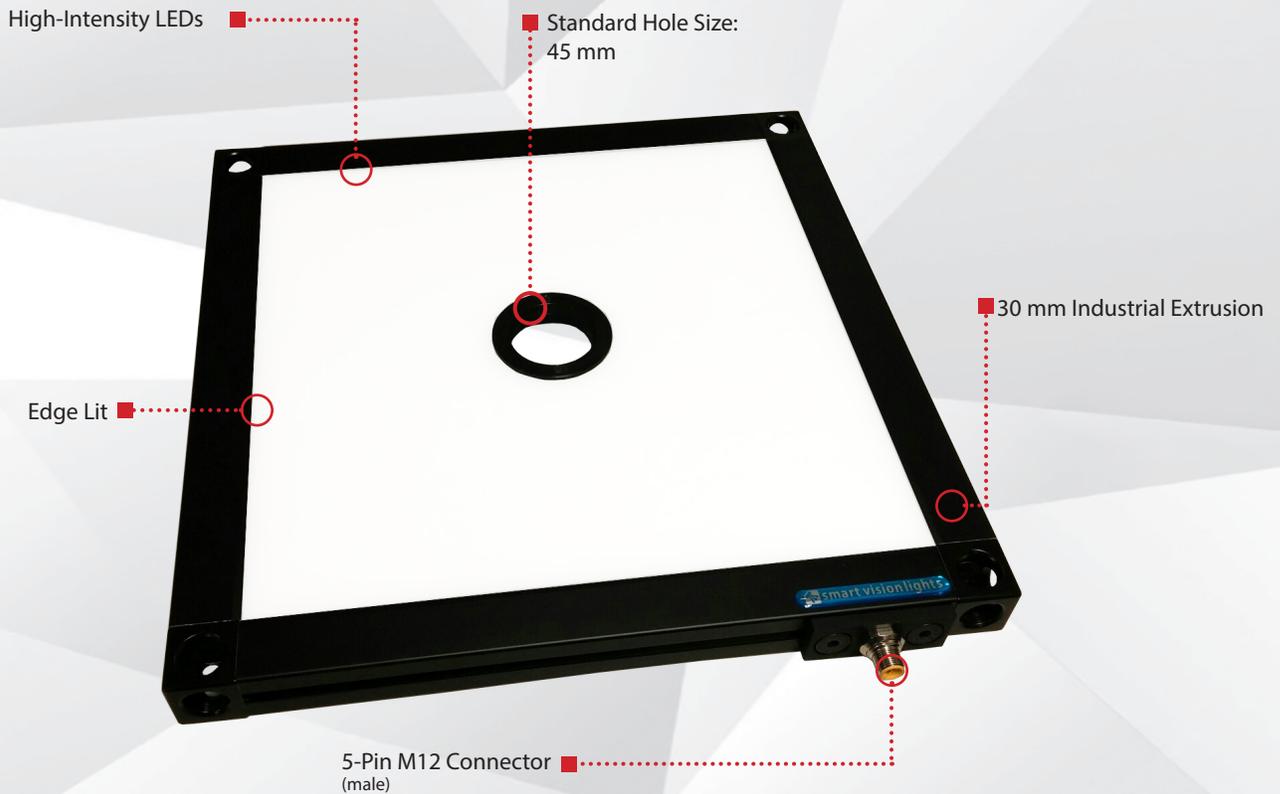
See Part Number section for **this light's** available standard wavelengths.



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.

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 light sizes available
- ✓ Custom hole placement and sizing available



PRODUCT DESCRIPTION

In the LLPX-H Light Panel Series, an optically clear internal light dispersion grid and a matte-white-finished backing plate allow more light to be reflected up and out through the diffusion acrylic. The LLPX-H features Multi-Drive™, which allows the user to operate the light in constant ON operation or OverDrive™, depending on wiring method. The industry-standard 5-pin M12 connector makes for simple wiring. The 1–10VDC analog signal line gives the user total control over intensity in continuous operation. Removing the signal puts the light into OverDrive™ strobe mode. Custom placement, sizing, and number of holes available upon request.



PRODUCT SPECIFICATIONS

	CONTINUOUS OPERATION	OVERDRIVE™ STROBE MODE
Electrical Input	24VDC +/-5%	
PNP Line	4 mA @ 5VDC 8 mA @ 10VDC 15 mA @ 24VDC	
NPN Line	15 mA @ ground (0VDC)	
OverDrive™ Strobe Mode	Not applicable	Connect pin 5 to GND (see Wiring Configuration for more information)
Strobe Duration	Not applicable	Min. 10 μs Max. 50 ms (see SafeStrobe™ Technology for more information)
Duty Cycle	Not applicable	Max. 10%
Strobe Input	Not applicable	PNP: +4VDC or greater to activate NPN: GND (<1VDC) to activate
Continuous Operation Mode	NPN can be tied to ground OR PNP can be tied to 24VDC (not both)	Not applicable
On/Off Input	PNP: +4VDC or greater to activate NPN: GND (<1VDC) to activate	Not applicable
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 smartvisionlights.com/warranty .	

Standard Light Sizes	Input Current	Wattage	Weight
306 mm x 306 mm	1.26 A	30.24 W	~3.08 kg
459 mm x 459 mm	1.98 A	47.52 W	~5.74 kg



CUSTOMIZE

Smart Vision Lights can customize an LLPX-H to meet your needs.

Size

SVL can customize an LLPX-H to the size you need — up to 4800 x 1180 mm. When requesting a custom LLPX-H, include the following: size (length x width) in millimeters, what side the 5-pin M12 connector should be placed on, and desired wavelength (color).

Holes

Holes can be placed in just about any location on the LLPX-H. When requesting custom hole placement, include number of holes needed, size of holes in millimeters and desired locations.



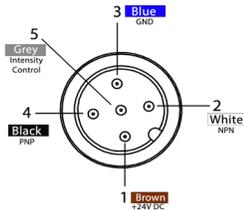
RESOURCE CORNER

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



WIRING CONFIGURATION

CONTINUOUS OPERATION MODE



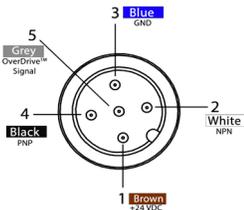
Pin layout for light (male connector)

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

For the light to function properly, apply either a 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)

OVERDRIVE™ OPERATION MODE



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	OverDrive™ Signal	Ground	GREY*

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

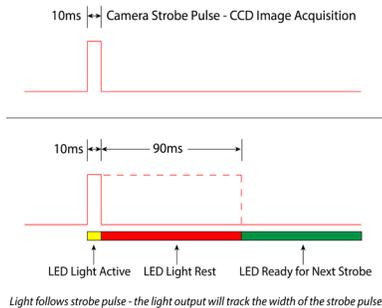
Failure to supply light with correct input current will result in non-repeatable lighting.
 (see Product Specifications for requirements)



DUTY CYCLE (OVERDRIVE™ MODE ONLY)

This section applies only to OverDrive™ strobe mode.

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



Light follows strobe pulse - the light output will track the width of the strobe pulse.

Calculating Rest Time

$$RT = \frac{ST}{D} - ST$$

RT = Rest Time
 ST = Strobe Time
 D = Duty Cycle

Example

$$90 \text{ ms} = \frac{10 \text{ ms}}{.1} - 10 \text{ ms}$$

Rest Time is 90 ms for 10 ms Strobe Time

Calculating Strobe Rate

$$SR = \frac{D}{ST}$$

SR = Strobe Rate (strokes per second)
 ST = Strobe Time (seconds)
 D = Duty Cycle

Example

$$1000 = \frac{0.1}{0.0001}$$

Strobe Rate is 1000 strokes per second

Calculating Duty Cycle

$$D = ST \times SR$$

SR = Strobe Rate (strokes per second)
 ST = Strobe Time (seconds)
 D = Duty Cycle

Example

$$0.1 = 0.0001 \times 1000$$

Duty Cycle is 10% (0.1)

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

Note: Strobe time is limited by the strobe rate.



MULTI DRIVE

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

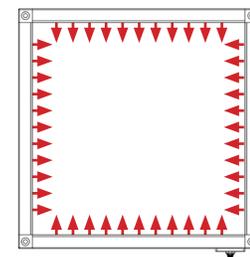


The Multi-Drive™ feature allows the user to run the light continuously or in OverDrive™ at the maximum allowed intensity by simply setting the product configuration. OverDrive™ operation has **up to eight times** the power of continuous operation.



EDGE LIT

The LLPX-H is edge lit, which means the light comes from each of the four edges. This produces a very homogeneous light output.



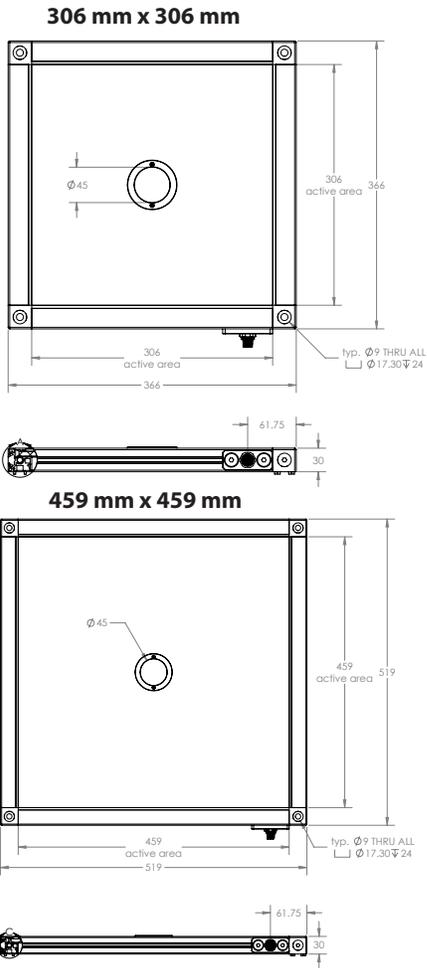
LLPX-459x459 shown (LED size and spacing not shown to scale)

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. This is especially beneficial for overdriving our high-current LEDs.

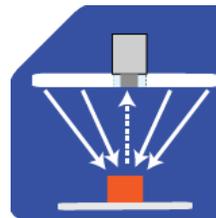
PRODUCT DRAWING

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

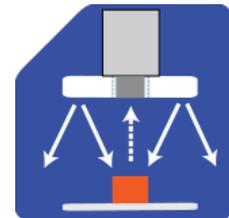


ILLUMINATION

LLPX-H Series of Backlights works best for:



Flat Dome "Light Tent"



Radial

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 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

LLPX-H - X - - X -

SIZE (L x W):

306 x 306

459 x 459

Custom sizes upon request

COLOR:



PATTERN AREA LIGHTING™:
Leave blank for no pattern

Part Number Examples:

LLPX-H-306x306-625 LLPX-H, 150 x 150 mm, 625 nm Red Wavelength

LLPX-H-450x459-WHI LLPX-H, 300 x 150 mm, White

LLPX-H-306x306-WHI-215x15-10 LLPX-H, 450 x 150 mm, 470 nm Blue Wavelength,
Pattern Area Light with 15 mm grid (dark lines), 15 mm light gap and 10% 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.

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



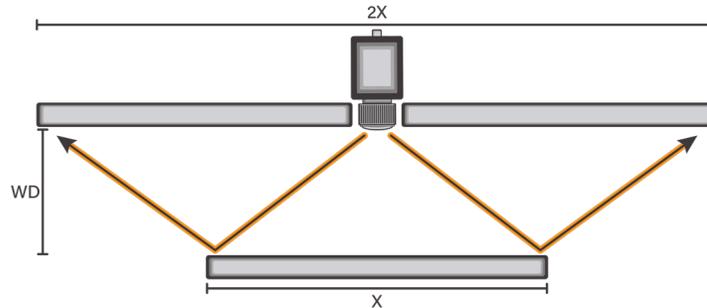
SIZING A LIGHT

When sizing a light for the most consistent/homogeneous illumination, best practice is to follow the W Rule. The W Rule states: The working distance (WD) is equal to the size of the part (X) and the size of the light is twice the size of the part.

THE W RULE:

The working distance is equal to the size of the part.
The size of the light is twice the size of the part.

If the working distances needs to be increases, the light also needs to increase in size to remain homogeneous.

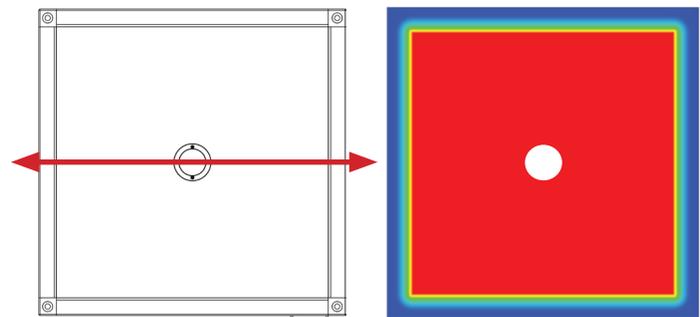


OPTICAL PERFORMANCE

The LLPX-H offers a very diffuse light pattern.

OPTICAL PERFORMANCE FOR THE LLPX-H

Rating	Illuminance (Lux)
Average Intensity Rating	42,000
<i>Illuminance measurement taken at surface of LLPX-H</i>	



LLPX-H-306x306



MOUNTING

Smart Vision Lights recommends using **drop-in T-nuts** for mounting an LLPX-H backlight.

Hardware included with light:

- (2) M5 x 10 mm screws (hex)
- (2) Drop-in T-nuts

NOTE

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

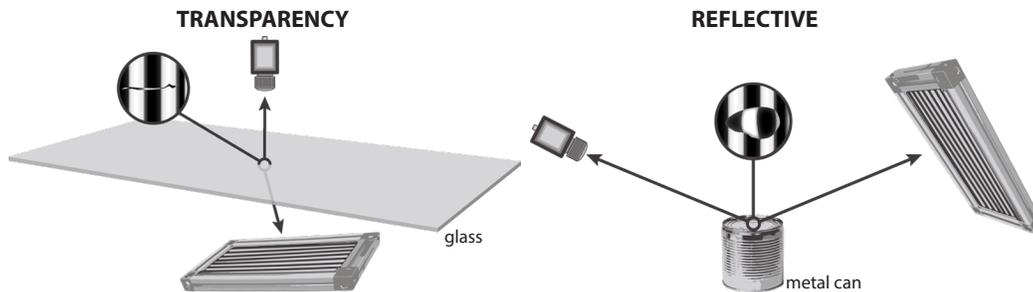


PATTERN AREA LIGHTING

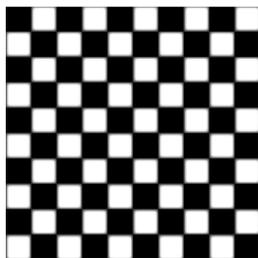
Pattern Area Lighting (PAL) is used for isolating defects on uneven, highly specular, and/or clear surfaces, which can be difficult with standard lighting methods. PAL allows for isolating a defect in a single image acquisition. With PAL, small defects will reflect off the surface at an equal but opposite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

How to use PAL

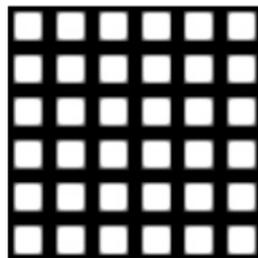
- For backlighting a transparent object, the light is positioned beneath the object.
- For front lighting, position the light where the light pattern will be directed on the surface at an angle.
- A camera is positioned to capture the reflection of the light source.
- The camera lens is adjusted to focus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



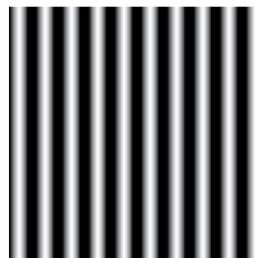
Pattern Area Lighting Examples



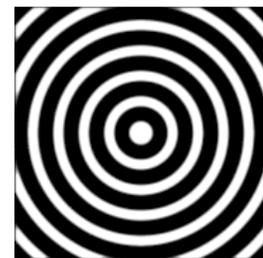
Pattern: Checker Board
Size: 50 mm x 50 mm square



Grid
50 mm line width



Gradient Lines
50 mm line width



Circles
50 mm circle thickness

Customized line and circle 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.

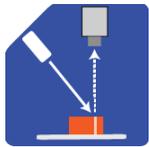
Built-In Driver The built-in driver allows full function without the need of an external controller.

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

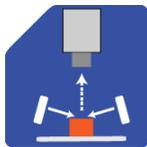
Polarizers Filters that reduce reflections on specular surfaces.

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

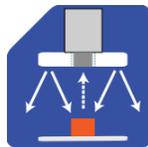
TYPES OF ILLUMINATION



Projector



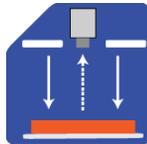
Dark Field



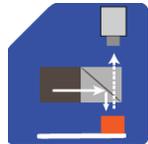
Radial



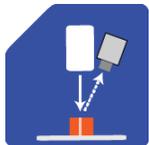
Bright Field



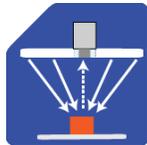
Direct



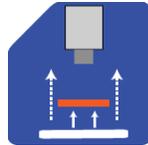
Axial



Line



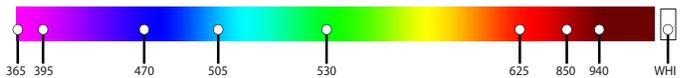
Diffuse Panel



Backlight

COMMON COLOR/WAVELENGTHS LEGEND

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



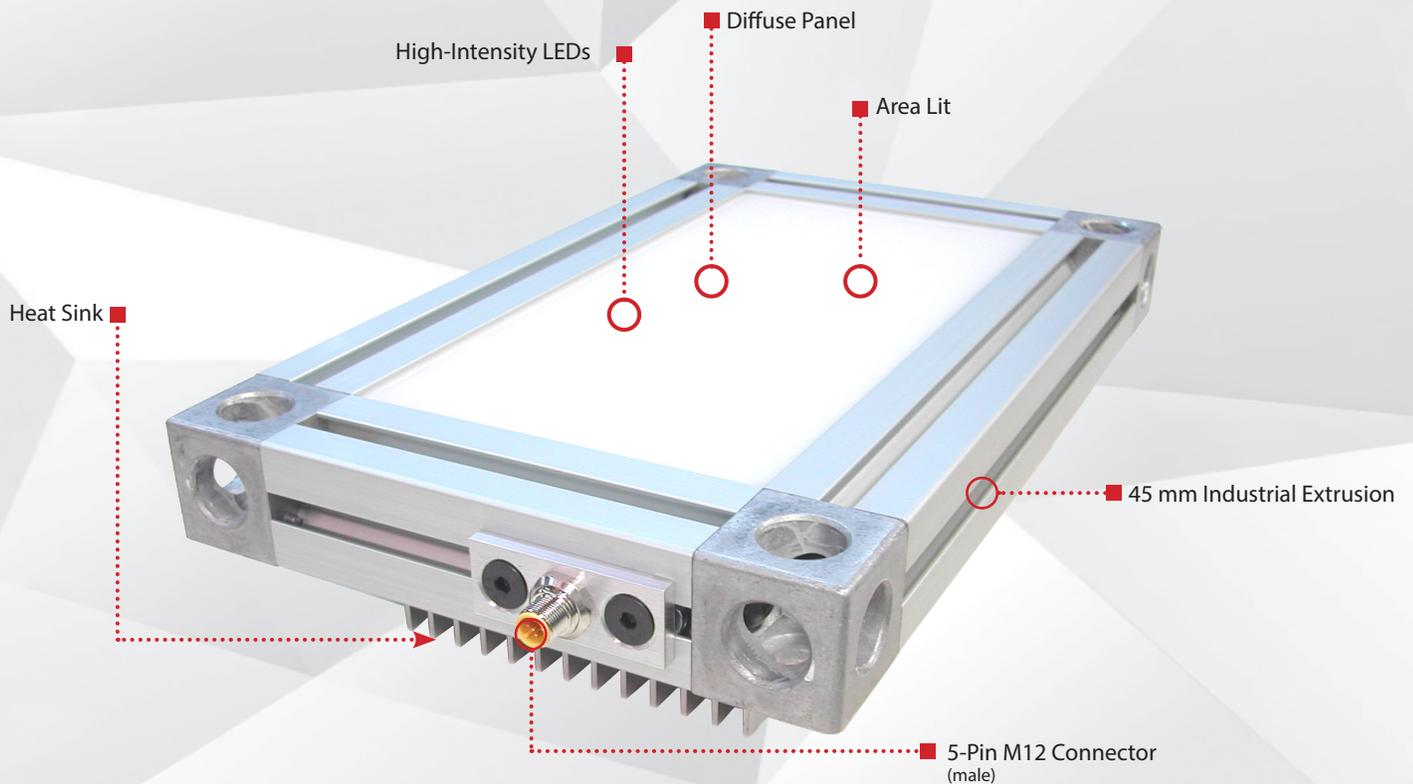
See Part Number section for **this light's** available standard wavelengths.



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.

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 strobe input
- ✓ 45mm industrial extrusion for mounting
- ✓ 5-pin M12 quick connect
- ✓ Custom sizes available

PRODUCT DESCRIPTION

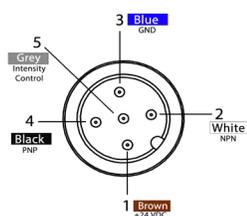
The MOBL Backlight Series is designed for maximum output. The series works in continuous operation mode or can operate with either an NPN or PNP trigger signal when using on/off input mode. The MOBL Backlight runs on an industry-standard 24VDC. The 1–10VDC analog control line gives the user total control over intensity. Proper heat dissipation is achieved using the side extrusion and the heat sink installed on the bottom of the light. The 45 mm extrusion makes mounting the light easy when using drop-in T-nuts. The MOBL Backlight has a built-in driver. No external driver is required.

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 @ 12V DC	20 mA @ 24VDC
NPN Line	15 mA @ ground (0VDC)		
Continuous Mode	NPN can be tied to ground OR 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 smartvisionlights.com/warranty .		

Standard Light Sizes	Input Current	Wattage	Weight
150 mm x 150 mm	1.1 A	26.4 W	~3.08 kg
300 mm x 150 mm	2.2 A	52.8 W	~4.80 kg
300 mm x 300 mm	4.4 A	106 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.

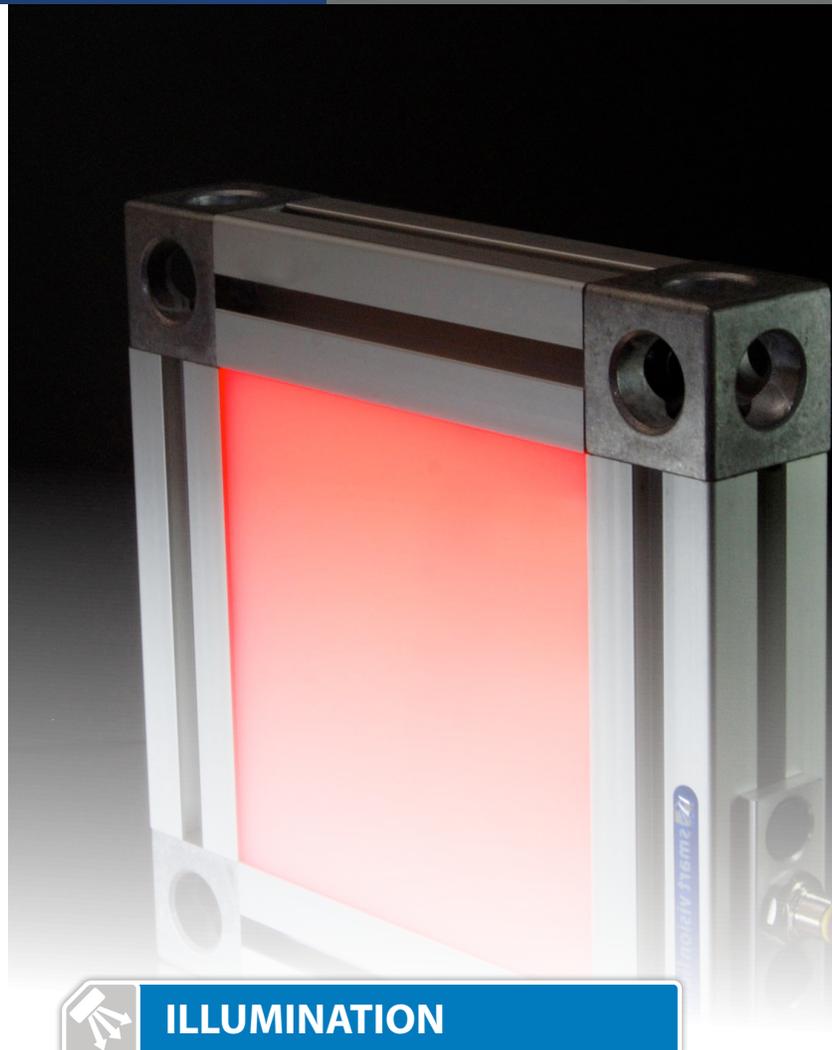
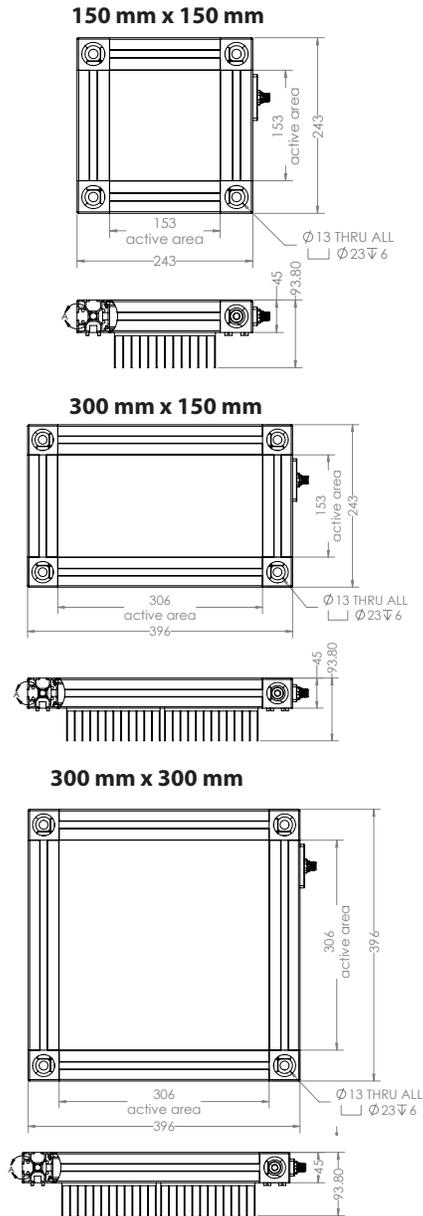


RESOURCE CORNER

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

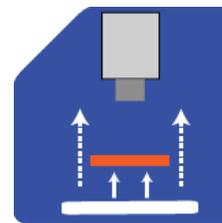
PRODUCT DRAWING

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



ILLUMINATION

MOBL 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

MOBL – [] [] [] X [] [] [] – [] [] [] – [] [] [] X [] [] [] – [] []

SIZE (L x W):

150 x 150

300 x 150

300 x 300

Custom sizes upon request

COLOR:



PATTERN AREA LIGHTING:
Leave blank for no pattern

Part Number Examples:

- MOBL-150x150-625** MOBL, 150 x 150 mm, 625 nm Red Wavelength
- MOBL-150x150-WHI-215x15-10** MOBL, 150 x 150 mm, White, Pattern Area Light with 15 mm grid (dark lines), 15 mm light gap and 10% 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.

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

CUSTOMIZE

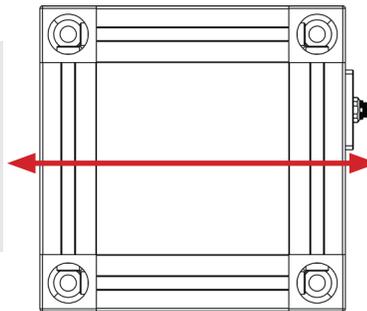
Smart Vision Lights can customize a MOBL to the size you need. When requesting a custom MOBL, include the following: size (length x width) in millimeters, what side the 5-pin M12 connector should be placed on, and desired wavelength (color).

OPTICAL PERFORMANCE

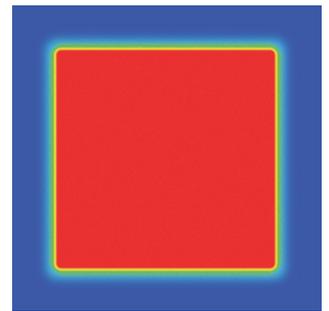
The MOBL offers a very diffuse light pattern.

OPTICAL PERFORMANCE FOR THE MOBL

Rating	Illuminance (Lux)
Average Intensity Rating	70,000
<i>Illuminance measurement taken at surface of MOBL</i>	



MOBL-150x150

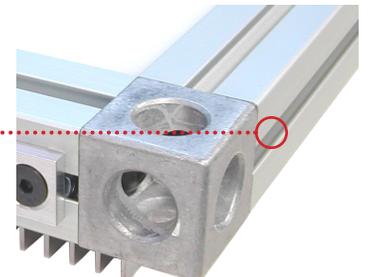


MOUNTING

Smart Vision Lights recommends using **drop-in T-nuts** for mounting a MOBL Backlight. The MOBL extrusion has a Bosch size 10 T-nut channel.

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

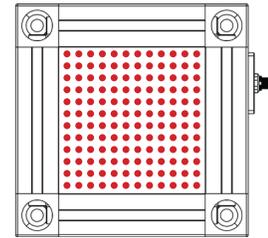
Bosch size 10 T-nut channel





AREA LIT

LEDs are placed to disperse light evenly throughout the lighted surface area.



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

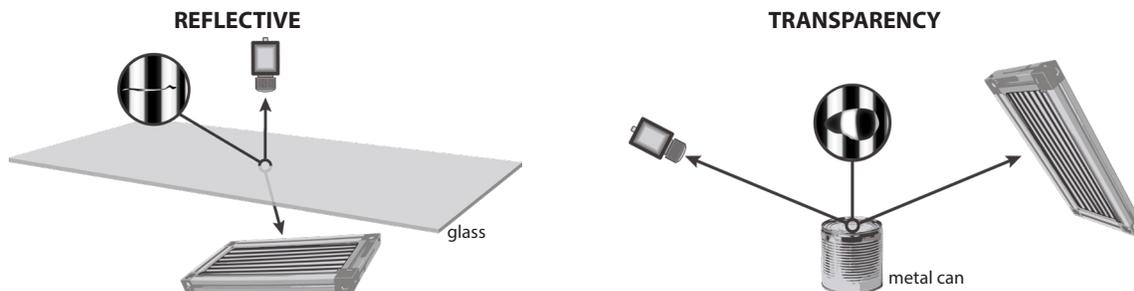


PATTERN AREA LIGHTING

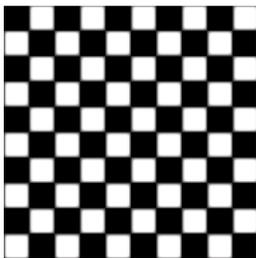
Pattern Area Lighting (PAL) is used for isolating defects on uneven, highly specular, and/or clear surfaces, which can be difficult with standard lighting methods. PAL allows for isolating a defect in a single image acquisition. With PAL, small defects will reflect off the surface at an equal but opposite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

How to use PAL

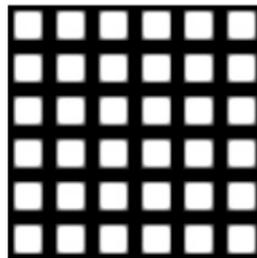
- For backlighting a transparent object, the light is positioned beneath the object.
- For front lighting, position the light where the light pattern will be directed on the surface at an angle.
- A camera is positioned to capture the reflection of the light source.
- The camera lens is adjusted to focus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



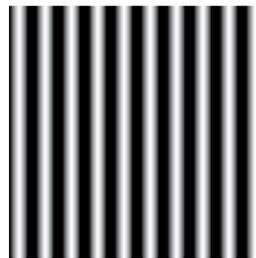
Pattern Area Lighting Examples



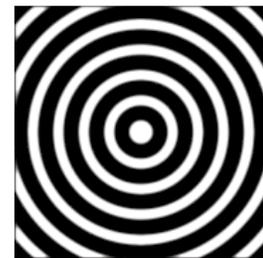
Pattern: Checker Board
Size: 50 mm x 50 mm square



Grid
50 mm line width



Gradient Lines
50 mm line width



Circles
50 mm circle thickness

Customized line and circle 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.

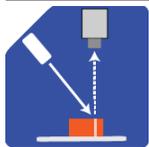
Built-In Driver The built-in driver allows full function without the need of an external controller.

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

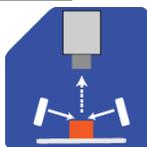
Polarizers Filters that reduce reflections on specular surfaces.

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

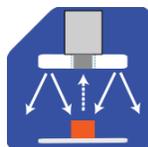
TYPES OF ILLUMINATION



Projector



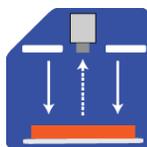
Dark Field



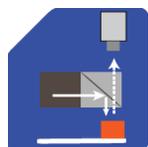
Radial



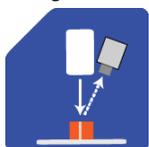
Bright Field



Direct



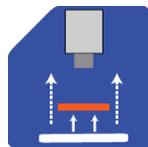
Axial



Line



Diffuse Panel

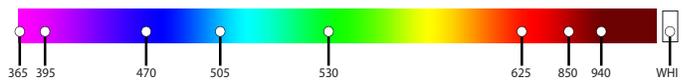


Backlight

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.

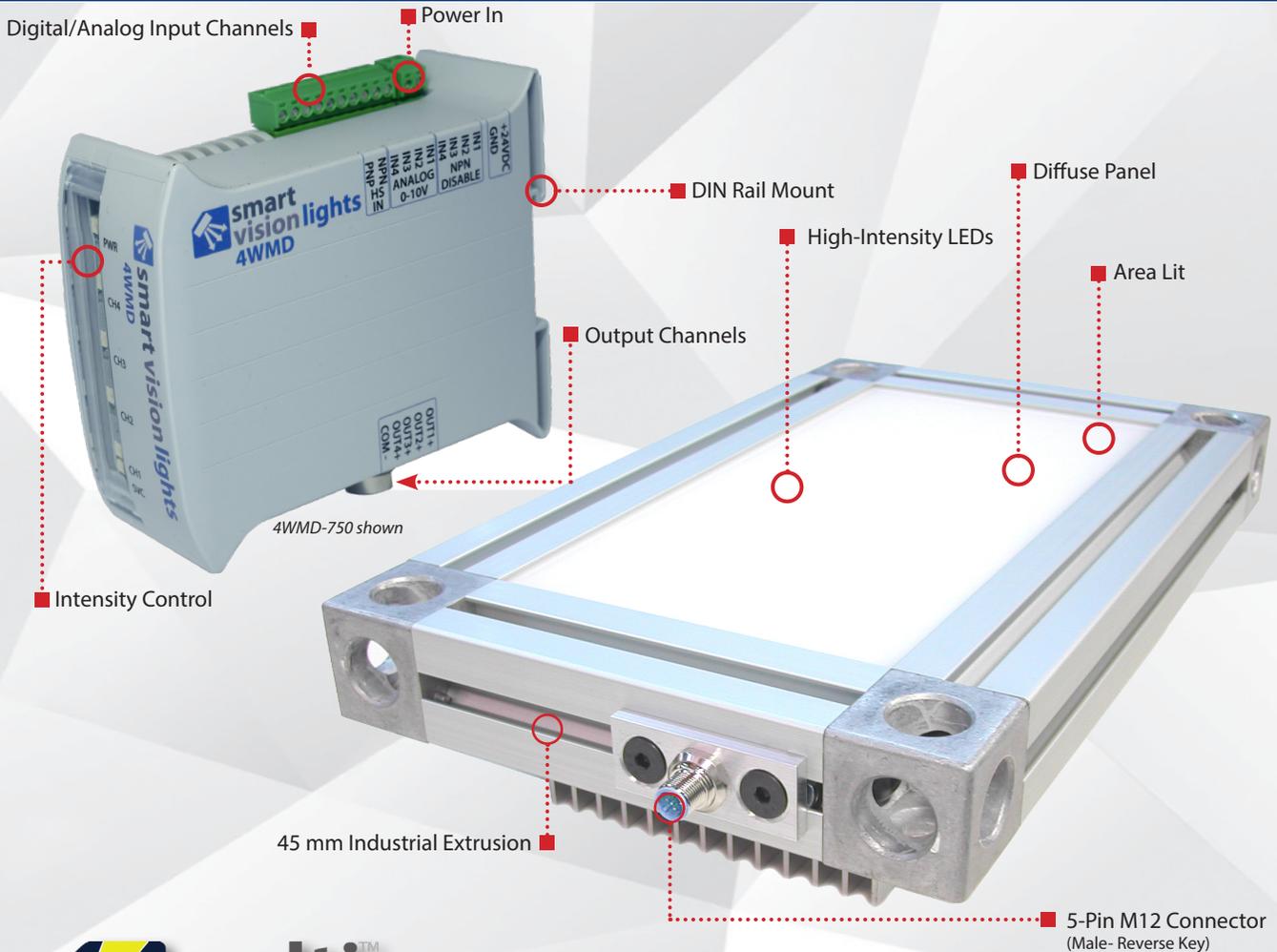
Check Part Number section to see if **this light** is available in SWIR wavelengths.



smart
vision lights™

MOBL *Maximum Output* BACKLIGHT KIT RGBW LIGHT / DRIVER

PRODUCT DATA SHEET



Warranty
10
YEAR*

Compliant
IEC
62471

Compliant
CE
RoHS

Rated
IP
50

Connector
5-PIN
M12

* see page 2 for details.

PRODUCT HIGHLIGHTS

- ✓ Kit available that includes a 4WMD for tuning individual wavelengths and a 5PM12-J2000-KR cable
- ✓ PNP and NPN high speed trigger signal input
- ✓ 45mm industrial extrusion for mounting
- ✓ 5-pin M12 quick connect (reverse key)





PRODUCT DESCRIPTION

MOBL (RGBW)

The MOBL (RGBW) Backlight Series is designed for maximum output and includes four tunable wavelengths. Each wavelength is independent and can be tuned individually, allowing for the light to output just about any color imaginable. Proper heat dissipation is achieved using the side extrusion. The 45 mm extrusion make mounting the light easy when using drop-in T-nuts.

4WMD

The 4WMD permits up to four individual channels to be tuned independently. The 4WMD has independent tuning controls and built-in Multi-Drive™, allowing for the intensity range to be set from 10%–100% for continuous operations or OverDrive™ strobe mode. In addition, when in continuous operation mode, the intensity can be adjusted using the analog signal line. Disabling a channel will turn off the wavelength tied to that channel. Each output channel has its own tuning control located on the front of the driver. The MOBL-RGBW and 4WMD needs to be sized to matched. See 4WMD Sizing for more details.



WHAT'S INCLUDED

When you order a MOBL (RGBW) light, such as the MOBL-150x150-RGBW, the following item is included:



MOBL
BACKLIGHT

MOBL (RGBW) requires an external constant current driver. See product specification for maximum input current.

When you order a MOBL (RGBW) kit, such as the MOBL-150x150-RGBW-KIT, the following items are included:



MOBL
BACKLIGHT

+



4WMD
DRIVER

+



2 METER
CABLE
5PM12-J2000-KR



RESOURCE CORNER

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



PRODUCT SPECIFICATIONS

MOBL (RGBW)	MOBL-150x150-RGBW	MOBL-300x150-RGBW	MOBL-300x300-RGBW
Weight	~3.08 kg	~4.80 kg	-
INPUT PER CHANNEL (MAX VALUES)			
Maximum LED Continuous Current	750 mA	1500 mA	2 A
Maximum LED OverDrive™ Current	6 A	9 A	12 A

PER CHANNEL	CONTINUOUS OPERATION	OVERDRIVE™ STROBE MODE
Input Connector	5-pin M12 connector (male — reverse-key)	
Strobe	Not applicable	Max. 50 ms
Duty Cycle	Not applicable	Max. 10%
Ambient Temperature	0°–45°C (32°–114°F)	
IP Rating	IP50	
Warranty	10 year. For complete warranty information, visit smartvisionlights.com/warranty	
Compliances	CE, RoHS, IEC 62471	

NOTE:

The MOBL (RGBW) requires an external constant current driver, such as the recommended 4WMD drivers below.

4WMD Driver

PER CHANNEL	Standard	High-Current
Electrical Input	24VDC +/-5%	
Electrical Input Connector	2-position screw terminal blocks – 14 AWG max wire size	
Operating Current (No Load)	70 mA	110 mA
Number of Input Channels	4	
Input Connector	10-position screw terminal block – 14 AWG max wire size (4 for channel control, 4 for analog, and 2 for PNP/NPN strobing/trigger)	
On/Off Trigger Input	PNP trigger: +4VDC or greater to activate (max 26VDC) NPN trigger: GND (<1VDC) to activate	
Input Channel Current	PNP input: 4 mA @ 4VDC 10 mA @ 12VDC 20 mA @ 24VDC NPN input: 15 mA @ Ground (0VDC)	
Analog Intensity	Continuous Operation: The output is adjustable from 10%–100% of intensity by applying 1–10VDC signal OverDrive™ Strobe Mode: Apply 0VDC	
Output Channels	4 channels for LED tuning control	
Output Connectors	One 5-pin M12 reverse-key connector 5-position screw terminal block – 14 AWG max wire size	
Indicator Lights	Power on = Green light Individual channels = Yellow light Service = Red light	
Mounting	DIN rail	
Dimensions	H = 102 mm (4.0"), L = 119 mm (4.7"), W = 45 mm (1.8")	H = 102 mm (4.0"), L = 119 mm (4.7"), W = 70 mm (2.8")
Ambient Temperature	-18°C–40°C (0°F–104°F)	
Ambient Humidity	0%–95% noncondensing	
Weight	~233 g	~425 g
Compliances	CE, RoHS	
Terminal Block Plugs (Included with 4WMD)	2-position terminal block plug 5-position terminal block plug 10-position terminal block plug	
Warranty	3 year. For complete warranty information, visit smartvisionlights.com/warranty	

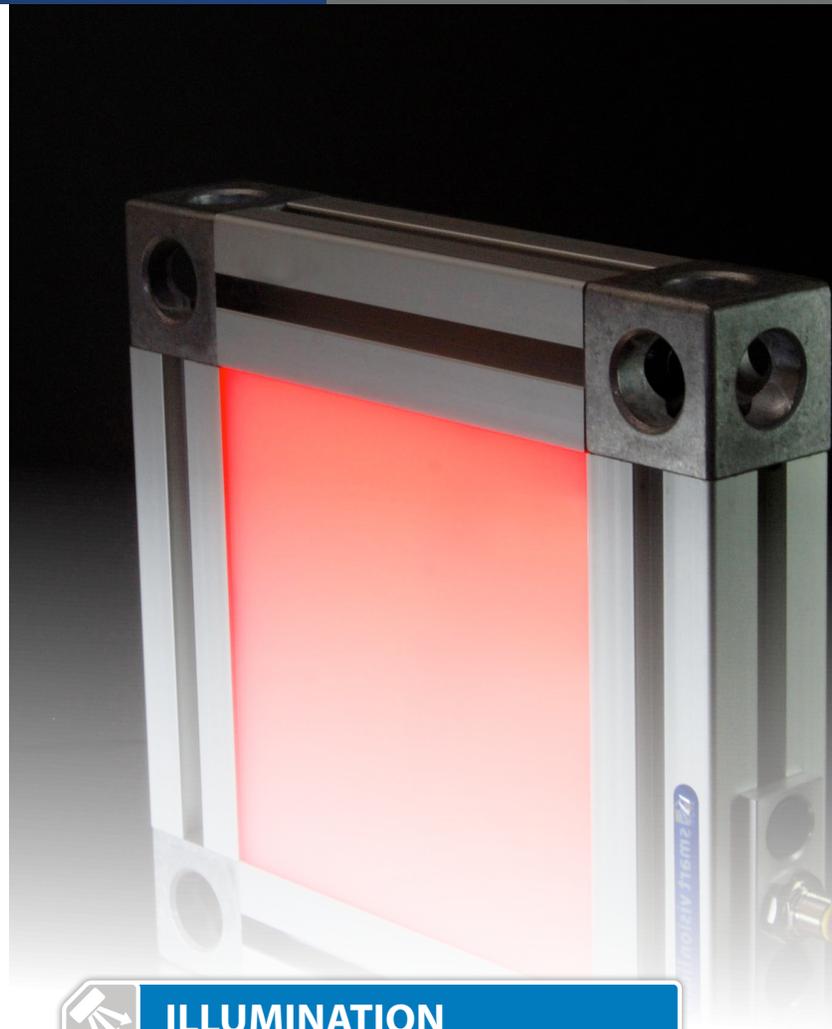
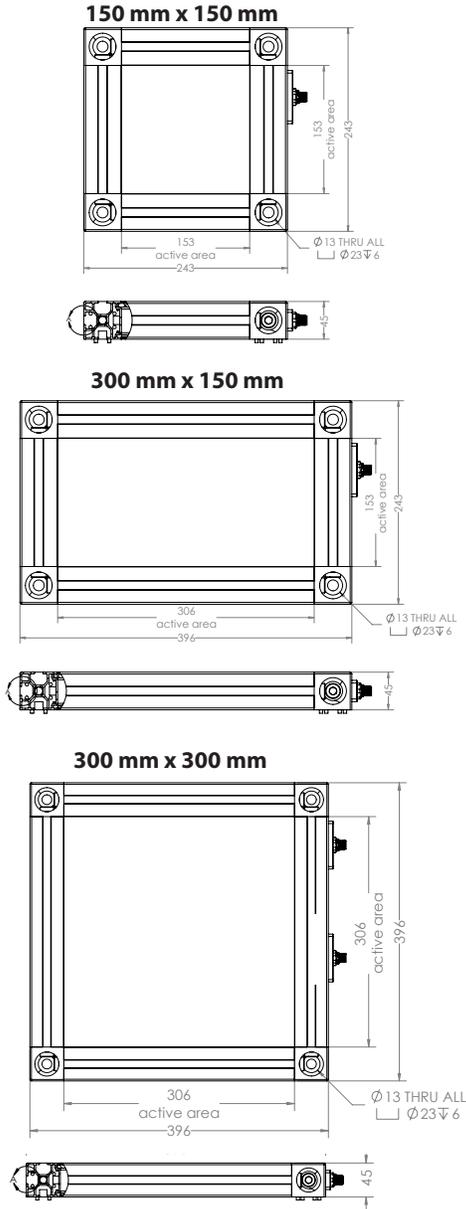
TOTAL INPUT PER UNIT (MAX)	4WMD-750	4WMD-1500	4WMD-2000
Continuous Input Current	2.1 A	4.2 A	5.4 A
Continuous Input Power	50.4 W	100 W	130 W
OverDrive™ Input Current	19 A	31 A	47 A
OverDrive™ Input Power	460 W	744 W	1130 W
Use With Light	MOBL-150x150-RGBW	MOBL-150x150-RGBW	MOBL-150x150-RGBW

NOTE:

The size of the driver is based off the size of the backlight. See 4WMD Sizing for more information.

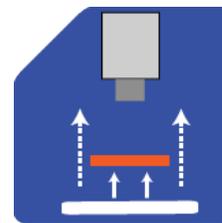
PRODUCT DRAWING

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



ILLUMINATION

MOBL (RGBW) Series of Backlights works best for:



Backlight

EYE SAFETY

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



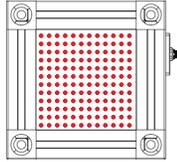
Notice

Exempt Group: No photobiological hazard to eyes or skin even for continuous, unrestricted use. Applicable for wavelengths: 470, 530, 625 and WHI when all four wavelengths are on at the same time.

AREA LIT

Each MOBL (RGBW) has LEDs placed to disperse light evenly throughout the lighted surface area.

MOBL-150 x150-RGBW shown
(LED size and spacing not shown to scale)



SAFESTROBE™ TECHNOLOGY

SafeStrobe™ technology is a unique technology that applies safe working parameters to ensure high-current LEDs are not damaged by driving them beyond their limits, such as when using maximum strobe time or duty cycle. SafeStrobe™ is especially beneficial when overdriving our high-current LEDs.

MULTI-DRIVE™

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

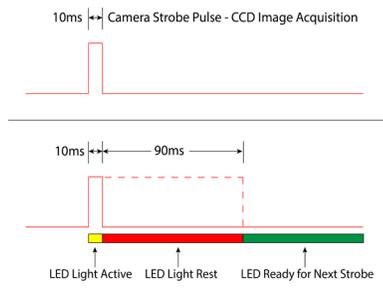


The Multi-Drive™ feature allows the user to run the light continuously or in OverDrive™ at the maximum allowed intensity by simply setting the product configuration. OverDrive™ strobe mode has **up to eight times** the power of continuous operation.

DUTY CYCLE (OVERDRIVE™ MODE ONLY)

This section applies only if light is in OverDrive™ strobe mode.

The Duty Cycle (D) is related to the Strobe Time (ST) and Rest Time (RT).



Light follows strobe pulse - the light output will track the width of the strobe pulse.

Calculating Rest Time

$$RT = \frac{ST}{D} - ST$$

RT = Rest Time
ST = Strobe Time
D = Duty Cycle

Example

$$90 \text{ ms} = \frac{10 \text{ ms}}{.1} - 10 \text{ ms}$$

Rest Time is 90 ms for 10 ms Strobe Time

Calculating Strobe Rate

$$SR = \frac{D}{ST}$$

SR = Strobe Rate (strokes per second)
ST = Strobe Time (seconds)
D = Duty Cycle

Example

$$1000 = \frac{0.1}{0.0001}$$

Strobe Rate is 1000 strokes per second

Calculating Duty Cycle

$$D = ST \times SR$$

SR = Strobe Rate (strokes per second)
ST = Strobe Time (seconds)
D = Duty Cycle

Example

$$0.1 = 0.0001 \times 1000$$

Duty Cycle is 10% (0.1)

Maximum Duty Cycle for OverDrive™ light is 10% (0.1)

Note: Strobe time is limited by the strobe rate.

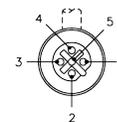
OUTPUT CONFIGURATION

Using the Reverse-Key 5-pin M12 Connector

When connecting a Smart Vision Lights™ RGBW light to the 4WMD, a reverse-key 5-pin M12 cable is required. All Smart Vision Lights™ RGBW lights come equipped with a 5-pin reverse-key connector.

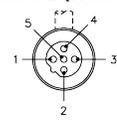
With very little wiring needed, the reverse-key 5-pin M12 connector simplifies connecting lights to the 4WMD.

4WMD



Reverse-Key 5-pin M12 Connector (female)

MOBL (RGBW)



Reverse-Key 5-pin M12 Connector (male)

5-pin M12 Connectors Pin Layout

Pin	Channel	Color
1	Common	Brown
2	1	White
3	2	Blue
4	3	Black
5	4	Gray

NOTE:

Smart Vision Lights™ uses reverse-key cables that have a blue-grey tip on the connectors. A 2 meter version of the cable is included when ordered (Part number: 5PM12-J2000-KR)



DISABLE A CHANNEL

If one or more wavelengths are not needed, the channels associated with the wavelength can be disabled. Disabling a channel will turn off the wavelength. To disable a channel, connect that channel to ground (GND).

Example: To disable channel 4, connect NPN Disable IN 4 to GND.

NOTE:

All channels are enabled by default.

Input Connectors

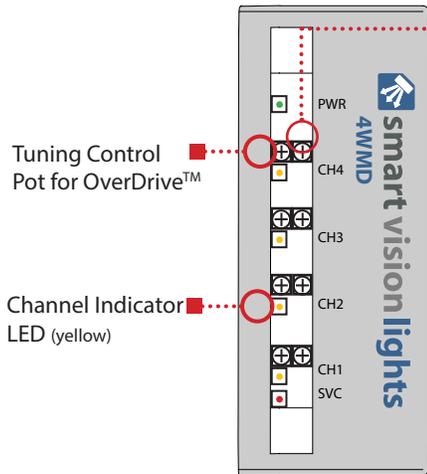
(top of 4WMD)

HS IN		Analog 0–10 V				NPN Disable				Power In	
PNP	NPN	IN 4	IN 3	IN 2	IN 1	IN 4	IN 3	IN 2	IN 1	GND	+24 V DC
<input type="checkbox"/>											

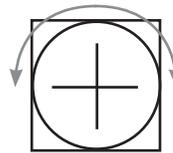


TUNING WAVELENGTHS

The 4WMD allows for the tuning of up to four individual wavelength intensities. Depending on its configuration, a channel can tune the output intensity of a given wavelength for either continuous operation or OverDrive™ strobe mode. Each channel can be tuned for continuous operation or OverDrive™ strobe mode. **Continuous operation and OverDrive™ cannot be used simultaneously on a single channel.** Each channel has a yellow indicator light that illuminates when the channel is active.



Tuning Control Pot for Continuous



270° turn pot

Clockwise = Increase intensity

Counterclockwise = Decrease intensity

NOTE:

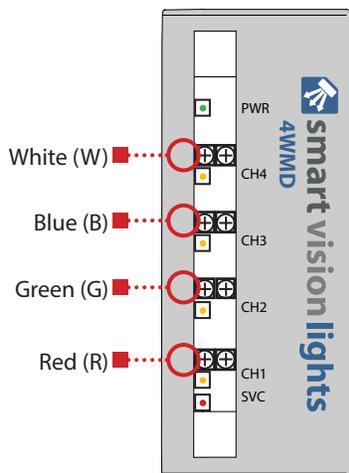
When in continuous operation, channel intensity can be individually adjusted using 1–10VDC on the analog input.

For maximum intensity, analog input can be tied to 24VDC.



WAVELENGTH ASSIGNMENT

When connecting the MOBL (RGBW) with the 4WMD using a Reverse Key cable, such as the 5PM12-J2000-KR, wavelength are set to be controlled as followed.



Pin	Channel	Wavelength
1	–	–
2	1	White (W)
3	2	Blue (B)
4	3	Red (R)
5	4	Green (G)



PART NUMBER

MOBL – **X** – **RGBW** –

SIZE (LxW):

150x150

300x150

300x300

Custom sizes
upon request

KIT

Kit includes light
and external
driver

Part Number Examples:

MOBL-150x150-RGBW MOBL, 150x150 mm, RGBW (light only)

MOBL-300x150-RGBW-KIT MOBL, 300x150 mm, RGBW, 4WMD driver and 2M jumper cable

The 5-pin M12 reverse-key connector is located on the width side of the light.

Sizes listed are in millimeters.



4WMD SIZING

Using the correct size 4WMD with the MOBL (RGBW) ensures the light works properly. The chart to the right shows 4WMD sizes for standard MOBL (RGBW) lights. Custom size lights may vary.



Standard



High-Current

Backlight	Driver
MOBL-150x150-RGBW	4WMD-750 (Standard)
MOBL-300x150-RGBW	4WMD-1500 (High-Current)
MOBL-300x300-RGBW	4WMD-2000 (High-Current)



CUSTOMIZE

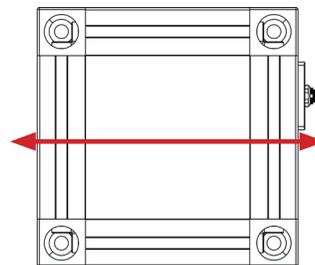
ADDITIONAL WAVELENGTH

The MOBL (RGBW) can be customized to include one additional wavelength. Additional wavelength options including IR, SWIR, UV or any available LED color. This additional wavelength brings the total wavelength options built into the light to five. *Additional wavelength will require an additional external driver.*

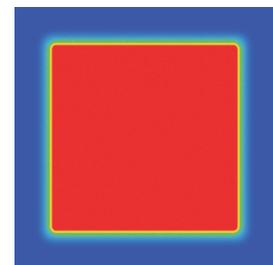


OPTICAL PERFORMANCE

The MOBL (RGBW) offers a very diffuse light pattern.



MOBL-150x150-RGBW





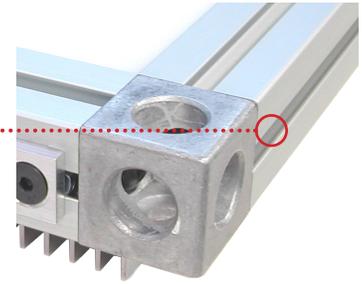
MOUNTING

Smart Vision Lights™ recommends using **drop-in T-nuts** for mounting a MOBL Backlight. T-Slot size on MOBL (RGBW) extrusion is Bosch size 10 T-nut channel.

NOTE

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

Bosch size 10 T-nut channel



ACCESSORIES

Jumper Cable	
Length	Part Number
2000 mm	5PM12-J2000-KR



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.

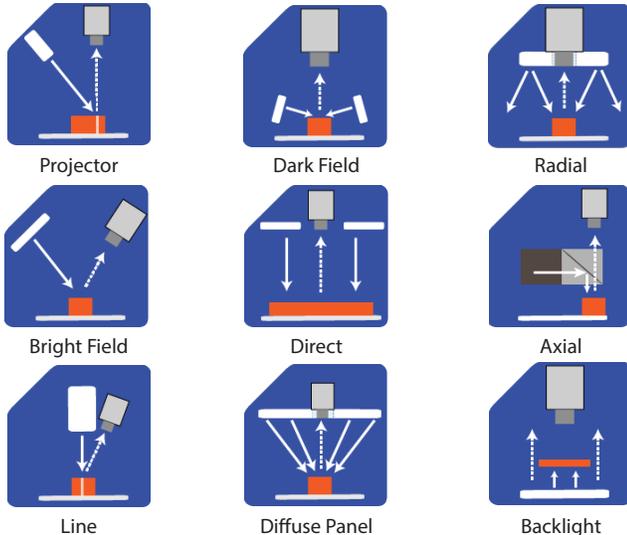
Built-In Driver The built-in driver allows full function without the need of an external controller.

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.

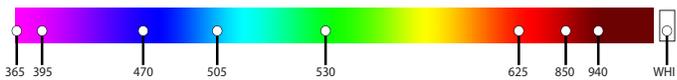
Diffuser Used to widen the angle of light emission, reduce reflections, and increase uniformity.

TYPES OF ILLUMINATION



COMMON COLOR/WAVELENGTHS LEGEND

Wavelengths 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.*

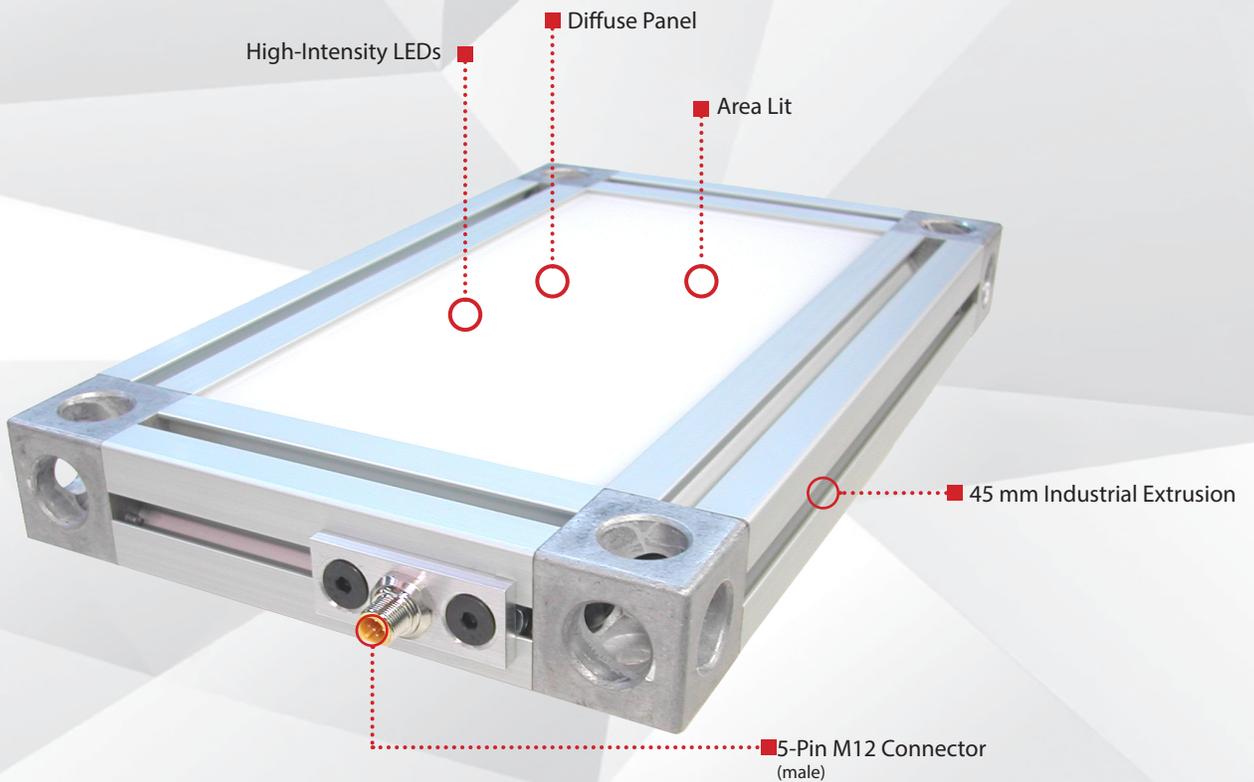
Check Part Number section to see if **this light is available in SWIR wavelengths.*



smart
vision lights

ODMOBL *Maximum Output* BACKLIGHT OVERDRIVE

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



Warranty	Compliant	Compliant	Rated	Connector
10 YEAR	IEC 62471	CE RoHS	IP 50	5-PIN M12

PRODUCT HIGHLIGHTS

- ✓ OverDrive™ — Five times brighter than a standard Maximum Output Backlight (MOBL)
- ✓ Built-in driver
- ✓ PNP and NPN trigger signal input
- ✓ 45mm industrial extrusion for mounting
- ✓ 5-pin M12 quick connect
- ✓ Custom sizes available





PRODUCT DESCRIPTION

The ODMOBL Backlight Series is designed for maximum output. NPN or PNP trigger signals can be used to control the pulse of the light. Intensity of the light can be controlled via 1–10VDC analog signal line. Proper heat dissipation is achieved using the side extrusion and the heat sink installed on the bottom of the light. The 45 mm extrusion makes mounting the light easy when using drop-in T-nuts. The ODMOBL Backlight has a built-in driver. No external driver is required.



PRODUCT SPECIFICATIONS

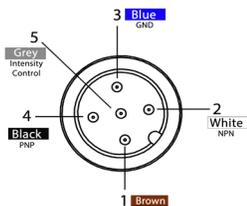
Electrical Input	24VDC +/-5%
Strobe Input	PNP: +4VDC to +24VDC to activate NPN: GND (<1VDC) to activate
PNP Line	4 mA @ 4VDC 10 mA @ 12VDC 20 mA @ 24VDC
NPN Line	15 mA @ Ground (0VDC)
Analog Intensity	The output is adjustable from 10%–100% of brightness by a 1–10VDC analog signal line. For maximum intensity, use +24VDC. Jumpering pin 5 to pin 1 will provide maximum intensity.
Strobe/Pulse Time	Max. 5000 SPS (Strobes Per Second) Max. Single Pulse = 125 ms (See SafeStrobe™ Technology for more information.)
Duty Cycle	Max. 10%
Connection	5-pin M12 connector
Ambient Temperature	-18°–40°C (0°–104°F)
IP Rating	IP50
Compliances	CE, RoHS, IEC 62471
Warranty	10 years. For complete warranty information, visit smartvisionlights.com/warranty .

Standard Light Sizes	Input Current	Wattage	Weight
150 mm x 150 mm	Peak: 13 A Average: 1.3 A	312 W	~2.22 kg
300 mm x 150 mm	Peak: 18 A 1.8 A	432 W	–
300 mm x 300 mm*	Peak: 13 A x 2: Average: 1.3 A	312 W x 2	–

*The ODMOBL 300 mm x 300 mm has two connectors and the input current and wattage values are listed per connector.



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 +24V DC.

For continuous mode, PNP (pin 4) can be tied to +24V DC (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.

Otherwise intensity is adjustable via the 1–10VDC analog control line.



MULTIPLE CONNECTORS

Some ODMOBL backlights have multiple connectors. Each of these connectors are independent and are wired separately of each other.

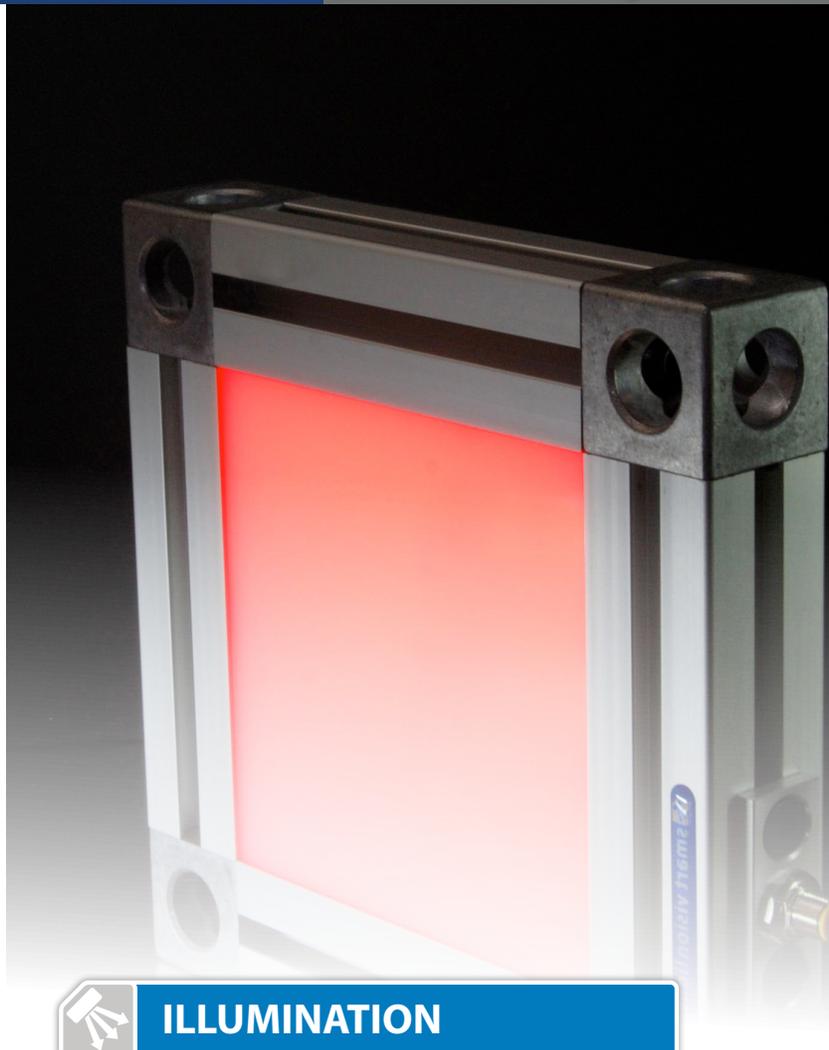
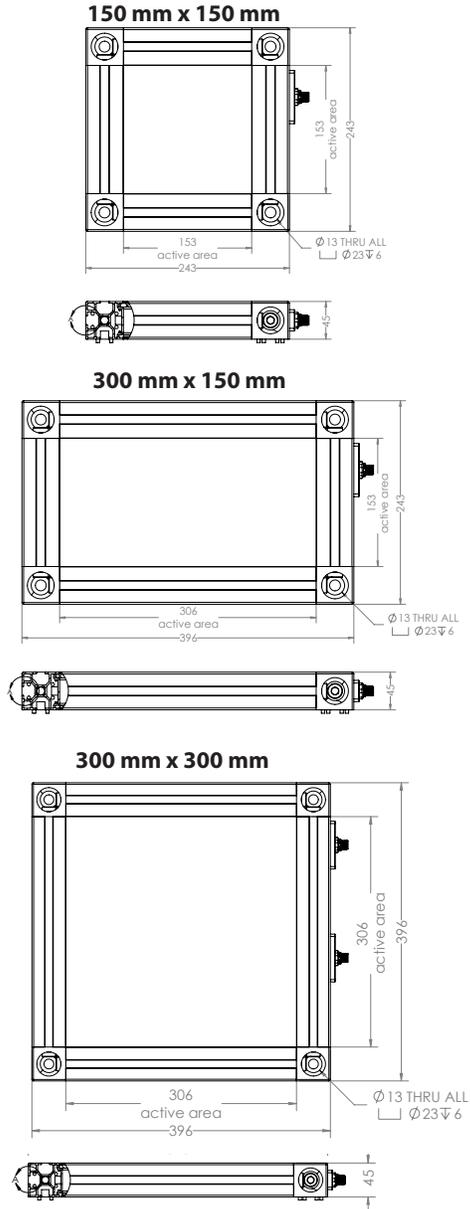


RESOURCE CORNER

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

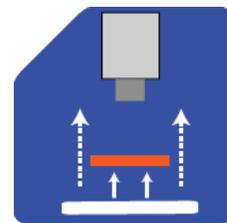
PRODUCT DRAWING

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



ILLUMINATION

ODMOBL 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

ODMOBL - X - - X -

SIZE (L x W):
 150 x 150
 300 x 150
 300 x 300
 Custom sizes upon request

COLOR:

WHI 470 505
 530 625 850

PATTERN AREA LIGHTING*:
 Leave blank for no pattern

Part Number Examples:

ODMOBL-150x150-625 ODMOBL 150 x 150 mm, 625 nm Red Wavelength

ODMOBL-300x150-WHI-105x05 ODMOBL 300 x 150 mm, white, Patterned Area Light with 5 mm dark line, 5 mm light gap, no gradient

ODMOBL-300x300-WHI-215x15-10 ODMOBL 300 x 300 mm, white, Patterned Area Light with 15 mm grid (dark lines), 15 mm light gap and 10% gradient

PATTERN AREA LIGHTING:

X -

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.

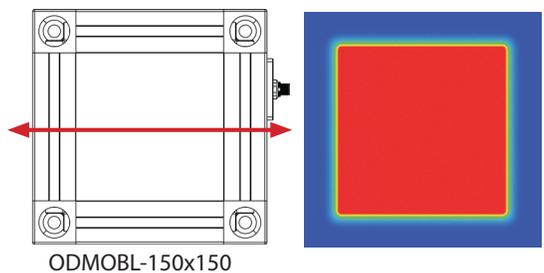
OPTICAL PERFORMANCE

The ODMOBL offers a very diffuse light pattern.

OPTICAL PERFORMANCE FOR THE ODMOBL

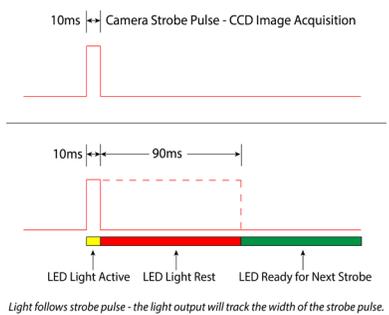
Rating	Illuminance (Lux)
Average Intensity Rating	350,000

Illuminance measurement taken at surface of ODMOBL



DUTY CYCLE

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



Calculating Rest Time

$$RT = \frac{ST}{D} - ST$$

RT = Rest Time
 ST = Strobe Time
 D = Duty Cycle

Example

$$90 \text{ ms} = \frac{10 \text{ ms}}{.1} - 10 \text{ ms}$$

Rest Time is 90 ms for 10 ms Strobe Time

Calculating Strobe Rate

$$SR = \frac{D}{ST}$$

SR = Strobe Rate (strokes per second)
 ST = Strobe Time (seconds)
 D = Duty Cycle

Example

$$1000 = \frac{0.1}{0.0001}$$

Strobe Rate is 1000 strokes per second

Calculating Duty Cycle

$$D = ST \times SR$$

SR = Strobe Rate (strokes per second)
 ST = Strobe Time (seconds)
 D = Duty Cycle

Example

$$0.1 = 0.0001 \times 1000$$

Duty Cycle is 10% (0.1)

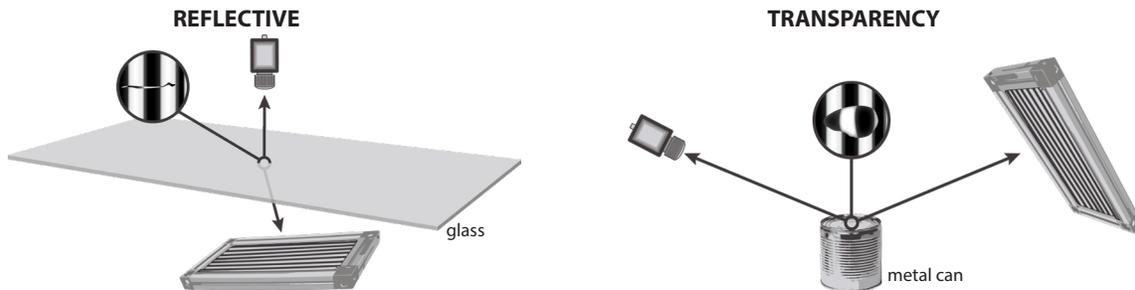
Maximum duty cycle for OverDrive™ light is 10% (0.1)
 Note: Strobe time is limited by the strobe rate.

PATTERNED AREA LIGHTING™

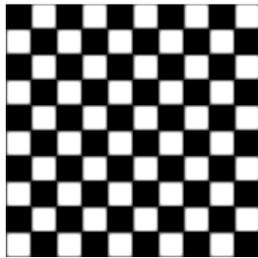
Patterned Area Lighting (PAL) is used for isolating defects on uneven, highly specular, and/or clear surfaces, which can be difficult with standard lighting methods. PAL can be used to isolate a defect in a single image acquisition. With PAL, small defects will reflect off the surface at an equal but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

How to use PAL

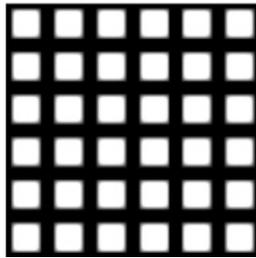
- For backlighting a transparent object, the light is positioned beneath the object.
- For front lighting, position the light where the light pattern will be directed on the surface at an angle.
- A camera is positioned to capture the reflection of the light source.
- The camera lens is adjusted to focus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



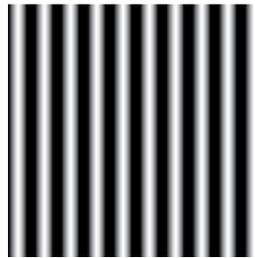
Patterned Area Lighting Examples



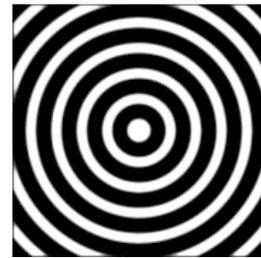
Pattern: Checker Board
Size: 50 mm x 50 mm square



Grid
50 mm line width



Gradient Lines
50 mm line width



Circles
50 mm circle thickness

Customized pattern sizes available upon request.

NOTE

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

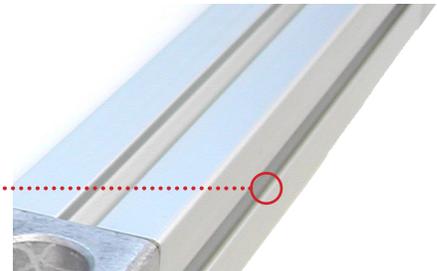
MOUNTING

Smart Vision Lights recommends using **drop-in T-nuts** for mounting a ODMOBL Backlight. The ODMOBL extrusion has a Bosch size 10 T-nut channel.

NOTE

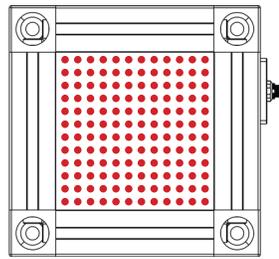
Removing corner cubes of light may result in voiding of warranty.

Bosch size 10 T-nut channel



AREA LIT

LEDs are placed to disperse light evenly throughout the lighted surface.



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

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. This is especially beneficial for overdriving our high-current LEDs.

CUSTOM SIZE

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

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.

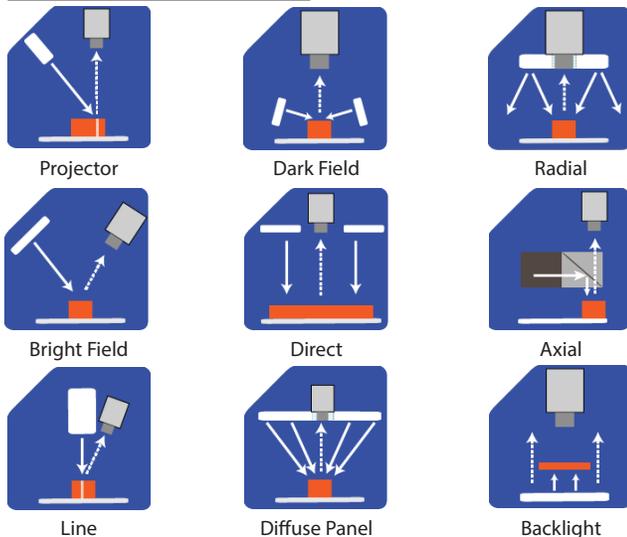
Built-In Driver The built-in driver allows full function without the need of an external controller.

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.

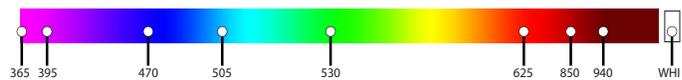
Diffuser Used to widen the angle of light emission, reduce reflections, and increase uniformity.

TYPES OF ILLUMINATION



COMMON COLOR/WAVELENGTHS LEGEND

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



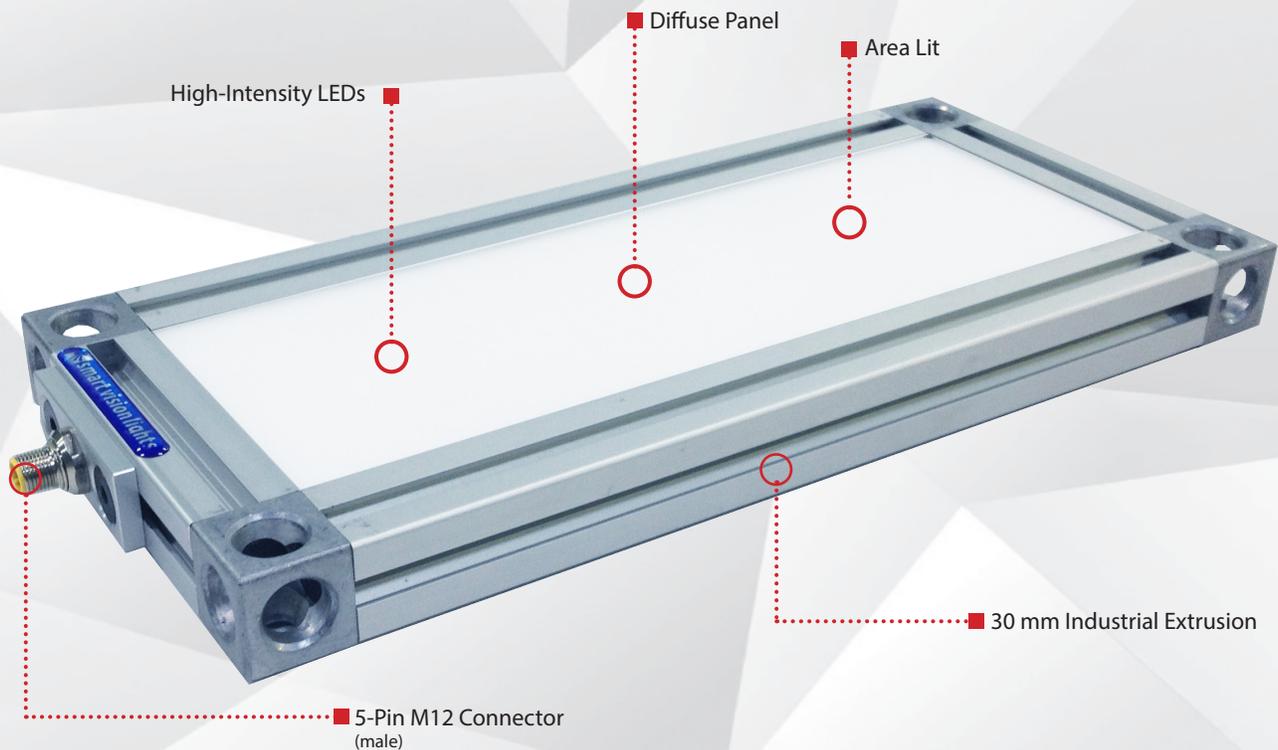
See Part Number section for **this light's** available standard wavelengths.



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.

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

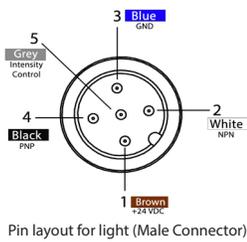
The SOBL Backlight Series is an innovative and highly versatile lights. SOBL Backlights are area lit for a more intense and highly diffuse lighting output. Lights have built-in drivers, so no external driver is needed. At just 30 mm in depth, the lights can be easily mounted in tight locations. Active 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 OR PNP can be tied to 24VDC (not both).
Analog Intensity	The output is adjustable from 10%–100% of brightness by a 1–10VDC signal. (Jumping 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 smartvisionlights.com/warranty .

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	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.



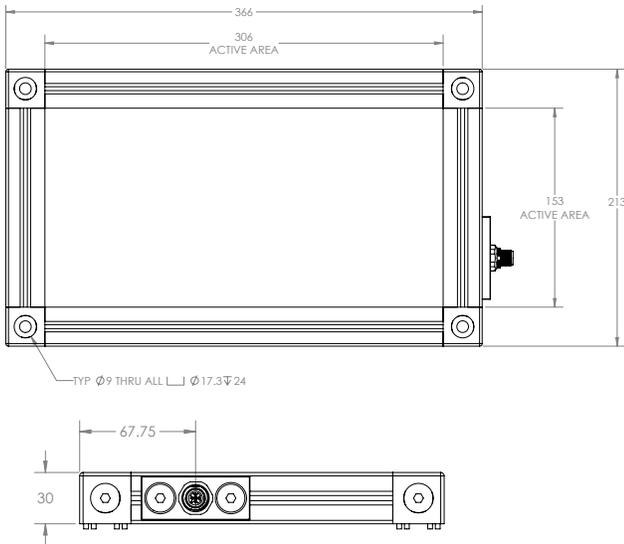
RESOURCE CORNER

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.



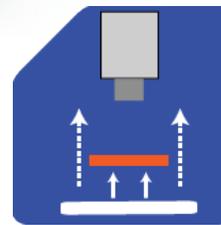
SOBL-300x150 shown

CAD files for all standard-size SOBL lights are available at smartvisionlights.com.



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.

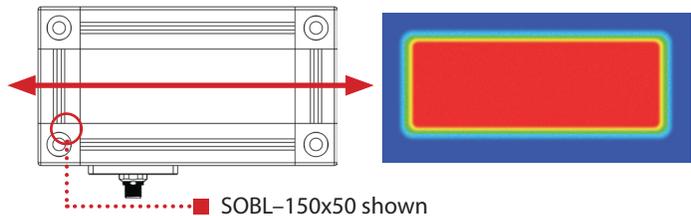


OPTICAL PERFORMANCE

The SOBL offers a very diffuse light pattern.

OPTICAL PERFORMANCE FOR THE SOBL

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



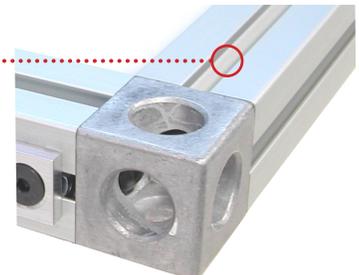
SOBL-150x50 shown



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.

Bosch size 8 T-nut channel



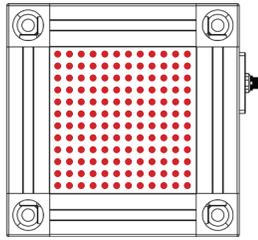
NOTE

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

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

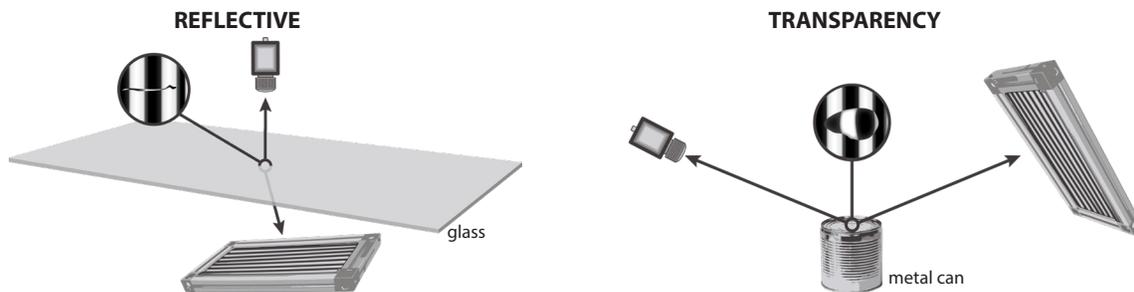
Smart Vision Lights can customize a SOBL to the size you need. When requesting a custom SOBL include the following: size (length x width) in millimeters, what side the 5-pin M12 connector should be placed on, and desired wavelength (color).

PATTERNED AREA LIGHTING™

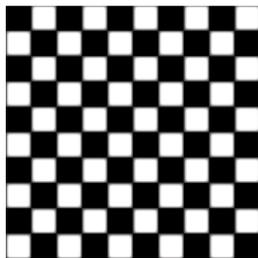
Patterned Area Lighting (PAL) is used for isolating defects on uneven, highly specular, and/or clear surfaces, which can be difficult with standard lighting methods. PAL can be used to isolate a defect in a single image acquisition. With PAL, small defects will reflect off the surface at an equal but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

How to use PAL

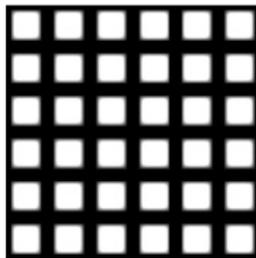
- For backlighting a transparent object, the light is positioned beneath the object.
- For front lighting, position the light where the light pattern will be directed on the surface at an angle.
- A camera is positioned to capture the reflection of the light source.
- The camera lens is adjusted to focus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



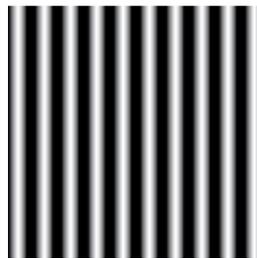
Patterned Area Lighting Examples



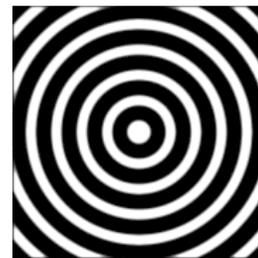
Pattern: Checker Board
Size: 50 mm x 50 mm box



Pattern: Grid
Size: 50 mm line width



Pattern: Gradient Lines
Size: 50 mm line width



Pattern: Circles
Size: 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.

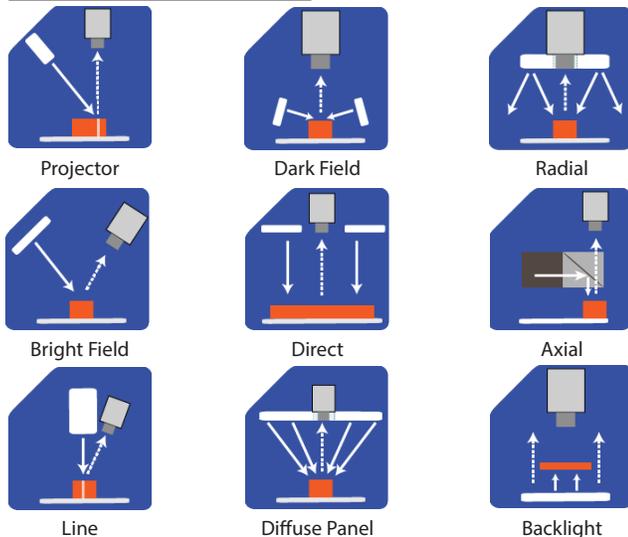
Built-In Driver The built-in driver allows full function without the need of an external controller.

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.

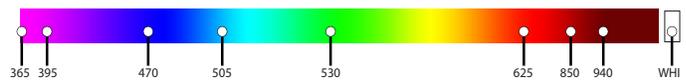
Diffuser Used to widen the angle of light emission, reduce reflections, and increase uniformity.

TYPES OF ILLUMINATION



COMMON COLOR/WAVELENGTHS LEGEND

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



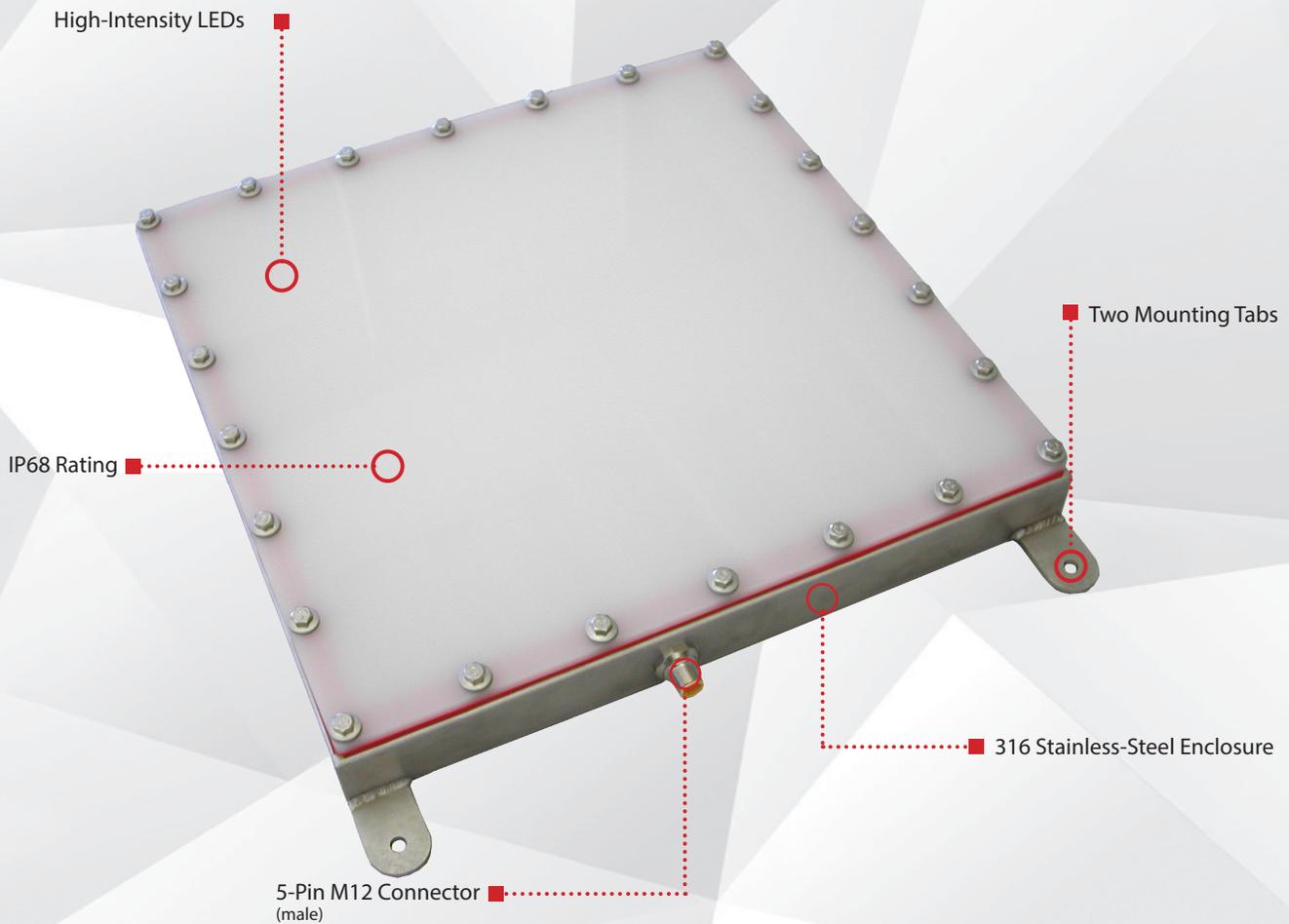
See Part Number section for **this light's** available standard wavelengths.



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.

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
68

Connector
5-PIN
M12

PRODUCT HIGHLIGHTS

- ✓ Built-in driver
- ✓ PNP and NPN trigger signal input
- ✓ 316 stainless-steel enclosure
- ✓ 5-pin M12 quick connect
- ✓ FDA food-grade compliant



PRODUCT DESCRIPTION

The SOBLW Series features a stainless-steel IP68-rated enclosure with sealed bolts and a waterproof connector for food industry and washdown environment applications where water and harsh detergents are present. The lights are highly versatile, with many custom sizes available. The series provides intense and highly diffuse area lighting with a built-in driver, so no external driver is needed. Active area dimensions (mm) include but are not limited to 150 x 150, 190 x 190, 300 x 150, 300 x 300, and 450 x 300.



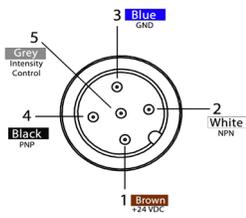
PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/-5%
On/Off Input	PNP: +4VDC or greater to activate NPN: GND (<VDC) 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 OR PNP can be tied to 24VDC (not both)
Analog Intensity	The output is adjustable from 10%–100% of brightness by a 1–10VDC signal. (Jumping pin 5 to pin 1 will provide maximum intensity)
Connection	5-pin M12 connector
Ambient Temperature	-18°–40° C (0°–104° F)
IP Rating	IP68
Compliances	CE, RoHS, IEC 62471
Warranty	10 year. For complete warranty information, visit smartvisionlights.com/warranty

Standard Light Sizes	Input Current	Wattage	Weight
150 mm x 150 mm	0.45 A	10.8 W	–
190 mm x 190 mm	1.20 A	28.8 W	–
300 mm x 150 mm	0.90 A	21.6 W	–
300 mm x 300 mm	1..80 A	43.2 W	4.30 kg
450 mm x 300 mm	2.70 A	64.8 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.

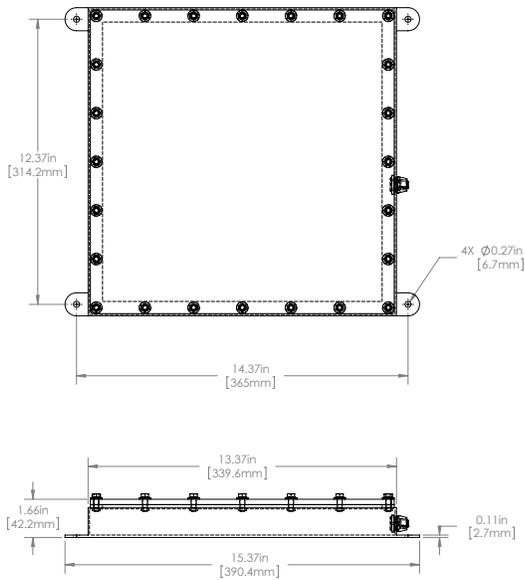


RESOURCE CORNER

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

PRODUCT DRAWING

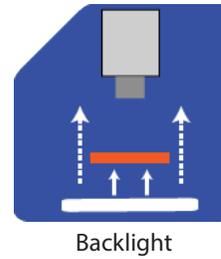
CAD files available on our website.
Dimensions are in mm.



SOBLW-300x300 shown
CAD files for all standard-size SOBLW lights
are available at smartvisionlights.com.

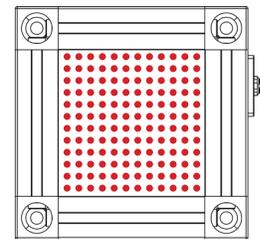
ILLUMINATION

SOBLW Series of Backlights works best for:



AREA LIT

LEDs are placed to produce uniform intensity throughout the lighted surface area.



SOBLW-150x150 mm shown
(LED size and spacing not shown to scale)

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

SOBLW – X –

SIZE (L x W):

150 x 150

190 x 190

300 x 150

300 x 300

450 x 300

Custom sizes upon request

COLOR:



Part Number Examples:

SOBLW-150x150-625 SOBLW, 150 mm x 150 mm, 625 nm Red Wavelength

SOBLW-300x150-WHI SOBLW, 300 mm x 150 mm, White

SOBLW-450x150-470 SOBLW, 450 mm x 150 mm, 470 nm Blue Wavelength

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.



CUSTOM SIZE

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



OPTICAL PERFORMANCE

The SOBLW offers a very diffuse light pattern.

OPTICAL PERFORMANCE FOR THE SOBLW

Rating	Illuminance (Lux)
Average Intensity Rating	42,000
<i>Illuminance measurement taken at surface of SOBLW</i>	

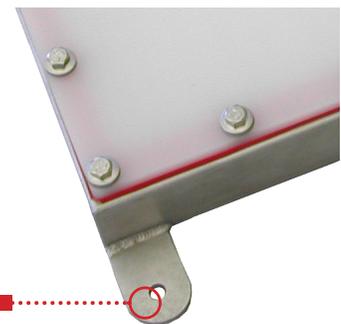


SOBLW-150x50 shown



MOUNTING

The SOBLW Backlight Series features two stainless-steel tabs welded directly to the housing for simple yet versatile mounting options.



Mounting Tab



ACCESSORIES

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

Power Cables (Washdown)	
	
Length	Part Number
15 m	W5PM12-15

Variable Control Pot	
	
Description	Part Number
Variable Control Pot	IVP-C1



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.

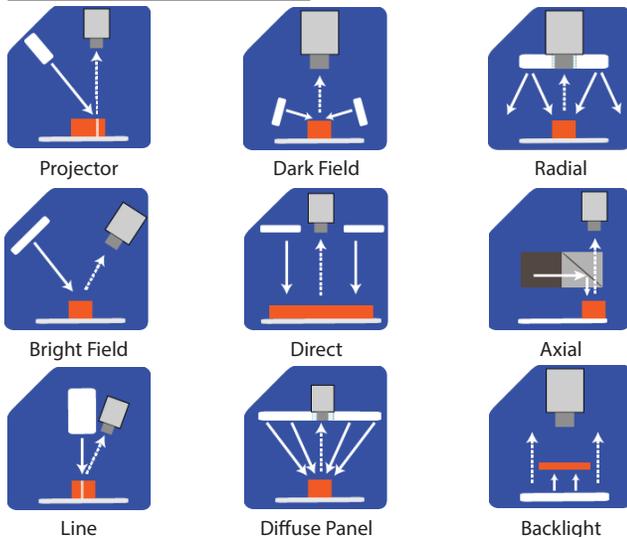
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Polarizers Filters that reduce reflections on specular surfaces.

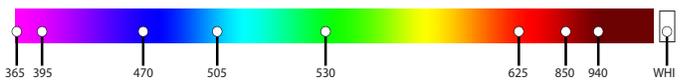
Diffuser Used to widen the angle of light emission, reduce reflections, and increase uniformity.

TYPES OF ILLUMINATION



COMMON COLOR/WAVELENGTHS LEGEND

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



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.