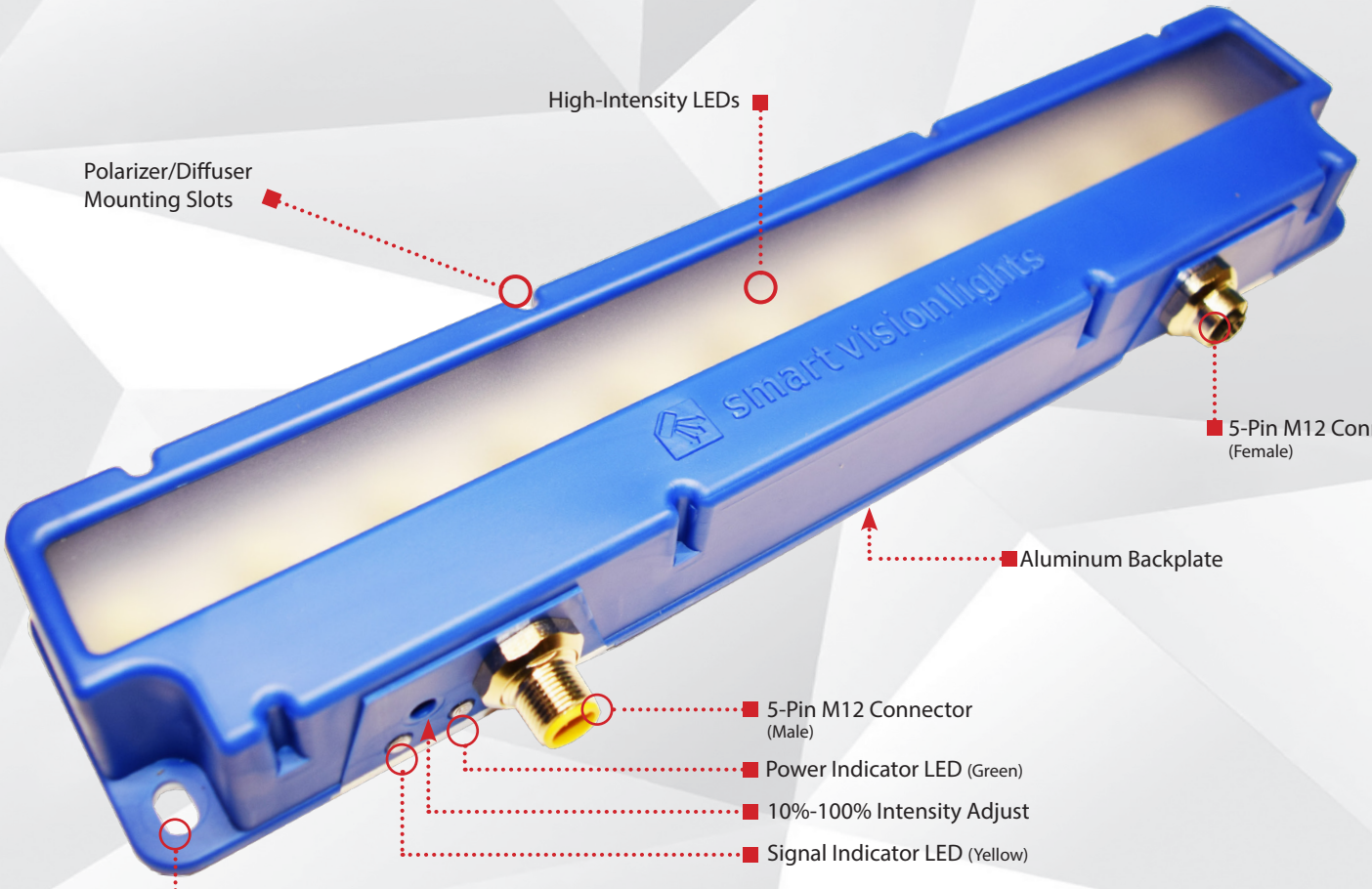
smart vision lights L300 *Connect-a-Light* LINEAR LIGHT

PRODUCT DATA SHEET



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

PRODUCT HIGHLIGHTS

- ✓ 5-pin M12 quick connect
- ✓ Built-in driver, no external wiring needed
- ✓ PNP and NPN trigger input signal
- ✓ Daisy-chain up to six L300 linear lights using a standard 5-pin M12 jumper cable

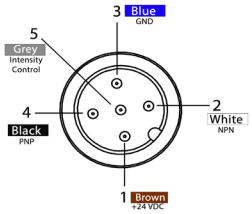
PRODUCT DESCRIPTION

The L300 array utilizes 12 high-intensity LEDs and features an integrated constant current driver built into the light. Connect-a-Light Series of Linear Lights uses 24VDC and can operate in continuous mode. NPN or PNP strobe triggers can be used to control the pulse of the light. Use NPN or PNP strobe triggers to control the light's pulse. Control intensity via a 1–10V remote analog signal or manual potentiometer.

PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/–5%
Input Current	Max. 700 mA
Wattage	Max. 17 W
On/Off Input	PNP: +4VDC to activate | NPN:GND (<1VDC) to activate
PNP Line	4 mA @ 4VDC | 10 mA @ 12VDC | 20 mA @ 24VDC
NPN Line	15 mA @ ground (0 V 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	270º turn pot — Intensity control of 10%–100%. Turn clockwise to increase intensity.
Analog Intensity	Brightness output is adjustable from 10%–100% via a 1–10VDC signal (Jumpering pin 5 to pin 1 will provide maximum intensity.)
Connection	5-pin M12 connector
Ambient Temperature	-18º–40ºC(0º–104ºF)
IP Rating	IP50
Weight	~370 g
Compliances	CE, RoHS, IEC 62471
Warranty	10 years. For complete warranty information, visit smartvisionlights.com/warranty.

WIRING CONFIGURATION



Pin layout for light (Male Connector)

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, 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 analog intensity to +V DC (24VDC) — jumper pin 5 to pin 1.

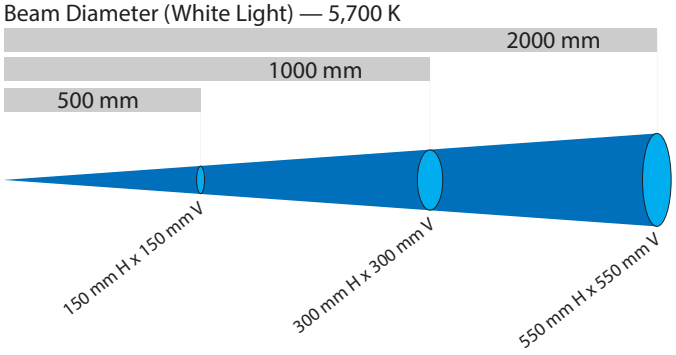
RESOURCE CORNER

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

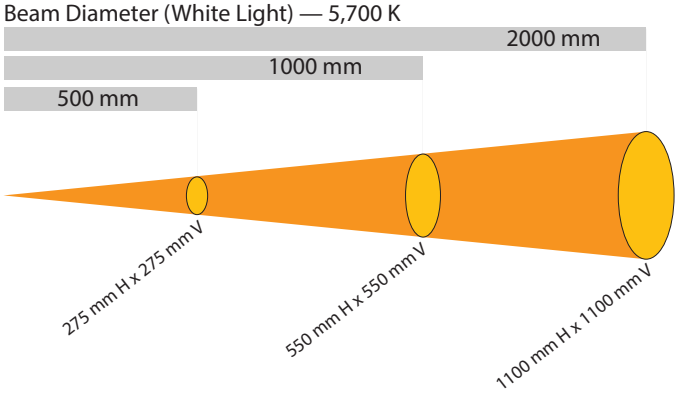
LIGHT PATTERNS

Smart Vision Lights recommends the L300 be used at a working distance between 300 mm and 4000 mm.

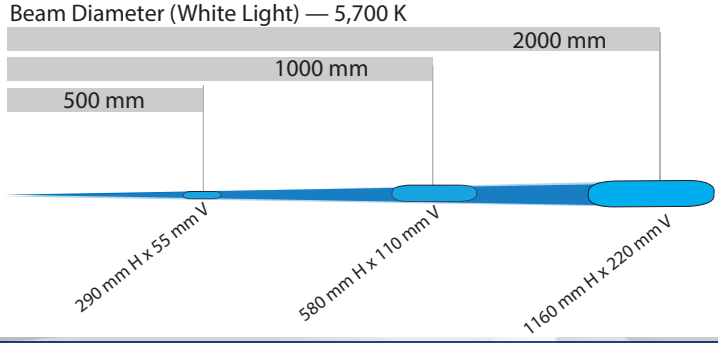
Beam Diameter (White Light) — 5,700 K



Beam Diameter (White Light) — 5,700 K



Beam Diameter (White Light) — 5,700 K



LIGHTING PATTERN FOR THE L300 **with Narrow (Standard) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	150 mm (~5.9") H x 150 mm (~5.9") V
1000 mm (39.4")	300 mm (~11.8") H x 300 mm (~11.8") V
2000 mm (78.8")	550 mm (~21.6") H x 550 mm (~21.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	11,000
Illuminance measurement taken on White Lights — 5,700 K	

LIGHTING PATTERN FOR THE L300 **with Wide (W) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	275 mm (~10.8") H x 275 mm (~10.8") V
1000 mm (39.4")	550 mm (~21.6") H x 550 mm (~21.6") V
2000 mm (78.8")	1100 mm (~43") H x 1100 mm (~43") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	8000
Illuminance measurement taken on White Lights — 5,700 K	

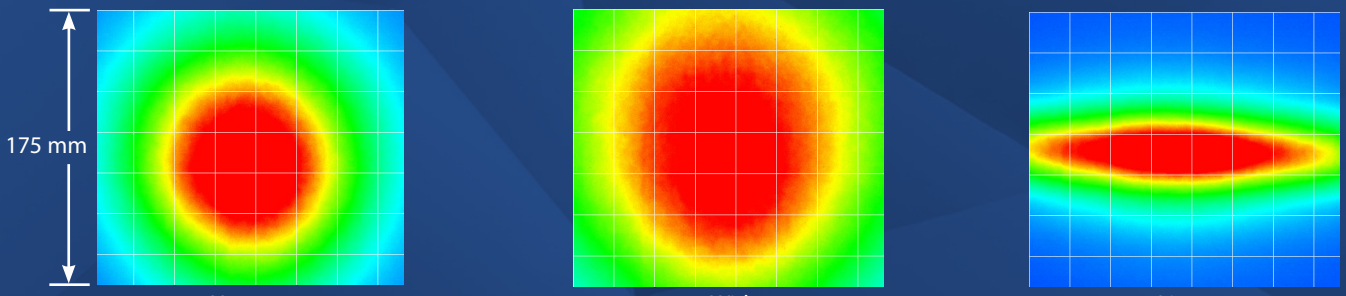
LIGHTING PATTERN FOR THE L300 **with Line (L) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	290 mm (~12.2") H x 55 mm (~2.1") V
1000 mm (39.4")	580 mm (~24.4") H x 110 mm (~4.3") V
2000 mm (78.8")	1160 mm (~48.8") H x 220 mm (~8.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	19,000
Illuminance measurement taken on White Lights — 5,700 K	

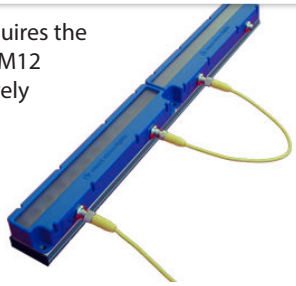
The L300 Linear Light produces a uniform light pattern.

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

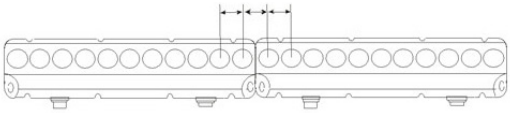


DAISY-CHAIN LIGHTS

L300 Series of lights requires the use of a standard 5-pin M12 jumper cable to effectively parallel up to six L300 lights.

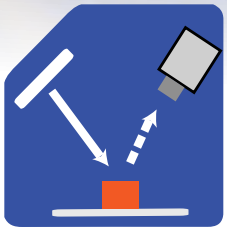


There is consistent spacing between LEDs as lights are connected together.

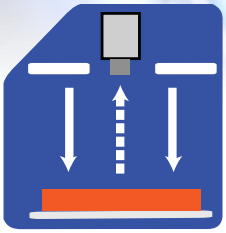


ILLUMINATION

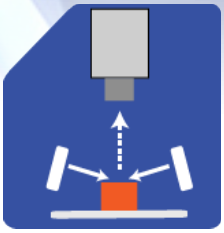
L300 Series of Linear Lights works best for:



Bright Field



Direct Lighting



Dark Field

EYE SAFETY

SMART VISION LIGHTS IEC 62471 COMPLIANT

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 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 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

L300 – □□□ – □ – □□□

COLOR:

WHI | 365 395 | 470 | 505 | 530 | 625 | 850 940

LENS:

Leave blank for Standard (Narrow)

W = Wide

L = Line

LINEAR POLARIZER:

Leave blank for none

LPI = Factory Installed

Part Number Examples:

L300-625 L300, 625 nm Red Wavelength, Standard (Narrow) Lens

L300-WHI-L L300, White, Line Lens

L300-470-W-LPI L300, 470 nm Blue Wavelength, Wide Lens, with Linear Polarizer Installed

SWIR SHORTWAVE INFRARED

This light is available in our SWIR LEDs.

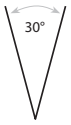
1050 nm | 1200 nm | 1300 nm | 1450 nm | 1550 nm

Line lens optic not available for UV wavelengths.
Additional wavelengths and lens options available upon request.

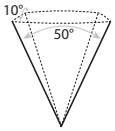
LENS OPTICS

NARROW (STANDARD)
Narrow, 16° angle-cone lenses are standard. Standard lenses project a narrow beam of illumination and are used for long working distances.

WIDE
Wide, 30° angle-cone lenses project a large area of illumination. They create a floodlight effect and can be used for short working distances.



LINE
Line, with a 10° width and a 50° fan angle, projects a thin, narrow beam of illumination.



Additional lens options available upon request.

When to Use a Linear Polarizer

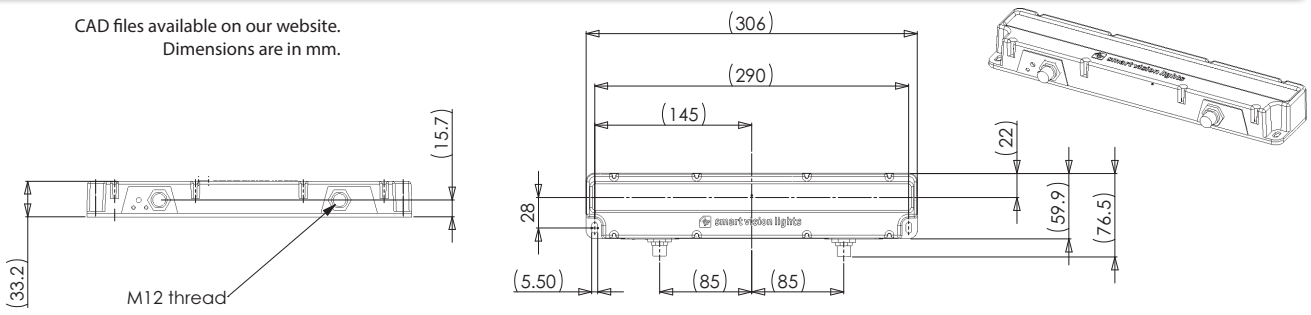
Polarizing filters can reduce reflections on specular (dielectric or nonmetal) surfaces.

A Linear Polarizer has a typical transmission of 38% while blocking 62% of the light not in the polarization plane.

WARNING: Running a light in continuous operation while using a standard polarizer with certain wavelengths (e.g., white, blue) may burn the polarizer.

PRODUCT DRAWING

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



ACCESSORIES

Power Cables

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

Jumper Cables (Daisy Chain)

Length	Part Number
300 mm	5PM12-J300
1000 mm	5PM12-J1000
2000 mm	5PM12-J2000

Mount

Description	Part Number
3-Axis Pan and Tilt Mount	PB300-M5

Mounting Rails

Length	Part Number
300 mm	LEXT300
600 mm	LEXT600
900 mm	LEXT900
1200 mm	LEXT1200
Custom sizes available	

Diffuser

Description	Part Number
Diffuser Kit	L300-DKIT

Linear Polarizer

Description	Part Number
Linear Polarizer Kit	L300-LP

Power Adapters *

Description	Part Number
AC, 24 V, 1.7 A	T1 Power Supply
24 V DC, 9 A / AC input	T2 Power Supply

* **European Versions Available** (Add "-EURO" to end of T1. Ex: T1-EURO Power Supply.)

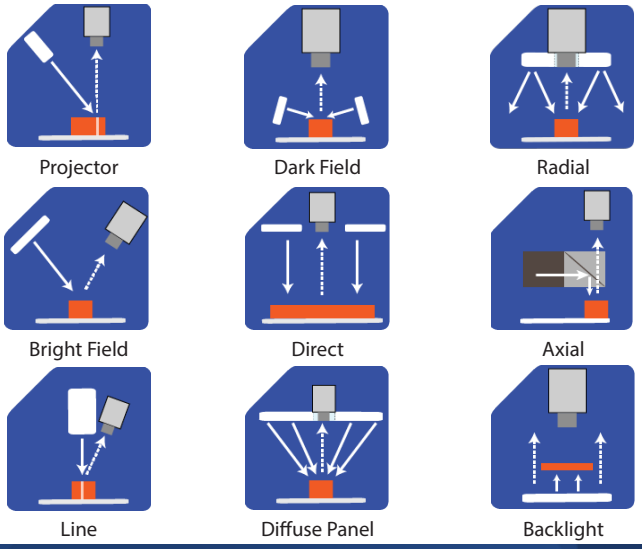
GLOSSARY

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

TERMINOLOGY

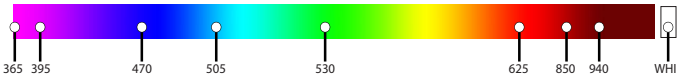
OverDrive™ Lights include an integrated high-pulse driver for complete LED light control.
Continuous Operation Lights stay on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built-In Driver The built-in driver allows full function without the need for an external controller.
Camera to Light Connect the light directly to the camera, without the need for additional controllers or equipment.
Polarizers Filters that reduce reflections on specular surfaces.
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.*

SWIR SHORTWAVE **INFRARED**

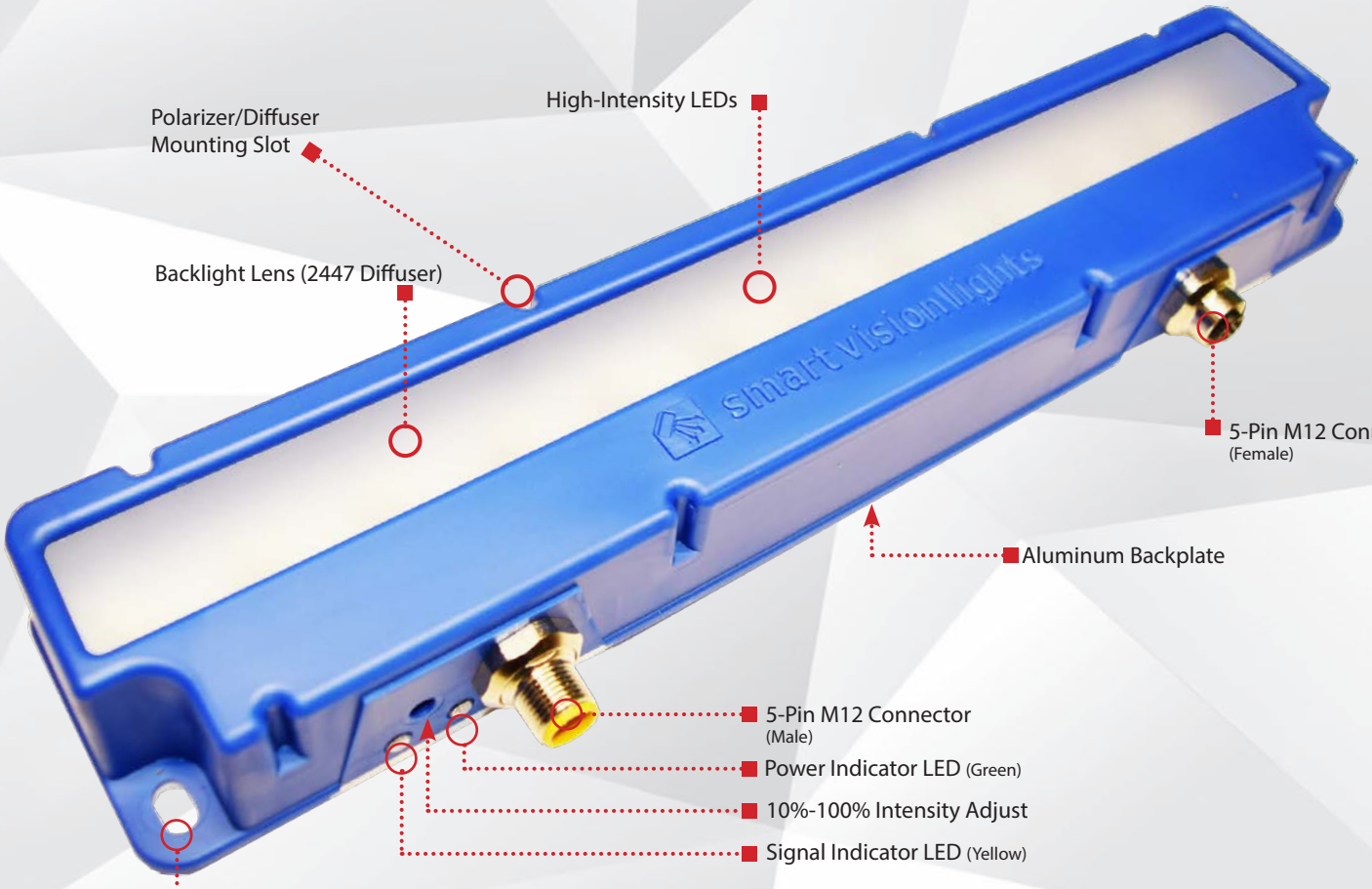
Shortwave infrared LEDs are available in 1050 nm, 1200 nm, 1300 nm, 1450 nm, and 1550 nm.*

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

smart vision lights LB300 *Connect-a-Light*

LINEAR LIGHT BACKLIGHT

PRODUCT DATA SHEET



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

PRODUCT HIGHLIGHTS

- ✓ 5-pin M12 quick connect
- ✓ Built-in driver, no external wiring needed
- ✓ PNP and NPN trigger input signal
- ✓ Daisy-chain up to six LB300 linear lights using a standard 5-pin M12 jumper cable
- ✓ Backlight lens (2447 diffuser) is factory installed

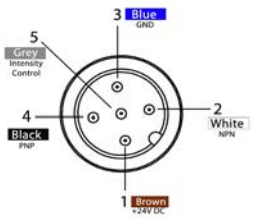
PRODUCT DESCRIPTION

The LB300 array utilizes 12 high-intensity LEDs, features an integrated constant-current driver built into the light and operates in continuous operation. The LB300 features a factory installed 2447 diffuser backlight lens and is a viable option for silhouetting objects. NPN or PNP trigger signals can be used to control the on/off input of the light. Intensity of the light can be controlled via 1–10VDC analog signal line or manual potentiometer. Daisy-chain up to six LB300 lights together.

PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/– 5%
Input Current	Max. 700 mA
Wattage	Max. 17 W
Strobe 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)
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	270º turn pot — Intensity control of 10% –100%. Turn clockwise to increase 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	-18º–40ºC (0º–104ºF)
IP Rating	IP50
Weight	~370 g
Compliances	CE, RoHS, IEC 62471
Warranty	10 years. For complete warranty information, visit smartvisionlights.com/warranty.

WIRING CONFIGURATION



Pin layout for light (Male Connector)

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*

OPTIONAL

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

** 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).*

RESOURCE CORNER

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

PART NUMBER

LB300 – □□□□

COLOR:

WHI | 470 | 505 | 530 | 625 | 850 940

Part Number Example:
LB300-625 LB300, 625 nm Red Wavelength

Additional wavelengths available upon request.

SWIR SHORT WAVE **INFRARED**

This light is available in our SWIR LEDs

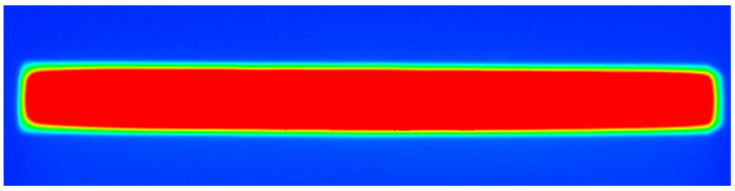
1050 nm | 1200 nm | 1300 nm | 1450 nm | 1550 nm

OPTICAL PERFORMANCE

The LB300 offers a diffuse light pattern.

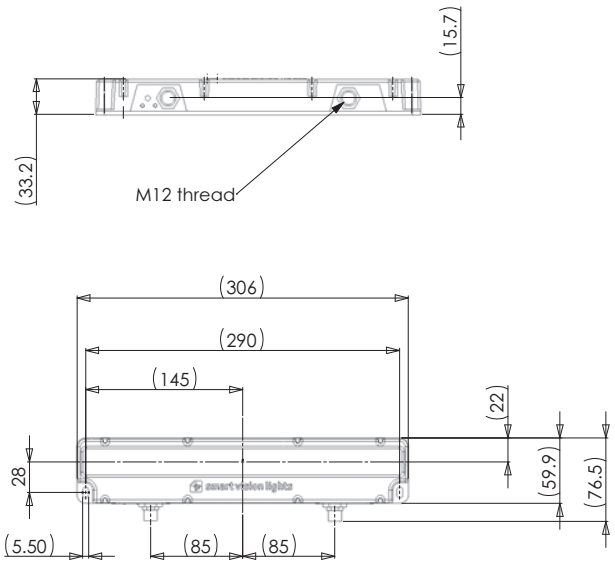
OPICTAL PERFORMANCE FOR THE LB300

Rating	Illuminance (Lux)
Average Intensity Rating	42,000
Illuminance measurement taken at surface of LB300	



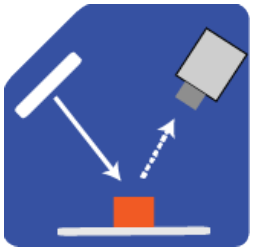
PRODUCT DRAWING

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

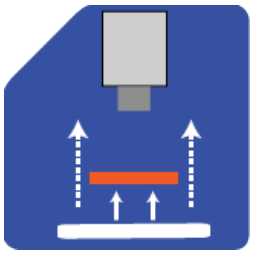


ILLUMINATION

LB300 Series of Linear Lights works best for:



Bright Field



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

ACCESSORIES

Power Cables

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

Jumper Cables (Daisy-Chain)

Length	Part Number
300 mm	5PM12-J300
1000 mm	5PM12-J1000

Mount

Description	Part Number
3-Axis Pan and Tilt Mount	PB300-M5

Mounting Rails

Length	Part Number
300 mm	LEXT300
600 mm	LEXT600
900 mm	LEXT900
1200 mm	LEXT1200
Custom sizes available	

Variable Control Pot

Description	Part Number
Controls the intensity of the light	IVP-C1

Power Adapters *

Description	Part Number
AC, 24 V, 1.7 A	T1 Power Supply
24VDC, 9 A / AC	T2 Power Supply

* **European Versions Available** (Add "-EURO" to end of T1. Example T1-EURO Power Supply)

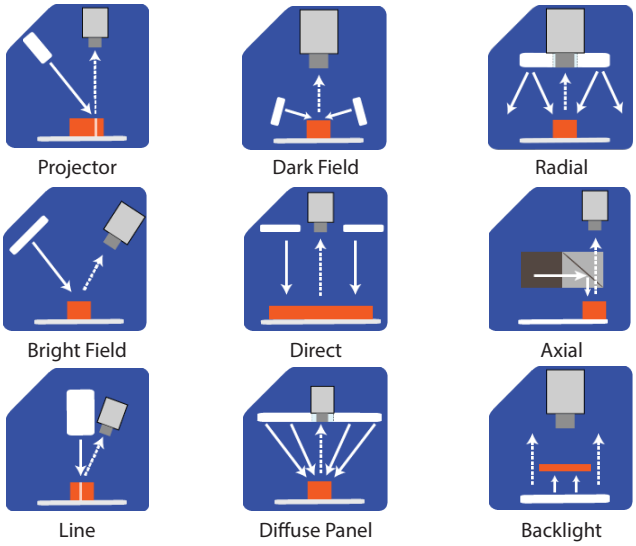
GLOSSARY

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

TERMINOLOGY

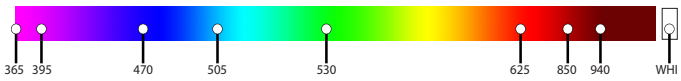
OverDrive™ Lights include an integrated high-pulse driver for complete LED light control.
Continuous Operation Lights stay on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built-In Driver The built-in driver allows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

TYPES OF ILLUMINATIONS



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.

SWIR SHORT WAVE **INFRARED**

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

smart vision lights

LC300 LINEAR LIGHT
GREY SERIES

PRODUCT DATA SHEET

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

PRODUCT HIGHLIGHTS

- ✓ 5-pin M12 quick connect
- ✓ Built-in driver, no external wiring to driver needed
- ✓ PNP and NPN trigger input signal

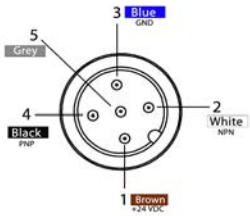
PRODUCT DESCRIPTION

The LC300 features 12 high-bright LEDs, operates in continuous mode, and includes a built-in driver. The LC300 is a low cost linear light. NPN or PNP trigger signals can be used to control the on/off input of the light.

PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/- 5%
Input Current	Max. 700 mA
Wattage	Max. 17 W
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)
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)
Ambient Temperature	-18º–40º C (0º–104º F)
IP Rating	IP50
Weight	~370g
Compliances	CE, RoHS, IEC 62471
Warranty	10 year warranty. For complete warranty information, visit smartvisionlights.com/warranty.

WIRING CONFIGURATION



Pin layout for light (Male Connector)

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	NOT USED	NOT USED	NOT USED

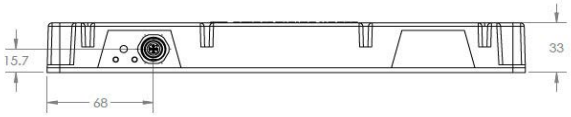
** Some cables use green/yellow for pin 5*
*For continuous mode: Tie PNP (pin 4) to +24VDC (pin 1) **or** tie NPN (pin 2) to ground (pin 3).*

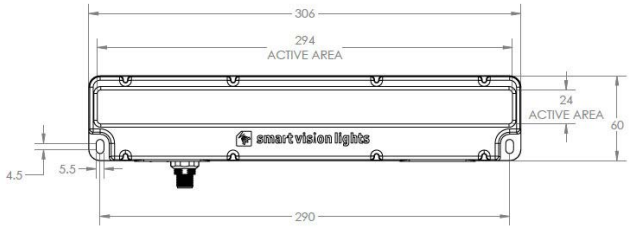
MAXIMUM INTENSITY

Light is set to maximum intensity.
It is not adjustable.

PRODUCT DRAWING

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





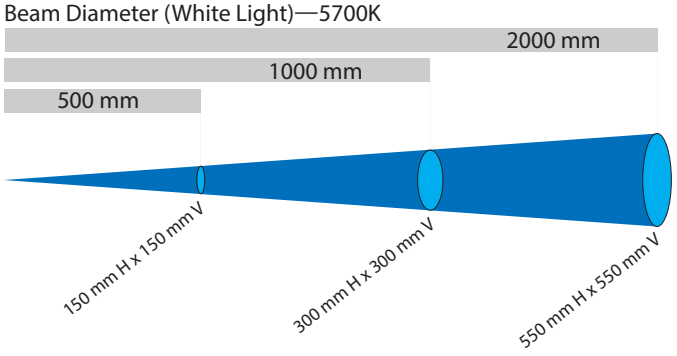
RESOURCE CORNER

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

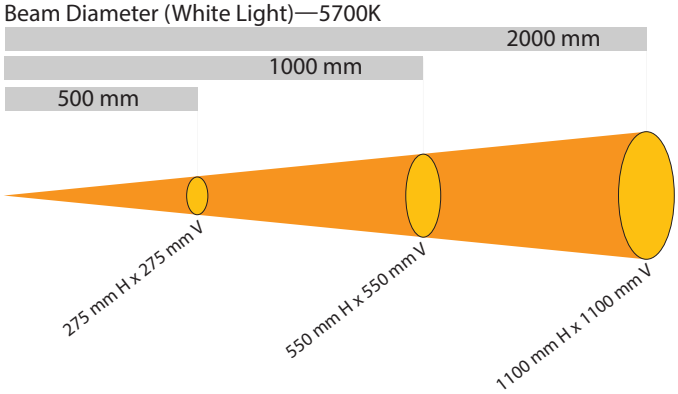
LIGHT PATTERNS

Smart Vision Lights recommends the LC300 be used at a working distance between 300 mm and 4000 mm.

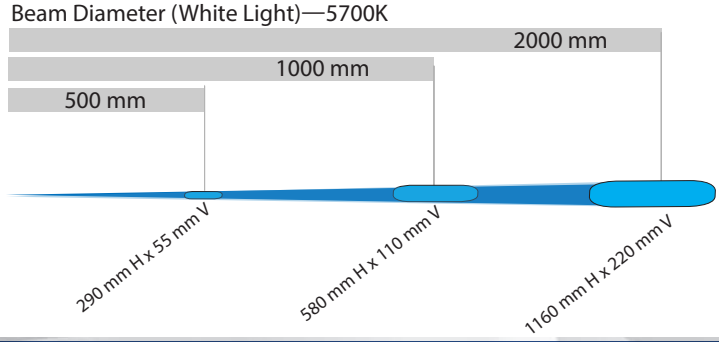
Beam Diameter (White Light)—5700K



Beam Diameter (White Light)—5700K



Beam Diameter (White Light)—5700K



LIGHTING PATTERN FOR THE LC300 **with Narrow (Standard) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	150 mm (~5.9") H x 150 mm (~5.9") V
1000 mm (39.4")	300 mm (~11.8") H x 300 mm (~11.8") V
2000 mm (78.8")	550 mm (~21.6") H x 550 mm (~21.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	11,000
Illuminance measurement taken on White Lights—5700 K	

LIGHTING PATTERN FOR THE LC300 **with Wide (W) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	275 mm (~10.8") H x 275 mm (~10.8") V
1000 mm (39.4")	550 mm (~21.6") H x 550 mm (~21.6") V
2000 mm (78.8")	1100 mm (~43") H x 1100 mm (~43") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	8000
Illuminance measurement taken on White Lights—5700K	

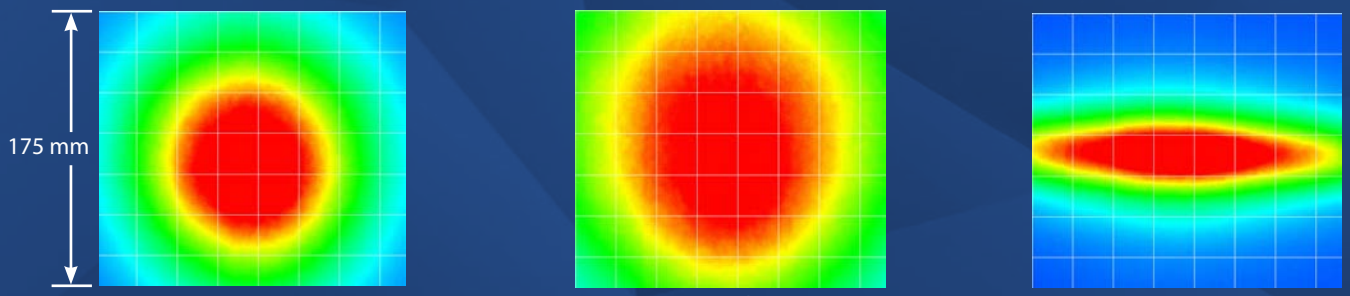
LIGHTING PATTERN FOR THE LC300 **with Line (L) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	290 mm (~12.2") H x 55 mm (~2.1") V
1000 mm (39.4")	580 mm (~24.4") H x 110 mm (~4.3") V
2000 mm (78.8")	1160 mm (~48.8") H x 220 mm (~8.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	19,000
Illuminance measurement taken on White Lights—5700K	

The LC300 Linear Light produces a uniform light pattern.

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



PART NUMBER

LC300 – □□□ – □

COLOR:

LENS:

Leave blank for Standard (Narrow)

W = Wide

L = Line

Part Number Examples:

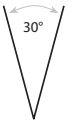
LC300-625 (LC300, 625 Red Wavelength, Standard [Narrow Lens])

LC300-WHI-L (LC300, White, Line Lens)

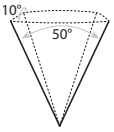
LENS OPTICS

NARROW (Standard)
Narrow, 16° angle-cone lenses are standard. Standard lenses create a narrow beam of illumination and are used for long working distances.

WIDE
Wide, 30° angle-cone lenses create a large area of illumination. They create a floodlight effect and can be used for short working distances.

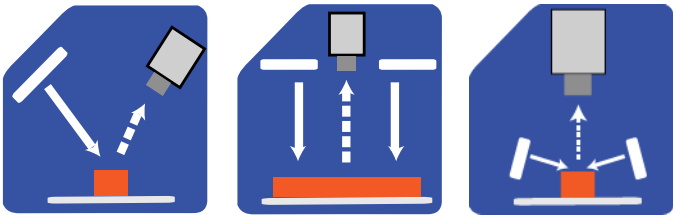


LINE
Line, with a 10° width and a 50° fan angle, projects a thin, narrow beam of illumination.



ILLUMINATION

LC300 Series of Linear Lights works best for:



Bright Field | Direct Lighting | Dark Field

When To Use a Linear Polarizer

Polarizing filters can reduce reflections on specular (dielectric or nonmetal) surfaces.

A Linear Polarizer has a typical transmission of 38 percent while blocking 62 percent of the light not in the polarization plane.

WARNING: Running a light in continuous operation while using a standard polarizer with certain wavelengths (e.g. white, blue) may burn the polarizer.

EYE SAFETY

SMART VISION LIGHTS IEC 62471 COMPLIANT

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.

ACCESSORIES

Power Cables

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

Mount

Description	Part Number
3-Axis Pan and Tilt Mount	PB300-M5

Mounting Rails

Length	Part Number
300mm	LEXT300
600mm	LEXT600
900mm	LEXT900
1200mm	LEXT1200
Custom sizes available	

Power Adapters *

Description	Part Number
AC, 24 V, 1.7 A	T1 Power Supply

* **European Versions Available** (Add "-EURO" to end of T1. Ex: T1-EURO Power Supply.)

Diffuser

Description	Part Number
Diffuser Kit	L300-DKIT

Linear Polarizer

Description	Part Number
Linear Polarizer Kit	L300-LP

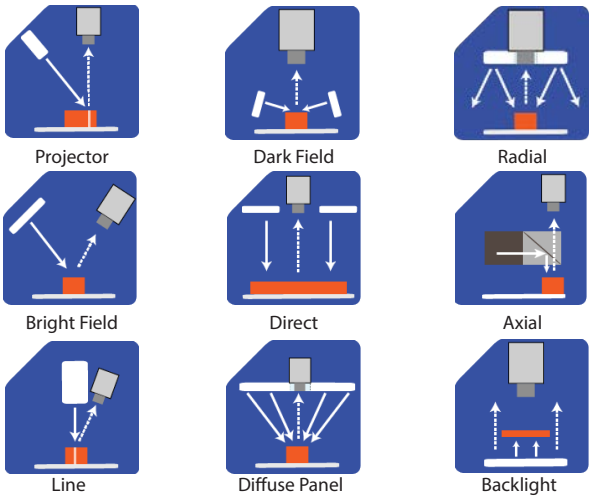
GLOSSARY

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

TERMINOLOGY

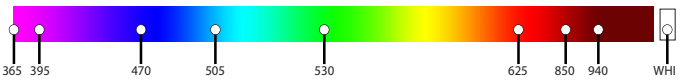
OverDrive™ Lights include an integrated high-pulse driver for complete LED light control.
Continuous Operation Lights stay on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built-In Driver The built-in driver allows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

TYPES OF ILLUMINATIONS



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.

SWIR SHORTWAVE **INFRARED**

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

PRODUCT DATA SHEET

LE Series | **LINEAR LIGHT** | Multi-Drive Operation

product introduction

The Multi-Drive controller combines the Constant ON operation and the high pulse operation into one easy to use product. The Multi-Drive controller allows the user to run the product in Constant ON operation or pulse/strobe the light at the maximum allowed intensity by the LED manufacturer by simply setting the product parameters. The built-in Multi-Driver also protects the LEDs from premature degradation and failure caused by excessive heat by regulating the current delivered to the LEDs and limiting the duty cycle of the light. NPN or PNP signal input options, a 0-10V analog intensity control, and an industry standard M12 power cable allow for versatility and eases installation time.

product features

- Continuous Operation or OverDrive
- Sealed to IP65 standards
- Driver Built In – No External Wiring To A Driver
- NPN and PNP Signal Input Options
- Industry Standard 5-Pin M12 connector

Constant ON product specs

Electrical Input	24VDC +/- 5%
Current	750mA per 300mm (12”)
Wattage	18W per 300mm (12”)
ON/OFF Input	PNP ► +4VDC or greater to activate | NPN ► GND (<1VDC) to activate | 5µS LED activation time
PNP Line	3.7mA @ 3VDC | 6.2mA @ 5VDC | 12.6mA @ 10VDC | 30.4mA @ 24VDC
NPN Line	22mA @ Common (0VDC)
Continuous Mode	Light will be in continuous mode by leaving signal on NPN/PNP input active
Connection	5 pin M12 connector
Ambient Temperature	-40º - 50º C (-40º - 122º F)
IP Rating	IP65
IEC 62471 Rating	See page 4 for details

OverDRIVE product specs

Electrical Input	24VDC +/- 5%
Current	5A during strobe per 300mm | 500mA Max. Avg. per 300mm
Wattage	120W during strobe per 300mm | 12W Max. Avg. per 300mm
Strobe Input	PNP ► +4VDC or greater to activate | NPN ► GND (<1VDC) to activate | 5µS LED activation time
PNP Line	3.7mA @ 3VDC | 6.2mA @ 5VDC | 12.6mA @ 10VDC | 30.4mA @ 24VDC
NPN Line	22mA @ Common (0VDC)
OverDrive Mode	Connect Pin 5 to GND (more info. in wiring configuration)
Duty Cycle	Max.10%
Strobe Duration	Max. 50mS
Connection	5 pin M12 connector
Ambient Temperature	-40º - 50º C (-40º - 122º F)
IP Rating	IP65
IEC 62471 Rating	See page 4 for details

product number key

LEXXX – XXX- X* —» Part Number Key

Product Family:	Length:	Color:	Lenses:
Linear Light LE Series	300mm 600mm 900mm 1200mm	470- Blue 505 - Cyan 530- Green 625- Red 850/940- IR WHI- White	L- Line W - Wide

* Lights come standard with narrow lenses

CE and RoHS Compliant

warnings

Attention

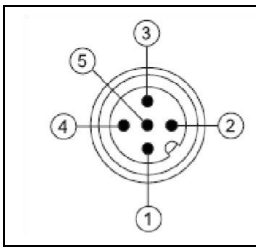
Please note that the power requirements are 750mA per 300mm at 24VDC for constant ON operation and 5A per 300mm at 24VDC for strobe mode. Failure to supply light with 750mA for constant ON or 5A for strobe per 300mm may result in non-repeatable lighting. Contact Smart Vision Lights for more information.

Attention

Light is not designed for outdoor use.

wiring configuration

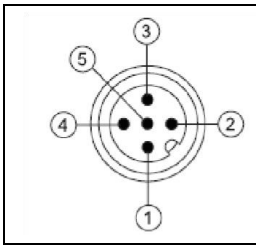
Wiring configuration for CONSTANT ON operation



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 with yellow stripe for 1-10V adjustment.

Wiring configuration for OverDrive operation



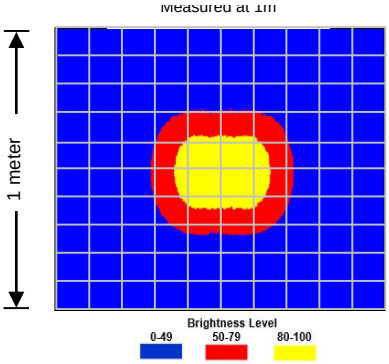
Pin	Function	Signal	Wire Color
1	Power In	+24VDC	BROWN
2	NPN	Sinking Signal	WHITE
3	GND	Ground	BLUE
4	PNP	Sourcing Signal	BLACK
5	OverDrive Signal	Ground	GREY

*Analog intensity control is disabled in OverDrive Mode. Light operates at maximum pulse intensity.

optical performance

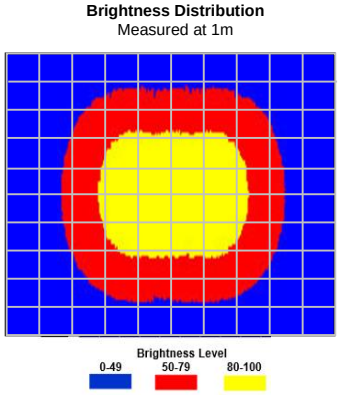
LE300-XXX

Working Distance mm (inches)	Pattern (80%-100% measured intensity) mm (Inches)	
.5m (19.7")	210mm(~8") H x 100mm(~4") V	
1m (39.4")	250mm(~9.8") H x 210mm(~8.3") V	
1.5m (~59")	270mm(~10.6") H x 255mm(~10") V	
Typical output performance	**Illumination (Lux)**	
	Constant ON	OverDrive
Distance = .5 meter	8800 lux	44000 lux
Illumination measurement taken on White Lights – 6500K		



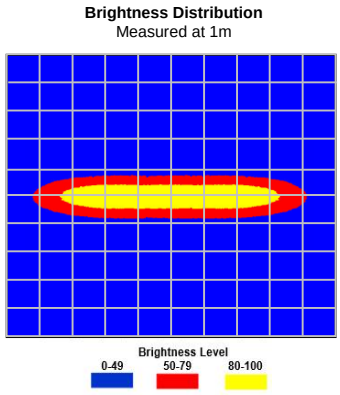
LE300-XXX-W

Working Distance mm (inches)	Pattern (80%-100% measured intensity) mm (Inches)	
.5m (19.7")	220mm(~9") H x 160mm(~6") V	
1m (39.4")	460mm(~18") H x 420mm(~16.5") V	
1.5m (59")	570mm(~22") H x 550mm(~22") V	
Typical output performance	**Illumination (Lux)**	
	Constant ON	OverDrive
Distance = .5 meter	5200 lux	26000 lux
Illumination measurement taken on White Lights – 6500K		



LE300-XXX-L

Working Distance mm (inches)	Pattern (80%-100% measured intensity) mm (Inches)	
.5m (19.7")	330mm(~13") H x 50mm(~2") V	
1m (39.4")	660mm(~26") H x 100mm(~4") V	
1.5m (59")	990mm(~39") H x 150mm(6") V	
Typical output performance	**Illumination (Lux)**	
	Constant ON	OverDrive
Distance = .5 meter	6800 lux	34000 lux
Illumination measurement taken on White Lights – 6500K		



mounting options

T-slot channel on the back for mounting

3-Axis Pan and Tilt Mount
P/N: PB300 - M5
(Sold separately)

Right Angle Bracket Kit
P/N: LE - Kit
(Included)

risk group

According to IEC 62471:2006. Full documentation 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 eye. Safe for most applications except prolonged exposures.
Applicable for wavelengths: 470, 505, 530, and WHI.

PRODUCT DATA SHEET

LHF300 Series | **LINEAR LIGHT** | Fluorescent Replacement

product introduction

The LHF300 Series of lights was designed as a direct LED replacement for standard fluorescent lighting. The plug n' play design of the Direct-Connect Linear Light Series gives users tremendous flexibility without the concern for additional wiring. The LHF300 array utilizes 30 high intensity LEDs and features a diffuse lens cover designed to disperse the light a uniform and homogenous pattern the same as a fluorescent light of equivalent length. It also features an integrated constant current driver built into the light. Direct-Connect Series Linear Lights utilize 24VDC and can operate in continuous or strobe mode. NPN strobe trigger can be used to control the pulse of the light.

product features

- Direct-Connect – Daisy Chain up to 8 units
- T-Slot for mounting and connecting together
- Driver built in – 24VDC
- NPN Strobe input
- Continuous operation or Strobe mode
- Homogenous light pattern

product specifications

Electrical Input	24VDC +/- 5%
Current	Max. 750mA
Wattage	Max. 18W
Strobe Input	NPN ► GND (<1VDC) to activate
NPN Line	22mA @ Common (0VDC)
Continuous Mode	Light will be in continuous mode by leaving signal on strobe input active
Connection	4 pin 2.5mm pitch phoenix connector
Daisy Chain	Up to eight LHF300
Ambient Temperature	-20º - 50º C (-4º - 122º F)
Lifespan	100,000 hrs
Color Temperature	White - 5000k
IP Rating	IP50
Weight	~455g
IEC 62471 Rating	See page 4

product number key

LHF300 – XXX —» **Part Number Key**

Product Family:
Fluorescent Replacement
LHF300

Color:
470 – Blue
625 – Red
850 - IR
WHI - White

CE and RoHS Compliant

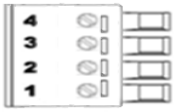
warnings

Attention

Please note that the power requirements are 750mA at 24VDC. Failure to supply light with 750mA will result in non-repeatable lighting. Contact Smart Vision Lights for more information.

wiring configuration

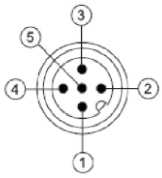
Standard



*Phoenix Contact - PTSM 0,5/4-P-2,5 Spring Cage Connector

PIN	Function	Signal
4	Ground	GND
3	NPN Strobe	GND for active ON
2	PNP Strobe	+24VDC for active ON
1	+24VDC	Power In

M12 Adapter Kit



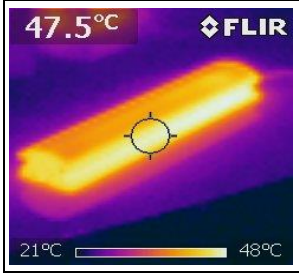
*5-pin M12 Connector

PIN	Function	Signal
1	Power In	+24VDC
2	NPN Strobe	GND for active ON
3	Ground	GND
4	PNP Strobe	+24VDC for active ON
5	NOT USED	NOT USED

thermal analysis

The LHF series of linear lights is the brightest in the vision industry due to the heat dissipation of the housing. Lifespan and power output for LED lights are based on the junction temperature of the high current LED. The junction is the point where the light is generated inside the LED and the point of heat generation. To dissipate heat, Smart Vision Lights directly mounts high current LED's to an aluminum circuit board. The aluminum circuit board is in direct contact with LHF series aluminum housing. This design efficiently transfers heat away from the high powered LEDs. Therefore, the LHF series Linear Light can be run at higher current, producing an increased output due the even heat dissipation of the aluminum housing. In constant operation the housing on Smart Vision Lights LHF series lights will run at 50ºC in an ambient temperature of 25ºC.

Thermal Analysis of LHF Series Light



The heat dissipation is evenly distributed throughout the aluminum housing.

LHF series aluminum housing is designed to transfer heat away from the high power LED's.

connecting lights

Power Input Connection

Light ships with
4-pin plug

Optional M12 Pigtail
Part # 5PM12-LHFP

End View of Light Connections

Male End

Female End

Connecting Lights Together – Daisy Chain

Part# LXJ-2DTN
Contains 2

daisy chain / direct connect

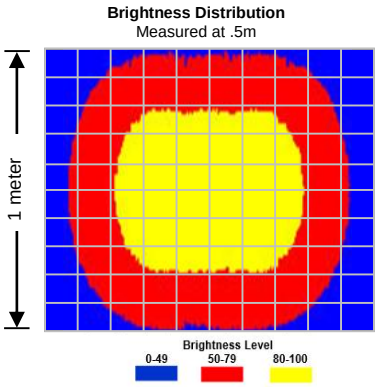
Illumination and intensity

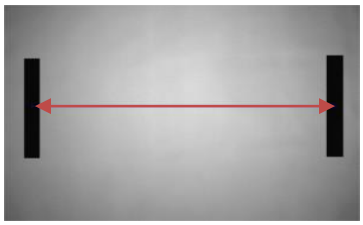
Able to connect up to eight LHF300 linear lights in parallel for a seamless and diffuse illumination pattern.

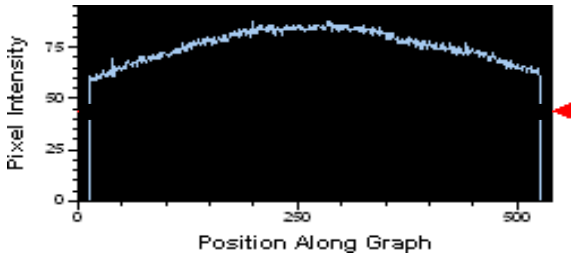
illumination pattern

Working Distance mm (inches)	Pattern (80%-100% measured intensity) mm (Inches)
.5m (~19.7”)	570mm(~22.4”) H x 580mm(~22.8”) V
1m (~39.4”)	800mm(~31.5”) H x 800mm(~31.5”) V
1.5m (~59.1”)	1031mm(~40.6”) H x 1031mm(~40.6”) V

Typical output performance	Illumination (Lux)
Distance = .5 meter	1700 lux
Distance = 1 meter	520 lux
Distance = 1.5 meter	160 lux
Illumination measurement taken on White Lights – 5000K	







accessories

M12 Male Adapter
Part# LHF300-PKIT
available

M12 Female Adapter
Part# LHF300-E-PKIT
available

M12 Cover Adapter
Part# LHF300-EC
available

Swivel Mounting Bracket
Part# LHF-300-BKT
available

risk group

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

Notice

Exempt Group: No photobiological hazard to eyes or skin even for continuous, unrestricted use.
Applicable for wavelengths: 625, 850, WHI

Caution

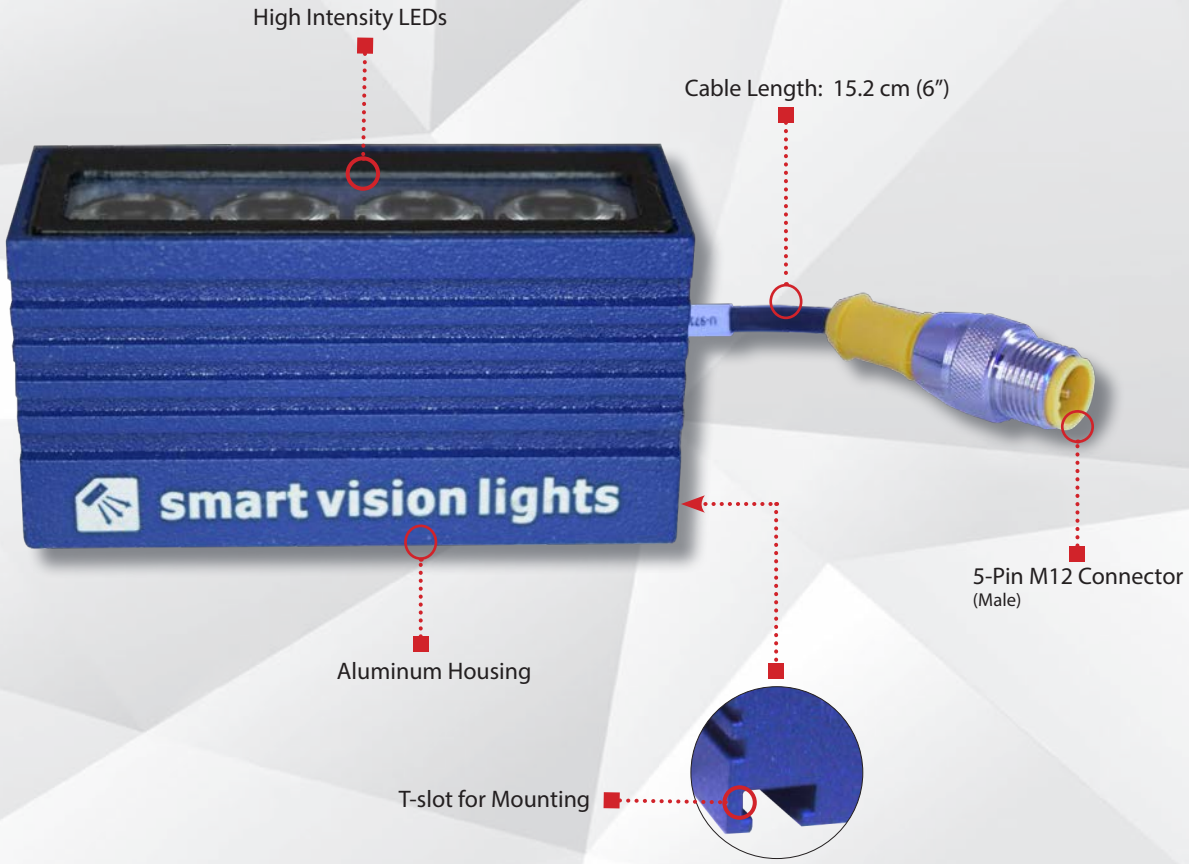
Risk Group 1: Possibly hazardous optical radiation emitted from this product. Do not stare at operating lamp. May be harmful to eye. Safe for most applications except prolonged exposures.
Applicable for wavelengths: 470

smart vision lights

LM45 *Miniature "Mini"* LINEAR LIGHT

MULTI-DRIVE™

PRODUCT DATA SHEET



multi drive™

Warranty	Compliant	Compliant	Rated	Connector
10 YEAR	IEC 62471	CE RoHS	IP 65	5-PIN M12

PRODUCT HIGHLIGHTS

- Delivering up to 42,000 LUX in OverDrive™ mode with standard lenses
- Built-in Multi-Drive™ allows the light to work in continuous operation or OverDrive™ mode
- PNP and NPN strobe input
- Over-current protection
- 5-pin M12 quick connect

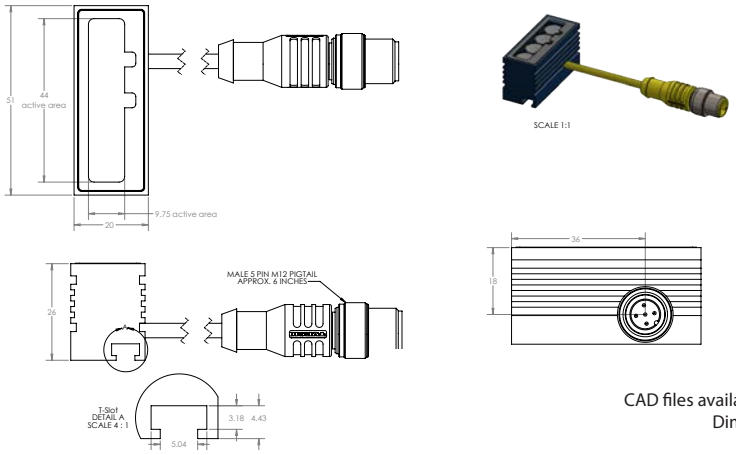
PRODUCT DESCRIPTION

The LM45 compact linear light features an integrated Multi-Drive™ constant current driver that operates continuously or in OverDrive™ strobe mode depending on wiring method. The light can be mounted via a rear T-slot channel, also offers overcurrent protection and PNP and NPN strobe input.

PRODUCT SPECIFICATION

	CONTINUOUS OPERATION	OVERDRIVE™ OPERATION
Electrical Input	24 V DC +/- 5%	
Input Current	Max. 140 mA	Max. 1.26 A
Wattage	Max. 2.88 W	Max. 31.6 W
PNP Line	4 mA @ 4 V DC | 10 mA @ 12 V DC | 20 mA @24 V DC	
NPN Line	15 mA @ Common (0 V DC)	
OverDrive™ Mode	**Not applicable**	Connect pin 5 to GND (see Wiring Configuration for more information)
Strobe Duration	**Not applicable**	Min. 10 µs | Max. 50 ms
Duty Cycle	**Not applicable**	Max. 10%
Strobe Input	**Not applicable**	PNP > +4 V DC or greater to activate NPN > GND (<1 V DC) 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 > +4 V DC or greater to activate NPN > GND (<1 V DC) to activate	**Not applicable**
Connection	5-pin M12 connector	
Ambient Temperature	-18º–40º C (0º–104º F)	
IP Rating	IP65	
Weight	54g	
Compliances	CE, RoHS, IEC-62471	

PRODUCT DRAWING



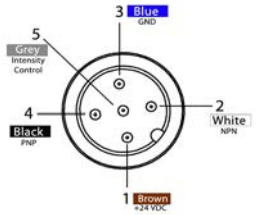
CAD files available on our website.
Dimensions are in mm.

RESOURCE CORNER

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

WIRING CONFIGURATION

CONTINUOUS OPERATION MODE



Pin layout for light (male connector)

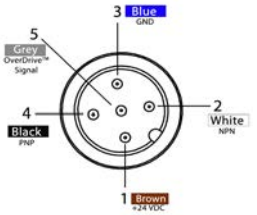
Pins	Function	Signal	Wire Color
1	Power In	+24VDC	BROWN
2	NPN	Sinking Signal	WHITE
3	GND	Ground	BLUE
4	PNP	Sourcing Signal	BLACK
5	Intensity Control	1-10 V DC	GREY*

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)

** Some cables use green/yellow for pin 5*
For maximum intensity, it is possible to 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).*

OVERDRIVE™ OPERATION MODE



Pin layout for light (male connector)

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	OverDrive™ Signal	Ground	GREY*

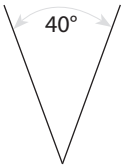
Failure to supply light with correct input current will result in non-repeatable lighting
(see Product Specifications for requirements)

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

LENSES

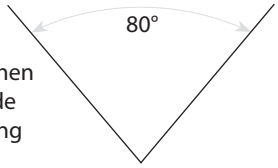
STANDARD

Standard lenses project a narrower beam of illumination. They can be used when long working distances are needed. Standard are 40° angle lenses. Best used for working distance between 200 mm and 1000 mm.



WIDE (W)

Wide lenses project a large area of illumination. Wide lenses can be used when short working distances are needed. Wide are 80° angle lenses. Best used for working distance between 50 mm and 1000 mm.

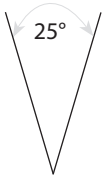


NARROW 16° (N16)

Narrow, 16° angle lenses project a narrower beam of illumination. They can be used when longer distances are needed. Best used for working distance between 300 mm and 2000 mm.

NARROW 25° (N25)

Narrow, 25° angle lenses project a narrower beam of illumination. They can be used when longer distances are needed. Best used for working distance between 300 mm and 2000 mm.



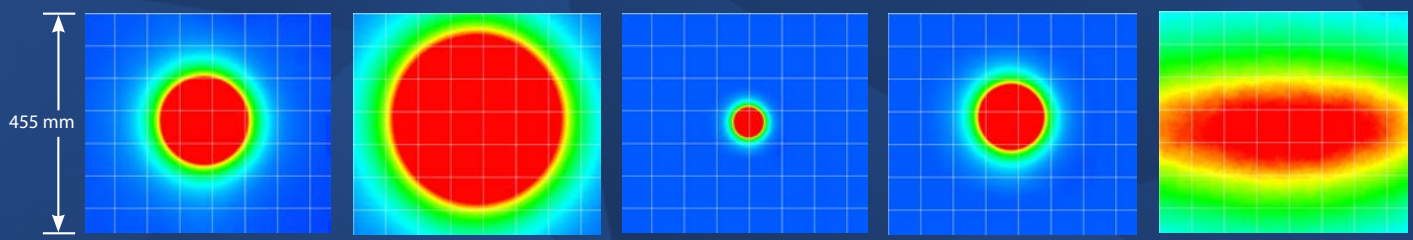
LINE (L)

Line, 10° and 50° angle cone lenses create a thin narrow beam of illumination.

Additional lens options available upon request.

The LM45 Mini Linear Light produces a uniform light pattern.

Working Distance = 500 mm (Grid set to 65 mm x 65 mm)



LIGHT PATTERNS

Smart Vision Lights recommends the LM45 be used at a working distance between 50 mm to 1000 mm.

LIGHTING PATTERN FOR THE LM45 **with Standard 40° Lenses**

Working Distance mm (inches)	Pattern (80% – 100% measured intensity) mm (inches)
250 mm (9.84″)	110 mm (~4.3″) H x 110 mm (~4.3″) V
500 mm (19.7″)	220 mm (~8.7″) H x 220 mm (~8.7″) V

Continuous Operation Mode	
Typical Output Performance	Illumination (Lux)
Distance = 250 mm	4200
Illumination measurement taken on White Light – 6500K	

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 250 mm	42,000
Illumination measurement taken on White Light – 6500K	

LIGHTING PATTERN FOR THE LM45 **with Wide 80° Lenses (W)**

Working Distance mm (inches)	Pattern (80% – 100% measured intensity) mm (inches)
250 mm (9.84″)	220 mm (~8.7″) H x 220 mm (~8.7″) V
500 mm (19.7″)	440 mm (~17.3″) H x 440 mm (~17.3″) V

Continuous Operation Mode	
Typical Output Performance	Illumination (Lux)
Distance = 250 mm	1500
Illumination measurement taken on White Light – 6500K	

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 250 mm	15,000
Illumination measurement taken on White Light – 6500K	

LIGHTING PATTERN FOR THE LM45 **with Narrow 16° Lenses (N16)**

Working Distance mm (inches)	Pattern (80% – 100% measured intensity) mm (inches)
500 mm (19.7″)	75 mm (~3.0″) H x 75 mm (~3.0″) V
1000 mm (39.4″)	150 mm (~6.0″) H x 150 mm (~6.0″) V

Continuous Operation Mode	
Typical Output Performance	Illumination (Lux)
Distance = 500 mm	4500
Illumination measurement taken on White Light – 6500K	

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 500 mm	45,000
Illumination measurement taken on White Light – 6500K	

LIGHTING PATTERN FOR THE LM45 **with 25° Narrow Lenses (N25)**

Working Distance mm (inches)	Pattern (80% – 100% measured intensity) mm (inches)
500 mm (19.7″)	170 mm (~6.7″) H x 170 mm (~6.7″) V
1000 mm (39.4″)	340 mm (~13.4″) H x 340 mm (~13.4″) V

Continuous Operation Mode	
Typical Output Performance	Illumination (Lux)
Distance = 500 mm	2700
Illumination measurement taken on White Light – 6500K	

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 500 mm	27,000
Illumination measurement taken on White Light – 6500K	

LIGHTING PATTERN FOR THE LM45 **with Line Lenses**

Working Distance mm (inches)	Pattern (80% – 100% measured intensity) mm (inches)
500 mm (19.7″)	230 mm (~9″) H x 60 mm (~2.4″) V
1000 mm (39.4″)	460 mm (~18″) H x 120 mm (~4.8″) V

Continuous Operation Mode	
Typical Output Performance	Illumination (Lux)
Distance = 500 mm	1750
Illumination measurement taken on White Light – 6500K	

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 500 mm	17,500
Illumination measurement taken on White Light – 6500K	

MULTI-DRIVE™

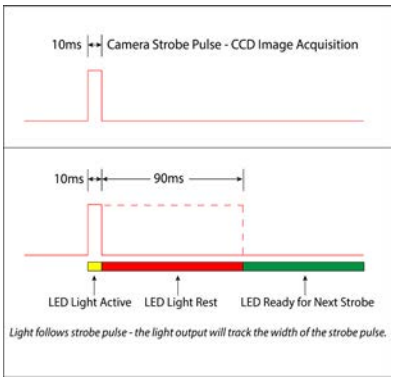
Multi-Drive™ offers the best of both worlds. Continuous operation and OverDrive™ mode (HIGH output strobe/pulse) are available in a single light. Other advantages of Multi-Drive™ include faster imaging and capture/freeze motion on high-speed lines.

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 ten times** the power of continuous operation.

DUTY CYCLE (OVERDRIVE™ MODE ONLY)

This section applies only if light is in OverDrive™ Mode.

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

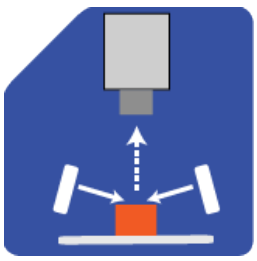
$$RT = \frac{10\ ms}{.1} - 10\ ms = 90\ ms$$

Rest Time is 90 ms for 10 ms Strobe Time

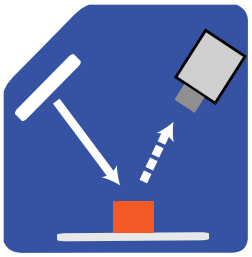
Maximum Duty Cycle for OverDrive™ light is 10% (0.1)

ILLUMINATION

LM45 Series of Miniature "Mini" Linear Lights works best for:



Dark Field



Bright Field

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, and 850.

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, 530, and WHI.

PART NUMBER

LM45 – □□□ – □

COLOR:

LENS:

Leave blank for Standard (40°)

W = Wide (80°)

N16 = Narrow (16°)

N25 = Narrow (25°)

L = Line lens

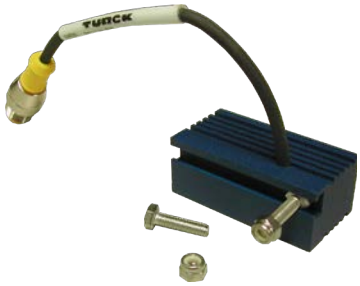
Part Number Examples:

LM45-625 (LM45, 625 Red Wavelength)
LM45-WHI-W (LM45, White Wavelength, Wide Lenses)
LM45-470-N16 (LM45, 470 Blue Wavelength, Narrow 16° Lenses)

MOUNTING

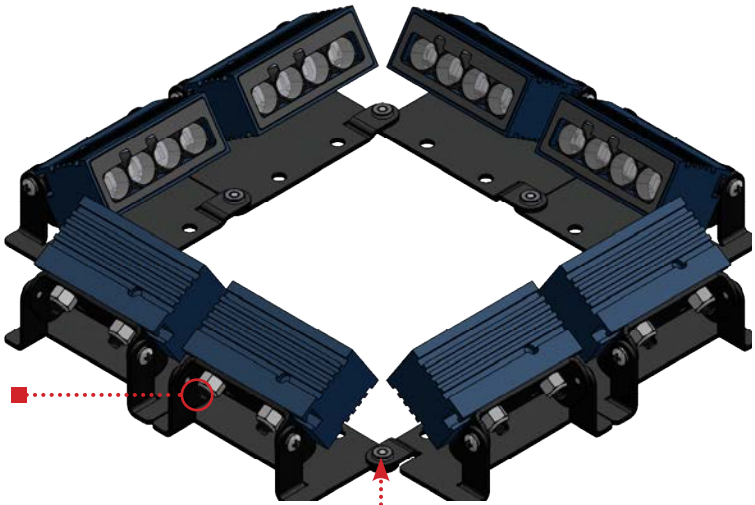
Mounting options include T-slot on bottom of light.

Hardware includes:
(2) M4 x 16 screws
(2) M4 nylon nuts



Optional Mounting Bracket	
	The **optional BKT0025** can be used to mount the LM45.

Easily connect together multiple LM45 using the BKT0025 bracket. The unique design of the BKT0025 bracket allows for any combination of lights to be easily connected together.



ACCESSORIES

Power Cables

Lengths	Part Number
5 m	5PM12-5
10 m	5PM12-10
15 m	5PM12-15
10 m	HF5PM12-10 (High Flex)

Splitter

Description	Part Number
5-pin 2 way splitter	5PM12-2SW

Mounting Bracket

Description	Part Number
LM45 Mount	BKT0025

Jumper Cables (Used with Splitter)

Lengths	Part Number
300 mm	5PM12-J300
1000 mm	5PM12-J1000
2000 mm	5PM12-J2000

Power Adapters *

Description	Part Number
AC, 24 Volt, 1.7 Amp	T1 Power Supply

* **European Versions Available** (Add -EURO to end of T1. Example T1-EURO Power Supply)

T1 Power Supply is only recommended when using light in continuous operation.

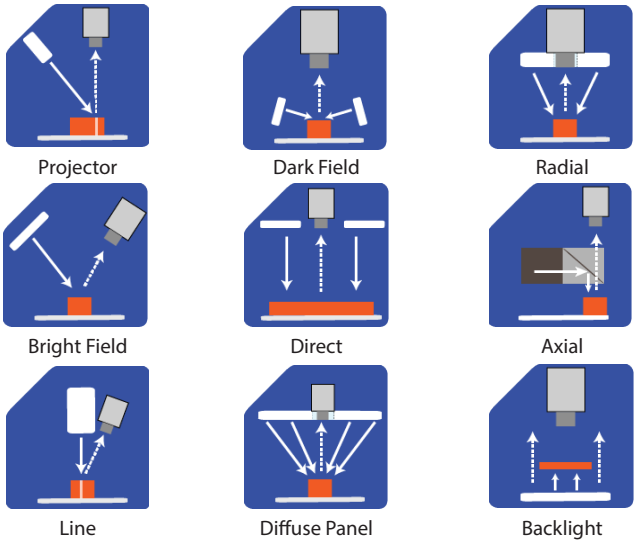
GLOSSARY

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

TERMINOLOGY

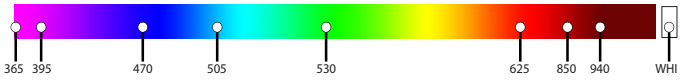
OverDrive™ Lights include an integrated high-pulse driver for complete LED light control.
Continuous Operation Lights stay on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built-in Driver The built-in driver allows 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 ILLUMINATIONS



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.

SWIR SHORTWAVE **INFRARED**

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

smart vision lights LM75 *Miniature "Mini"* LINEAR LIGHT

MULTI-DRIVE™

PRODUCT DATA SHEET

multi drive™

Warranty	Compliant	Compliant	Rated	Connector
10 YEAR	IEC 62471	CE RoHS	IP 65	5-PIN M12

PRODUCT HIGHLIGHTS

- Delivering up to 86,000 LUX in OverDrive™ mode with standard lenses
- Built-in Multi-Drive™ allows the light to work in continuous operation or OverDrive™ mode
- PNP and NPN strobe input
- Over-current protection
- 5-pin M12 quick connect

PRODUCT DESCRIPTION

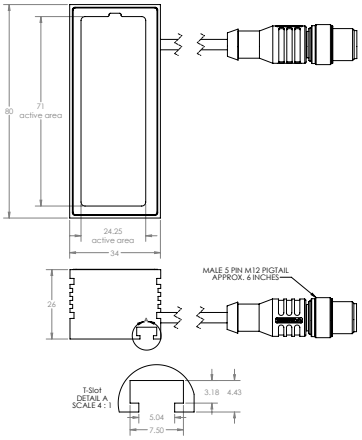
The LM75 compact linear light features an integrated Multi-Drive™ constant current driver that operates continuously or in OverDrive™ strobe mode depending on wiring method. The light can be mounted via a rear T-slot channel, also offers over-current protection and PNP and NPN strobe input.

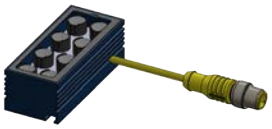
PRODUCT SPECIFICATIONS

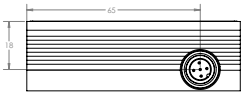
	CONTINUOUS OPERATION	OVERDRIVE™ OPERATION
Electrical Input	24VDC +/- 5%	
Input Current	Max. 275 mA	Max. 3.1 A
Wattage	Max. 6.3 W	Max. 70 W
PNP Line	4 mA @ 4VDC | 10 mA @ 12VDC | 20 mA @24VDC	
NPN Line	15 mA @ Common (0VDC)	
OverDrive™ Mode	**Not applicable**	Connect pin 5 to GND (see Wiring Configuration for more information)
Strobe Duration	**Not applicable**	Min. 10 µs | Max. 50 ms
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	-18º–40º C (0º–104º F)	
IP Rating	IP65	
Weight	128g	
Compliances	CE, RoHS, IEC-62471	

PRODUCT DRAWING

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





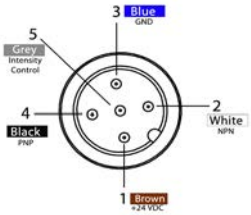


RESOURCE CORNER

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

WIRING CONFIGURATION

CONTINUOUS OPERATION MODE



Pin layout for light (Male Connector)

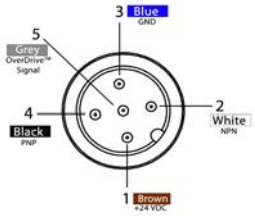
Pins	Function	Signal	Wire Color
1	Power In	+24VDC	BROWN
2	NPN	Sinking Signal	WHITE
3	GND	Ground	BLUE
4	PNP	Sourcing Signal	BLACK
5	Intensity Control	1-10VDC	GREY*

For the light to function properly, apply either a PNP or NPN signal, <u>not both</u>.

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

** Some cables use green/yellow for pin 5*
For maximum intensity, it is possible to 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).*

OVERDRIVE™ OPERATION MODE



Pin layout for light (Male Connector)

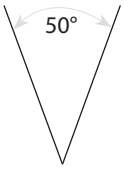
Pins	Function	Signal	Wire Color
1	Power In	+24VDC	BROWN
2	NPN	Sinking Signal	WHITE
3	GND	Ground	BLUE
4	PNP	Sourcing Signal	BLACK
5	OverDrive™ Signal	Ground	GREY*

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

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

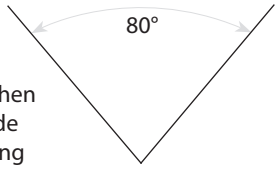
LENSES

STANDARD (NARROW)



Standard lenses project a narrower beam of illumination. They can be used when long working distances are needed. Standard are 50° angle lenses. Best used for working distance between 200 mm and 1000 mm.

WIDE (W)



Wide lenses project a large area of illumination. Wide lenses can be used when short working distances are needed. Wide are 80° angle lenses. Best used for working distance between 50 mm and 1000 mm.

NARROW 16° (N16)

Narrow, 16° angle lenses project a narrower beam of illumination. They can be used when longer distances are needed. Best used for working distance between 300 mm and 2000 mm.

NARROW 25° (N25)

Narrow, 25° angle lenses project a narrower beam of illumination. They can be used when longer distances are needed. Best used for working distance between 300 mm and 2000 mm.

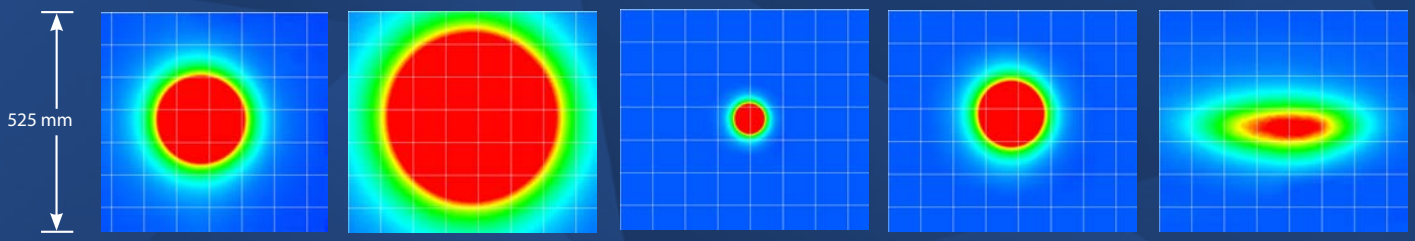
LINE

Line, with a 10° width and a 50° fan angle projects a thin, narrow beam of illumination.

Additional lens options available upon request.

The LM75 Mini Linear Light produces a uniform light pattern.

Working Distance = 500 mm (Grid set to 75 mm x 75 mm)



LIGHT PATTERNS

Smart Vision Lights recommends the LM75 be used at a working distance between 50 mm to 2000 mm.

LIGHTING PATTERN FOR THE LM75 **with Standard 50° Lenses**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
250 mm (9.84")	120 mm (~4.7") H x 120 mm (~4.9") V
500 mm (19.7")	240 mm (~9.4") H x 240 mm (~9.4") V

Continuous Operation Mode	
Typical Output Performance	Illumination (Lux)
Distance = 250 mm	8600
Illuminance measurement taken on White Light - 6500K	

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 250 mm	86,000
Illuminance measurement taken on White Light - 6500K	

LIGHTING PATTERN FOR THE LM75 **with Wide 80° Lenses (W)**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
250 mm (9.84")	240 mm (~9.4") H x 240 mm (~9.4") V
500 mm (19.7")	480 mm (~18.9") H x 480 mm (~18.9") V

Continuous Operation Mode	
Typical Output Performance	Illuminance (Lux)
Distance = 250 mm	3100
Illuminance measurement taken on White Light - 6500K	

OverDrive™ Mode	
Typical Output Performance	Illuminance (Lux)
Distance = 250 mm	31,000
Illuminance measurement taken on White Light - 6500K	

LIGHTING PATTERN FOR THE LM75 **with Narrow 16° Lenses (N16)**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
500 mm (19.7")	75 mm (~3") H x 75 mm (~3") V
1000 mm (39.4")	150 mm (~5.9") H x 150 mm (~5.9") V

Continuous Operation Mode	
Typical Output Performance	Illumination (Lux)
Distance = 500 mm	10,000
Illuminance measurement taken on White Light - 6500K	

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 500 mm	100,000
Illuminance measurement taken on White Light - 6500K	

LIGHTING PATTERN FOR THE LM75 **with Narrow 25° Lenses (N25)**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
500 mm (19.7")	170 mm (~6.7") H x 170 mm (~6.7") V
1000 mm (39.4")	340 mm (~13.4") H x 340 mm (~13.4") V

Continuous Operation Mode	
Typical Output Pereformance	Illuminance (Lux)
Distance = 500 mm	5400
Illuminance measurement taken on White Light - 6500K	

OverDrive™ Mode	
Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	54,000
Illuminance measurement taken on White Light - 6500K	

LIGHTING PATTERN FOR THE LM75 **with Line Lenses**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
500 mm (19.7")	330 mm (~13") H x 120 mm (~4.7") V
1000 mm (39.4")	660 mm (~26") H x 240 mm (~9.4") V

Continuous Operation Mode	
Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	4200
Illuminance measurement taken on White Light - 6500K	

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 500 mm	42,000
Illuminance measurement taken on White Light - 6500K	

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 ten times** the power of continuous operation.

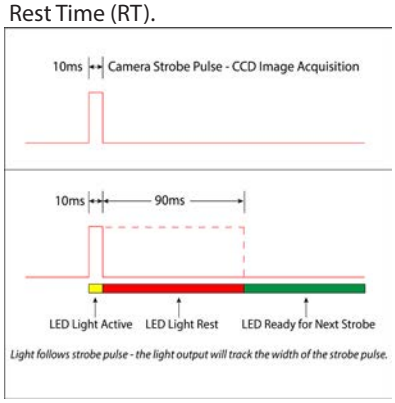
SAFESTROBE™

SafeStrobe™ 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 maximum strobe time or duty cycle. This is especially beneficial for overdriving our high current LEDs.

DUTY CYCLE (OVERDRIVE™ MODE ONLY)

This section applies only if light is in OverDrive™ Mode.

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

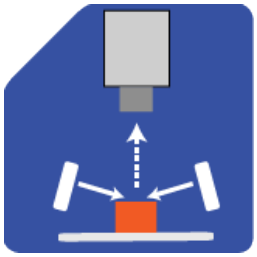
$$RT = \frac{10\ ms}{.1} - 10\ ms = 90\ ms$$

Rest Time is 90 ms for 10 ms Strobe Time

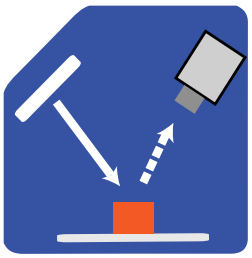
Maximum Duty Cycle for OverDrive™ light is 10% (0.1)

ILLUMINATION

LM75 Series of Mini Linear Lights works best for:



Dark Field



Bright Field

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, and 850.

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, 530, and WHI.

PART NUMBER

LM75 – □□□ – □

COLOR:

LENS:

Leave blank for Standard (50°)

W = Wide (80°)

N16 = Narrow (16°)

N25 = Narrow (25°)

L = Line

Part Number Examples:

LM75-625 (LM75, 625 Red Wavelength)
LM75-WHI-W (LM75, White Wavelength, Wide Lenses)
LM75-470-N25 (LM75, 470 Blue Wavelength, Narrow 25° Lenses)

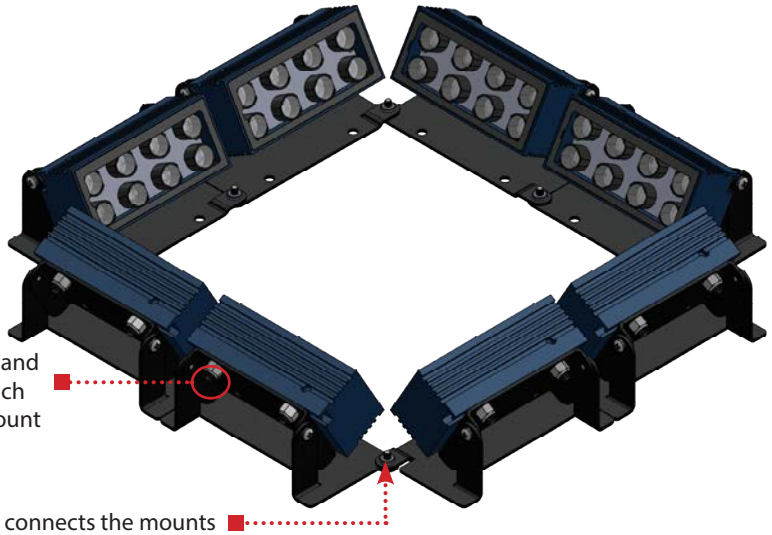
MOUNTING

Mounting options include T-slot on bottom of light.

Hardware includes:
(2) M4 x 16 screws
(2) M4 nylon nuts

Optional Mounting Equipment	
	The **optional BKT0026** can be used to mount the LM75.

Easily connect together multiple LM75 using the BKT0026 bracket. The unique design of the BKT0026 bracket allows for any combination of lights to be easily connected together.



ACCESSORIES

Power Cables

Lengths	Part Number
5 m	5PM12-5
10 m	5PM12-10
15 m	5PM12-15
10 m	HF5PM12-10 (High Flex)

Splitter

Description	Part Number
5-pin 2 way splitter	5PM12-2WS

Mounting Bracket

Description	Part Number
LM75 Mount	BKT0026

Jumper Cables (Used with Splitter)

Lengths	Part Number
300 mm	5PM12-J300
1000 mm	5PM12-J1000
2000 mm	5PM12-J2000

Power Adapters *

Description	Part Number
AC, 24 Volt, 1.7 Amp	T1 Power Supply

* **European Versions Available** (Add -EURO to end of T1. Example T1-EURO Power Supply)

T1 Power Supply is only recommended when using light in continuous operation.

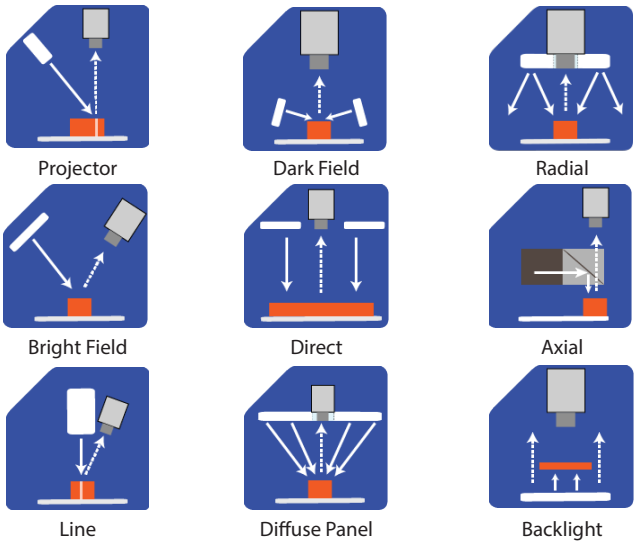
GLOSSARY

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

TERMINOLOGY

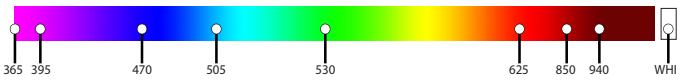
OverDrive™ Light includes an integrated high-pulse driver for complete LED light control.
Continuous Operation Light stays on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built-in Driver The built-in driver allows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

TYPES OF ILLUMINATIONS



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.*

SWIR SHORTWAVE **INFRARED**

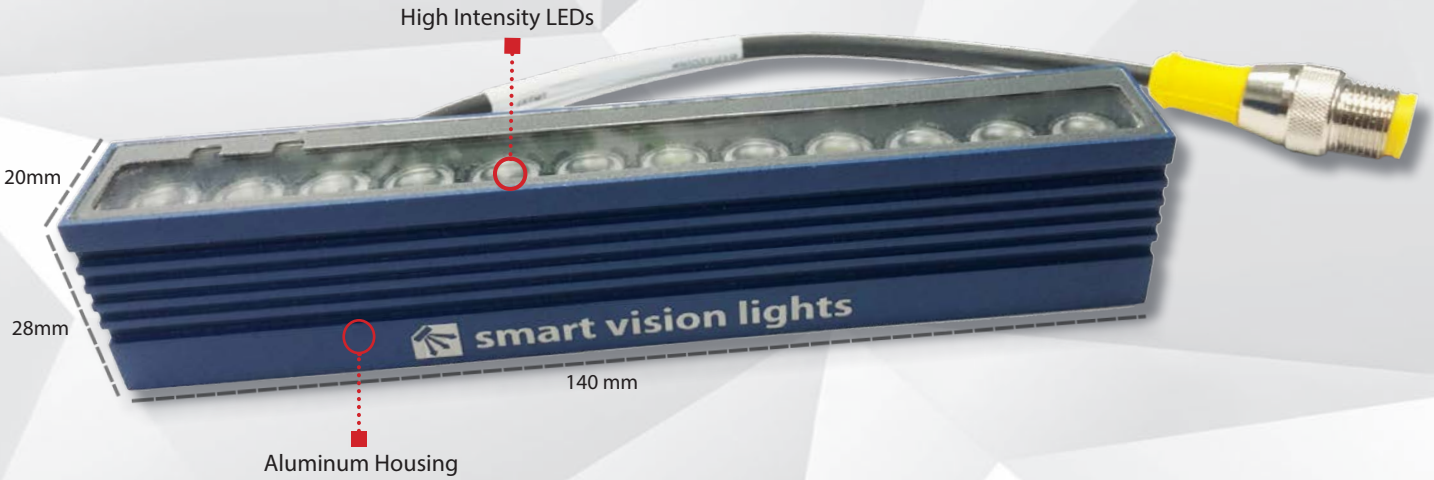
Shortwave Infrared LEDs are available in 1050 nm, 1200 nm, 1300 nm, 1450 nm, and 1550 nm.*

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

smart vision lights LM150 *Miniature "Mini"* LINEAR LIGHT

MULTI-DRIVE™

PRODUCT DATA SHEET



multi drive™

Warranty	Compliant	Compliant	Rated	Connector
10 YEAR	IEC 62471	CE RoHS	IP 65	5-PIN M12

PRODUCT HIGHLIGHTS

- Delivering over 100,000 lux in OverDrive™ mode with standard lens option
- Built-in Multi-Drive™ allows the light to work in continuous operation or OverDrive™ mode
- PNP and NPN strobe input
- Over-current protection
- 5-pin M12 connector

PRODUCT DESCRIPTION

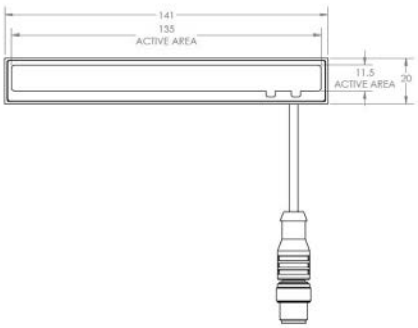
The LM150's compact design features Smart Vision Light's exclusive integrated Multi-Drive™ current driver that can operate in either continuous or OverDrive™ mode depending on the wiring configuration selected by the user. This light also features over-current protection and can be enabled/strobed with either NPN or PNP inputs.

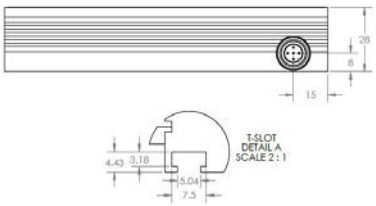
PRODUCT SPECIFICATIONS

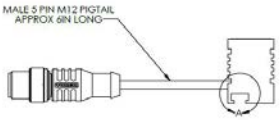
	CONTINUOUS OPERATION	OVERDRIVE™ OPERATION
Electrical Input	24VDC +/- 5%	
Input Current	Max. 317 mA	Max. 4.18 A
Wattage	Max. 7.61 W	Max. 100 W
PNP Line	4 mA @ 4VDC | 10 mA @ 12VDC | 20 mA @24VDC	
NPN Line	15 mA @ Common (0VDC)	
OverDrive™ Mode	**Not applicable**	Connect pin 5 to GND (see Wiring Configuration for more information)
Strobe Duration	**Not applicable**	Min. 10 µs | Max. 50 ms
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	-18º–40º C (0º–104º F)	
IP Rating	IP65	
Weight	128g	
Compliances	CE, RoHS, IEC-62471	

PRODUCT DRAWING

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





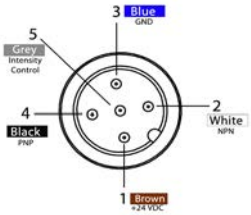


RESOURCE CORNER

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

WIRING CONFIGURATION

CONTINUOUS OPERATION MODE



Pin layout for light (Male Connector)

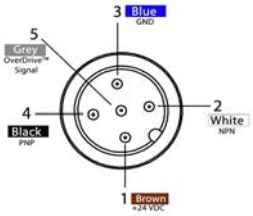
Pins	Function	Signal	Wire Color
1	Power In	+24VDC	BROWN
2	NPN	Sinking Signal	WHITE
3	GND	Ground	BLUE
4	PNP	Sourcing Signal	BLACK
5	Intensity Control	1-10VDC	GREY*

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

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

** 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).*

OVERDRIVE™ OPERATION MODE



Pin layout for light (Male Connector)

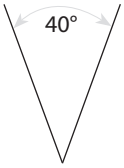
Pins	Function	Signal	Wire Color
1	Power In	+24VDC	BROWN
2	NPN	Sinking Signal	WHITE
3	GND	Ground	BLUE
4	PNP	Sourcing Signal	BLACK
5	OverDrive™ Signal	Ground	GREY*

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

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

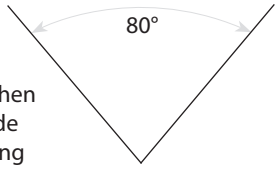
LENSES

STANDARD (DEFAULT)



Standard lenses project a narrower beam of illumination. They can be used when long working distances are needed. Standard are 40° angle lenses. Best used for working distance between 200 mm and 1000 mm.

WIDE (W)



Wide lenses project a large area of illumination. Wide lenses can be used when short working distances are needed. Wide are 80° angle lenses. Best used for working distance between 50 mm and 1000 mm.

NARROW 16° (N16)

Narrow, 16° angle lenses project a narrower beam of illumination. They can be used when longer distances are needed. Best used for working distance between 300 mm and 2000 mm.

NARROW 25° (N25)

Narrow, 25° angle lenses project a narrower beam of illumination. They can be used when longer distances are needed. Best used for working distance between 300 mm and 2000 mm.

LINE

Line, with a 10° width and a 50° fan angle projects a thin, narrow beam of illumination.

Additional lens options available upon request.

LIGHT PATTERNS

Smart Vision Lights recommends the LM150 be used at a working distance between 50 mm to 2000 mm.

LIGHTING PATTERN FOR THE LM150 **with Narrow 16° Lenses (N16)**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
500 mm (19.7″)	100 mm (~3.9″) H x 75 mm (~3″) V
1000 mm (39.4″)	160 mm (~6.3″) H x 130 mm (~5.1″) V

Continuous Operation Mode	
Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	16,000
Illuminance measurement taken on White Light — 5700K	

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 500 mm	110,000
Illuminance measurement taken on White Light — 5700K	

LIGHTING PATTERN FOR THE LM150 **with Narrow 25° Lenses (N25)**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
500 mm (19.7″)	170 mm (~6.7″) H x 170 mm (~6.7″) V
1000 mm (39.4″)	340 mm (~13.4″) H x 340 mm (~13.4″) V

Continuous Operation Mode	
Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	9,800
Illuminance measurement taken on White Light — 5700K	

OverDrive™ Mode	
Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	70,000
Illuminance measurement taken on White Light — 5700K	

LIGHTING PATTERN FOR THE LM150 **with Standard 40° Lenses**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
250 mm (9.84″)	160 mm (~6.3″) H x 160 mm (~6.3″) V
500 mm (19.7″)	330 mm (~13″) H x 330 mm (~13″) V

Continuous Operation Mode	
Typical Output Performance	Illuminance (Lux)
Distance = 250 mm	13,000
Illuminance measurement taken on White Light — 5700K	

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 250 mm	92,000
Illuminance measurement taken on White Light — 5700K	

LIGHTING PATTERN FOR THE LM150 **with Wide 80° Lenses (W)**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
250 mm (9.84″)	200 mm (~7.8″) H x 200 mm (~7.8″) V
500 mm (19.7″)	400 mm (~15.7″) H x 400 mm (~15.7″) V

Continuous Operation Mode	
Typical Output Performance	Illuminance (Lux)
Distance = 250 mm	5,600
Illuminance measurement taken on White Light — 5700K	

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 250 mm	40,000
Illuminance measurement taken on White Light — 5700K	

LIGHT PATTERNS (CONTINUED)

Smart Vision Lights recommends the LM150 be used at a working distance between 50 mm to 2000 mm.

LIGHTING PATTERN FOR THE LM150 **with Line Lenses**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
500 mm (19.7")	210 mm (~8.2") H x 70 mm (~2.7") V
1000 mm (39.4")	400 mm (~15.7") H x 140 mm (~5.5") V

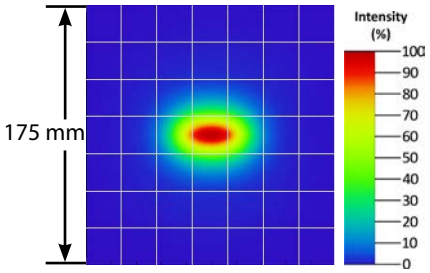
Continuous Operation Mode	
Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	7,800
Illuminance measurement taken on White Light — 5700K	

OverDrive™ Mode	
Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	55,000
Illuminance measurement taken on White Light — 5700K	

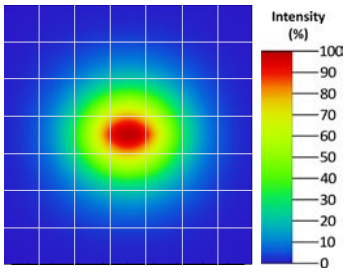
BEAM PATTERNS

Narrow 16° Lenses

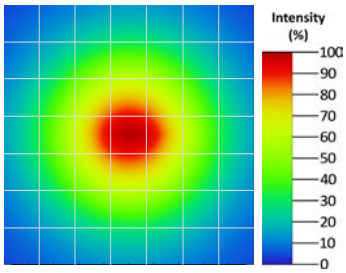
Working Distance: 250 mm



Working Distance: 500 mm

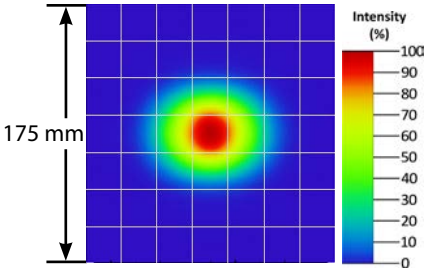


Working Distance: 1000 mm

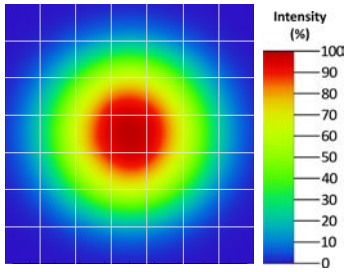


Narrow 25° Lenses

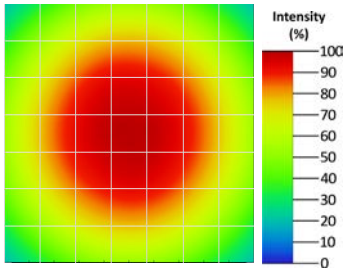
Working Distance: 250 mm



Working Distance: 500 mm



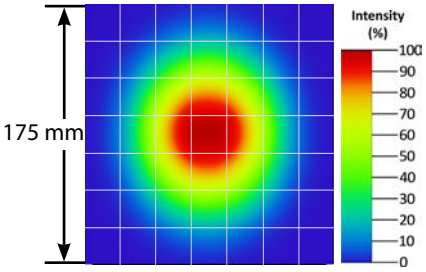
Working Distance: 1000 mm



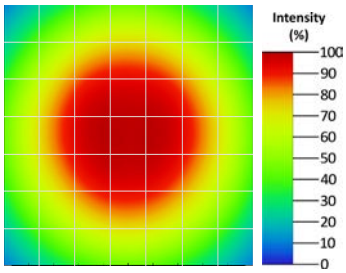
BEAM PATTERNS (CONTINUED)

Standard 40° Lenses

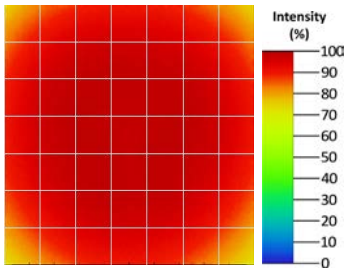
Working Distance: 250 mm



Working Distance: 500 mm

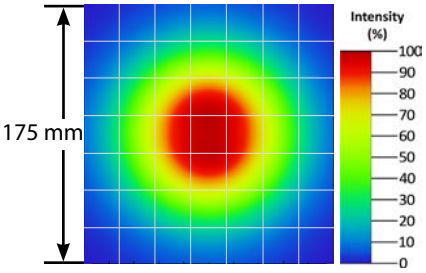


Working Distance: 1000 mm

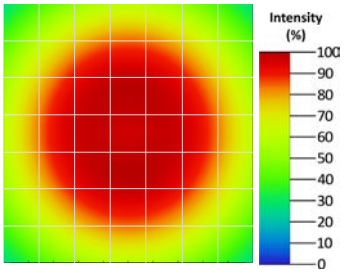


Wide 80° Lenses

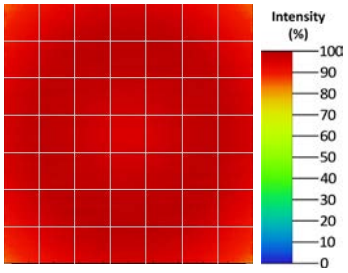
Working Distance: 250 mm



Working Distance: 500 mm

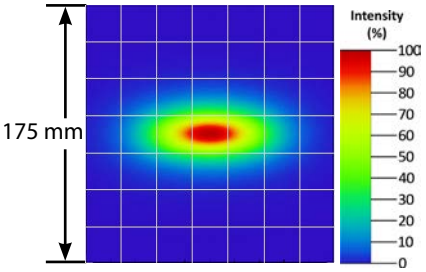


Working Distance: 1000 mm

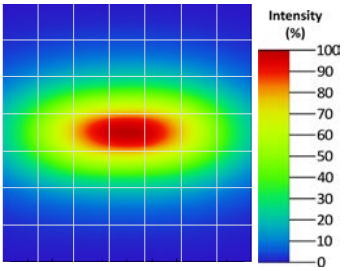


Line Lenses

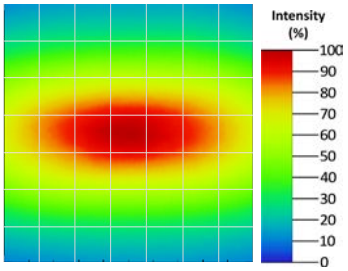
Working Distance: 250 mm



Working Distance: 500 mm



Working Distance: 1000 mm



EYE SAFETY

SMART VISION LIGHTS IEC 62471 COMPLIANT

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, and 850.

Caution

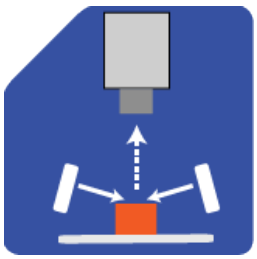
Risk Group 1: Possibly hazardous optical radiation emitted from this product. Do not stare at operating lamp. May be harmful to eyes. Safe for most applications except prolonged exposure. Applicable for wavelengths: 470, 530, and WHI.

MULTI-DRIVE™

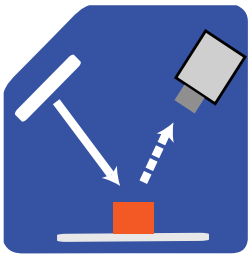
Multi-Drive™ offers the best of both worlds with continuous operation and OverDrive™ mode (HIGH output strobe/pulse) available in a single light. Capture and freeze motion on high-speed lines with Smart Vision Light's LM150 and other Smart Vision Lights products using Multi-Drive™.

ILLUMINATION

LM150 Series of Mini Linear Lights works best for:



Dark Field



Bright Field

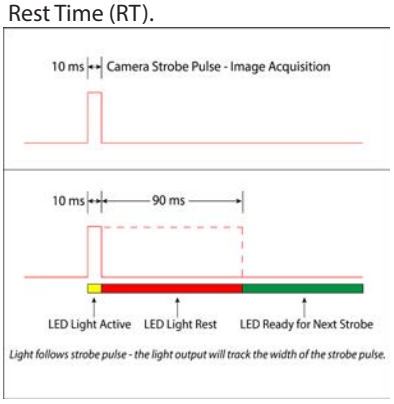
SAFESTROBE™

SafeStrobe™ 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 maximum strobe time or duty cycle. This is especially beneficial for overdriving our high current LEDs.

DUTY CYCLE (OVERDRIVE™ MODE ONLY)

This section applies only if light is in OverDrive™ Mode.

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

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

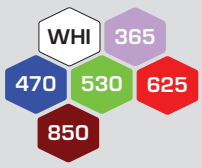
Rest Time is 90 ms for 10 ms Strobe Time

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

PART NUMBER

LM150 – □□□ – □□□

COLOR:



LENS:

Leave blank for Standard (40°)

W = Wide (80°)

N16 = Narrow (16°)

N25 = Narrow (25°)

L = Line

Part Number Examples:

LM150-625 (LM150, 625 Red Wavelength)
LM150-WHI-W (LM150, White Wavelength, Wide Lenses)
LM150-470-N25 (LM150, 470 Blue Wavelength, Narrow 25° Lenses)

ACCESSORIES

Power Cables

Lengths	Part Number
5 m	5PM12-5
10 m	5PM12-10
15 m	5PM12-15
10 m	HF5PM12-10 (High Flex)

Splitter

Description	Part Number
5-pin 2 way splitter	5PM12-2WS

Jumper Cables (Used with Splitter)

Lengths	Part Number
300 mm	5PM12-J300
1000 mm	5PM12-J1000
2000 mm	5PM12-J2000

Power Adapters *

Description	Part Number
AC, 24 Volt, 1.7 Amp	T1 Power Supply

* **European Versions Available** (Add -EURO to end of T1. Example T1-EURO Power Supply)

T1 Power Supply is only recommended when using light in continuous operation.

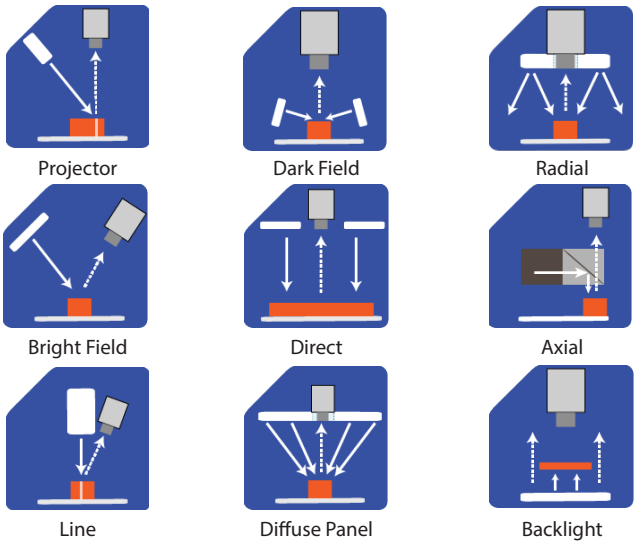
GLOSSARY

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

TERMINOLOGY

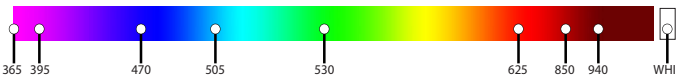
OverDrive™ Light includes an integrated high-pulse driver for complete LED light control.
Continuous Operation Light stays on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built-in Driver The built-in driver allows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

TYPES OF ILLUMINATIONS



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.*

SWIR SHORTWAVE **INFRARED**

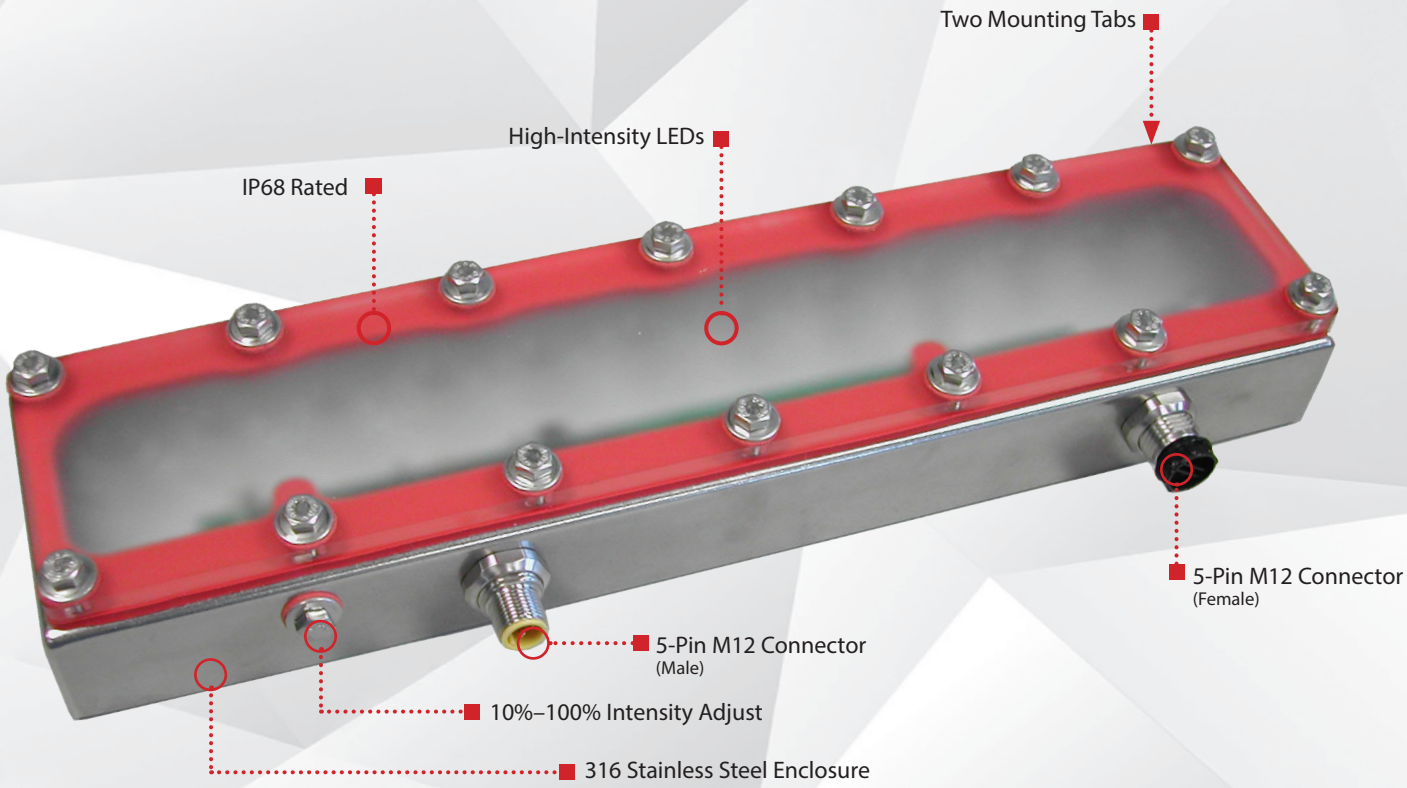
Shortwave Infrared LEDs are available in 1050 nm, 1200 nm, 1300 nm, 1450 nm, and 1550 nm.*

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

smart vision lights

LW300 Connect-a-Light LINEAR LIGHT WASHDOWN

PRODUCT DATA SHEET



Warranty	Compliant	Compliant	Rated	Connector
10 YEAR	IEC 62471	CE RoHS	IP 68	5-PIN M12

PRODUCT HIGHLIGHTS

- ✓ 5-pin M12 quick connect
- ✓ Built-in driver, no external wiring needed
- ✓ PNP and NPN trigger signal input
- ✓ Washdown light with 316 stainless-steel enclosure
- ✓ Daisy-chain up to six LW300 linear lights using a 5-pin M12 washdown jumper cable

Rev. 2020/06/04

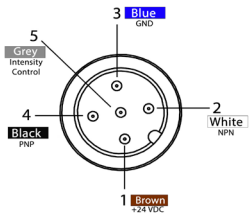
PRODUCT DESCRIPTION

The LW300 series features a 100% waterproof stainless-steel enclosure specially designed for food industry and washdown environments where water and harsh detergents are present. The LW300 features an integrated constant-current driver built into the light and runs in continuous operation mode. NPN or PNP trigger signals can be used to control the on/off input of the light. Intensity of the light can be controlled via 1–10VDC analog signal line or the manual potentiometer. Daisy-chain up to six LW300 lights together.

PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/−5%
Input Current	Max. 700 mA
Wattage	Max. 17 W
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)
Potentiometer	270° turn pot—Intensity control of 10%–100%. Turn clockwise to increase intensity.
Analog Intensity	Brightness output adjustable from 10%–100% via a 1–10VDC signal
Connection	5-pin M12 connector
Ambient Temperature	-18°–40°C(0°–104°F)
IP Rating	IP68
Weight	~1430 g
Compliances	CE, RoHS, IEC 62471
Warranty	UV LEDs have a 2 year warranty, all other LEDs have a 10 year warranty. For complete warranty information, visit smartvisionlights.com/warranty.

WIRING CONFIGURATION



Pin layout for light (Male Connector)

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: Tie PNP (pin 4) to +24VDC (pin 1) **or** tie NPN (pin 2) to ground (pin 3).*

OPTIONAL

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

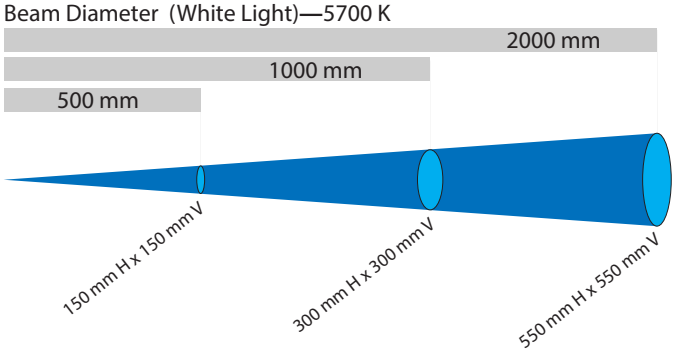
RESOURCE CORNER

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

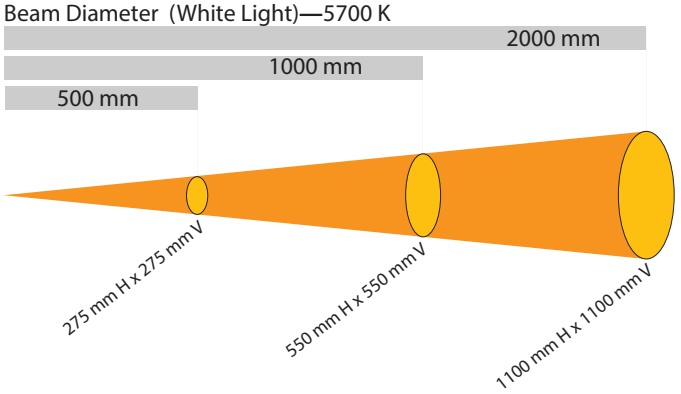
LIGHT PATTERNS

Smart Vision Lights recommends the LW300 be used at a working distance between 300 mm and 4000 mm.

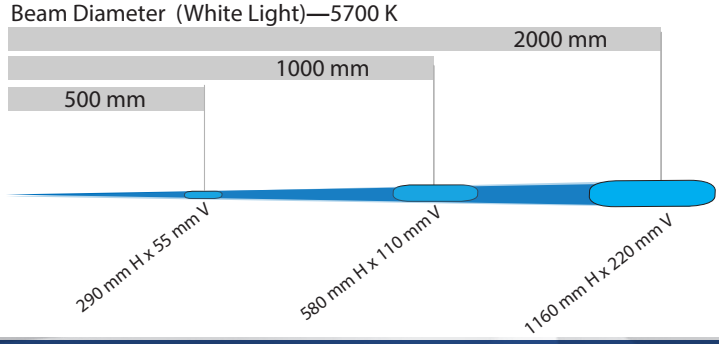
Beam Diameter (White Light)—5700 K



Beam Diameter (White Light)—5700 K



Beam Diameter (White Light)—5700 K



LIGHTING PATTERN FOR THE LW300 **with Narrow (Standard) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	150 mm (~5.9") H x 150 mm (~5.9") V
1000 mm (39.4")	300 mm (~11.8") H x 300 mm (~11.8") V
2000 mm (78.8")	550 mm (~21.6") H x 550 mm (~21.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	11,000
Illuminance measurement taken on White Lights—5700K	

LIGHTING PATTERN FOR THE LW300 **with Wide (W) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	275 mm (~10.8") H x 275 mm (~10.8") V
1000 mm (39.4")	550 mm (~21.6") H x 550 mm (~21.6") V
2000 mm (78.8")	1100 mm (~43") H x 1100 mm (~43") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	8000
Illuminance measurement taken on White Lights)—5700K	

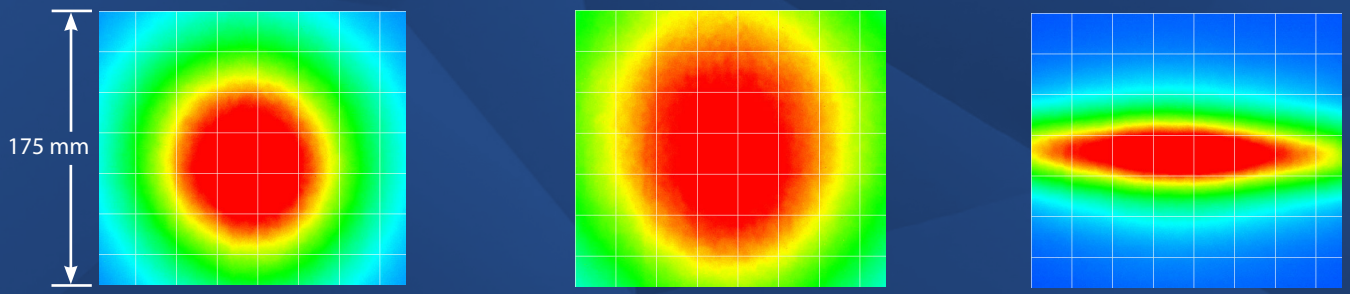
LIGHTING PATTERN FOR THE LW300 **with Line (L) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	290 mm (~12.2") H x 55 mm (~2.1") V
1000 mm (39.4")	580 mm (~24.4") H x 110 mm (~4.3") V
2000 mm (78.8")	1160 mm (~48.8") H x 220 mm (~8.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	19,000
Illuminance measurement taken on White Lights — 5700K	

The LW300 Linear Light produces a uniform light pattern.

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

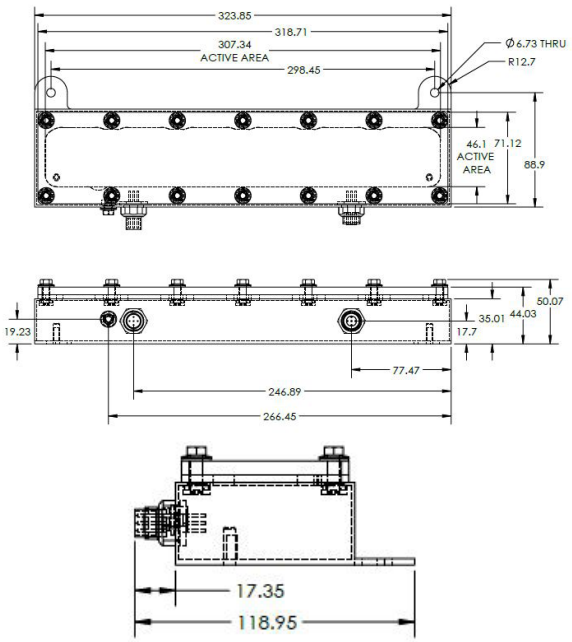


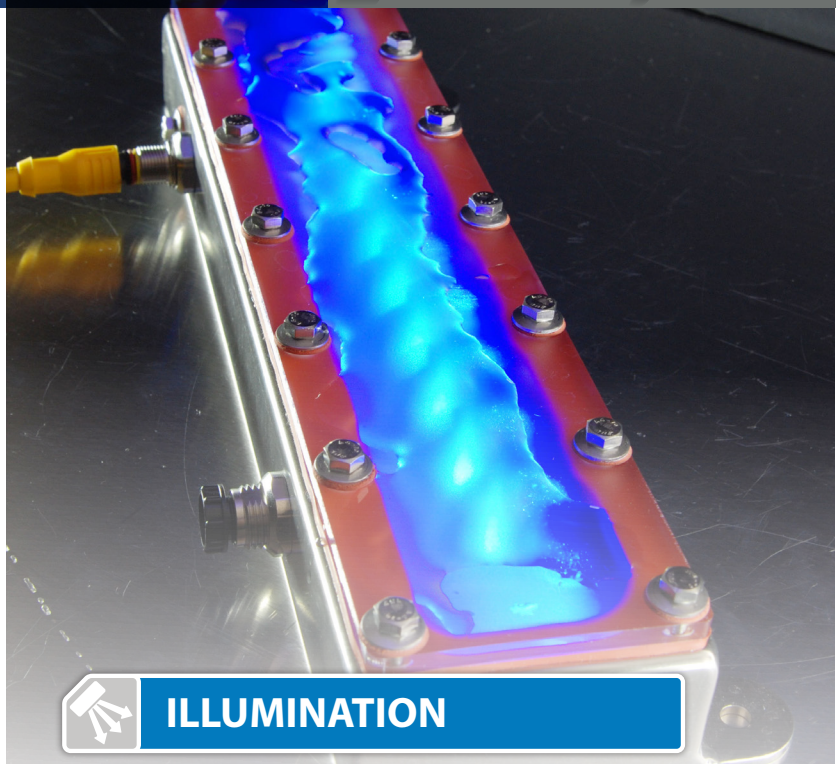
DAISY-CHAIN LIGHTS

LW300 series of lights require the use of a 5-pin M12 jumper cable to effectively parallel up to six LW300 lights.

PRODUCT DRAWING

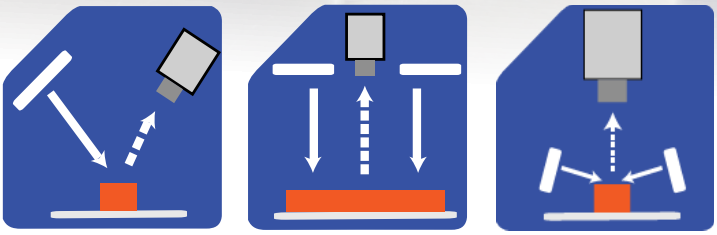
CAD files available on our website.
Dimensions are in mm.





ILLUMINATION

LW300 Series of Linear Lights works best for:



Bright Field | Direct Lighting | Dark Field

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 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 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

LW300– □□□□ – □ – □□□

COLOR:

WHI | 365 395 | 470 | 505 | 530 | 625 | 850 940

LENS:

Leave blank for Standard (Narrow)

W = Wide

L = Line

LINEAR POLARIZER:

Leave blank for none

LPI = Factory Installed

Part Number Examples:

LW300-625	LW300, 625 nm Red Wavelength, Standard (Narrow) Lens
LW300-WHI-L	LW300, White, Line Lens
LW300-470-W-LPI	LW300, 470 nm Blue Wavelength, Wide Lens, with Linear Polarizer Installed

SWIR SHORTWAVE INFRARED

This light is available in our SWIR LEDs.

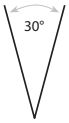
1050 nm | 1200 nm | 1300 nm | 1450 nm | 1550 nm

Line lens optic not available for UV wavelengths.
Additional wavelengths and lens options available upon request.

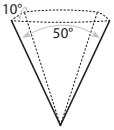
STANDARD LENS OPTICS

NARROW(STANDARD)
Narrow, 14° angle-cone lenses are standard. Standard lenses create a narrow beam of illumination and are used for long working distances.

WIDE
Wide, 30° angle-cone lenses create a large area of illumination. They create a floodlight effect, can be used for short working distances.



LINE
Line, with a 10° width and a 50° fan angle projects a thin, narrow beam of illumination.



** Additional lens options available upon request.*

MOUNTING

The LW300 Series features two stainless-steel tabs welded directly to the housing for simple yet versatile mounting options.

When to Use a Linear Polarizers?

Polarizing filters can reduce reflections on specular (Dielectric or non-metal) surfaces.

A Linear Polarizer has a typical transmission of 38 percent while blocking 62 percent of the light not in the polarization plane.

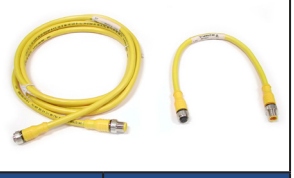
WARNING: Running a light in continuous operation while using a standard polarizer with certain wavelengths (ex. white, blue) may result in burning of the polarizer.

ACCESSORIES

Power Cables (Washdown)

Length	Part Number
5 m	W5PM12-5
10 m	W5PM12-10
15 m	W5PM12-15

Jumper Cables (Daisy-Chain,Washdown)



Length	Part Number
300 mm	W5PM12-J300
2000 mm	W5PM12-J2000

Washdown cables have a 316 stainless-steel connector(s).

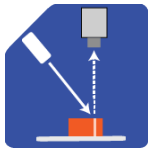
GLOSSARY

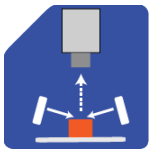
This glossary covers all Smart Vision Lights product families; some content in this section may not apply to this specific light.

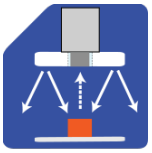
TERMINOLOGY

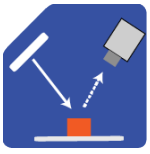
OverDrive™ Lights include an integrated high-pulse driver for complete LED light control.
Continuous Operation Lights stay on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built In Driver The built-in driver allows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

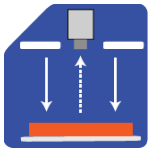
TYPES OF ILLUMINATIONS

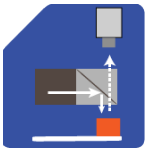

Projector

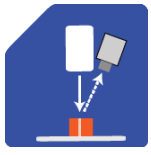

Dark Field

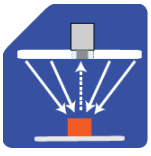

Radial

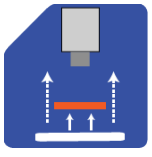

Bright Field


Direct


Axial

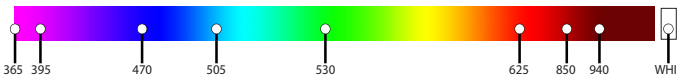

Line


Diffuse Panel


Backlight

COLOR/WAVELENGTHS LEGEND

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



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

SWIR SHORT WAVE **INFRARED**

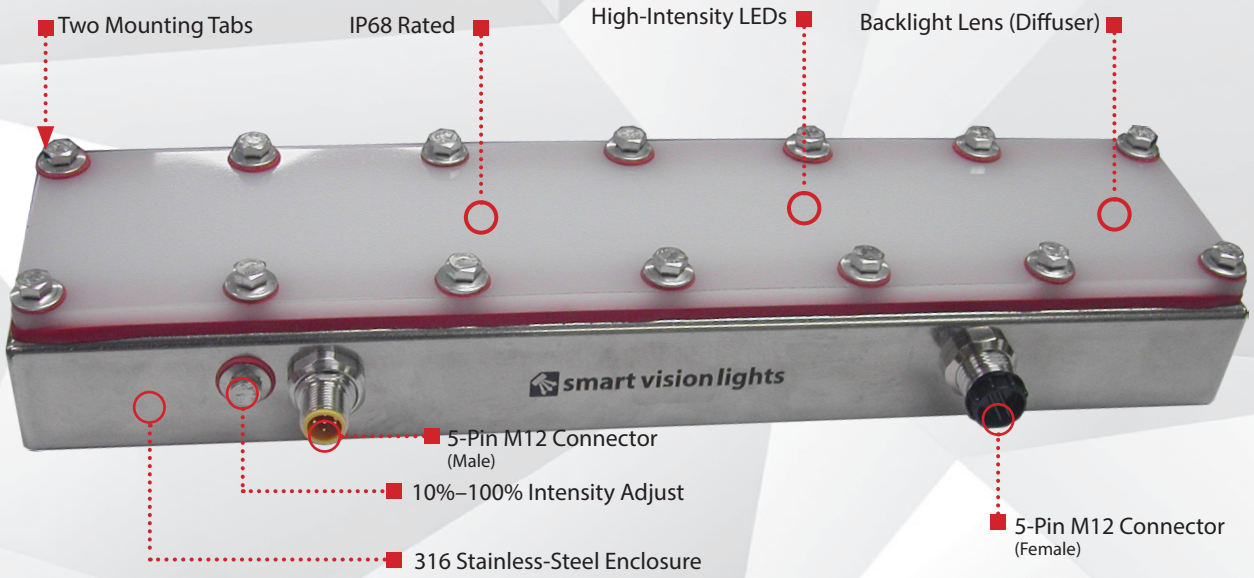
Shortwave infrared LEDs are available in 1050 nm, 1200 nm, 1300 nm, 1450 nm, and 1550 nm.
*Check Part Number section to see if **this light** is available in SWIR wavelengths.

smart vision lights LWB300 *Connect-a-Light*

LINEAR LIGHT

WASHDOWN | BACKLIGHT

PRODUCT DATA SHEET



Warranty	Compliant	Compliant	Rated	Connector
10 YEAR	IEC 62471	CE RoHS	IP 68	5-PIN M12

PRODUCT HIGHLIGHTS

- ✓ 5-pin M12 quick connect
- ✓ Built-in driver, no external wiring needed
- ✓ PNP and NPN trigger input signal
- ✓ Washdown light with 316 stainless-steel enclosure
- ✓ Daisy-chain up to six LWB300 linear lights using a 5-pin M12 washdown jumber cable

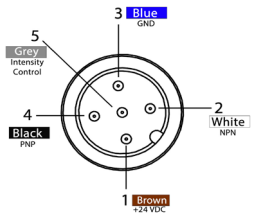
PRODUCT DESCRIPTION

The LWB300 series features a 100% waterproof stainless-steel enclosure specially designed for food industry and washdown environments where water and harsh detergents are present. The LWB300 features an integrated constant-current driver built into the light and runs in continuous operation. NPN or PNP trigger signal input can be used to control the turning on/off input of the light. Intensity of the light can be controlled via a 1–10VDC remote analog signal line or manual potentiometer. Daisy-chain up to six LWB300 together.

PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/–5%
Input Current	Max. 700 mA
Wattage	Max. 17 W
On/Off Input	PNP: +4VDC 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)
Potentiometer	270º turn pot — Intensity control of 10%–100%. Turn clockwise to increase intensity.
Analog Intensity	Brightness output is adjustable from 10%–100% via a 1–10VDC signal. (Jumpering pin 5 to pin 1 will provide maximum intensity.)
Connection	5-pin M12 connector
Ambient Temperature	-18º–40ºC (0º–104ºF)
IP Rating	IP68
Weight	~1430 g
Compliances	CE, RoHS, IEC 62471
Warranty	10 years. For complete warranty information, visit smartvisionlights.com/warranty.

WIRING CONFIGURATION



Pin layout for light (Male Connector)

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*

OPTIONAL

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

** 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)*

RESOURCE CORNER

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

PART NUMBER

LWB300 – □□□

COLOR:

WHI | 470 | 505 | 530 | 625 | 850 940

Part Number Example:

LWB300-625 LWB300, 625 Red Wavelength

SWIR SHORTWAVE **INFRARED**

This light is available in our SWIR LEDs.

1050 nm | 1200 nm | 1300 nm | 1450 nm | 1550 nm

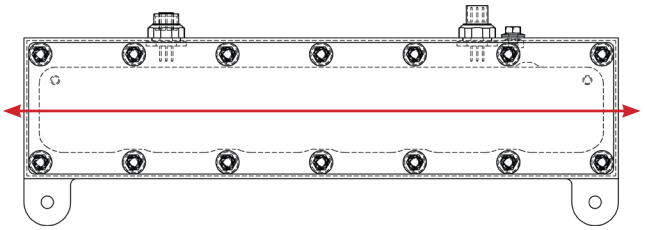
Additional wavelengths available upon request.

OPTICAL PERFORMANCE

The LWB300 offers a very diffuse light pattern.

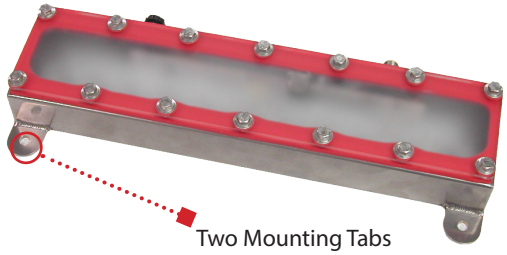
OPICTAL PERFORMANCE FOR THE LWB300

Rating	Illumination (Lux)
Average Intensity Rating	42,000
Illuminance measurement taken at surface of LWB300	



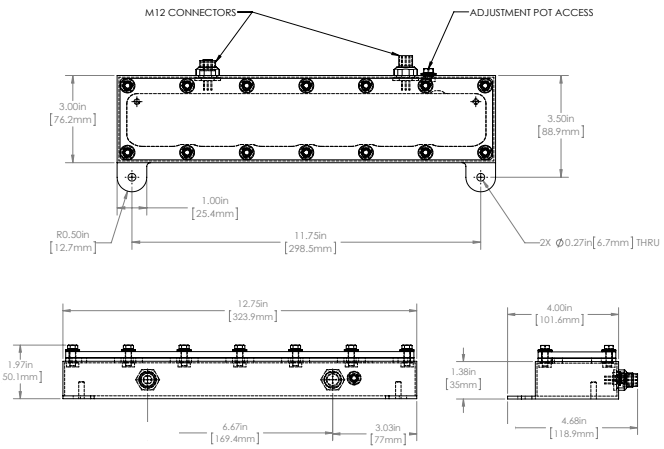
MOUNTING

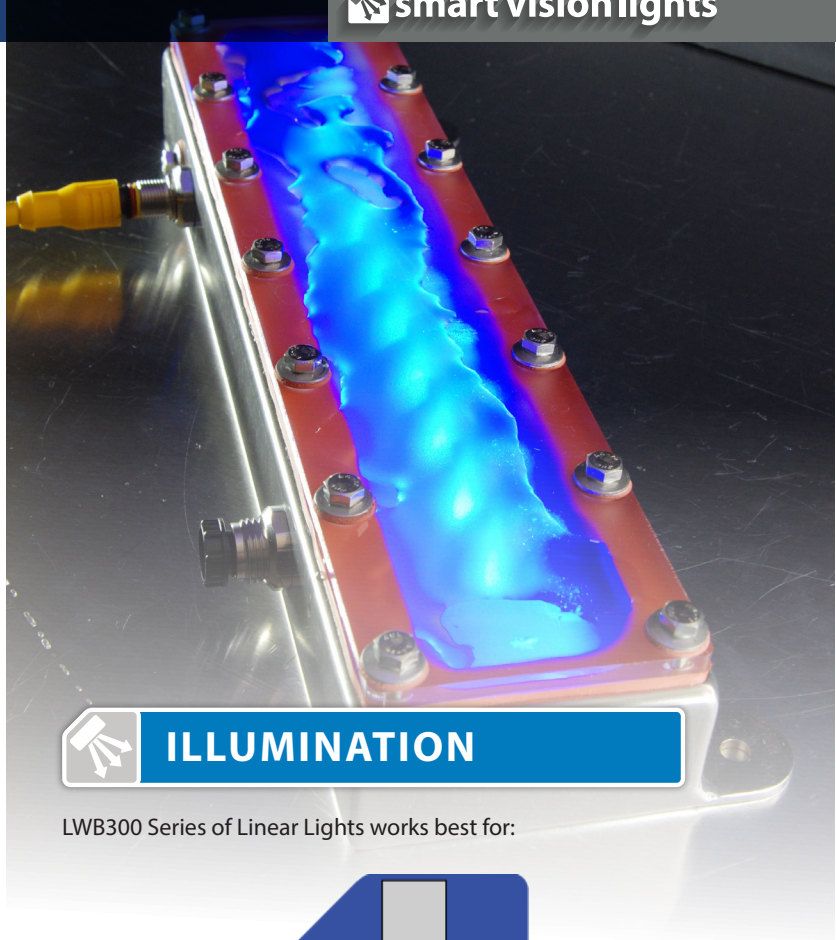
The LWB300 Series features two stainless-steel tabs welded directly to the housing for simple yet versatile mounting options.



PRODUCT DRAWING

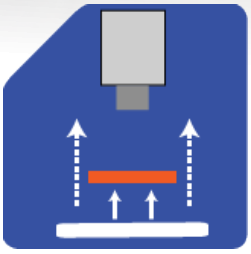
CAD files available on our website.
Dimensions are in mm.





ILLUMINATION

LWB300 Series of Linear Lights 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 prolonged exposure. Applicable for wavelengths 470, 505, 530, and WHI.

ACCESSORIES

Power Cables (Wash-down)

Length	Part Number
10 m	W5PM12-10
15 m	W5PM12-15

Jumper Cables (Daisy-Chain) (Washdown)

Length	Part Number
300 mm	W5PM12-J300
2000 mm	W5PM12-J2000
2 m	W5PM12-J2000

Washdown cables have a 316 Stainless-steel connector(s).

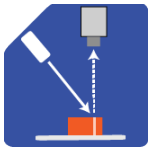
GLOSSARY

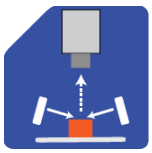
This glossary covers all Smart Vision Lights product families; some content in this section may not apply to this specific light.

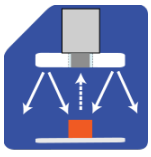
TERMINOLOGY

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 for an external controller.
Camera to Light Connect the light directly to the camera, without the need for additional controllers or equipment.
Polarizers Filters that reduce reflections on specular surfaces.
Diffuser Used to widen the angle of light emission, reduce reflections, and increase uniformity.

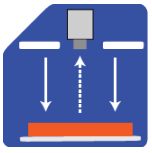
TYPES OF ILLUMINATION

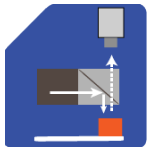

Projector

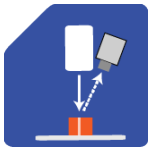

Dark Field

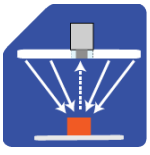

Radial

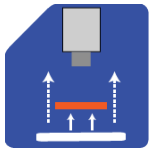

Bright Field


Direct


Axial

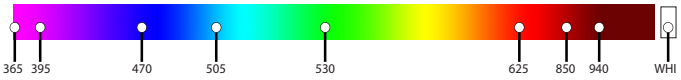

Line


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.*

SWIR SHORTWAVE **INFRARED**

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

LWE150 *Mini-Light* LINEAR LIGHT WASHDOWN

PRODUCT DATA SHEET

multi drive™

Warranty	Compliant	Compliant	Rated	Connector
10 YEAR	IEC 62471	CE RoHS	IP 68	5-PIN M12

PRODUCT HIGHLIGHTS

- ✓ Built-in Multi-Drive™ allows the light to work in continuous operation or OverDrive™ strobe mode
- ✓ SafeStrobe™ technology ensures protected operation of LEDs
- ✓ Washdown light with 316 stainless-steel enclosure
- ✓ 5-pin M12 quick connect
- ✓ Built-in driver
- ✓ PNP and NPN trigger signal input

PRODUCT DESCRIPTION

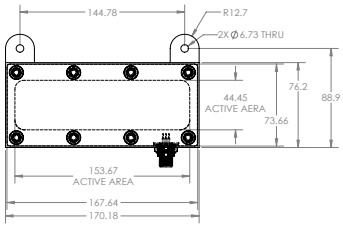
The LWE150 features a stainless-steel enclosure specially designed for food industry and washdown environments where water and harsh detergents are present. The LWE150 has an integrated Multi-Drive™ constant-current driver that operates continuous operation or in OverDrive™ strobe mode, depending on wiring configuration. 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.

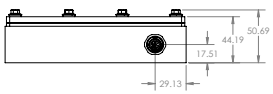
PRODUCT SPECIFICATIONS

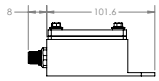
	CONTINUOUS OPERATION	OVERDRIVE™ OPERATION
Electrical Input	24VDC +/- 5%	
Input Current	Max. 412 mA	Max. 2.80 A
Wattage	Max. 10 W	Max. 68 W
PNP Line	4 mA @ 4VDC | 10 mA @ 12VDC | 20 mA @24VDC	
NPN Line	15 mA @ Common (0 VDC)	
OverDrive™ Mode	**Not applicable**	Connect pin 5 to GND (see Wiring Configuration 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	0º–40ºC (32º–104ºF)	
IP Rating	IP68	
Weight	760 g	
Compliances	CE, RoHS, IEC 62471	

PRODUCT DRAWING

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





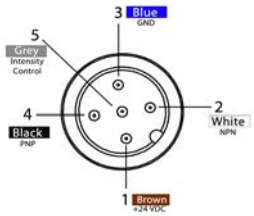


RESOURCE CORNER

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)

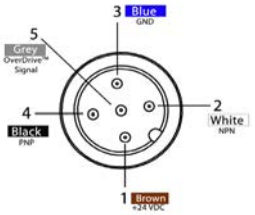
Pins	Function	Signal	Wire Color
1	Power In	+24VDC	BROWN
2	NPN	Sinking Signal	WHITE
3	GND	Ground	BLUE
4	PNP	Sourcing Signal	BLACK
5	Intensity Control	1-10VDC**	GREY*

** 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 +24VDC (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 requirement.)

OVERDRIVE™ STROBE MODE



Pin layout for light (male connector)

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	OverDrive™ Signal	Ground	GREY*

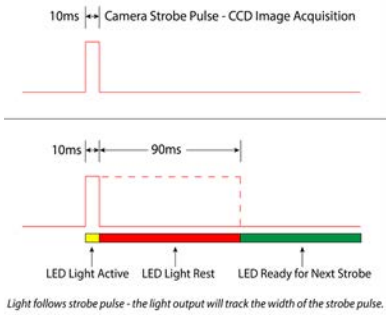
** Some cables use green/yellow for pin 5*

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

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 (strobes per second)
ST = Strobe Time (seconds)
D = Duty Cycle

Example

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

Strobe Rate is 1000 strobes per second

Calculating Duty Cycle

$$D = ST \times SR$$

SR = Strobe Rate (strobes 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™

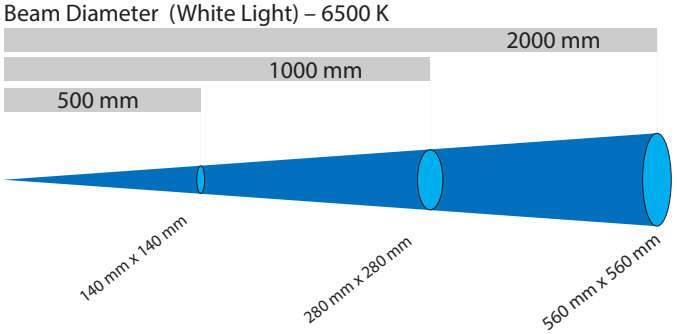
Multi-Drive™ offers the best of both worlds. Continuous operation and OverDrive™ mode (HIGH output strobe/pulse) are available in a single light. Other advantages of Multi-Drive™ include faster imaging and capture/freeze motion on high-speed lines.

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™ strobe mode has **up to eight times** the power of continuous operation.

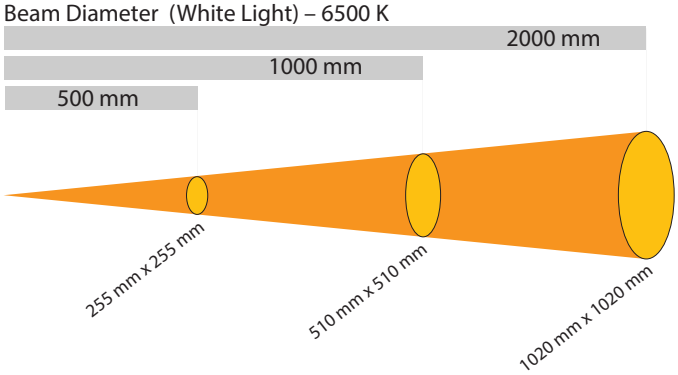
LIGHT PATTERNS

Smart Vision Lights recommends the LWE150 be used at a working distance between 300 mm and 4000 mm.

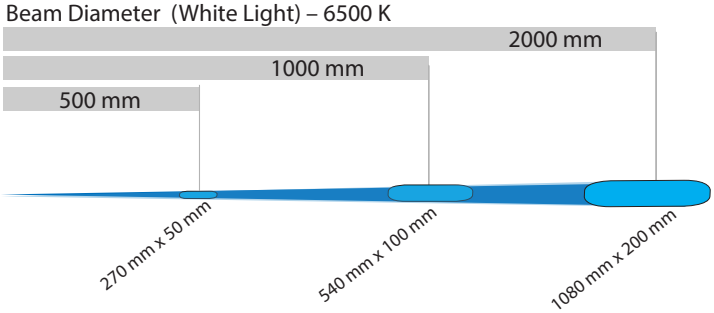
Beam Diameter (White Light) – 6500 K



Beam Diameter (White Light) – 6500 K



Beam Diameter (White Light) – 6500 K



LIGHTING PATTERN FOR THE LWE150 **with Narrow (Standard) Lenses**

Working Distance	Pattern (80% - 100% measured intensity) (H = Horizontal, V = Vertical)
500 mm (19.7")	140 mm (~5.5") H x 140 mm (~5.5") V
1000 mm (39.4")	280 mm (~11") H x 280 mm (~11") V
2000 mm (78.8")	560 mm (~22") H x 560 mm (~22") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	6600
Illuminance measurement taken on White Lights, 5700 K	

LIGHTING PATTERN FOR THE LWE150 **with Wide (W) Lenses**

Working Distance	Pattern (80% - 100% measured intensity) (H = Horizontal, V = Vertical)
500 mm (19.7")	255 mm (~10") H x 255 mm (~10") V
1000 mm (39.4")	510 mm (~20") H x 510 mm (~20") V
2000 mm (78.8")	1020 mm (~40") H x 1020 mm (~40") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	4800
Illuminance measurement taken on White Lights, 5700 K	

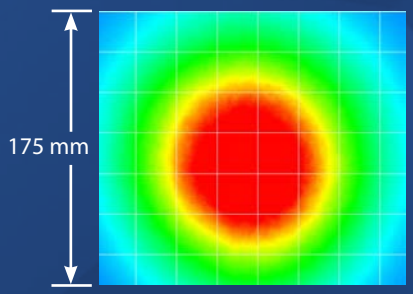
LIGHTING PATTERN FOR THE LWE150 **with Line (L) Lenses**

Working Distance	Pattern (80% - 100% measured intensity) (H = Horizontal, V = Vertical)
500 mm (19.7")	270 mm (~10.6") H x 50 mm (~2") V
1000 mm (39.4")	540 mm (~21.3") H x 100 mm (~4") V
2000 mm (78.8")	1080 mm (~42.6") H x 200 mm (~8") V

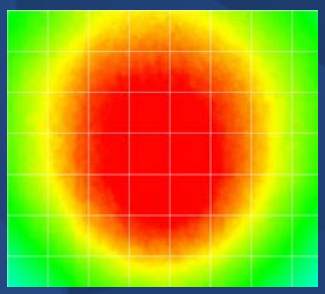
Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	11,400
Illuminance measurement taken on White Lights, 5700 K	

The LWE150 Linear Light produces a uniform light pattern.

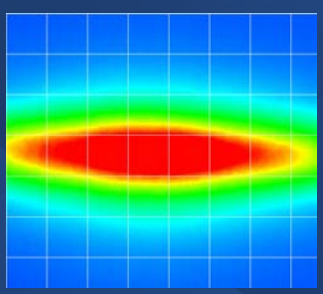
Working Distance = 500 mm Grid set to 25 mm x 25 mm



Narrow



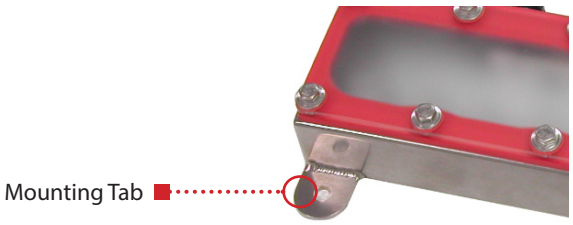
Wide

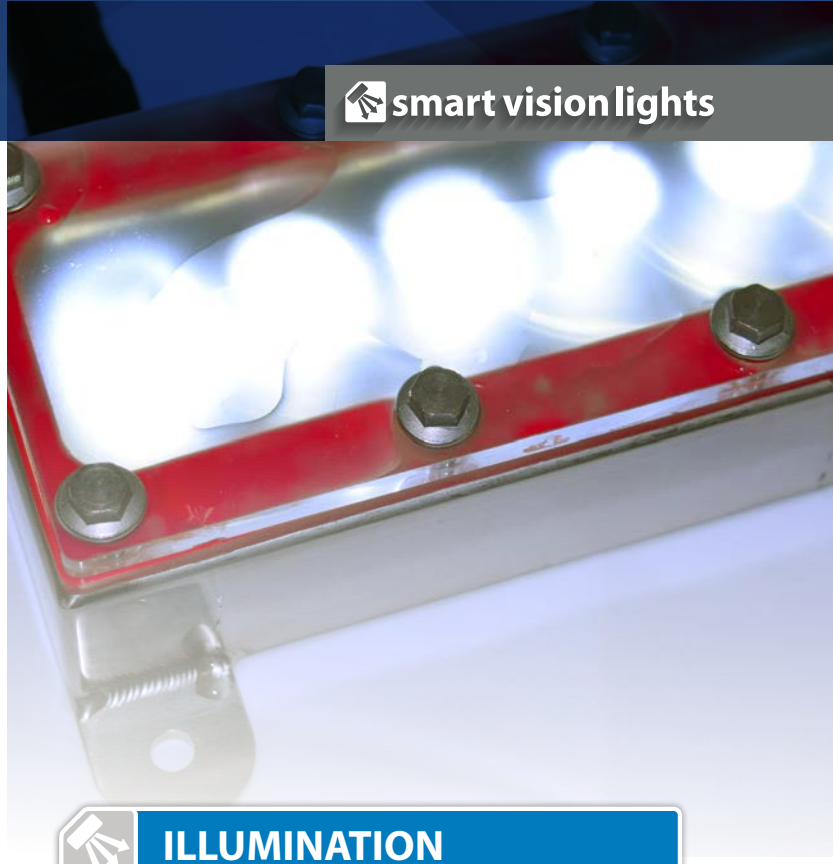


Line

MOUNTING

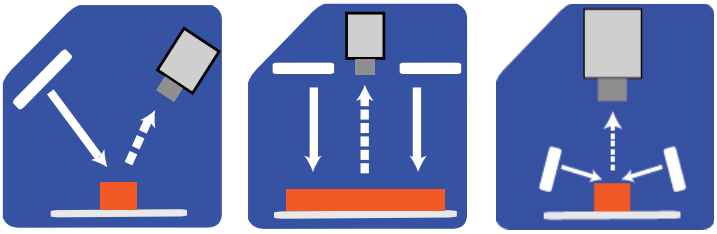
The LWE150 features 2 stainless-steel tabs welded directly to the housing for simple yet versatile mounting options.





ILLUMINATION

LWE150 Series of linear lights works best for:



Bright Field | Direct Lighting | Dark Field

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 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

LWE150 – □□□ – □ – □□□

COLOR:

WHI | 365 395 | 470 | 505 | 530 | 625 | 850 940

LENS:

Leave blank for standard (narrow)

W = Wide

L = Line

LINEAR POLARIZER:

Leave blank for none

LPI = Factory Installed

Part Number Examples:

LWE150-625	LWE150, 625 nm Red Wavelength, Standard (Narrow) Lenses
LWE150-WHI-L	LWE150, White, Line Lenses
LWE150-470-W-LPI	LWE150, 470 nm Blue Wavelength, Wide Lenses, with Linear Polarizer installed

SWIR SHORT WAVE INFRARED

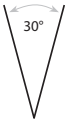
This light is available in our SWIR LEDs
(1050 nm, 1200 nm, 1300 nm, 1450 nm, 1550 nm)

** Line lens optic not available for UV wavelengths.*
Additional wavelengths and lens options available upon request.

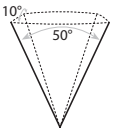
STANDARD LENS OPTICS

NARROW
Narrow lenses are standard.
Narrow 14° angle cone lenses are standard. Standard lenses create a narrow beam of illumination and are used for long working distances.

WIDE
Wide 30° angle cone lenses create a large area of illumination. They create a floodlight effect, can be used for short working distances.



LINE
Line, with a 10° width and a 50° fan angle, projects a thin, narrow beam of illumination.



** Additional lens options available upon request.*

SAFESTROBE™ TECHNOLOGY

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

When to Use a Linear Polarizer?

Polarizing filters can reduce reflections on specular (Dielectric or non-metal) surfaces.

A linear polarizer has a typical transmission of 38% while blocking 62% of the light not in the polarization plane.

WARNING: Running a light in continuous operation while using a standard polarizer with certain wavelengths (ex. white, blue) may result in burning of the polarizer.

ACCESSORIES

Power Cables

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

Jumper Cables (Daisy Chain)

Lengths	Part Number
300 mm	5PM12-J300
1000 mm	5PM12-J1000
2000 mm	5PM12-J2000

Power Cables (Washdown)

Lengths	Part Number
15 m	W5PM12-15

Jumper Cables (Daisy Chain) (Washdown)

Lengths	Part Number
300 mm	W5PM12-J300
2000 mm	W5PM12-J2000

Washdown cables have a 316 stainless-steel connector(s).

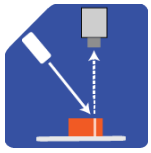
GLOSSARY

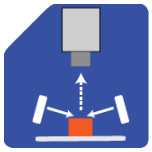
This glossary covers all Smart Vision Lights product families; some content in this section may not apply to this specific light.

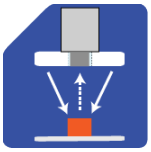
TERMINOLOGY

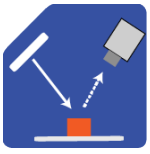
OverDrive™ Light includes an integrated high-current strobe driver for complete LED light control.
Continuous Operation Light stays on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-current strobe operation) modes into one easy-to-use light.
Built-In Driver The built-in driver allows full function without the need of an external driver.
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.

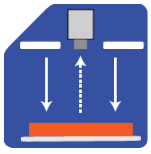
TYPES OF ILLUMINATIONS

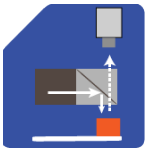

Projector

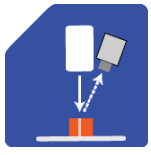

Dark Field

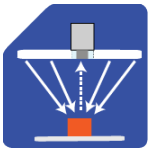

Radial

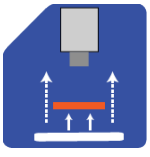

Bright Field


Direct


Axial

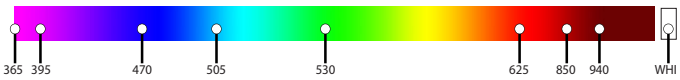

Line


Diffuse Panel


Backlight

COLOR/WAVELENGTHS LEGEND

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



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

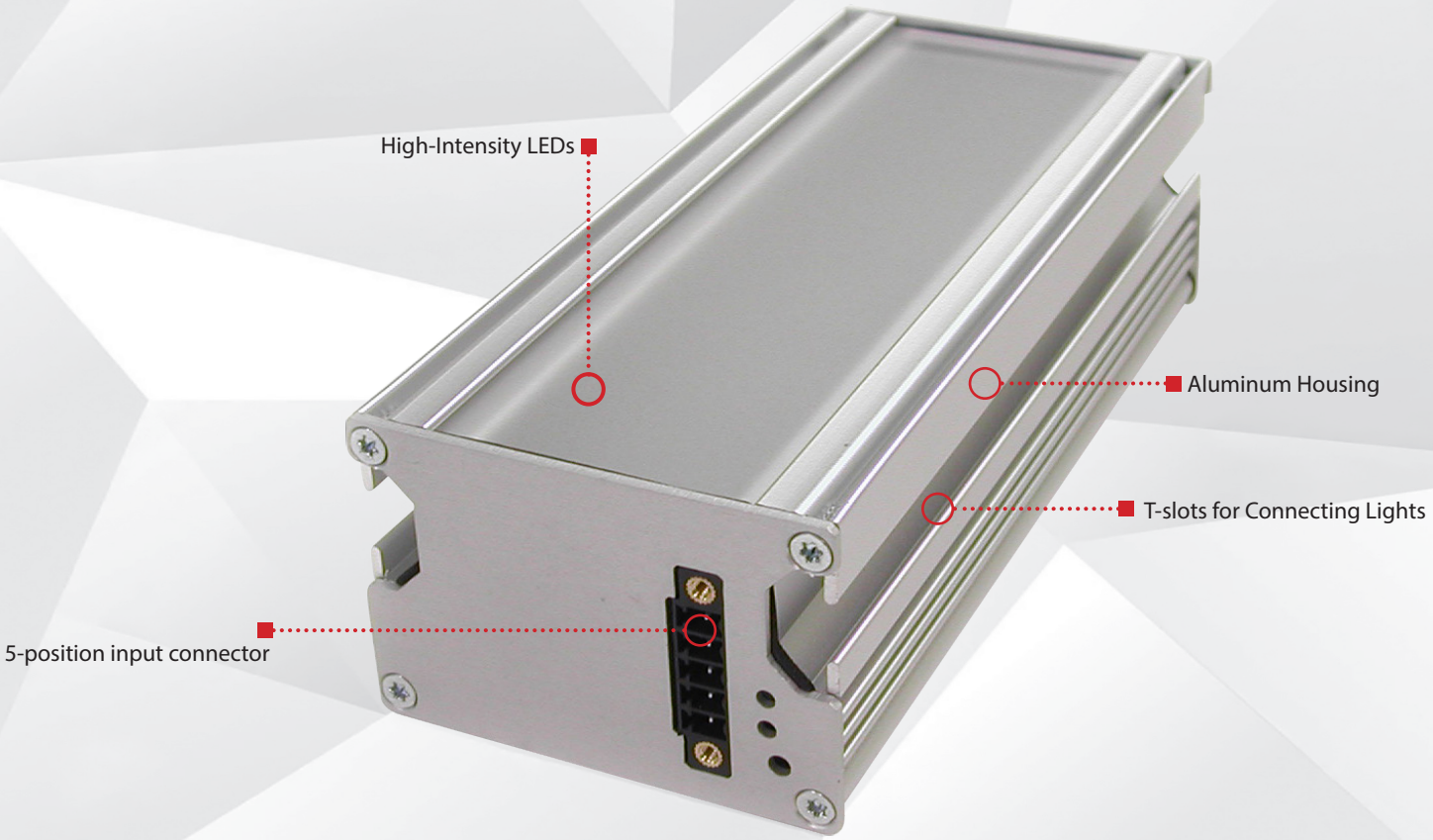
SWIR SHORT WAVE **INFRARED**

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

LX150 *Direct Connect* LINEAR LIGHT

PRODUCT DATA SHEET



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

PRODUCT HIGHLIGHTS

- ✓ Built-in driver, no external wiring needed
- ✓ PNP and NPN strobe input
- ✓ T-slot for mounting and connecting together
- ✓ Direct connect up to 16 units

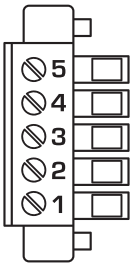
PRODUCT DESCRIPTION

The modular design of the LX150 linear light, part of the Direct Connect Linear Light Series, offers integrated light-to-light connectors, eliminating the need for cable connectors to string lights together. The light operates in continuous operation. This innovative design requires power connection to the first light but eliminates the need for jumper cables to pass power through to the next, enabling tailored-length solutions in increments of 150 mm. Direct connect up to sixteen LX150 together. Compatible with the LX300.

PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/- 5%
Input Current	Max. 700 mA
Wattage	Max. 17 W
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)
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%–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	IP50
Weight	~285g
Compliances	CE, RoHS, IEC 62471
Warranty	UV LEDs have a 2 year warranty, all other LEDs have a 10 year warranty. For complete warranty information, visit smartvisionlights.com/warranty.

WIRING CONFIGURATION



Pin layout for light (Male Connector)

Pins	Function	Signal	Wire Color
5	GND	Ground	BLUE
4	PNP	4VDC to 30VDC for active on	BLACK
3	Intensity Control	1–10VDC	GREY*
2	NPN Strobe	GND for active ON	WHITE
1	Power	+24VDC	BROWN

OPTIONAL

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

** 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 +24VDC (pin 1) **or** NPN (pin 2) can be tied to Ground (pin 3).*

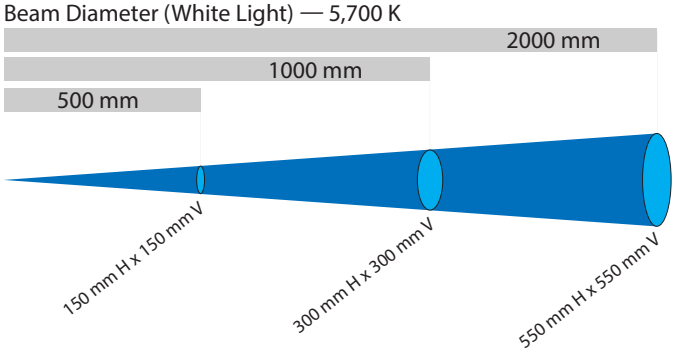
RESOURCE CORNER

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

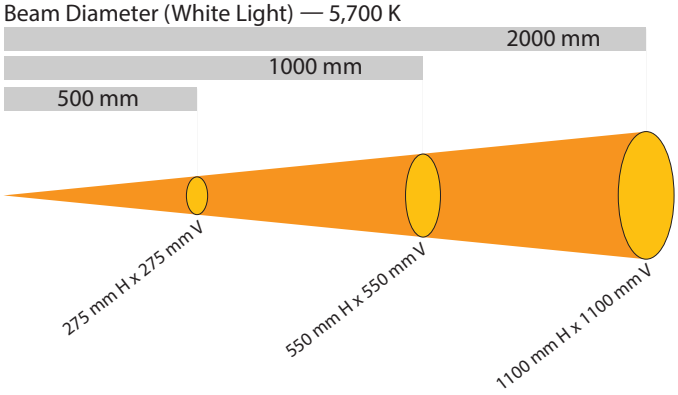
LIGHT PATTERNS

Smart Vision Lights recommends the LX150 be used at a working distance between 300 mm to 4000 mm.

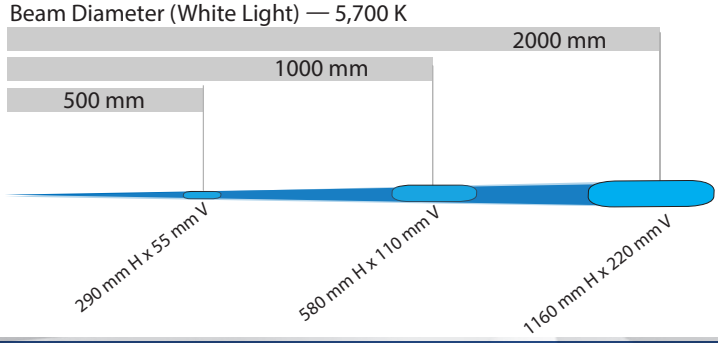
Beam Diameter (White Light) — 5,700 K



Beam Diameter (White Light) — 5,700 K



Beam Diameter (White Light) — 5,700 K



LIGHTING PATTERN FOR THE LX150 **with Narrow (Standard) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	150 mm (~5.9") H x 150 mm (~5.9") V
1000 mm (39.4")	300 mm (~11.8") H x 300 mm (~11.8") V
2000 mm (78.8")	550 mm (~21.6") H x 550 mm (~21.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	11,000
Illuminance measurement taken on White Lights — 5,700 K	

LIGHTING PATTERN FOR THE LX150 **with Wide (W) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	275 mm (~10.8") H x 275 mm (~10.8") V
1000 mm (39.4")	550 mm (~21.6") H x 550 mm (~21.6") V
2000 mm (78.8")	1100 mm (~43") H x 1100 mm (~43") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	8,000
Illuminance measurement taken on White Lights — 5,700 K	

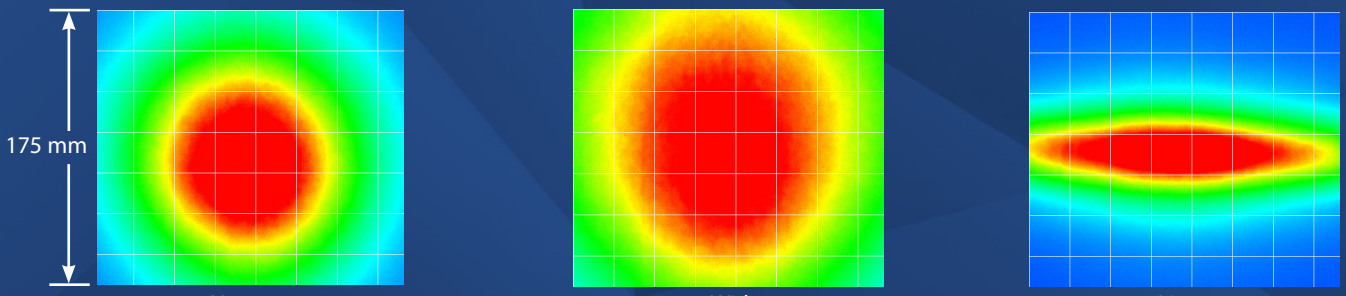
LIGHTING PATTERN FOR THE LX150 **with Line (L) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	290 mm (~12.2") H x 55 mm (~2.1") V
1000 mm (39.4")	580 mm (~24.4") H x 110 mm (~4.3") V
2000 mm (78.8")	1160 mm (~48.8") H x 220 mm (~8.6") V

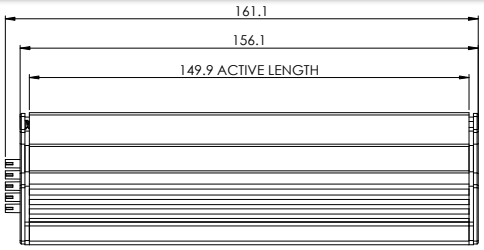
Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	19,000
Illuminance measurement taken on White Lights — 5,700 K	

The LX150 Linear Light produces a uniform light pattern.

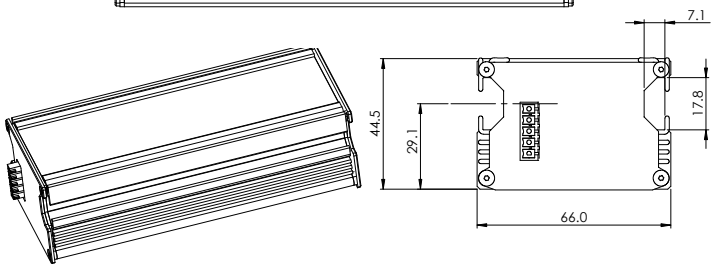
Working Distance = 500 mm Grid set to 25 mm x 25 mm



PRODUCT DRAWING

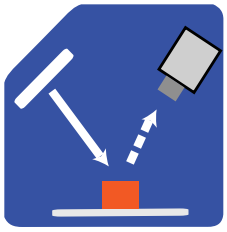


CAD files available on our website. Dimensions are in mm.

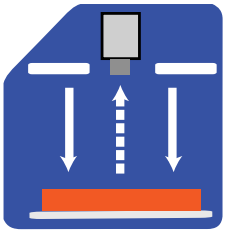


ILLUMINATION

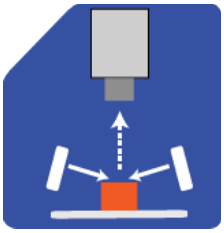
LX150 Series of Linear Lights works best for:



Bright Field



Direct Lighting



Dark Field

DAISY-CHAIN LIGHTS

LX150 Series of lights requires the use of LXJ-2DTN connectors to effectively daisy-chain lights togethers.

EYE SAFETY

According to IEC 62471

SMART VISION LIGHTS IEC 62471 COMPLIANT

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 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

LX150 – □□□ – □ – □□□

COLOR:

WHI | 365 395 | 470 | 505 | 530 | 625 | 850 940

LENS:

Leave blank for standard (narrow)

W = Wide

L = Line

LINEAR POLARIZER:

Leave blank for none

LPI = Factory Installed

Part Number Examples:

LX150-625 LX150, 625 nm Red Wavelength, Standard (Narrow) Lenses

LX150-WHI-L LX150, White, Line Lenses

LX150-470-W-LPI LX150, 470 nm Blue Wavelength, Wide Lenses, with Linear Polarizer installed

** Line lens optic not available for UV wavelengths.*
Additional wavelengths and lens options available upon request.

SWIR SHORT WAVE INFRARED

This light is available in our SWIR LEDs

1050 nm | 1200 nm | 1300 nm | 1450 nm | 1550 nm

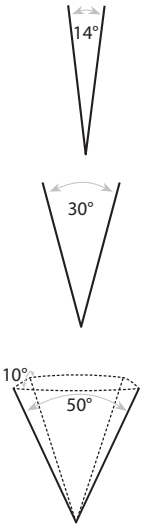
LENS OPTICS

NARROW (STANDARD)
Narrow lenses are standard.
Narrow, 14° angle-cone lenses are standard. Standard lenses projects a narrow beam of illumination and are used for long working distances.

WIDE
Wide, 30° angle-cone lenses projects a large area of illumination. They create a floodlight effect, can be used for short working distances.

LINE
Line, with a 10° width and a 50° fan angle projects a thin, narrow beam of illumination.

** Additional lens options available upon request.*



When to Use a Linear Polarizers?

Polarizing filters can reduce reflections on specular surfaces.

A Linear Polarizer has a typical transmission of 38 percent while blocking 62 percent of the light not in the polarization plane.

WARNING: Running a light in continuous operation while using a standard polarizer with certain wavelengths (e.g., white, blue) may burn the polarizer.

ACCESSORIES

Connector (Only for Direct Connect)	
	
Description	Part Number
Set of 2 Connectors	LXJ-2DTN

No Direct Connect End Cap	
	
Description	Part Number
No Direct Connect End Cap	PLT0146-CLR

Power Connector	
	
Length	Part Number
300 mm	5PM12-LXP

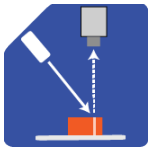
GLOSSARY

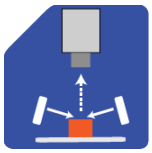
This glossary covers all Smart Vision Lights product families; some content in this section may not apply to this specific light.

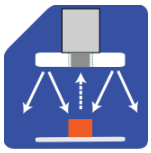
TERMINOLOGY

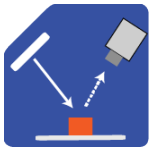
OverDrive™ Lights include an integrated high-pulse driver for complete LED light control.
Continuous Operation Lights stay on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built-In Driver The built-in driver allows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

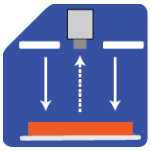
TYPES OF ILLUMINATION

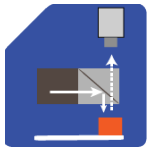

Projector

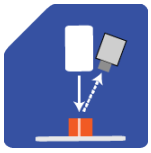

Dark Field

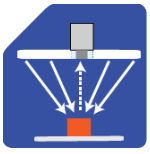

Radial

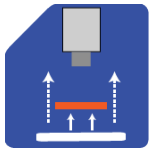

Bright Field


Direct


Axial

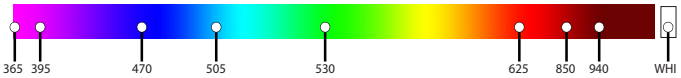

Line


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.*

SWIR SHORTWAVE **INFRARED**

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

LX300 *Direct Connect* LINEAR LIGHT

PRODUCT DATA SHEET

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

PRODUCT HIGHLIGHTS

- ✓ Built-in driver, no external wiring needed
- ✓ PNP and NPN strobe input
- ✓ T-Slot for mounting and connecting together
- ✓ Direct connect up to 16 units

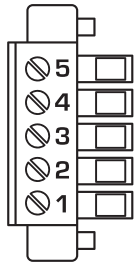
PRODUCT DESCRIPTION

The modular design of the LX300 linear light, part of the Direct Connect Linear Light Series, offers integrated light-to-light connectors, eliminating the need for cable connectors to string lights together. The light operates in continuous operation. This innovative design requires power connection to the first light but eliminates the need for jumper cables to pass power through to the next, enabling tailored-length solutions in increments of 300 mm. Direct connect up to eight LX300 together. Compatible with the LX150.

PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/- 5%
Input Current	Max. 700 mA
Wattage	Max. 17 W
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)
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	IP50
Weight	~540g
Compliances	CE, RoHS, IEC 62471

WIRING CONFIGURATION



Pin layout for light (Male Connector)

Pins	Function	Signal	Wire Color
5	GND	Ground	BLUE
4	PNP	4VDC to 30VDC for active on	BLACK
3	Intensity Control	1-10VDC	GREY*
2	NPN Strobe	GND for active ON	WHITE
1	Power	+24VDC	BROWN

OPTIONAL

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

** 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).*

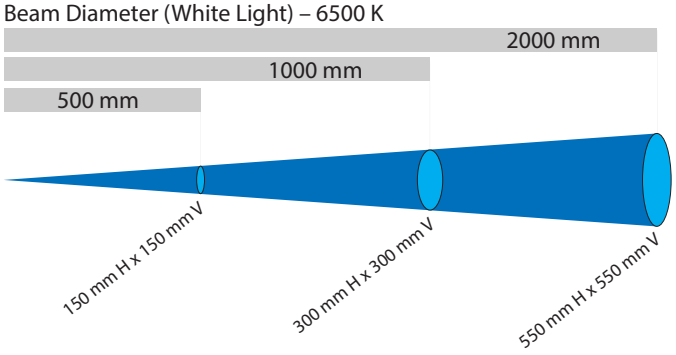
RESOURCE CORNER

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

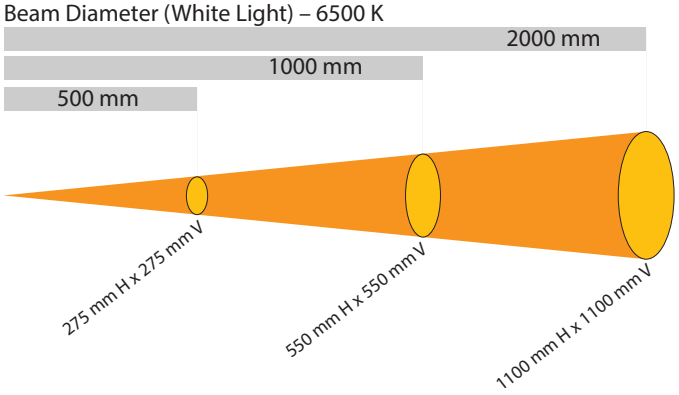
LIGHT PATTERNS

Smart Vision Lights recommends the LX300 be used at a working distance between 300 mm to 4000 mm.

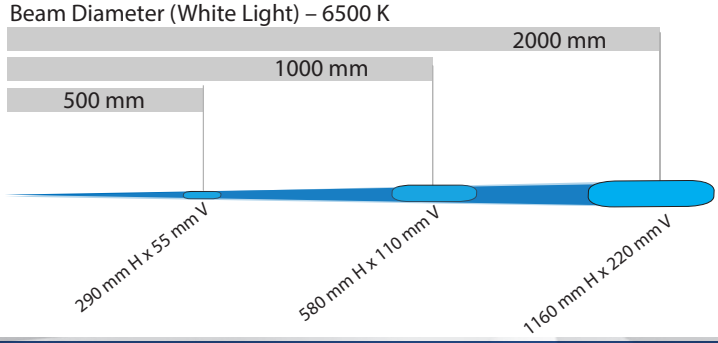
Beam Diameter (White Light) – 6500 K



Beam Diameter (White Light) – 6500 K



Beam Diameter (White Light) – 6500 K



LIGHTING PATTERN FOR THE LX300 **with Narrow (Standard) Lenses**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
500 mm (19.7")	150 mm (~5.9") H x 150 mm (~5.9") V
1000 mm (39.4")	300 mm (~11.8") H x 300 mm (~11.8") V
2000 mm (78.8")	550 mm (~21.6") H x 550 mm (~21.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	11,000
Illumination measurement taken on White Lights - 6500K	

LIGHTING PATTERN FOR THE LX300 **with Wide (W) Lenses**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
500 mm (19.7")	275 mm (~10.8") H x 275 mm (~10.8") V
1000 mm (39.4")	550 mm (~21.6") H x 550 mm (~21.6") V
2000 mm (78.8")	1100 mm (~43") H x 1100 mm (~43") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	8,000
Illumination measurement taken on White Lights - 6500K	

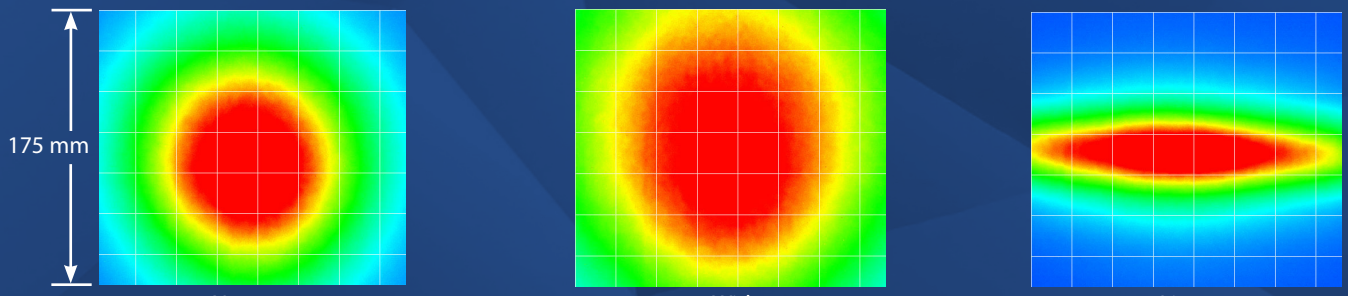
LIGHTING PATTERN FOR THE LX300 **with Line (L) Lenses**

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
500 mm (19.7")	290 mm (~12.2") H x 55 mm (~2.1") V
1000 mm (39.4")	580 mm (~24.4") H x 110 mm (~4.3") V
2000 mm (78.8")	1160 mm (~48.8") H x 220 mm (~8.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	19,000
Illumination measurement taken on White Lights - 6500K	

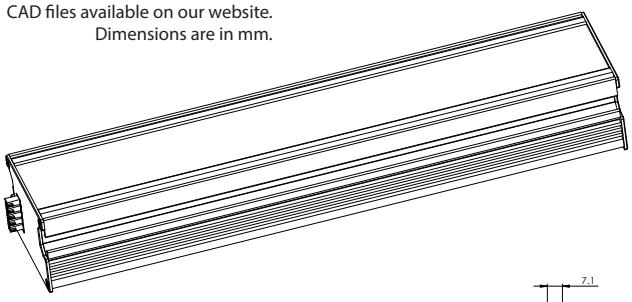
The LX300 Linear Light produces a uniform light pattern.

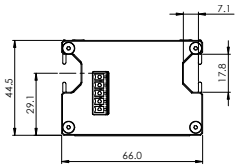
Working Distance = 500 mm Grid set to 25 mm x 25 mm

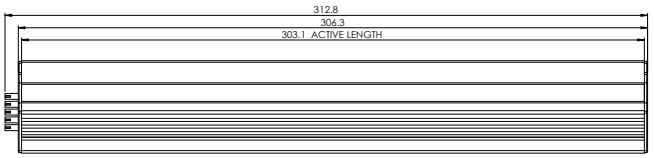


PRODUCT DRAWING

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

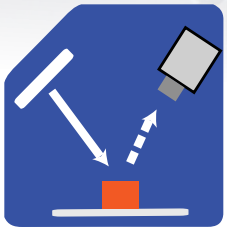




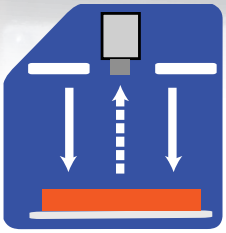


ILLUMINATION

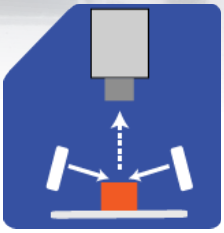
LX300 Series of Linear Lights works best for:



Bright Field



Direct Lighting



Dark Field

EYE SAFETY

SMART VISION LIGHTS IEC 62471 COMPLIANT

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

LX300 – □□□ – □ – □□□

COLOR:

WHI | 365 395 | 470 | 505 | 530 | 625 | 850 940

LENS:

Leave blank for standard (narrow)

W = Wide

L = Line

LINEAR POLARIZER:

Leave blank for none

LPI = Factory Installed

Part Number Examples:

LX300-625 LX300, 625 nm Red Wavelength, Standard (Narrow) Lenses

LX300-WHI-L LX300, White, Line Lenses

LX300-470-W-LPI LX300, 470 nm Blue Wavelength, Wide Lenses, with Linear Polarizer installed

** Line lens optic not available for UV wavelengths*

Additional wavelengths and lens options available upon request

SWIR SHORTWAVE INFRARED

This light is available in our SWIR LEDs

(1050 nm, 1200 nm, 1300 nm, 1450 nm, 1550 nm)

1050 nm | 1200 nm | 1300 nm | 1450 nm | 1550 nm

STANDARD LENS OPTICS

NARROW

Narrow lenses are standard.

Narrow, 14° angle cone lenses are standard. Standard lenses projects a narrow beam of illumination and are used for long working distances.

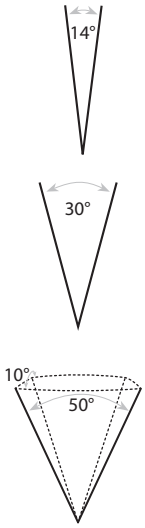
WIDE

Wide, 30° angle cone lenses projects a large area of illumination. They create a floodlight effect, can be used for short working distances.

LINE

Line, with a 10° width and a 50° fan angle projects a thin, narrow beam of illumination.

** Additional lens options available upon request.*



When to Use a Linear Polarizers?

Polarizing filters can reduce reflections on specular surfaces.

A Linear Polarizer has a typical transmission of 38% while blocking 62% of the light not in the polarization plane.

WARNING: Running a light in continuous operation while using a standard polarizer with certain wavelengths (ex. white, blue) may result in burning of the polarizer.

ACCESSORIES

Connector (Only for Direct Connect)	
	
Description	Part Number
Set of 2 Connectors	LXJ-2DTN

No Direct Connect End Cap	
	
Description	Part Number
No Direct Connect End Cap	PLT0146-CLR

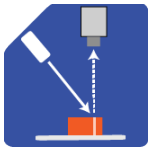
GLOSSARY

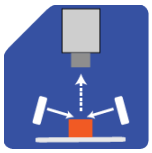
This glossary covers all Smart Vision Lights product families; some content in this section may not apply to this specific light.

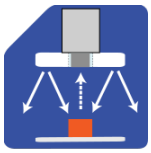
TERMINOLOGY

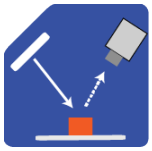
OverDrive™ Lights include an integrated high-pulse driver for complete LED light control.
Continuous Operation Lights stay on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built-in Driver The built-in driver allows 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.

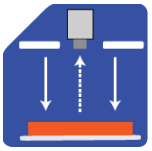
TYPES OF ILLUMINATION

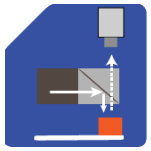

Projector

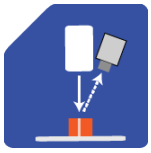

Dark Field

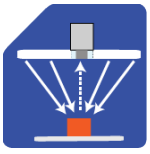

Radial

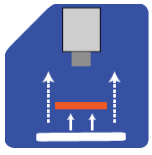

Bright Field


Direct


Axial

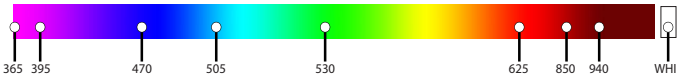

Line


Diffuse Panel


Backlight

COMMON COLOR/WAVELENGTHS LEGEND

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.*

SWIR SHORTWAVE **INFRARED**

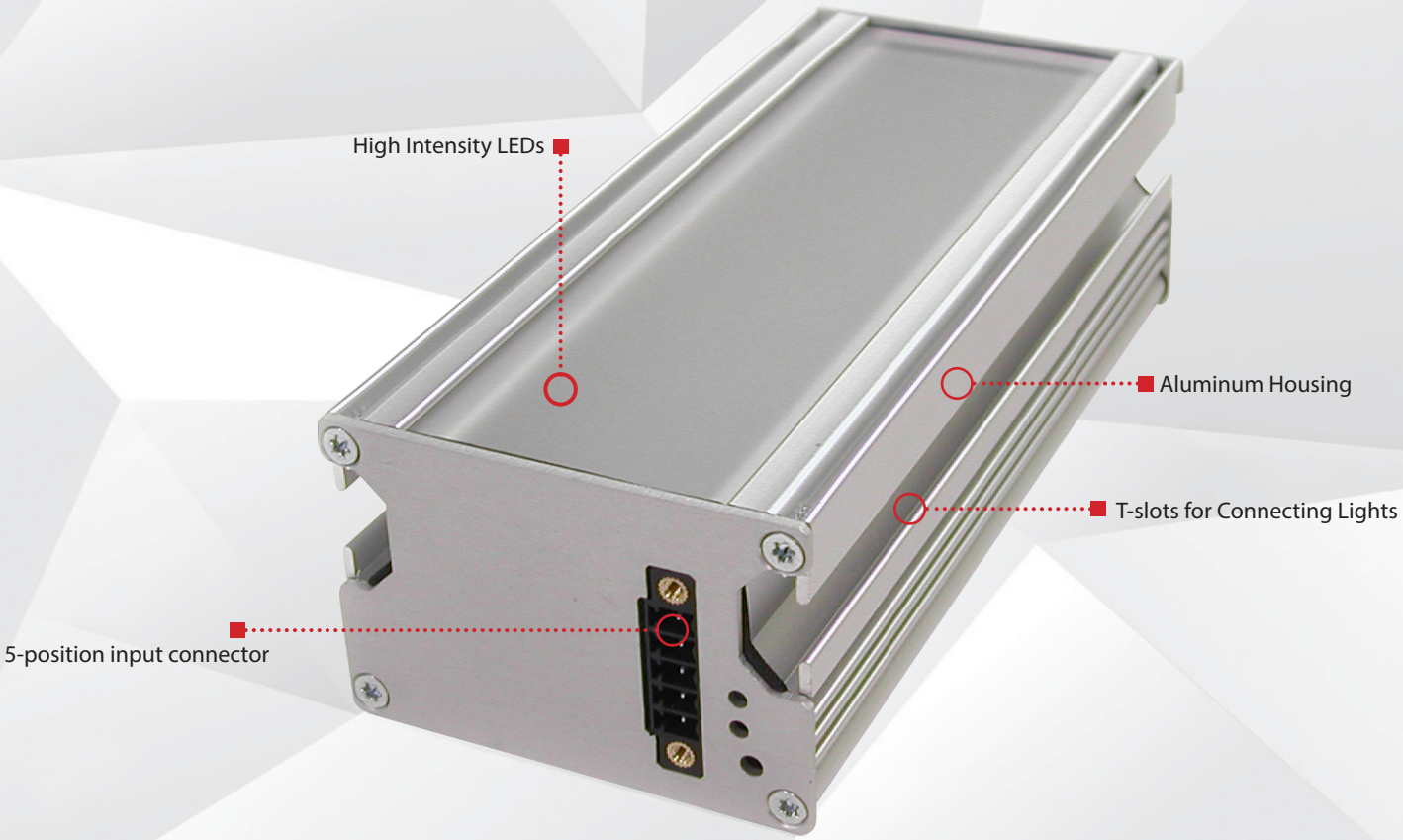
Shortwave Infrared LEDs are available in 1050 nm, 1200 nm, 1300 nm, 1450 nm, and 1550 nm.*

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

smart vision lights

LXB150 *Direct Connect* LINEAR LIGHT BACKLIGHT

PRODUCT DATA SHEET



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

PRODUCT HIGHLIGHTS

- ✓ Built-in driver, no external wiring needed
- ✓ PNP and NPN strobe input
- ✓ T-Slot for mounting and connecting together
- ✓ Direct connect up to 16 units
- ✓ Backlight lens (diffuser) is factory installed

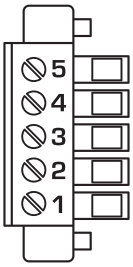
PRODUCT DESCRIPTION

The modular design of the LXB150 linear light, part of the Direct Connect Linear Light Series, offers integrated light-to-light connectors, eliminating the need for cable connectors to string lights together. The LXB150 features a factory installed 2447 diffuser backlight lens and is a viable option for silhouetting objects. The light operates in continuous operation. This innovative design requires power connection to the first light but eliminates the need for jumper cables to pass power through to the next, enabling tailored-length solutions in increments of 150 mm. Direct connect up to sixteen LXB150 together. Compatible with the LXB300.

PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/- 5%
Input Current	Max. 700 mA
Wattage	Max. 17 W
On / Off Input	PNP > +4VDC or greater to activate | NPN > GND (<1VDC) to activate
PNP Line	4 mA @ 4VDC | 10 mA @ 12 V DC | 20 mA @ 24VDC
NPN Line	15 mA @ Ground (0VDC)
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	270º 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	-18º–40º C (0º–104º F)
IP Rating	IP50
Weight	~285g
Compliances	CE, RoHS, IEC 62471

WIRING CONFIGURATION



Pin layout for light (Male Connector)

Pins	Function	Signal	Wire Color
5	GND	Ground	BLUE
4	PNP	4VDC to 30VDC for active on	BLACK
3	Intensity Control	1-10VDC	GREY*
2	NPN Strobe	GND for active ON	WHITE
1	Power	+24VDC	BROWN

OPTIONAL

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

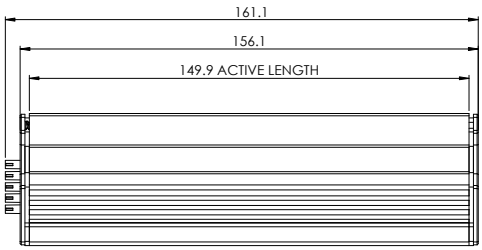
** Some cables use green/yellow for pin 5*
For maximum intensity, it is possible to tie pin 5 to pin 1 at +24VDC.
For continuous mode: PNP (pin 4) can be tied to +24VDC (pin 1) ***or*** *NPN (pin 2) can be tied to Ground (pin 3).*

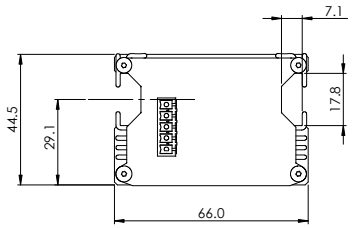
RESOURCE CORNER

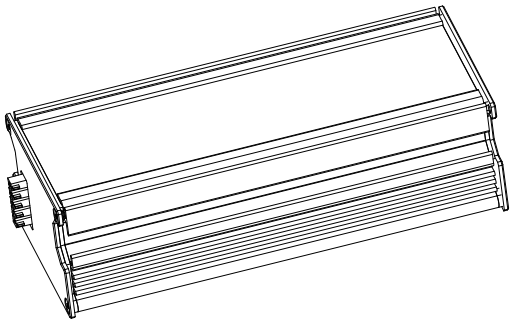
Additional resources are available on our website, including CAD files, videos, and application examples.

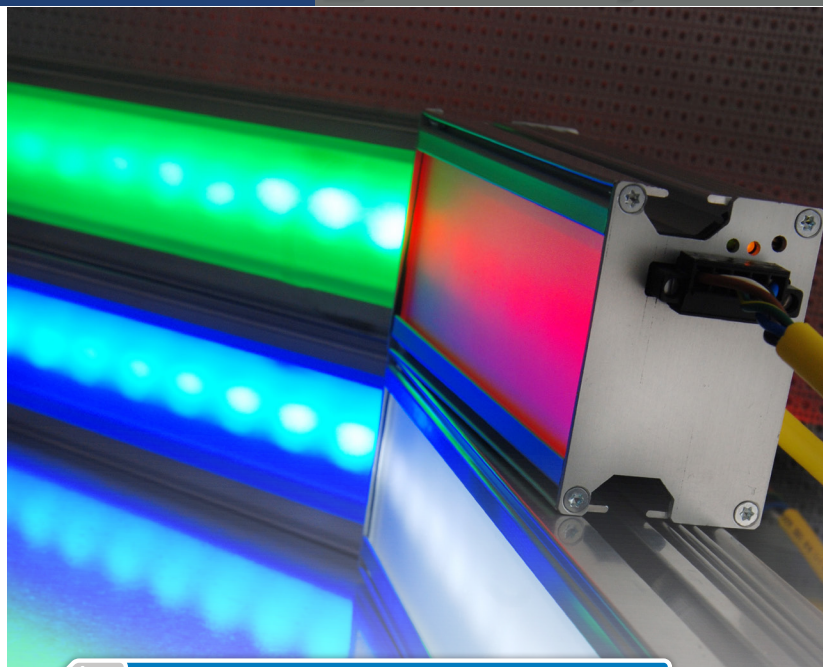
PRODUCT DRAWING

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



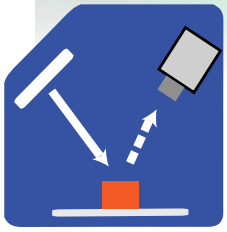


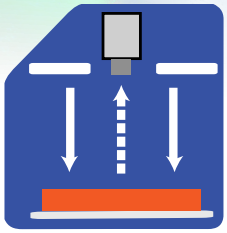


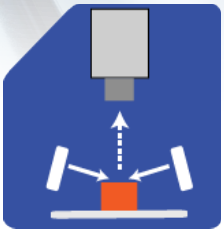


ILLUMINATION

LXB150 Series of Linear Lights works best for:


Bright Field


Direct Lighting


Dark Field

EYE SAFETY

SMART VISION LIGHTS IEC 62471 COMPLIANT

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

LXB150 – □□□

COLOR:

WHI | 470 | 505 | 530 | 625 | 850 940

Part Number Examples:

LXB150-625 LXB150, 625 nm Red Wavelength

SWIR SHORTWAVE INFRARED

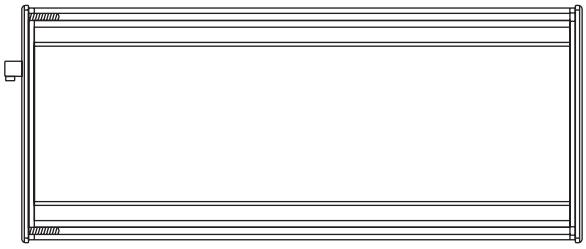
This light is available in our SWIR LEDs
(1050 nm, 1200 nm, 1300 nm, 1450 nm, 1550 nm)

1050 nm | 1200 nm | 1300 nm | 1450 nm | 1550 nm

** Line lens optic not available for UV wavelengths*
Additional wavelengths and lens options available upon request

OPTICAL PERFORMANCE

Smart Vision Lights recommends the LXB150 be used at a working distance between 150 mm to 450 mm.



OPTICAL PERFORMANCE FOR THE LXB150

Rating	Illumination (Lux)
Average Intensity Rating	69,000
Lux measurement taken at surface of LXB150	

ACCESSORIES

Connector (Only for Direct Connect)	
	
Description	Part Number
Set of 2 Connectors	LXJ-2DTN

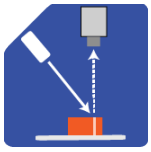
GLOSSARY

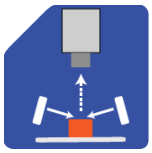
This glossary covers all Smart Vision Lights product families; some content in this section may not apply to this specific light.

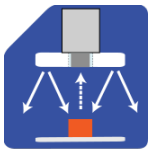
TERMINOLOGY

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.

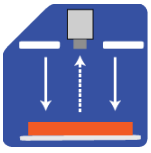
TYPES OF ILLUMINATION

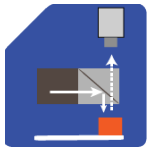

Projector

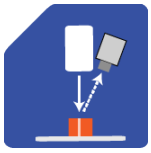

Dark Field

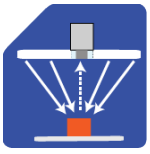

Radial

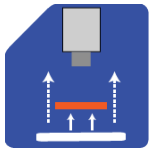

Bright Field


Direct


Axial

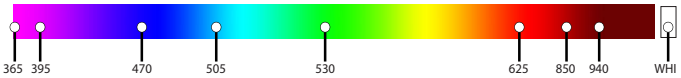

Line


Diffuse Panel


Backlight

COMMON COLOR/WAVELENGTHS LEGEND

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.*

SWIR SHORTWAVE **INFRARED**

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

LXB300 *Direct Connect* LINEAR LIGHT

PRODUCT DATA SHEET

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

PRODUCT HIGHLIGHTS

- ✓ Built-in driver, no external wiring needed
- ✓ PNP and NPN strobe input
- ✓ T-Slot for mounting and connecting together
- ✓ Direct connect up to 16 units
- ✓ Backlight lens (diffuser) is factory installed

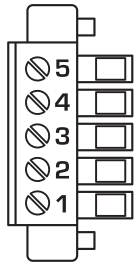
PRODUCT DESCRIPTION

The modular design of the LXB300 linear light, part of the Direct Connect Linear Light Series, offers integrated light-to-light connectors, eliminating the need for cable connectors to string lights together. The LXB300 features a factory installed 2447 diffuser backlight lens and is a viable option for silhouetting objects. The light operates in continuous operation. This innovative design requires power connection to the first light but eliminates the need for jumper cables to pass power through to the next, enabling tailored-length solutions in increments of 300 mm. Direct connect up to eight LXB300 together. Compatible with the LXB150.

PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/- 5%
Input Current	Max. 700 mA
Wattage	Max. 17 W
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)
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	IP50
Weight	~540g
Compliances	CE, RoHS, IEC 62471

WIRING CONFIGURATION



Pin layout for light (Male Connector)

Pins	Function	Signal	Wire Color
5	GND	Ground	BLUE
4	PNP	4VDC to 30VDC for active on	BLACK
3	Intensity Control	1-10VDC	GREY*
2	NPN Strobe	GND for active ON	WHITE
1	Power	+24VDC	BROWN

OPTIONAL

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

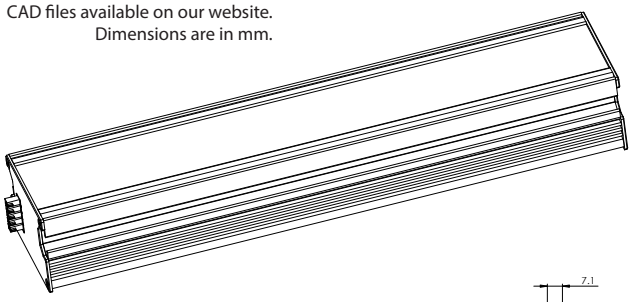
** Some cables use green/yellow for pin 5*
For maximum intensity, it is possible to tie pin 5 to pin 1 at +24VDC.
For continuous mode: PNP (pin 4) can be tied to +24VDC (pin 1) ***or*** *NPN (pin 2) can be tied to Ground (pin 3).*

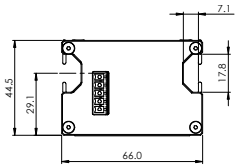
RESOURCE CORNER

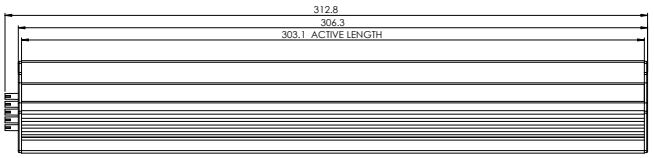
Additional resources are available on our website, including CAD files, videos, and application examples.

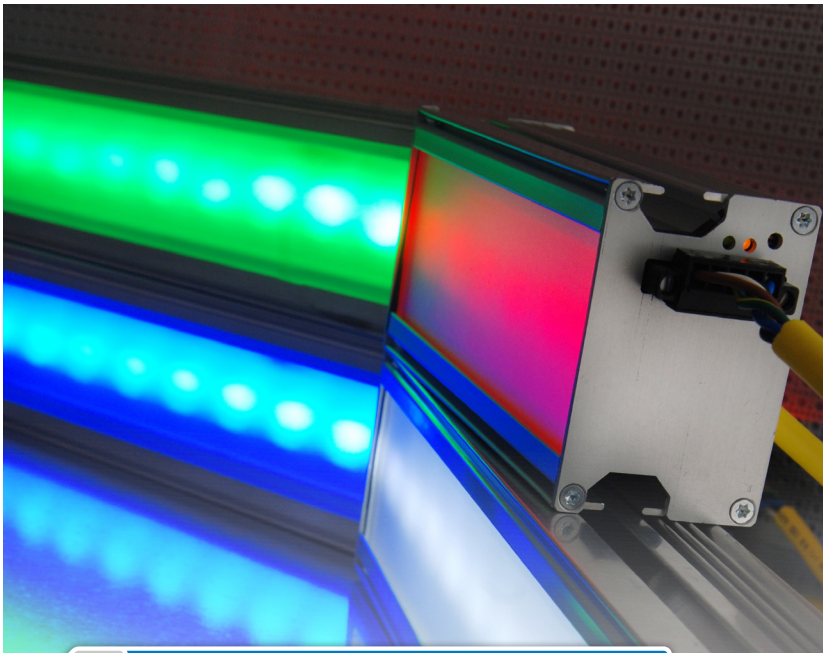
PRODUCT DRAWING

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



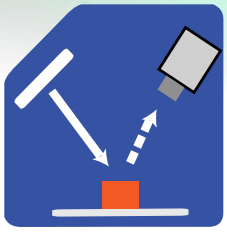




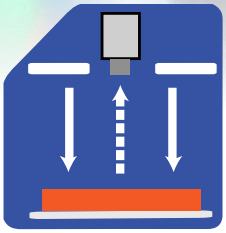


ILLUMINATION

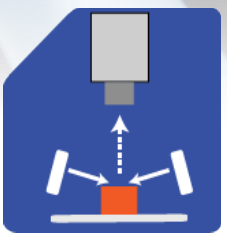
LXB300 Series of Linear Lights works best for:



Bright Field



Direct Lighting



Dark Field

EYE SAFETY

SMART VISION LIGHTS IEC 62471 COMPLIANT

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

LXB300 – □□□

COLOR:

WHI 470 505 530 625 850 940

Part Number Examples:

LXB300-625 LXB300, 625 nm Red Wavelength

SWIR SHORTWAVE **INFRARED**

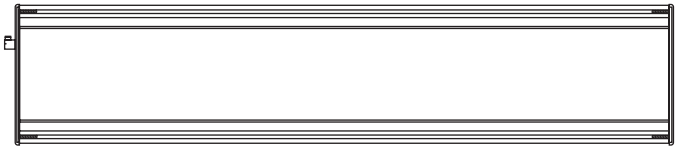
This light is available in our SWIR LEDs
(1050 nm, 1200 nm, 1300 nm, 1450 nm, 1550 nm)

1050 nm **1200 nm** **1300 nm** **1450 nm** **1550 nm**

** Line lens optic not available for UV wavelengths*
Additional wavelengths and lens options available upon request

OPTICAL PERFORMANCE

Smart Vision Lights recommends the LXB300 be used at a working distance between 150 mm to 450 mm.



OPTICAL PERFORMANCE FOR THE LXB300

Rating	Illumination (Lux)
Average Intensity Rating	69,000
Lux measurement taken at surface of LXB300	

ACCESSORIES

Connector (Only for Direct Connect)	
	
Description	Part Number
Set of 2 Connectors	LXJ-2DTN

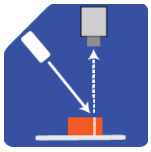
GLOSSARY

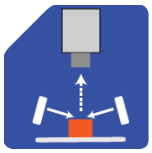
This glossary covers all Smart Vision Lights product families; some content in this section may not apply to this specific light.

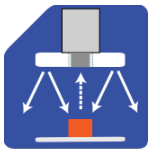
TERMINOLOGY

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.

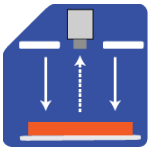
TYPES OF ILLUMINATION

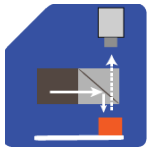

Projector

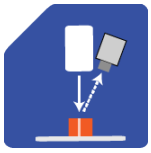

Dark Field

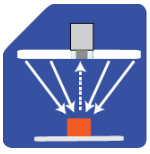

Radial

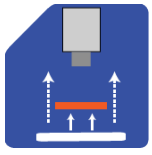

Bright Field


Direct


Axial

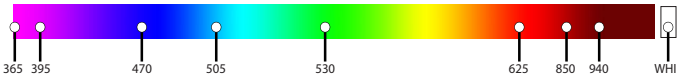

Line


Diffuse Panel


Backlight

COMMON COLOR/WAVELENGTHS LEGEND

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.*

SWIR SHORTWAVE **INFRARED**

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

LXE300 Direct Connect LINEAR LIGHT

MULTI-DRIVE™

PRODUCT DATA SHEET

multi drive™

Warranty	Compliant	Compliant	Rated	Connector
10 YEAR	IEC 62471	CE RoHS	IP 65	5-PIN M12

PRODUCT HIGHLIGHTS

- ✓ Bright linear light, delivering up to 100,000 lux in OverDrive™ mode
- ✓ Direct connect up to six lights in a line without loss of uniformity for a fraction of the cost of monolithic designs
- ✓ Built-in Multi-Drive™ allows the light to work in continuous operation or OverDrive™ mode
- ✓ PNP and NPN strobe input
- ✓ 5-pin M12 quick connect

PRODUCT DESCRIPTION

Delivering up to 100,000 lux, the LXE300 includes our advanced Multi-Drive™ driver, allowing users to operate the linear light in continuous operation or OverDrive™ strobe (high-pulse operation) mode. Users can also direct connect up to six LXE300 lights to create ultra-long linear lights at a fraction of the cost of traditional monolithic solutions without any loss in uniformity. The LXE300 can also be connected by daisy-chaining them together using a locking jumper cable. The LXE300 Linear Light is rated for IP65.

PRODUCT SPECIFICATIONS

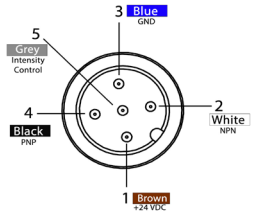
	CONTINUOUS OPERATION	OVERDRIVE™ STROBE MODE
Electrical Input	24VDC +/- 5%	
Input Current	Max. 850 mA	Max. 4.7 A
Wattage	Max. 20 W	Max. 110 W (During Strobe)
PNP Line	4 mA @ 4VDC | 10 mA @ 12VDC | 20 mA @24VDC	
NPN Line	15 mA @ Common (0 V DC)	
OverDrive™ Strobe Mode	**Not applicable**	Connect pin 5 to GND (see Wiring Configuration for more information)
Strobe Duration	**Not applicable**	Min. 10 µs | Max. 50 ms
Duty Cycle	**Not applicable**	Max. 10%
Strobe Input	**Not applicable**	PNP: +4 VDC 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	-18º–40º C (0º–104º F)	
IP Rating	IP65	
Weight	~660 g	
Power Supply	A separate power supply for OverDrive™ mode (high-pulse operation) is recommended. *(see Input Current for value)*	
Compliances	CE, RoHS, IEC 62471	
Warranty	10 year. For complete warranty information, visit smartvisionlights.com/warranty	

RESOURCE CORNER

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

WIRING CONFIGURATION

CONTINUOUS OPERATION MODE



Pin layout for light (male connector)

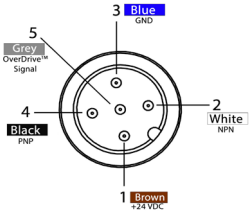
Pins	Function	Signal	Wire Color
1	Power In	+24VDC	BROWN
2	NPN	Sinking Signal	WHITE
3	GND	Ground	BLUE
4	PNP	Sourcing Signal	BLACK
5	Intensity Control	1–10VDC	GREY*

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)

** Some cables use green/yellow for pin 5*
For maximum intensity, it is possible to 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).*

OVERDRIVE™ OPERATION MODE



Pin layout for light (male connector)

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	OverDrive™ Signal	Ground	GREY*

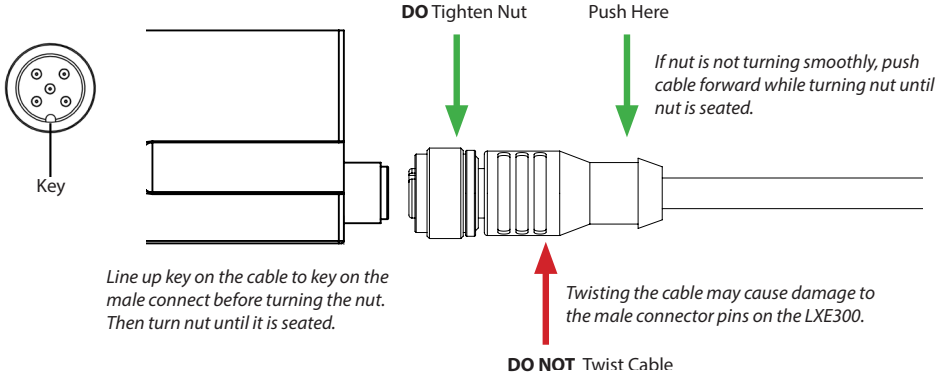
Failure to supply light with correct input current will result in non-repeatable lighting
(see Product Specifications for requirements)

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

CONNECTING A 5-PIN M12 CABLE

WARNING:

When connecting a 5-pin M12 cable to the male connector on the LXE300, do not twist the cable. Tighten the nut only. Twisting the cable may result in damage to the pins.



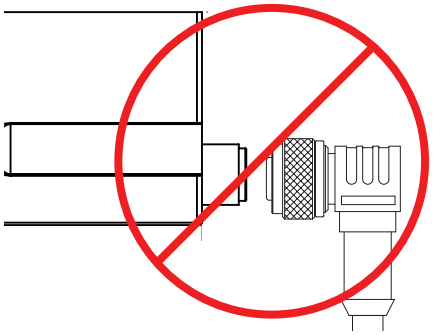
WARNING:

Smart Vision Lights recommends not using a right angle cable with the LXE300.

If you do need to use a right angle cable:

- **Do not put rotational force on the connector**
- **Once the cable is connect, secure the cable to prevent the cable from rotating.**

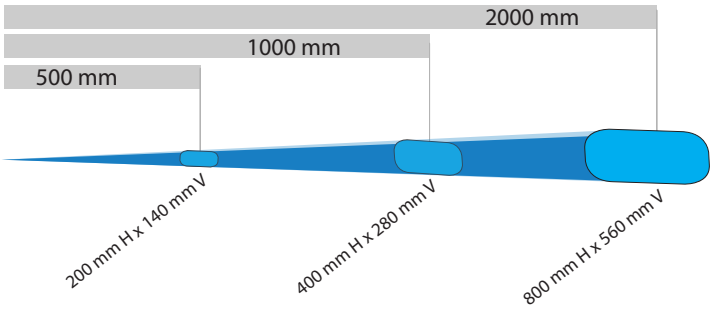
Damage caused by a right angle cable may result in the warranty being voided.



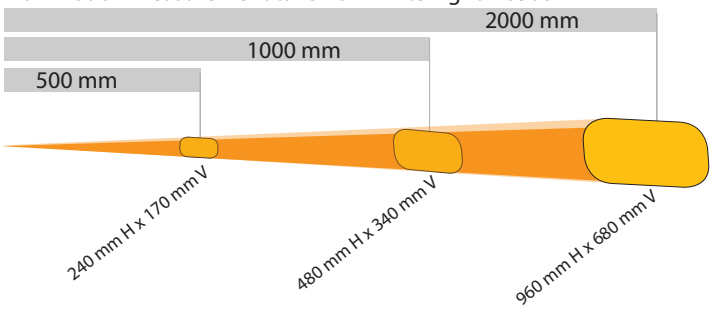
LIGHT PATTERNS

Smart Vision Lights recommends the LXE300 be used at a working distance between 300 mm to 4000 mm.

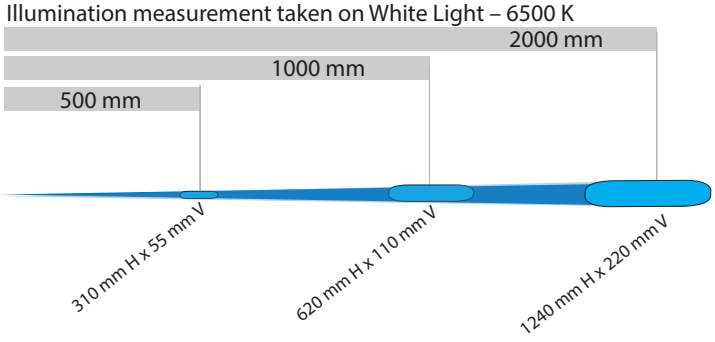
Illumination measurement taken on White Light – 6500 K



Illumination measurement taken on White Light – 6500 K



Illumination measurement taken on White Light – 6500 K



LIGHTING PATTERN FOR THE LXE300 **with Narrow (Standard) Lenses**

Working Distance mm (inches)	Pattern (80% – 100% Measured Intensity) mm (inches)
500 mm (19.7")	200 mm (~7.8") H x 140 mm (~5.5") V
1000 mm (39.4")	400 mm (~15.7") H x 280 mm (~11") V
2000 mm (78.8")	800 mm (~31.5") H x 560 mm (~22") V

Operation	Typical Output Performance	Illumination (Lux)
Continuous Mode	Distance = 500 mm	20,000
OverDrive™ Mode	Distance = 500 mm	100,000
Illumination measurement taken on White Lights – 6500K		

LIGHTING PATTERN FOR THE LXE300 **with Wide (W) Lenses**

Working Distance mm (inches)	Pattern (80% – 100% Measured Intensity) mm (inches)
500 mm (19.7")	240 mm (~9.4") H x 170 mm (~6.7") V
1000 mm (39.4")	480 mm (~18.9") H x 340 mm (~13.4") V
2000 mm (78.8")	960 mm (~37.8") H x 680 mm (~26.7") V

Operation	Typical Output Performance	Illumination (Lux)
Continuous Mode	Distance = 500 mm	8600
OverDrive™ Mode	Distance = 500 mm	43,000
Illumination measurement taken on White Lights – 6500K		

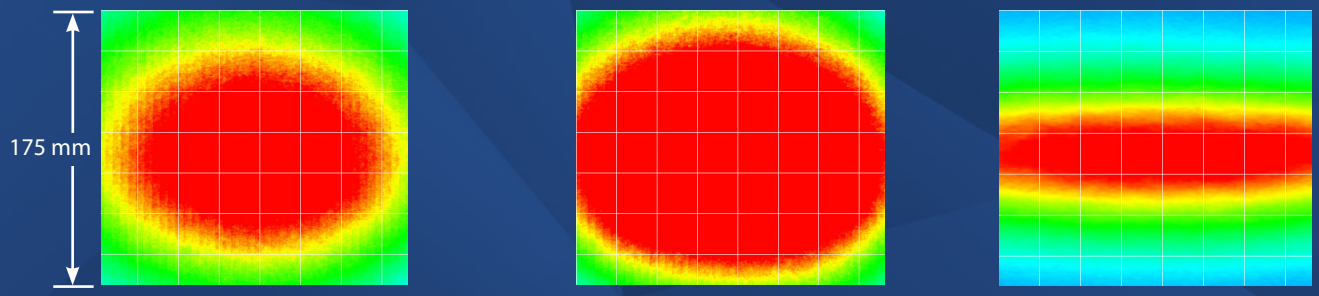
LIGHTING PATTERN FOR THE LXE300 **with Line (L) Lenses**

Working Distance mm (inches)	Pattern (80% – 100% Measured Intensity) mm (inches)
500 mm (19.7")	310 mm (~12.2") H x 55 mm (~2.1") V
1000 mm (39.4")	620 mm (~24.4") H x 110 mm (~4.3") V
2000 mm (78.8")	1240 mm (~48.8") H x 220 mm (~8.7") V

Operation	Typical Output Performance	Illumination (Lux)
Continuous Mode	Distance = 500 mm	18,000
OverDrive™ Mode	Distance = 500 mm	90,000
Illumination measurement taken on White Lights – 6500K		

The LXE300 Linear Light produces a uniform light pattern.

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



Narrow Wide Line

MULTI-DRIVE™

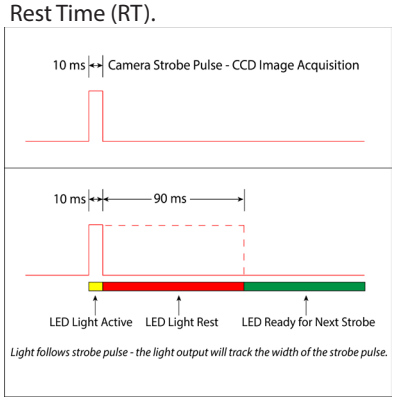
Multi-Drive™ allowing users to operate the light in continuous operation or OverDrive™ strobe (high-pulse operation) mode. An advantage of Multi-Drive™ is faster imaging. It also enchances capture/freeze motion imaging on high-speed lines.

The Multi-Drive™ feature allows the user to run the light in continuous operation or OverDrive™ strobe mode at maximum intensity. OverDrive™ strobe mode is **up to five times** the power of continuous operation.

DUTY CYCLE (OVERDRIVE™ MODE ONLY)

This section applies only if light is in OverDrive™ Mode.

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



Calculating Rest Time

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

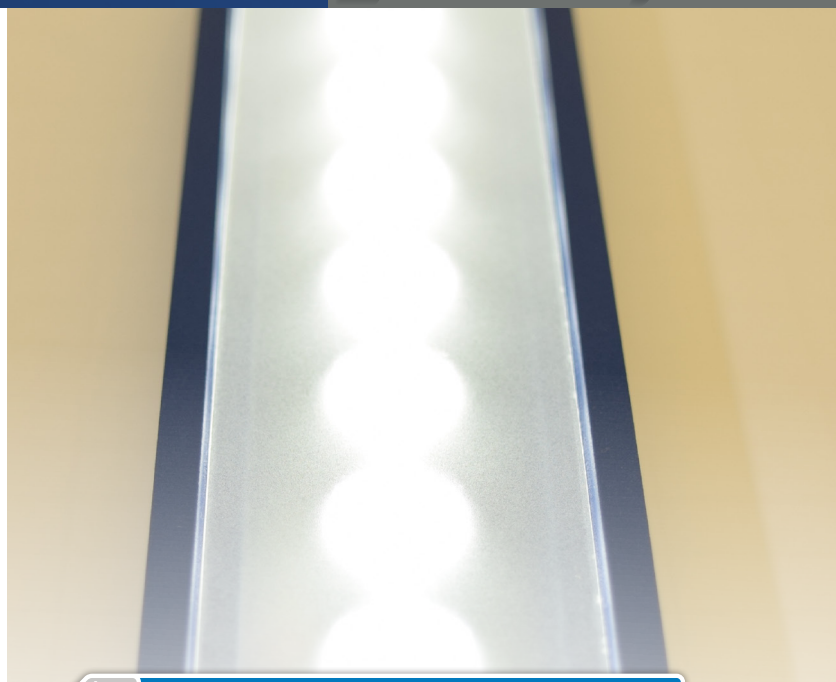
RT = Rest Time
ST = Strobe Time
D = Duty Cycle

Example

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

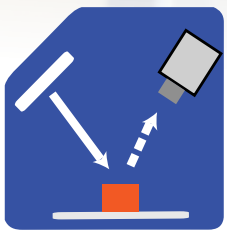
Rest Time is 90 ms for 10 ms Strobe Time

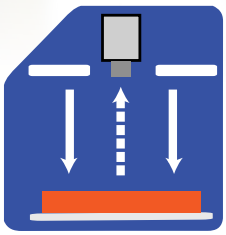
Maximum Duty Cycle for OverDrive™ light is 10% (0.1)

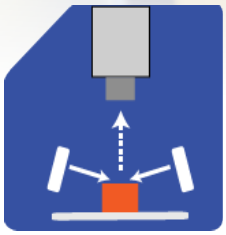


ILLUMINATION

LXE300 Series of Linear Lights works best for:


Bright Field


Direct Lighting


Dark Field

EYE SAFETY

SMART VISION LIGHTS IEC 62471 COMPLIANT

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.

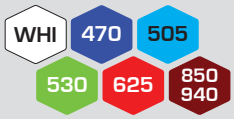
Caution

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.

PART NUMBER

LXE300 – □□□ – □ – □□□ – □□

COLOR:



LENS:
Leave blank for standard (narrow)
W = Wide
L = Line

LINEAR POLARIZER:
Leave blank for none
LPI = Factory Installed

CONNECTOR:
Leave blank for Direct Connect
DC = Daisy-Chain
PG = Plug

Additional wavelengths and lens options available upon request.
UV wavelengths are not available.

Part Number Examples:

LXE300-625	LXE300, 625 Red Wavelength, Standard (Narrow) Lenses
LXE300-WHI-W	LXE300, White, Wide Lenses
LXE300-WHI-W-DC	LXE300, White, Wide Lenses, Daisy-Chain
LXE300-470-W-LPI	LXE300, 470 Blue Wavelength, Wide Lenses, Linear Polarizer Installed

STANDARD LENS OPTICS

NARROW
Narrow lenses are standard.
Standard lenses create a narrow beam of illumination. They can be used when long working distances are needed. Narrow are 10° angle cone lenses.

WIDE
Wide lenses create a large area of illumination. Wide lenses can be used when short working distances are needed. Wide are 25° angle cone lenses.

** Additional lens options available upon request.*

When to Use a Linear Polarizers?

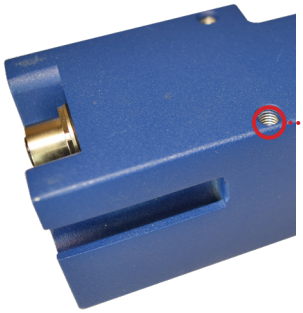
Polarizing filters can reduce reflections on specular surfaces.

A Linear Polarizer has a typical transmission of 38% while blocking 62% of the light not in the polarization plane.

WARNING: Running a light in continuous operation while using a polarizer with certain wavelengths (ex. white, blue) may result in burning of the polarizer.

MOUNTING

Four screw holes are located on the bottom of the light for easy mounting.

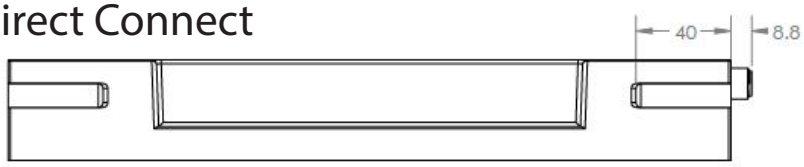


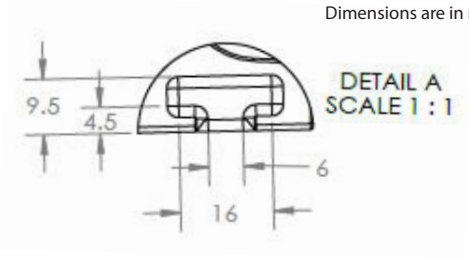
Four M5 screws included with light.

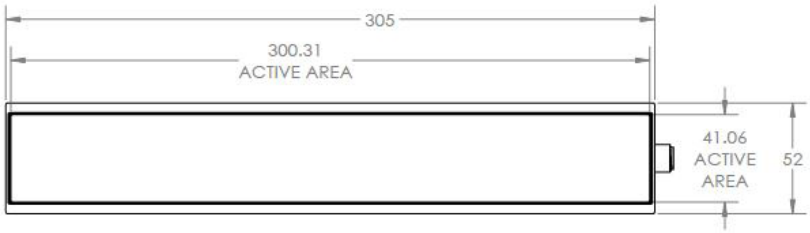
PRODUCT DRAWING

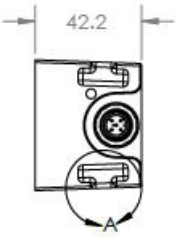
CAD files available on our website.
Dimensions are in mm

Direct Connect

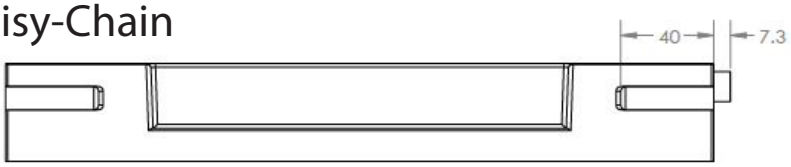


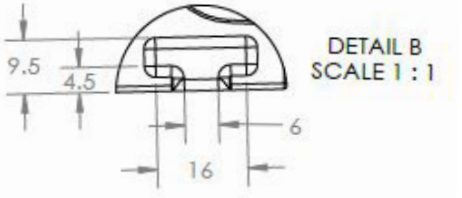


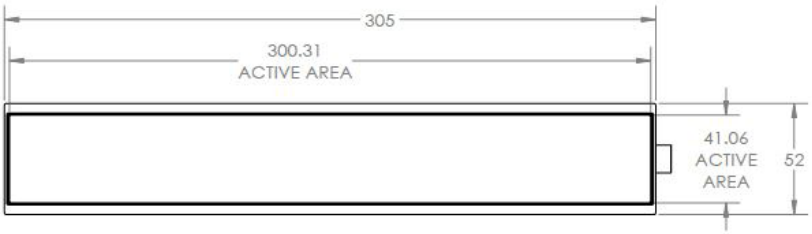


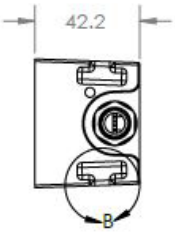


Daisy-Chain

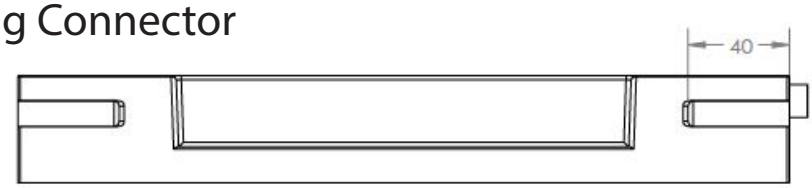


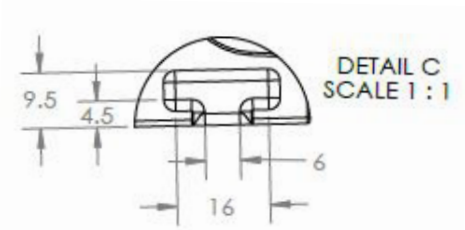


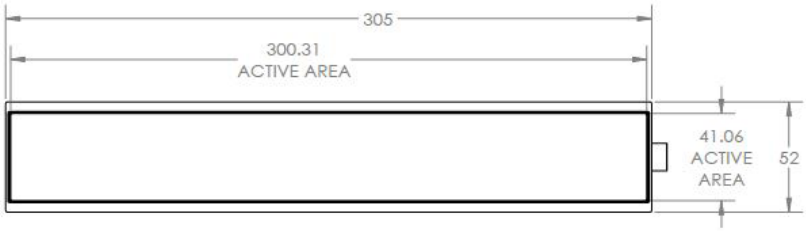


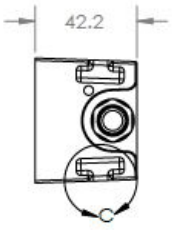


Plug Connector



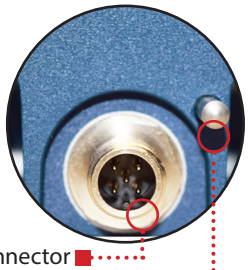






DIRECT CONNECT

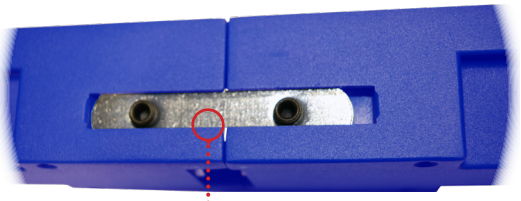
The LXE300 allows for connecting lights together with no additional cables. Lights are directly connected together, with no space between the lights. Up to six LXE300 lights can be directly connected together.



5-Pin M12 Connector
(Male)

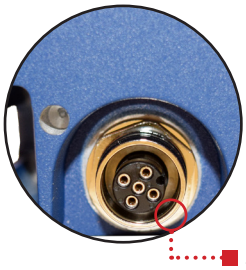
Alignment Pin

The part number **LXJ-2DTN** is required to directly connect two or more LXE300 together.



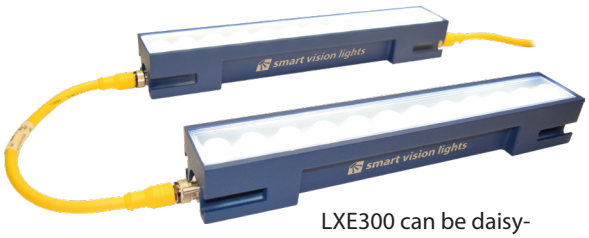
Part Number: LXJ-2DTN

DAISY-CHAIN



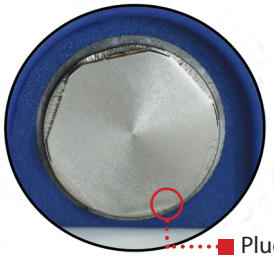
Daisy-chain allows for a locking 5PM-12 jumper cable to be used when connecting LXE300 lights together. Lights are able to be spaced apart from each other. Up to six LXE300 lights can be daisy-chained together.

5-Pin M12 Connector
(Female)



LXE300 can be daisy-chained together using a locking jumper cable.

PLUG



If multiple units are not going to be used, a plug termination can be ordered. To get this option, use a -PG suffix on the product number.
Ex. LZE300 - 625 - W - LPI - PG = LZE300, 625 nm, Wide Lens, Linear Polarize Installed, Plug

Plug Connector

ACCESSORIES

Power Cables

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

Jumper Cables (Only for Daisy Chaining)

Lengths	Part Number
300 mm	5PM12-J300
1000 mm	5PM12-J1000
2000 mm	5PM12-J2000

Power Adapters *

Description	Part Number
AC, 24 Volt, 1.7 Amp	T1 Power Supply
24VDC, 9 Amp / AC input	T2 Power Supply

* **European Versions Available** (Add -EURO to end of T1 or T2. Example T1-EURO Power Supply)

Mount

Description	Part Number
3-Axis Pan and Tilt Mount	PB300-M5

Connector (Only for Direct Connect)

Description	Part Number
Set of 2 Connectors	LXJ-2DTN

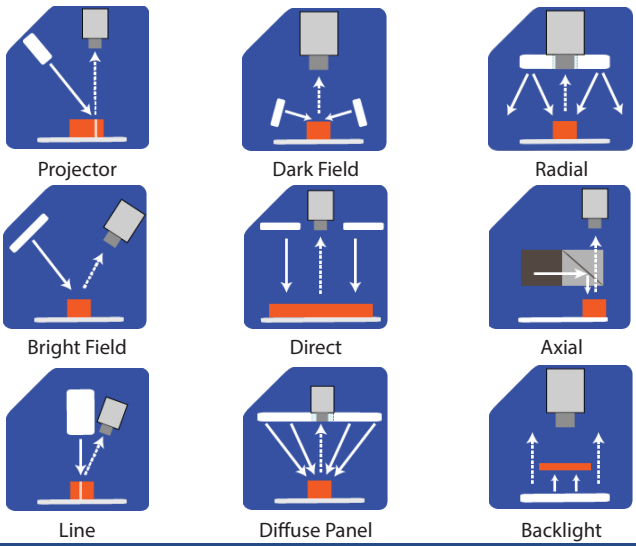
GLOSSARY

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

TERMINOLOGY

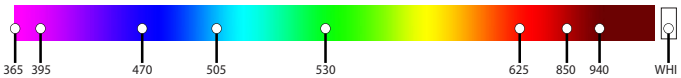
OverDrive™ Lights include an integrated high-pulse driver for complete LED light control.
Continuous Operation Lights stay on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built-in Driver The built-in driver allows 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.
Diffusers Used to widen the angle of light emission, reduce reflections, and increase uniformity.

TYPES OF ILLUMINATIONS



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.*

SWIR SHORT WAVE **INFRARED**

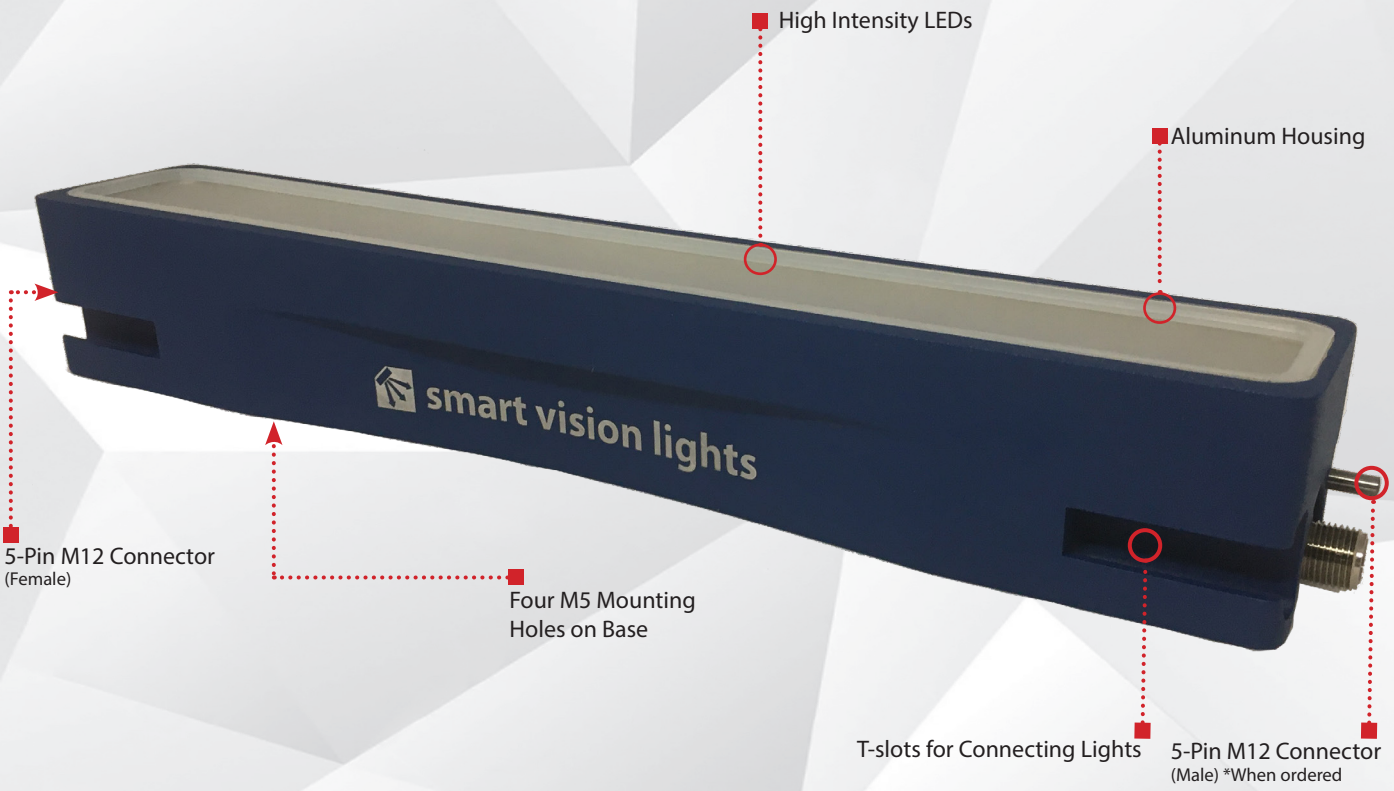
Short Wave Infrared LEDs are available in 1050 nm, 1200 nm, 1300 nm, 1450 nm, and 1550 nm.

smart vision lights

LZE300 Direct Connect LINEAR LIGHT

MULTI-DRIVE™

PRODUCT DATA SHEET



multi drive™

Warranty	Compliant	Compliant	Rated	Connector
10 YEAR	IEC 62471	CE RoHS	IP 65	5-PIN M12

PRODUCT HIGHLIGHTS

- ✓ Connect up to six lights in a line without loss of uniformity
- ✓ SmartVisionLink™-enabled to allow for easy intensity adjustment in both continuous and OverDrive™ strobe modes
- ✓ Ability to control intensity for the entire light or for each of the three LED zones when using BTM-1000 Bluetooth Module
- ✓ Standard LZE300 has a 12 LED configuration
- ✓ NanoDrive™ allows the light to be fully on in less than 500 ns

PRODUCT DESCRIPTION

The LZE300, a SmartVisionLink™-enabled linear light, has the same features and functions as the LXE300, with the addition of communication with a SmartVisionLink™ managing device, such as the BTM-1000. When the LZE300 is connected to the BTM-1000, its intensity can be fully controlled, either for the entire light or for each of the three LED zones. Individual zones may also be turned off. Direct connect or daisy-chain together up to six LZE300s within a single string of lights to create 18 individual zones with adjustable intensity levels. The standard LZE300 has a 12 LED configuration.

PRODUCT SPECIFICATIONS

	CONTINUOUS OPERATION	OVERDRIVE™ STROBE MODE
Electrical Input	24VDC +/- 5%	
PNP Line	4 mA @ 4VDC | 10 mA @ 12VDC | 20 mA @24VDC	
NPN Line	15 mA @ Common (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
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	-18º–40º C (0º–104º F)	
IP Rating	IP65	
Weight	~660 g	
Power Supply	A separate power supply for OverDrive™ mode (high-pulse operation) is recommended. *(see Input Current for value)*	
Compliances	CE, RoHS, IEC 62471	
Warranty	UV LEDs have a 2 year warranty, all other LEDs have a 10 year warranty. For complete warranty information, visit smartvisionlights.com/warranty	

The standard LZE300 has a 12 LED configuration.

	STANDARD (12 LEDs)
Input Current (Continuous Operation)	Max. 850 mA
Input Current (OverDrive™ Strobe Mode)	Max. 4.7 A (During Strobe)
Wattage (Continuous Operation)	Max. 20 W
Wattage (OverDrive™ Strobe Mode)	Max. 110 W (During Strobe)

SMARTVISIONLINK™

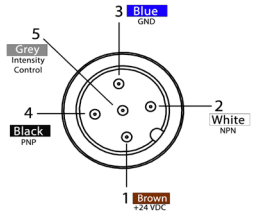
SmartVisionLink™ provides a way for a light to communicate with an app on a mobile device or tablet. This technology allows users to adjust the intensity of the light in both continuous operation and OverDrive™ strobe mode. By connecting the BTM-1000 Bluetooth module to a light that is SmartVisionLink™-enabled, a user can adjust parameters for the light. The SmartVisionLink™ app is available free to download in the Apple App and Google Play Stores.

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)

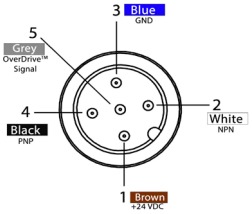
Pins	Function	Signal	Wire Color
1	Power In	+24VDC	BROWN
2	NPN	Sinking Signal	WHITE
3	GND	Ground	BLUE
4	PNP	Sourcing Signal	BLACK
5	Intensity Control	1–10VDC	GREY*

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)

** 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).*

OVERDRIVE™ OPERATION MODE



Pin layout for light (male connector)

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	OverDrive™ Signal	Ground	GREY*

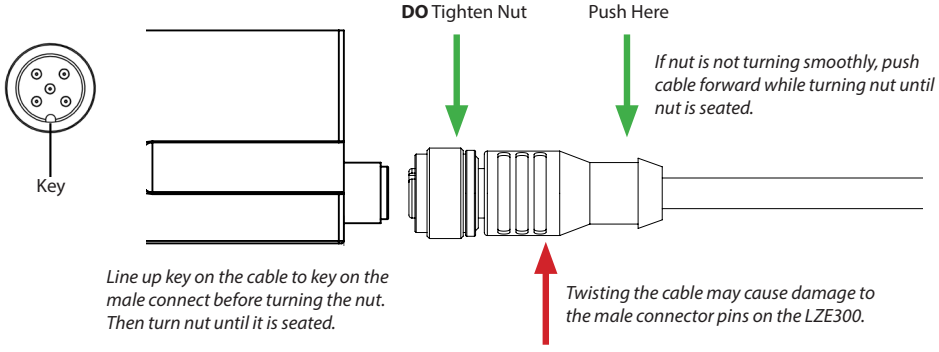
Failure to supply light with correct input current will result in non-repeatable lighting
(see Product Specifications for requirements)

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

CONNECTING A 5-PIN M12 CABLE

WARNING:

When connecting a 5-pin M12 cable to the male connector on the LZE300, do not twist the cable. Tighten the nut only. Twisting the cable will result in damage to the pins.

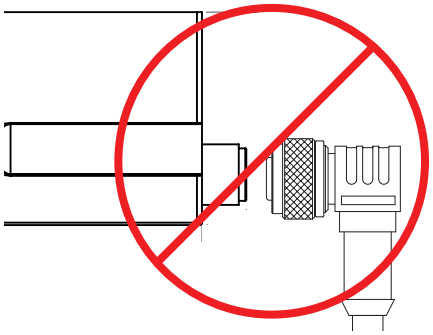


WARNING:

Smart Vision Lights does not recommends using a right angle cable with the LZE300.

If a right angle cable is required, do not rotate the connector or cable.

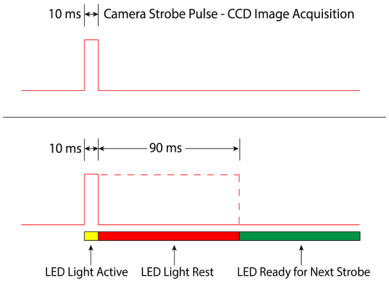
Damage caused by a right angle cable will result in the warranty being voided.



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 (strobes per second)
ST = Strobe Time (seconds)
D = Duty Cycle

Example

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

Strobe Rate is 1000 strobes per second

Calculating Duty Cycle

$$D = ST \times SR$$

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

Example

$$0.1 = 0.0001 \times 1000$$

Duty Cycle is 10% (0.1)

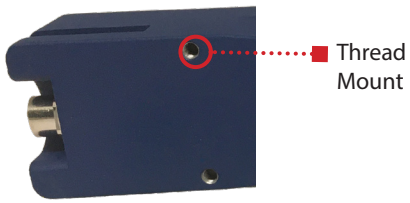
Maximum Duty Cycle for OverDrive™ light is 10% (0.1)

Note: Strobe time is limited by the strobe rate.

MOUNTING

Four screw holes are located on the bottom of the light for easy mounting.

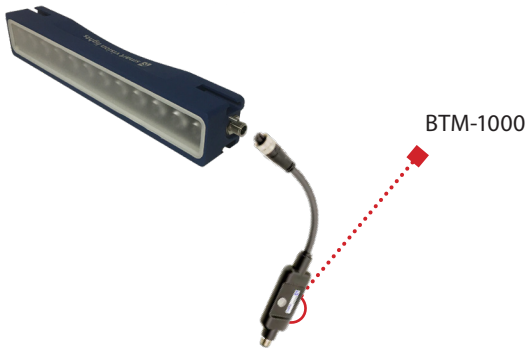
Four M5 screws included with light.



CONNECTING A BTM-1000

The BTM-1000 can be connected directly to a light or attached to a jumper cable that is connected to a light. Once the light's intensity is set to desired level, the BTM-1000 can be removed from the light or cable.

The pigtail end of the BTM-1000 is connected directly to the light or to the cable attached to the light.



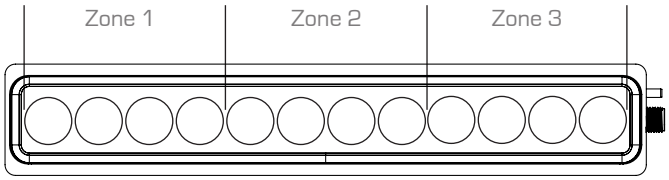
MANAGING MULTIPLE LIGHTS

Using the SmartVisionLinks™ app, a user is able to adjust intensity levels for a string of up to 6 lights. Each light or each zone in a multi-zone light are able to have its intensity adjusted independently of the other lights and zones. When direct connecting six LZE300 the user is able to manage 18 individual zone intensities.

ZONE CONFIGURATION

The LZE300 is divided into 3 zones. Each zone intensity level can be set independent of the other zones using the SmartVisionLink™ app and controller, such as the BTM-1000 (Bluetooth module). Each zone is 100 mm in length.

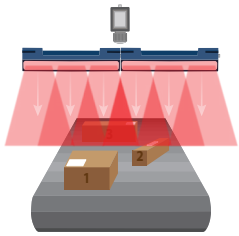
Zone 1 is located at the end with the female connector.

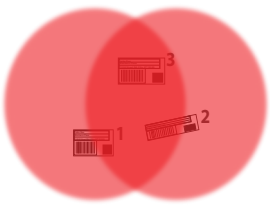


UNDERSTANDING ZONES

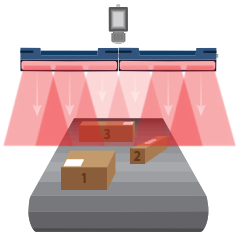
The LZE300 is a light that is SmartVisionLink™-enabled and is designed so intensity can be adjusted using the SmartVisionLink™ app. The LZE300 has 3 built-in zones, allowing for each zone intensity to be set independent of the other zones. Individual zones can also be turned off. Being able to adjust zones within a single light can help reduce hot spots and ensure even uniformity across a string of lights.

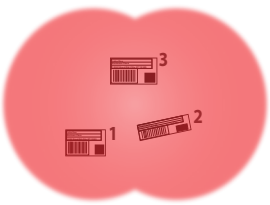
Lights Without Zones



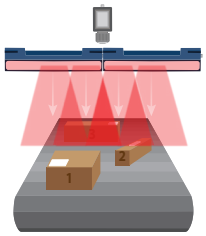


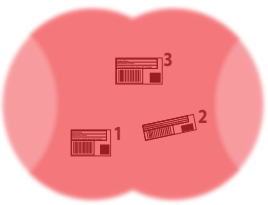
Lights With Middle Zones Adjusted



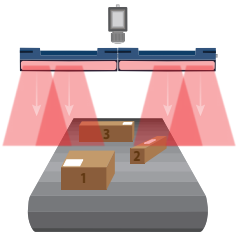


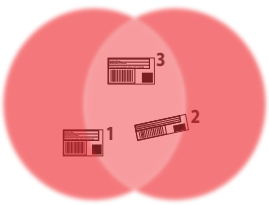
Lights With End Zones Turned Off





Lights With Middle Zones Turned Off





LED COLOR ACCURACY

To ensure accurate color matching between lights, Smart Vision Lights features a color consistent, 3-step MacAdam ellipse LED package with a nominal 5700 K color temperature.

LIGHT PATTERNS

Smart Vision Lights recommends the LZE300 be used at a working distance between 300 mm to 4000 mm.

LIGHTING PATTERN FOR THE STANDARD LZE300 **with Narrow (10°) Lenses**

Working Distance mm (inches)	Pattern (80% – 100% Measured Intensity)
500 mm (19.7")	200 mm (~7.8") H x 140 mm (~5.5") V
1000 mm (39.4")	400 mm (~15.7") H x 280 mm (~11") V
2000 mm (78.8")	800 mm (~31.5") H x 560 mm (~22") V

Operation	Illuminance (Lux)	
	1 Zone	All Zones
Continuous Operation	13,000	23,000
OverDrive™ Strobe	56,000	100,000

Illuminance measured at 500 mm from light.

LIGHTING PATTERN FOR THE STANDARD LZE300 **with Wide (25°) Lenses**

Working Distance mm (inches)	Pattern (80% – 100% Measured Intensity)
500 mm (19.7")	240 mm (~9.4") H x 170 mm (~6.7") V
1000 mm (39.4")	480 mm (~18.9") H x 340 mm (~13.4") V
2000 mm (78.8")	960 mm (~37.8") H x 680 mm (~26.7") V

Operation	Illuminance (Lux)	
	1 Zone	All Zones
Continuous Operation	3,400	8,600
OverDrive™ Strobe	14,800	37,000

Illuminance measured at 500 mm from light.

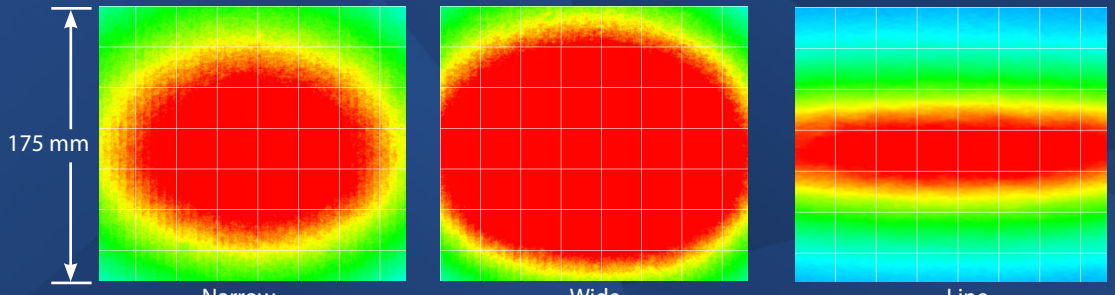
LIGHTING PATTERN FOR THE STANDARD LZE300 **with Line Lenses**

Working Distance mm (inches)	Pattern (80% – 100% Measured Intensity)
500 mm (19.7")	310 mm (~12.2") H x 55 mm (~2.1") V
1000 mm (39.4")	620 mm (~24.4") H x 110 mm (~4.3") V
2000 mm (78.8")	1240 mm (~48.8") H x 220 mm (~8.7") V

Operation	Illuminance (Lux)	
	1 Zone	All Zones
Continuous Operation	6,800	18,000
OverDrive™ Strobe	29,500	78,000

Illuminance measured at 500 mm from light.

The LZE300 Linear Light produces a uniform light pattern.



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

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.

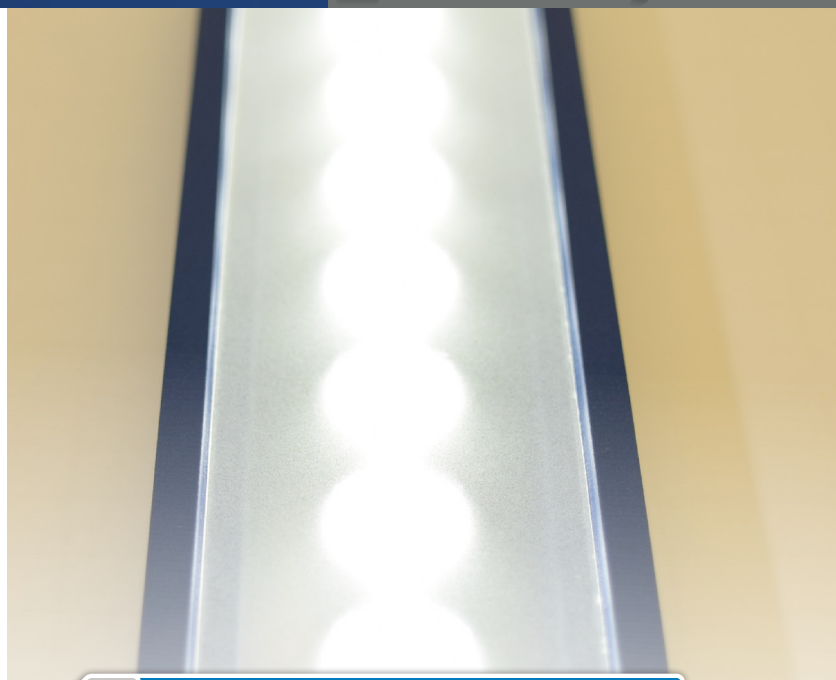
The Multi-Drive feature allows the user to run the light continuously or in OverDrive at the maximum allowed intensity by simply setting the product configuration. OverDrive operation has **over four times** the power of continuous operation.

SAFESTROBE™ TECHNOLOGY

SafeStrobe™ 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 maximum strobe time or duty cycle. This is especially beneficial for overdriving our high current LEDs.

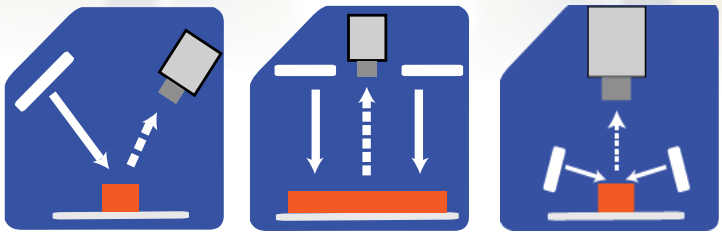
NANODRIVE™

To keep up with faster image acquisition by high-speed cameras, lighting applications require light sources to reach full intensity in a shorter amount of time. To meet this demand, the NanoDrive™ has been developed to deliver full power to a light in 500 nanoseconds or less. The NanoDrive™ is designed to allow tens of amps to reach the LEDs within nanoseconds, resulting in a light reaching its full LED power/light intensity within that time frame. NanoDrive™ technology is patent-pending.



ILLUMINATION

LZE300 Series of Linear Lights works best for:



Bright Field | Direct Lighting | Dark Field

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 wavelength 395.

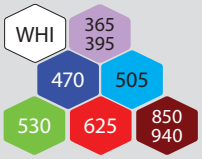
Caution

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

LZE300 – □□□ – □ – □□□ – □□

COLOR:



LENS:

Leave blank for standard (narrow)

W = Wide

L = Line

LINEAR POLARIZER:

Leave blank for none

LP = Field Install

LPI = Factory Installed

CONNECTOR:

Leave blank for Direct Connect

DC = Daisy-Chain

PG = Plug

SWIR SHORTWAVE INFRARED

This light is available in our SWIR LEDs

Additional wavelengths and lens options available upon request.

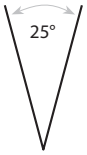
Part Number Examples:

LZE300-625	LZE300, standard (12 LEDs), 625 nm Red Wavelength, Standard (Narrow) Lenses
LZE300-WHI-W	LZE300, standard (12 LEDs), White, Wide Lenses
LZE300-470-W-LPI	LZE300, standard (12 LEDs), 470 nm Blue Wavelength, Wide Lenses, Linear Polarizer Installed, Direct Connect
LZE300-470-W-LPI-DC	LZE300, standard (12 LEDs), 470 nm Blue Wavelength, Wide Lenses, Linear Polarizer Installed, Daisy-Chain

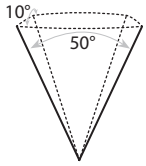
STANDARD LENS OPTICS

NARROW
Narrow lenses are standard.
Narrow, 10° angle cone lenses are standard. Standard lenses projects a narrow beam of illumination and are used for long working distances.

WIDE
Wide, 25° angle cone lenses projects a large area of illumination. They create a floodlight effect, can be used for short working distances.



LINE
Line, with a 10° width and a 50° fan angle projects a thin, narrow beam of illumination.



Additional lens options available upon request.

SHORTWAVE IR (SWIR)

Shortwave infrared (SWIR) lighting is a great option when visible light is not feasible for your application. Invisible to the human eye, SWIR wavelengths range from 1050 mm to 2500 nm. They are similar to visible wavelengths in that a wavelength is either reflected or absorbed by the object it is illuminating. This allows for a strong contrast when inspecting objects, essential for high-resolution imaging. A SWIR camera is required for use of a SWIR wavelength light.

When to Use a Linear Polarizers?

Polarizing filters can reduce reflections on specular surfaces.

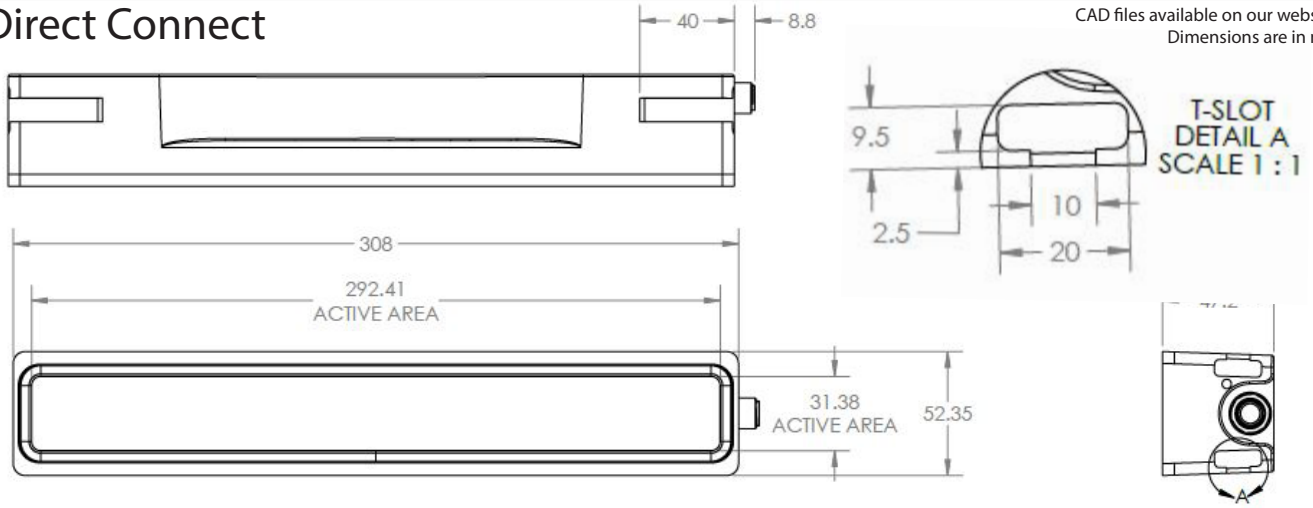
A Linear Polarizer has a typical transmission of 38% while blocking 62% of the light not in the polarization plane.

WARNING: Running a light in continuous operation while using a polarizer with certain wavelengths (ex. white, blue) may result in burning of the polarizer.

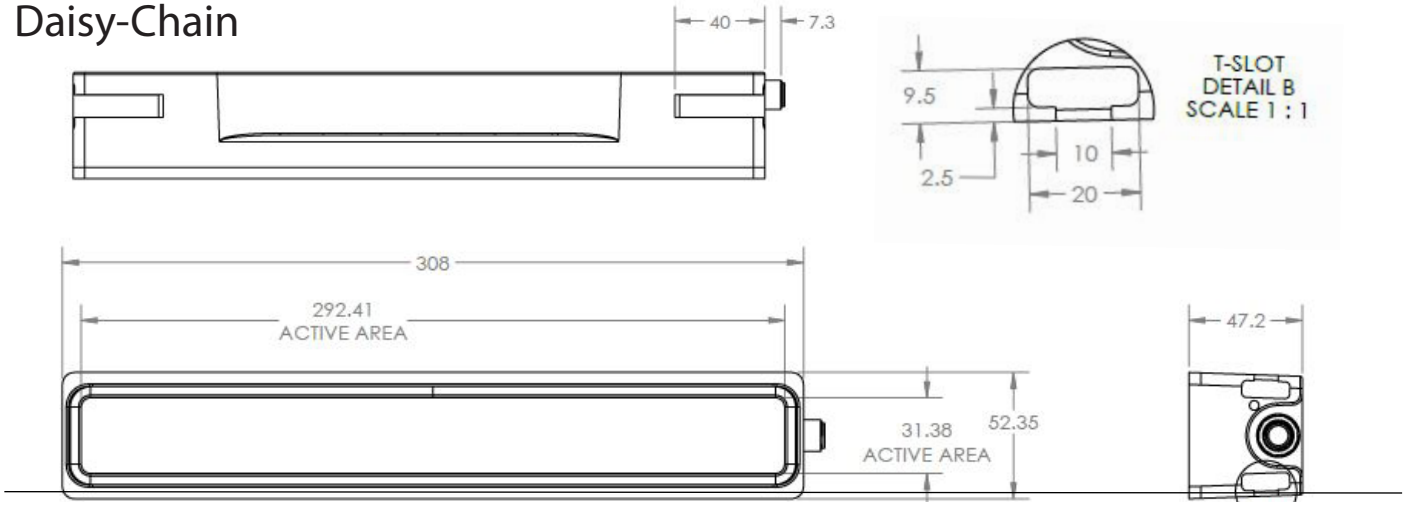
PRODUCT DRAWING

CAD files available on our website.
Dimensions are in mm

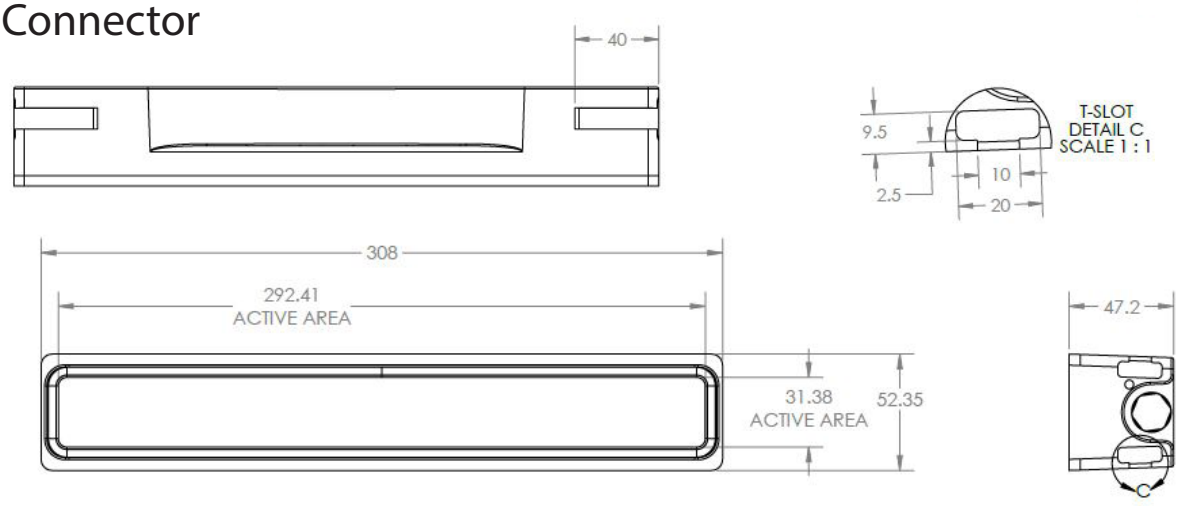
Direct Connect



Daisy-Chain

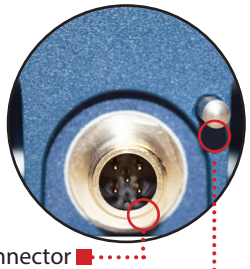


Plug Connector

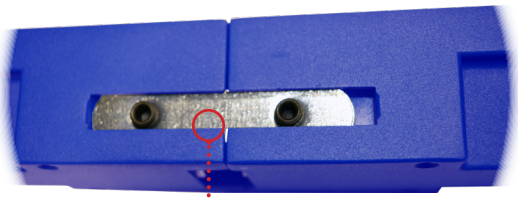


DIRECT CONNECT

The LZE300 allows for connecting lights together with no additional cables. Lights are directly connected together, with no space between the lights. Up to six LZE300 lights can be directly connected together.



The part number **LXJ-2DTN** is required to directly connect two or more LZE300 together.



*For this type of connection, be sure to leave the suffix blank when filling out the part number.
Ex. LZE300 - 625 - W - LPI = LZE300, 625 nm, Wide Lens, Linear Polarizer Installed, Direct Connect

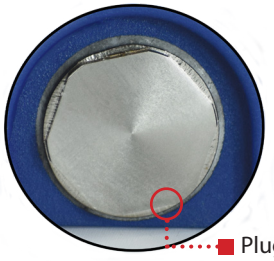
DAISY-CHAIN

Daisy-chain allows for a 5PM-12 jumper cable to be used when connecting LZE300 lights together. Lights are able to be spaced apart from each other. Up to six LZE300 lights can be daisy-chained together.

LZE300 can be daisy-chained together using a jumper cable. (See accessories)

*For this type of connection, be sure to use a -DC suffix when filling out the part number.
Ex. LZE300 - 625 - W - LPI - DC = LZE300, 625 nm, Wide Lens, Linear Polarize Installed, Daisy Chain

PLUG



If multiple units are not going to be used, a plug termination can be ordered. To get this option, use a -PG suffix on the product number.
Ex. LZE300 - 625 - W - LPI - PG = LZE300, 625 nm, Wide Lens, Linear Polarize Installed, Plug

ACCESSORIES

Power Cables

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

Jumper Cables (Only for Daisy Chaining)

Lengths	Part Number
300 mm	5PM12-J300
1000 mm	5PM12-J1000
2000 mm	5PM12-J2000

Mount

Description	Part Number
3-Axis Pan and Tilt Mount	PB300-M5

Connector (Only for Direct Connect)

Description	Part Number
Set of 2 Connectors	LXJ-2DTN

SmartVisionLink™

Part Number	Description
BTM-1000	Bluetooth Module

Linear Polarizer

Description	Part Number
Linear Polarizer Kit	LZE300-LP

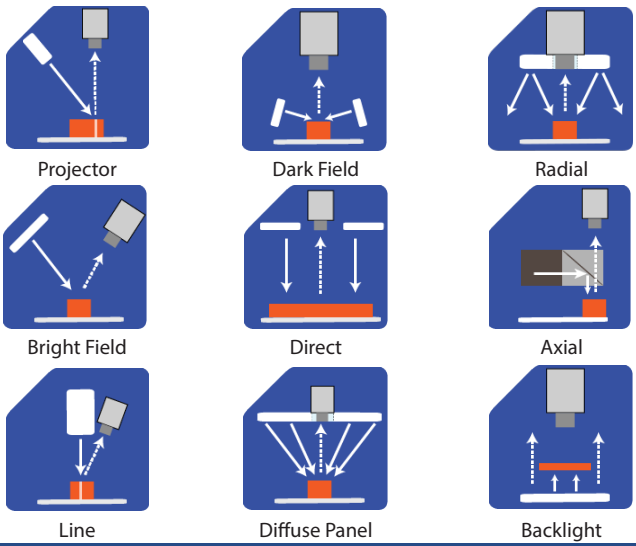
GLOSSARY

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

TERMINOLOGY

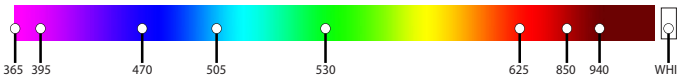
OverDrive™ Lights include an integrated high-pulse driver for complete LED light control.
Continuous Operation Lights stay on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built-in Driver The built-in driver allows 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 ILLUMINATIONS



COMMON COLOR/WAVELENGTHS LEGEND

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



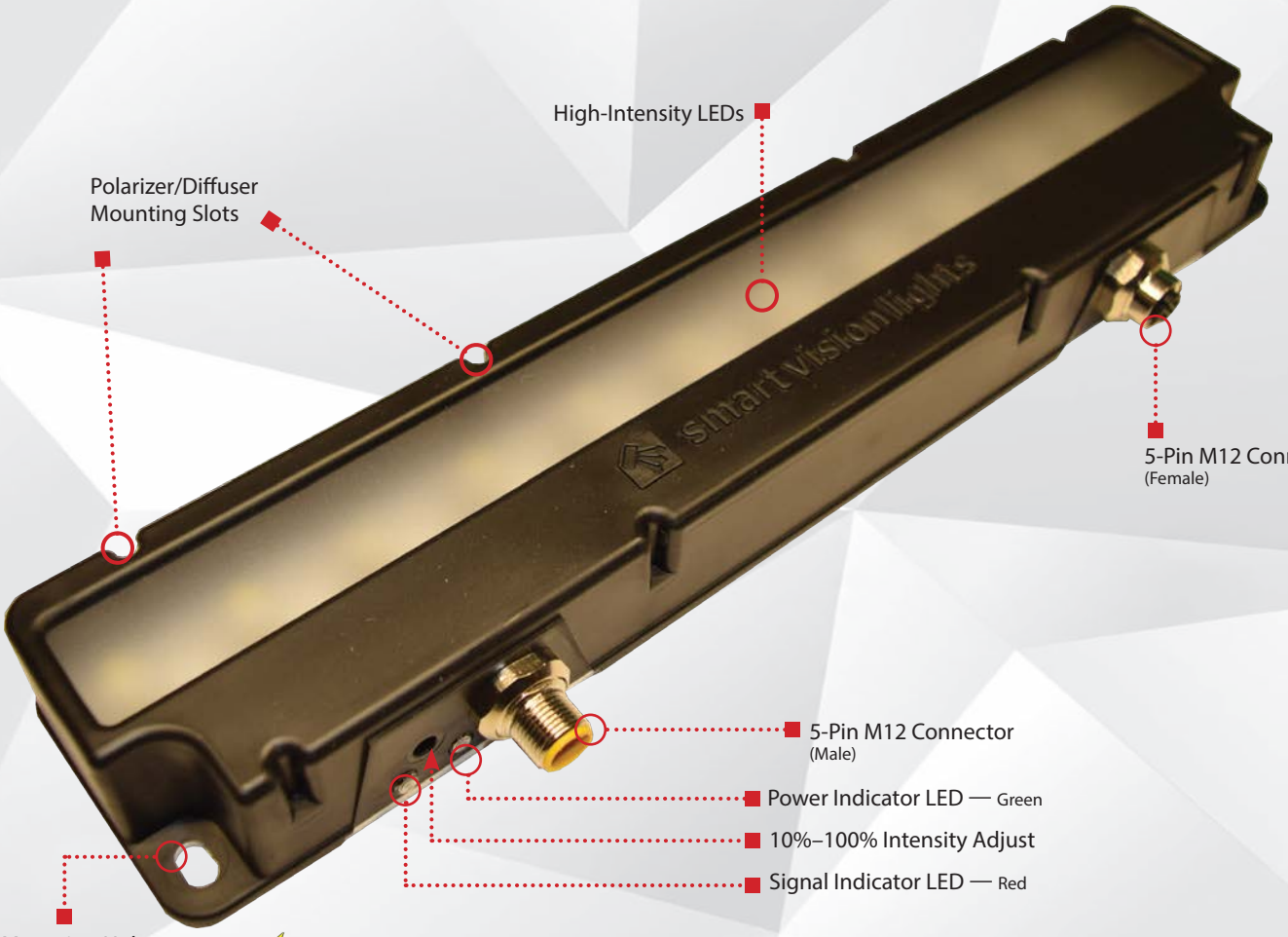
See Part Number section for **this light's available standard wavelengths.*

SWIR SHORT WAVE **INFRARED**

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

smart vision lights ODL300 *Connect-a-Light* LINEAR LIGHT OVERDRIVE™

PRODUCT DATA SHEET



OverDRIVE

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

PRODUCT HIGHLIGHTS

- ✓ OverDrive™ — up to five times brighter than a standard linear Connect-a-Light
- ✓ Daisy-chain up to six ODL300 linear lights using a 5-pin M12 jumper cable
- ✓ Built-in Smart Driver™
- ✓ PNP and NPN trigger input signal
- ✓ Up to 5000 strobes per second
- ✓ 5-pin M12 quick connect

Rev. 2019/07/12

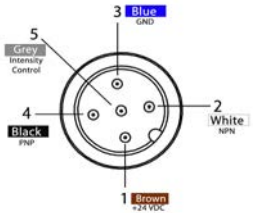
PRODUCT DESCRIPTION

The ODL300 array utilizes 12 high intensity LEDs and features an integrated OverDrive™ driver with a maximum strobe rate of 5000 strobes per second. 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.

PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/–5%
Input Current	Max. 4.6 A draw during strobe | Max. average 460 mA
Wattage	Max. 110 W during strobe | Max. average 11 W
Strobe 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 @ common (0VDC)
Duty Cycle	Max. 10%
Strobe/Pulse Time	Max. 5000 SPS (strobes per second) | Max. Single Pulse = 125 ms
Red Indicator LED	ON = Light Rest (LED inactive) | OFF = LED/Light Ready
Green Indicator LED	ON = Power
Potentiometer	270º turn pot — intensity control of 10%–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	-18º–40ºC (0º–104ºF)
IP Rating	IP50
Weight	~370 g
Compliances	CE, RoHS, IEC 62471
Warranty	UV LEDs have a 2 year warranty, all other LEDs have a 10 year warranty. For complete warranty information, visit smartvisionlights.com/warranty.

WIRING CONFIGURATION



Pin layout for light (male connector)

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 Signal	1–10VDC	GREY*

OPTIONAL

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

** 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).*

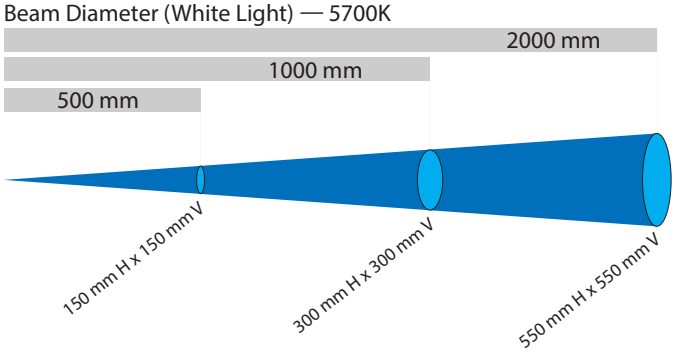
RESOURCE CORNER

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

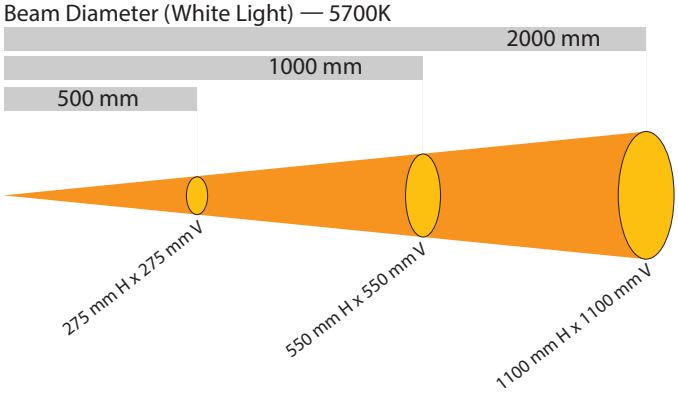
LIGHT PATTERNS

Smart Vision Lights recommends the ODL300 be used at a working distance between 300 mm and 4000 mm.

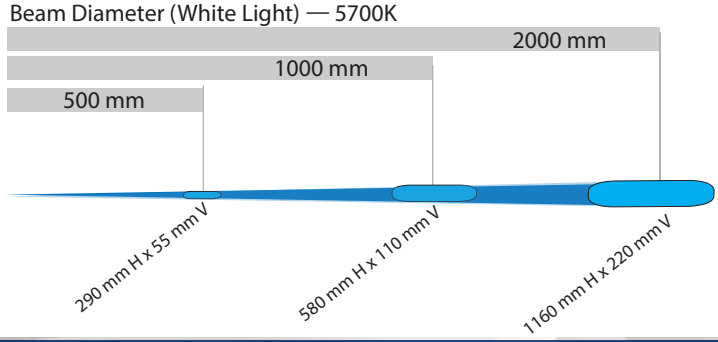
Beam Diameter (White Light) — 5700K



Beam Diameter (White Light) — 5700K



Beam Diameter (White Light) — 5700K



LIGHTING PATTERN FOR THE ODL300 **with Narrow (Standard) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	150 mm (~5.9") H x 150 mm (~5.9") V
1000 mm (39.4")	300 mm (~11.8") H x 300 mm (~11.8") V
2000 mm (78.8")	550 mm (~21.6") H x 550 mm (~21.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	55,000
Illuminance measurement taken on White Lights — 5700K	

LIGHTING PATTERN FOR THE ODL300 **with Wide (W) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	275 mm (~10.8") H x 275 mm (~10.8") V
1000 mm (39.4")	550 mm (~21.6") H x 550 mm (~21.6") V
2000 mm (78.8")	1100 mm (~43") H x 1100 mm (~43") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	40,000
Illuminance measurement taken on White Lights—5700K	

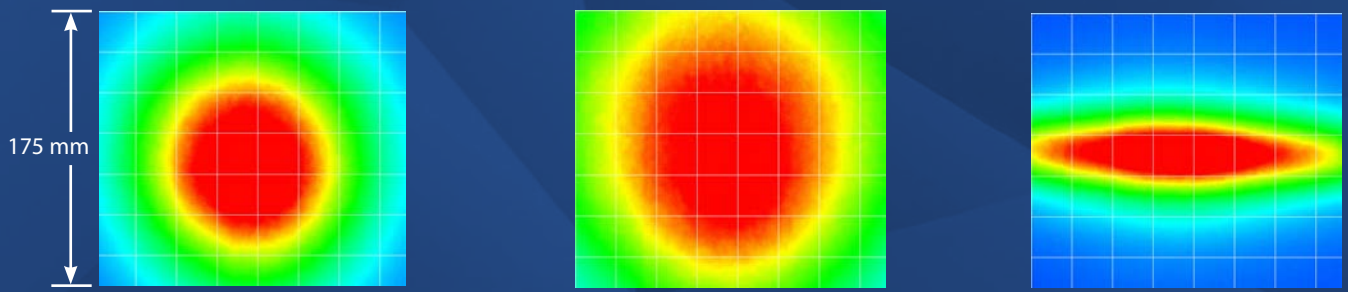
LIGHTING PATTERN FOR THE ODL300 **with Line (L) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	290 mm (~12.2") H x 55 mm (~2.1") V
1000 mm (39.4")	580 mm (~24.4") H x 110 mm (~4.3") V
2000 mm (78.8")	1160 mm (~48.8") H x 220 mm (~8.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	95,000
Illuminance measurement taken on White Lights — 5700K	

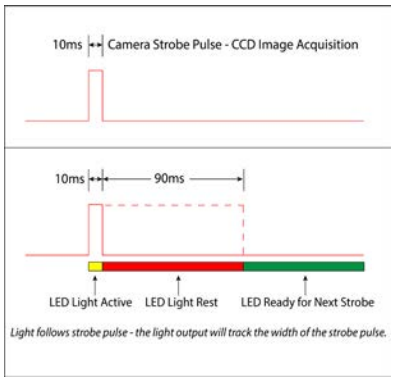
The ODL300 Linear Light produces a uniform light pattern.

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



DUTY CYCLE (OVERDRIVE™ MODE ONLY)

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

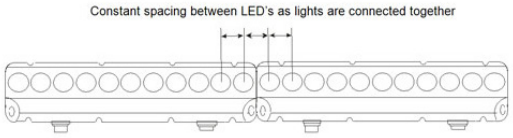
$$RT = \frac{10\ ms}{0.1} - 10\ ms = 90\ ms$$

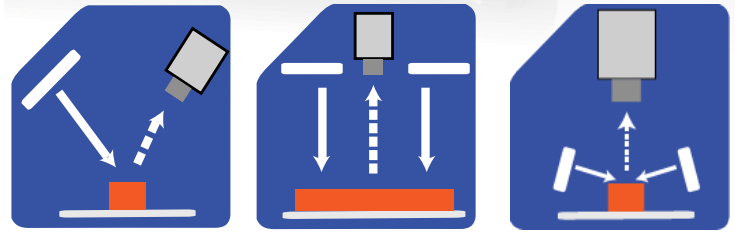
Rest Time is 90 ms for 10 ms Strobe Time

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

DAISY-CHAIN LIGHTS

ODL300 Series of lights requires the use of a standard 5-pin M12 jumper cable to effectively parallel up to six (6) ODL300 lights.





ILLUMINATION

ODL300 Series of Linear Lights works best for:

Bright Field

Direct Lighting

Dark Field

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 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 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

ODL300 – □□□□ – □ – □□□

COLOR:
WHI, 365 395, 470, 505, 530, 625, 850 940

LENS:
Leave blank for Standard (Narrow)
W = Wide
L = Line

LINEAR POLARIZER:
Leave blank for none
LPI = Factory Installed

Part Number Examples:

ODL300-625	ODL300, 625 nm Wavelength, Standard Lens (Narrow)
ODL300-WHI-L	ODL300, White, Line Lens
ODL300-470-W-LPI	ODL300, 470 nm Blue Wavelength, Wide Lens, with Linear Polarizer Installed

Line lens optic not available for UV wavelengths.
Additional wavelengths and lens options available upon request.

SWIR SHORTWAVE INFRARED

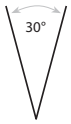
This light is available in our SWIR LEDs.

1050 nm | 1200 nm | 1300 nm | 1450 nm | 1550 nm

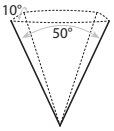
LENS OPTICS

NARROW (STANDARD)
Narrow, 16° angle-cone lenses are standard. Standard lenses create a narrow beam of illumination and are used for long working distances.

WIDE
Wide, 30° angle-cone lenses create a large area of illumination. They create a floodlight effect, can be used for short working distances.



LINE
Line, with a 10° width and a 50° fan-angle projects a thin, narrow beam of illumination.



When to Use a Linear Polarizer?

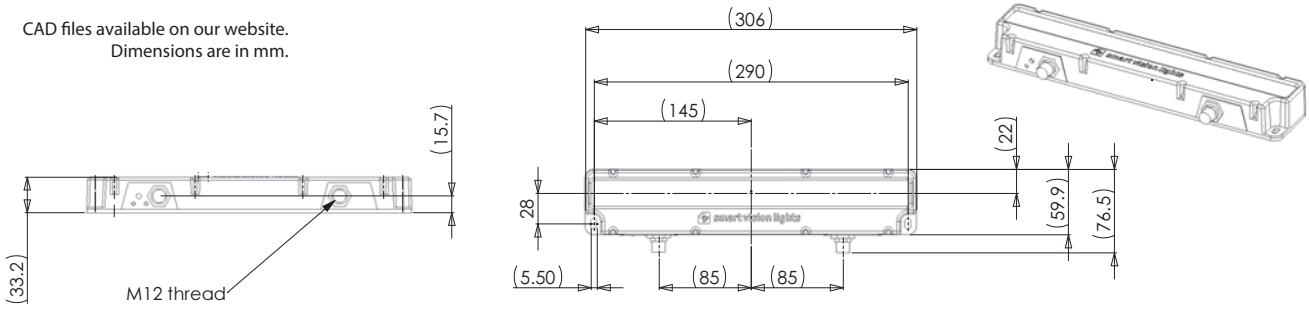
Polarizing filters can reduce reflections on specular (Dielectric or nonmetal) surfaces.

A Linear Polarizer has a typical transmission of 38 percent while blocking 62 percent of the light not in the polarization plane.

WARNING: Running a light in continuous operation while using a polarizer with certain wavelengths (e.g. white, blue) may burn the polarizer.

PRODUCT DRAWING

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



ACCESSORIES

Power Cables

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

Jumper Cables (Daisy-Chain)

Length	Part Number
300 mm	5PM12-J300
1000 mm	5PM12-J1000
2000 mm	5PM12-J2000

Mount

Description	Part Number
3-Axis Pan and Tilt Mount	PB300-M5

Mounting Rails

Length	Part Number
300 mm	LEXT300
600 mm	LEXT600
900 mm	LEXT900
1200 mm	LEXT1200
Custom sizes available	

Diffuser

Description	Part Number
Diffuser Kit	ODL300-DKIT

Linear Polarizer

Description	Part Number
Linear Polarizer Kit	ODL300-LP

GLOSSARY

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

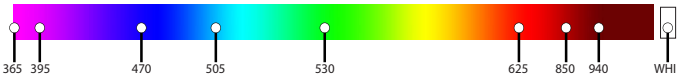
TERMINOLOGY

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 for an external controller.
Camera to Light Connect the light directly to the camera, without the need for additional controllers or equipment.
Polarizers Filters that reduce reflections on specular surfaces.
Diffuser Used to widen the angle of light emission, reduce reflections, and increase uniformity.

TYPES OF ILLUMINATIONS

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.*

SWIR SHORT WAVE INFRARED

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

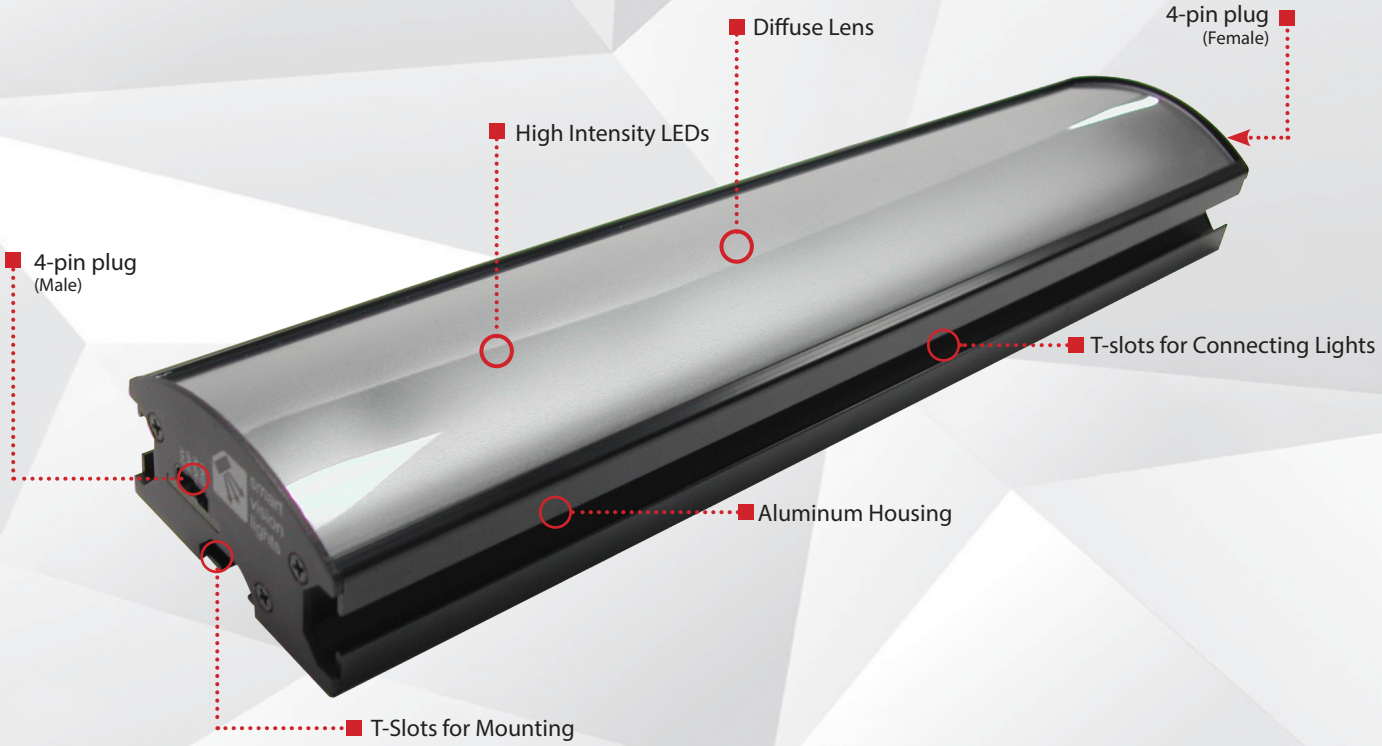
ODLHF300 *Direct Connect*

LINEAR LIGHT

FLOURESCENT REPLACEMENT

OVERDRIVE™

PRODUCT DATA SHEET



OverDRIVE™

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

PRODUCT HIGHLIGHTS

- ✓ OverDrive™ — Up to five times brighter than a standard flourescent replacement light
- ✓ Built-in driver, no external wiring needed
- ✓ PNP and NPN strobe input
- ✓ T-Slot for mounting and connecting together
- ✓ Direct connect up to eight lights in a line without loss of uniformity
- ✓ Optional add-ons include 5-pin M12 connectors

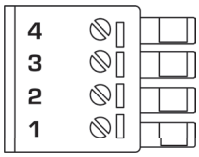
PRODUCT DESCRIPTION

The ODLHF300 Series of lights was designed as a direct LED replacement for standard fluorescent lighting. The plug n' play design of the Direct-Connect Linear Light Series gives users tremendous flexibility without the concern for additional wiring. The ODLHF300 array utilizes 30 high intensity LEDs and features a diffuse lens cover designed to disperse the light a uniform and homogenous pattern the same as a fluorescent light of equivalent length. It also features an integrated constant current driver built into the light. Direct-Connect Series Linear Lights utilize 24 V DC and can operate in constant ON or strobing mode. NPN or PNP strobe trigger can be used to control the pulse of the light..

PRODUCT SPECIFICATIONS

Electrical Input	24 V DC +/- 5%
Input Current	Max. 2A
Wattage	Max. 48 W
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 (0VDC)
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 24 V DC (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 1–10 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
Weight	~455g
Compliances	CE, RoHS, IEC 62471

WIRING CONFIGURATION



Pin layout for light (Male Connector)

Pins	Function	Signal	Wire Color
4	Ground	GND	BLUE
3	NPN Strobe	GND for active ON	WHITE
2	PNP Strobe	+24 V DC for active on	BLACK
1	Power in	+24 V DC	BROWN

RESOURCE CORNER

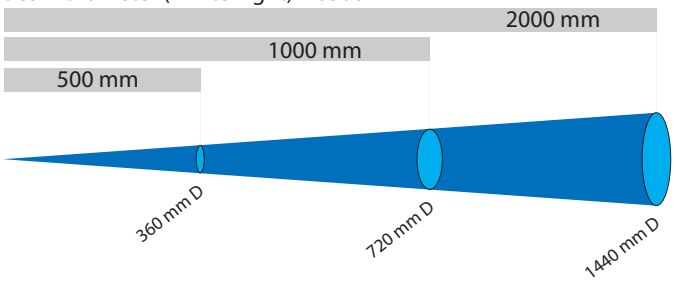
Additional resources are available on our website, including CAD files, videos, and application examples.

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

LIGHT PATTERNS

Smart Vision Lights recommends the ODLHF300 be used at a working distance between 150 mm to 2000 mm.

Beam Diameter (White Light) – 6500 K



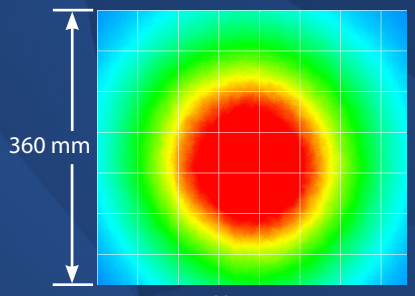
LIGHTING PATTERN FOR THE ODLHF300

Working Distance mm (inches)	Pattern (80% - 100% measured intensity) mm (inches)
500 mm (19.7")	360 mm D
1000 mm (39.4")	720 mm D
2000 mm (78.8")	1440 mm D

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	1680
Illumination measurement taken on White Lights - 6500K	

The ODLHF300 Linear Light produces a uniform light pattern.

Working Distance = 500 mm Grid set to 50 mm x 50 mm



Narrow

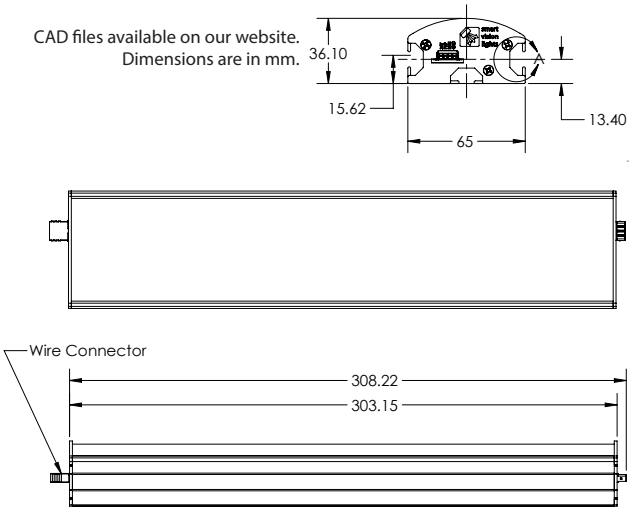
DAISY CHAIN LIGHTS

The ODLHF300 series allows for connecting lights together with no additional cables. Lights are directly connected together, with no space between the lights. UP to eight LHF300 lights can be directly connected together. The LXJ-2DTN is required to directly connect two ODLHF300 lights together.

Light Connector
(Part Number LXJ-2DTN)

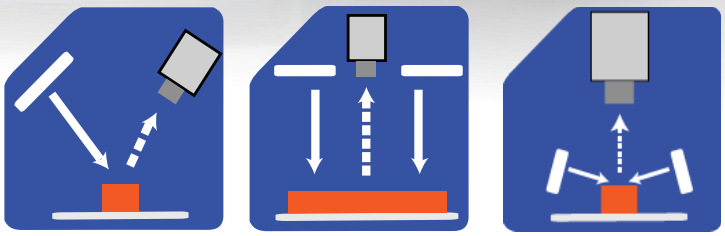
PRODUCT DRAWING

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



ILLUMINATION

ODLHF300 Series of Linear Lights works best for:



Bright Field | Direct Lighting | Dark Field

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 three T-slots (two along the sides and one along the bottom) on the ODLHF300 flourescent replacement light.

Optional Mounting Hardware:
T-Slots = M5 x 0.8 mm T-Nut

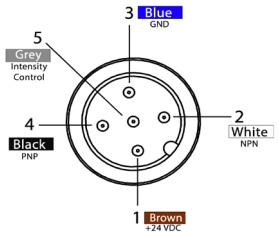
ADD-ONS

M12 Male Adapter
Part# LHF300-E-PKIT

M12 Female Adapter
Part# LHF300-E-PKIT

M12 Cover Adapter
Part# LHF300-EC

WHEN USING CONNECTOR ADAPTERS



Pin layout for light (Male Connector)

Wiring Configuration For the 5-pin M12 Adapter:

Pins	Function	Signal	Wire Color
1	Power in	+24 V DC	BROWN
2	NPN Strobe	GND for active ON	WHITE
3	Ground	GND	BLUE
4	PNP Strobe	+24 V DC for active on	BLACK
5	NOT USED	NOT USED	GREY

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).*

When a ODLHF300 light has a M12 male adapter and a M12 female adapter installed, the light can be daisy-chained with another ODLHF300 light. The one being daisy-chained too does require having at least a M12 male adapter. A standard jumper cable is required when daisy-chaining lights (Part Number: 5PM12-J300, 5PM12-J1000, or 5PM12-J2000).

PART NUMBER

ODLHF300 – □□□ – □□□ – □□□

CONNECTOR:

Leave blank for 4-pin plug (male)

M12 = 5-pin M12 (male)

COLOR:

WHI 470 625 850

LINEAR POLARIZER:

Leave blank for none

LPI = Factory Installed

Part Number Examples:

ODLHF300-625	ODLHF300, 4-pin plug connector, 625 nm Red Wavelength
ODLHF300-M12-WHI	ODLHF300, 5-pin M12 (male), WHI white
ODLHF300-470-LPI	ODLHF300, 4-pin plug connector, 470 nm Blue Wavelength, with Linear Polarizer installed

** Line lens optic not available for UV wavelengths*
Additional wavelengths and lens options available upon request

When to Use a Linear Polarizers?

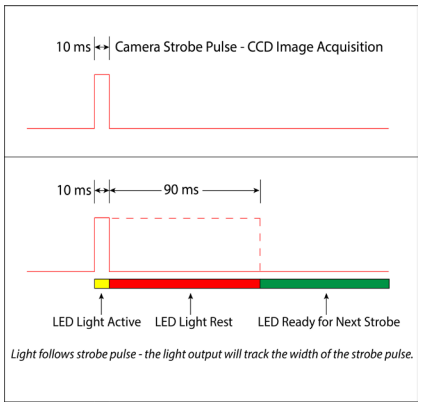
Polarizing filters can reduce reflections on specular (Dielectric or non-metal) surfaces.

A Linear Polarizer has a typical transmission of 38% while blocking 62% of the light not in the polarization plane.

WARNING: Running a light in continuous operation while using a standard polarizer with certain wavelengths (ex. white, blue) may result in burning of the polarizer.

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

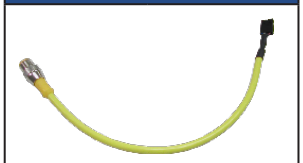
$$RT = \frac{10\ ms}{.1} - 10\ ms = 90\ ms$$

Rest Time is 90 ms for 10 ms Strobe Time

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

ACCESSORIES

M12 Pigtail cable



Description	Part Number
	5PM12-LHFP

Connector (Only for Direct Connect)

Description	Part Number
Set of 2 Connectors	LXJ-2DTN

Swivel Mount

Description	Part Number
	LHF300-BKT

M12 Cover Adapter

Description	Part Number
Cover Adapter	LHF300-EC

M12 Male Adapter

Description	Part Number
Male Adapter	LHF300-PKIT

M12 Female Adapter

Description	Part Number
Female Adapter	LHF300-E-PKIT

Jumper Cables

Lengths	Part Number
300 mm	5PM12-J300
1000 mm	5PM12-J1000
2000 mm	5PM12-J2000

* Only used when connecting LHF300 with male & female adapters installed.

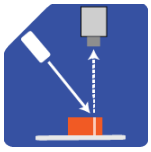
GLOSSARY

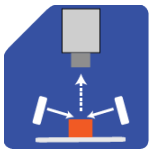
This glossary covers all Smart Vision Lights product families; some content in this section may not apply to this specific light.

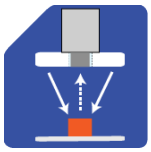
TERMINOLOGY

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.

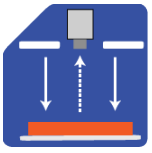
TYPES OF ILLUMINATION

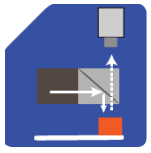

Projector

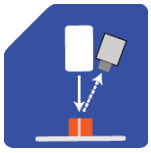

Dark Field

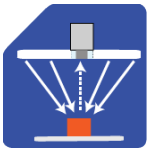

Radial

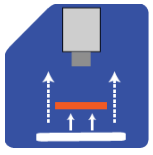

Bright Field


Direct


Axial

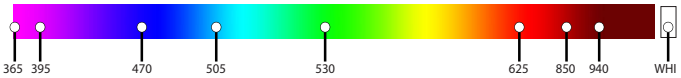

Line


Diffuse Panel


Backlight

COMMON COLOR/WAVELENGTHS LEGEND

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.*

SWIR SHORT WAVE **INFRARED**

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.*

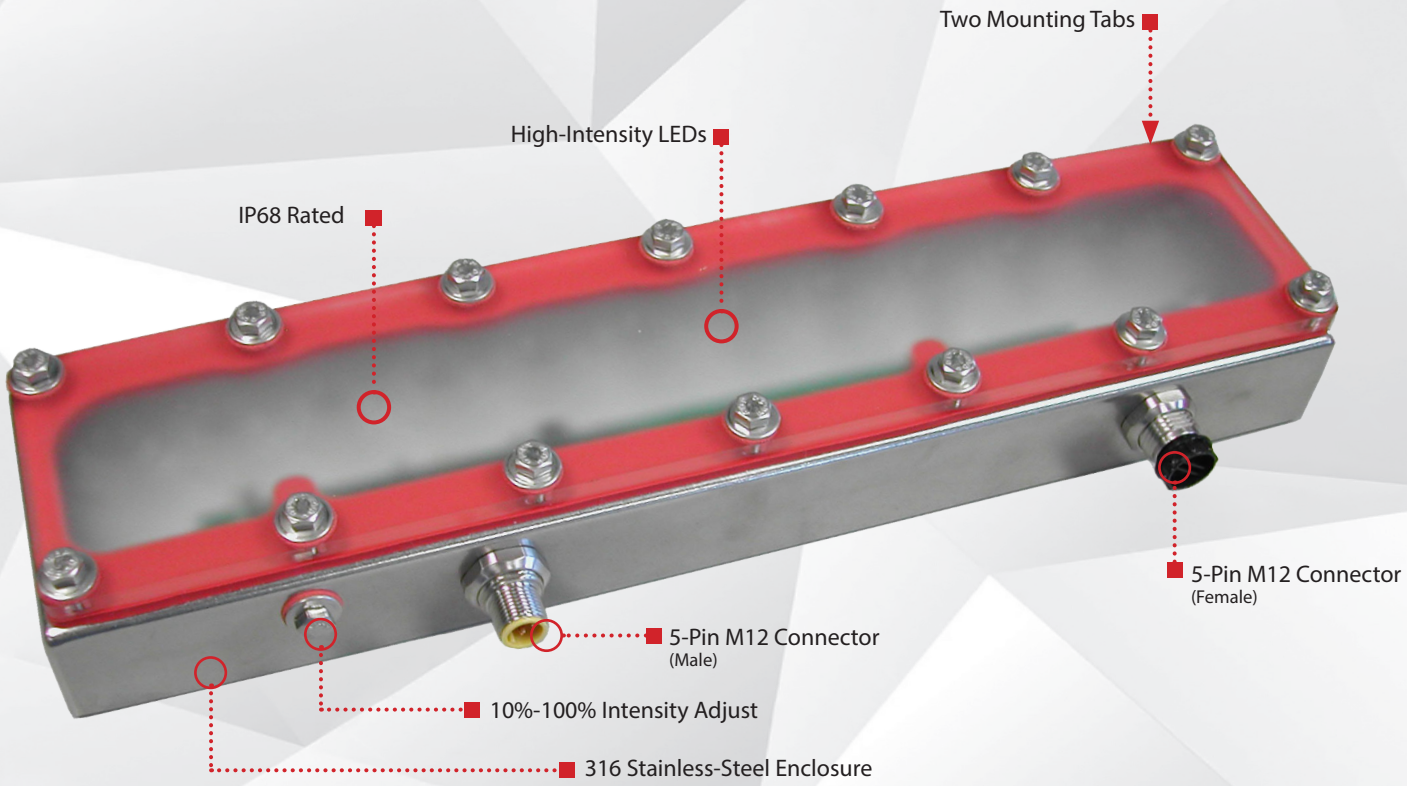
smart vision lights

ODLW300 *Connect-a-Light*

LINEAR LIGHT

WASHDOWN | OVERDRIVE™

PRODUCT DATA SHEET



OverDRIVE™

Warranty	Compliant	Compliant	Rated	Connector
10 YEAR	IEC 62471	CE RoHS	IP 68	5-PIN M12

PRODUCT HIGHLIGHTS

- ✓ OverDrive™ — up to five times brighter than a standard linear Connect-a-Light
- ✓ Built-in driver
- ✓ PNP and NPN trigger input signal
- ✓ Washdown light with 316 stainless-steel enclosure
- ✓ Daisy-chain up to six ODLW300 linear lights using a 5-pin M12 washdown jumper cable

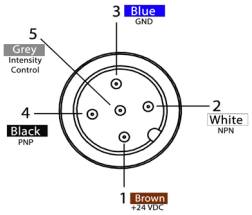
PRODUCT DESCRIPTION

The ODLW300 Series features a 100% waterproof stainless-steel enclosure specially designed for food industry and washdown environments where water and harsh detergents are present. The integrated OverDrive™ driver allows for a maximum strobe rate of 5000 strobes per second. NPN or PNP trigger signal input can be used to control the pulse of the light. Intensity of the light can be controlled via 1–10VDC analog signal line or the manual potentiometer. Daisy-chain up to six ODLW300 lights together.

PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/–5%
Input Current	Max. 4.6 A draw during strobe | Max. average 460 mA
Wattage	Max. 110 W during strobe | Max. average 11 W
Strobe Input	PNP > +4VDC or greater to activate | NPN > GND (<1VDC) to activate
PNP Line	4mA @ 4VDC | 10mA @ 12VDC | 20mA @ 24VDC
NPN Line	15mA @ ground (0VDC)
Duty Cycle	Max. 10%
Strobe / Pulse Time	Max. 5000 SPS (Strobes Per Second) | Max. Single Pulse = 125ms
Potentiometer	270º turn pot — intensity control of 10%–100%. Turn clockwise to increases intensity.
Analog Intensity	The output is adjustable from 10%–100% of brightness by a 1 – 10VDC signal.
Connection	5-pin M12 connector
Ambient Temperature	-18º–40ºC (0º–104ºF)
IP Rating	IP68
Weight	~1430 g
Power Supply	A separate power supply for OverDrive™ (high-pulse operation) is recommended. See Input Current for value.
Compliances	CE, RoHS, IEC 62471
Warranty	UV LEDs have a 2 year warranty, all other LEDs have a 10 year warranty. 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.

OPTIONAL

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

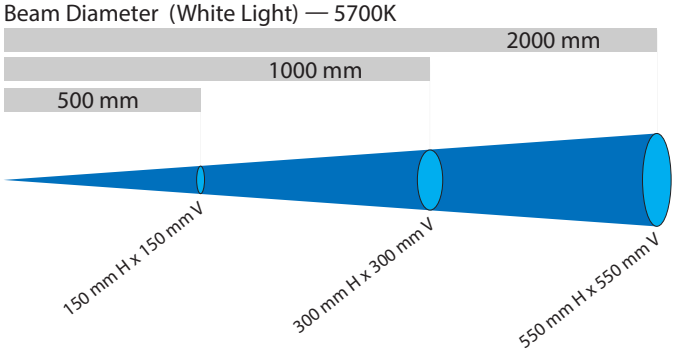
RESOURCE CORNER

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

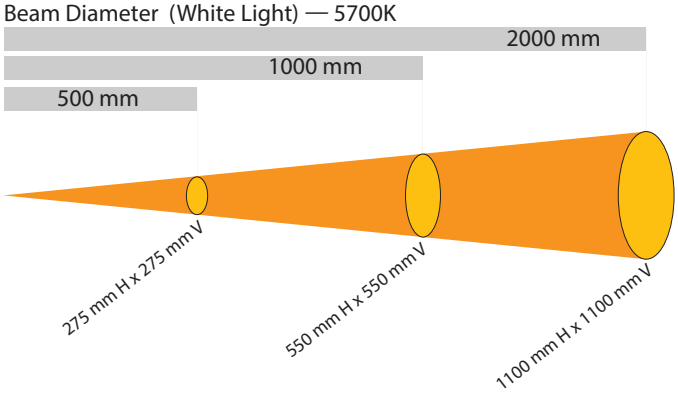
LIGHT PATTERNS

Smart Vision Lights recommends the ODLW300 be used at a working distance between 300 mm and 4000 mm.

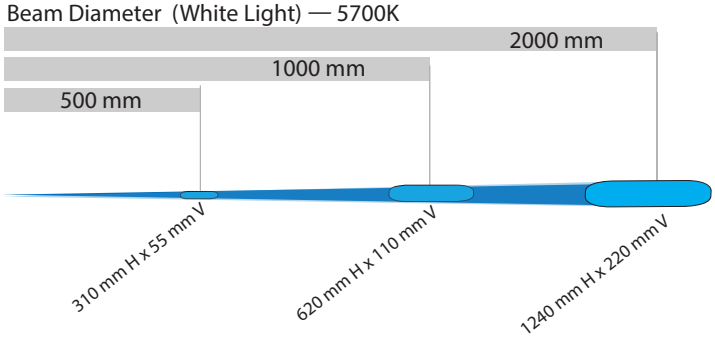
Beam Diameter (White Light) — 5700K



Beam Diameter (White Light) — 5700K



Beam Diameter (White Light) — 5700K



LIGHTING PATTERN FOR THE ODLW300 **with Narrow (Standard) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	150 mm (~5.9") H x 150 mm (~5.9") V
1000 mm (39.4")	300 mm (~11.8") H x 300 mm (~11.8") V
2000 mm (78.8")	550 mm (~21.6") H x 550 mm (~21.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	55,000
Illuminance measurement taken on White Lights — 5700K	

LIGHTING PATTERN FOR THE ODLW300 **with Wide (W) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	275 mm (~10.8") H x 275 mm (~10.8") V
1000 mm (39.4")	550 mm (~21.6") H x 550 mm (~21.6") V
2000 mm (78.8")	1100 mm (~43") H x 1100 mm (~43") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	40,000
Illuminance measurement taken on White Lights — 5700K	

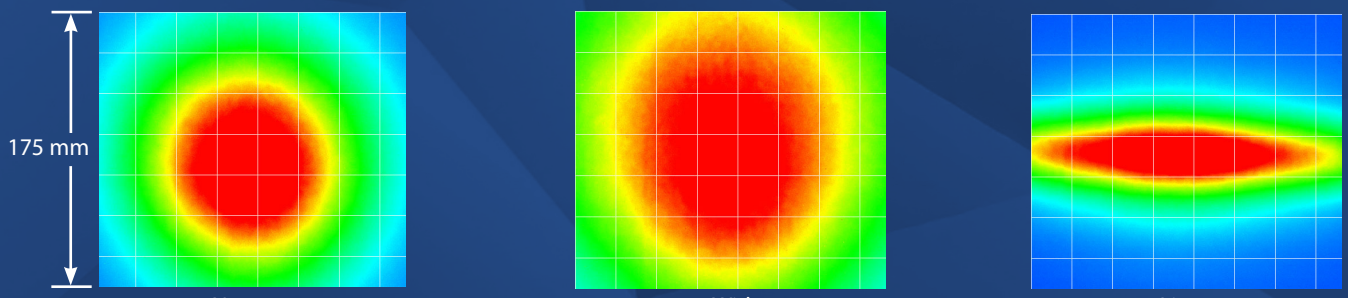
LIGHTING PATTERN FOR THE ODLW300 **with Line (L) Lenses**

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	310 mm (~12.2") H x 55 mm (~2.1") V
1000 mm (39.4")	620 mm (~24.4") H x 110 mm (~4.3") V
2000 mm (78.8")	1240 mm (~48.8") H x 220 mm (~8.6") V

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	95,000
Illuminance measurement taken on White Lights — 5700K	

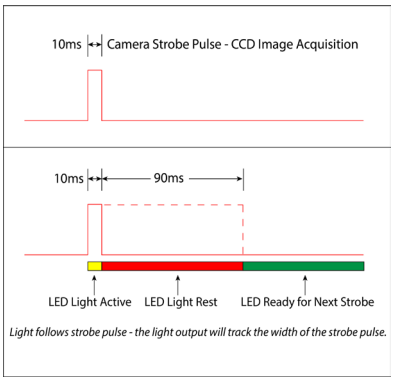
The ODLW300 Linear Light produces a uniform light pattern.

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



DUTY CYCLE (OVERDRIVE™ MODE ONLY)

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

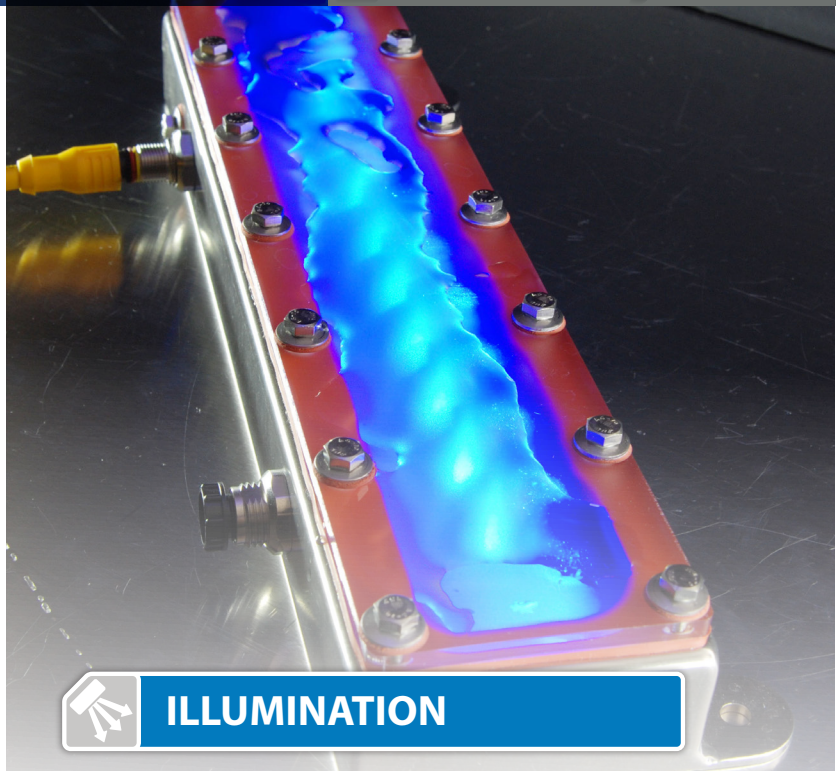
$$RT = \frac{10\ ms}{0.1} - 10\ ms = 90\ ms$$

Rest Time is 90 ms for 10 ms Strobe Time

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

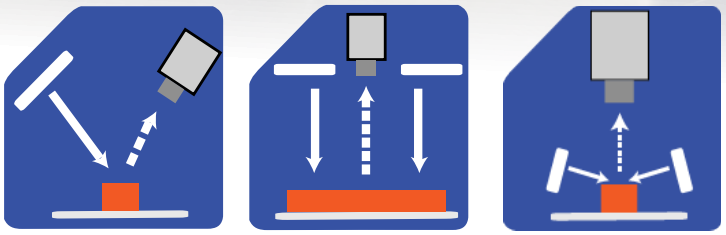
DAISY-CHAIN LIGHTS

ODLW300 Series light requires the use of a standard 5-pin M12 jumper cable to effectively parallel up to six (6) ODLW300 lights.



ILLUMINATION

ODLW300 Series of Linear Lights works best for:



Bright Field | Direct Lighting | Dark Field

EYE SAFETY

SMART VISION LIGHTS IEC 62471 COMPLIANT

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 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 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

ODLW300 – □□□□ – □

COLOR:

WHI | 365 395 | 470 | 505 | 530 | 625 | 850 940

LENS:

Leave blank for Standard (Narrow)

W = Wide

L = Line

Part Number Examples:

ODLW300-625 ODLW300, 625 nm Red Wavelength, Standard (Narrow Lens)

ODLW300-WHI-L ODLW300, White, Line Lens

SWIR SHORTWAVE INFRARED

This light is available in our SWIR LEDs.

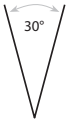
1050 nm | 1200 nm | 1300 nm | 1450 nm | 1550 nm

Additional wavelength and lens options available upon request.

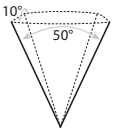
LENS OPTICS

NARROW (STANDARD)
Narrow, 16° angle-cone lenses are standard. Standard lenses create a narrow beam of illumination and are used for long working distances.

WIDE
Wide, 30° angle-cone lenses create a large area of illumination. They create a floodlight effect and can be used for short working distances.



LINE
Line, with a 10° width and a 50° fan angle, projects a thin, narrow beam of illumination.



Additional lens options available upon request.

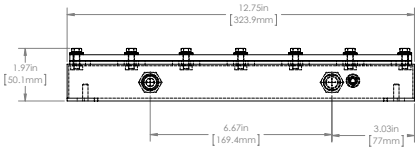
MOUNTING

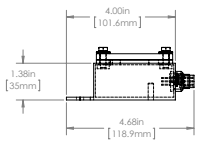
The ODLW300 series features two 316 stainless-steel tabs welded directly to the housing for simple yet versatile mounting options.

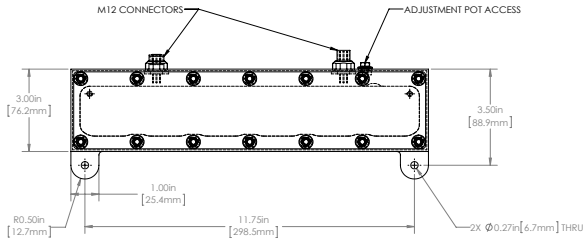
Two Mounting Tabs

PRODUCT DRAWING

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





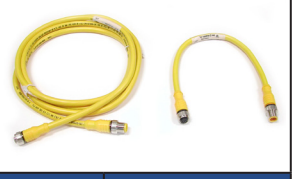


ACCESSORIES

Power Cables (Wash-down)

Length	Part Number
10 m	W5PM12-10
15 m	W5PM12-15

Jumper Cables (Daisy Chain) (Washdown)



Length	Part Number
300 mm	W5PM12-J300

Washdown cables have a 316 Stainless-Steel connector(s).

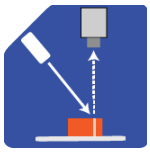
GLOSSARY

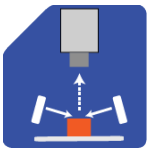
This glossary covers all Smart Vision Lights product families; some content in this section may not apply to this specific light.

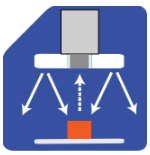
TERMINOLOGY

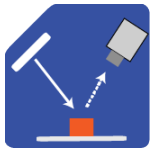
OverDrive™ Lights include an integrated high-pulse driver for complete LED light control.
Continuous Operation Lights stay on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built-In Driver The built-in driver allows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

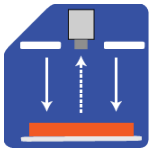
TYPES OF ILLUMINATIONS

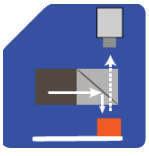

Projector

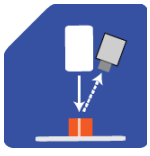

Dark Field

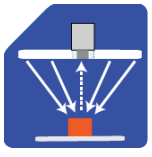

Radial

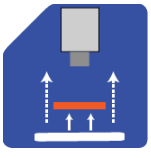

Bright Field


Direct


Axial

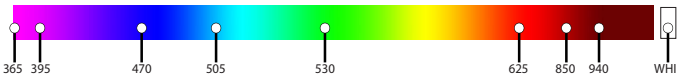

Line


Diffuse Panel


Backlight

COLOR/WAVELENGTHS LEGEND

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



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

SWIR SHORT WAVE INFRARED

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.*