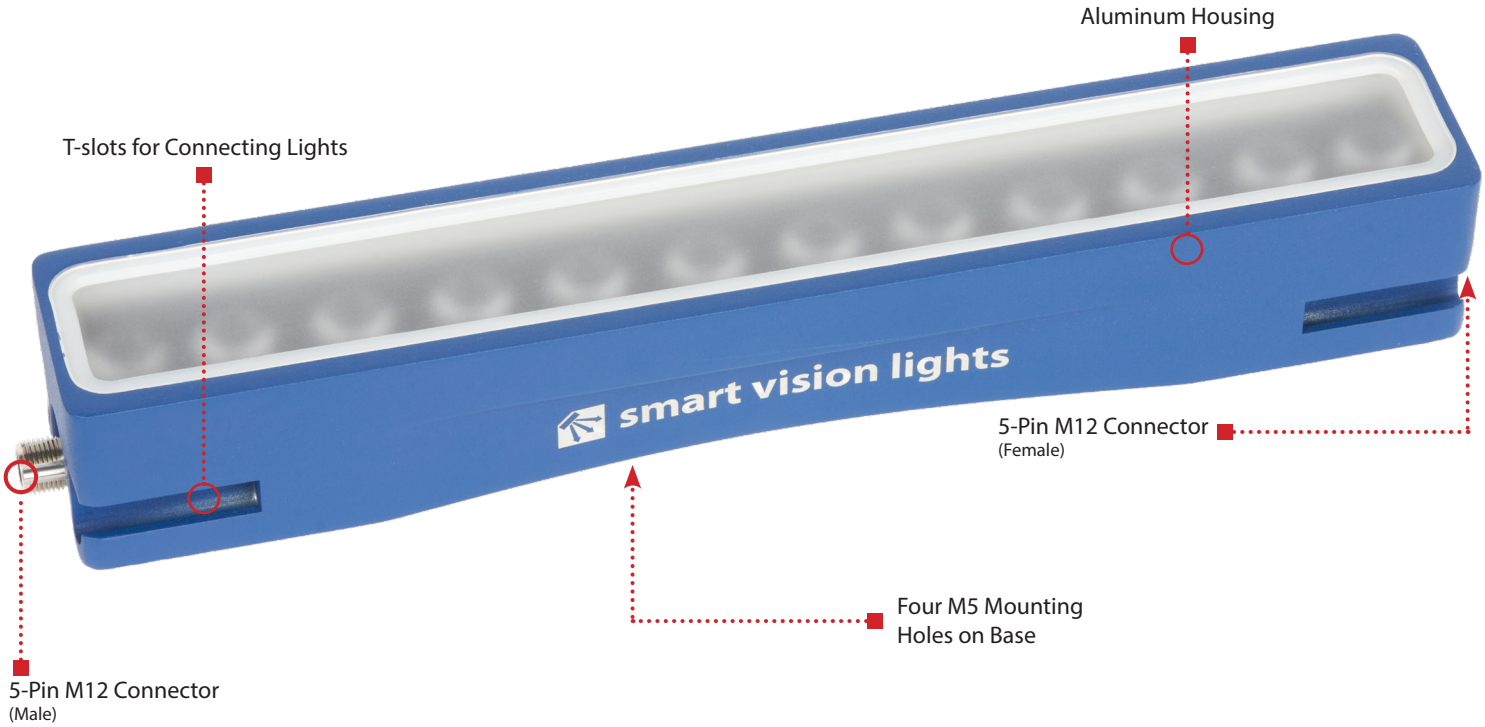
LZE300 Linear Light
DIRECT CONNECT



The LZE300 is a SmartVisionLink™-enabled linear light. With the addition of the BTM-1000 Bluetooth module, the LZE300 can be wirelessly adjusted for intensity levels either for the entire light or for each of the three LED zones. The LZE300 can be connected in a series of up to six lights, either through direct-connect or daisy-chain, to create a total of 18 independently controllable lighting zones.

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

LZE300 HIGHLIGHTS

- ✔ Connect up to six LZE300 linear lights
- ✔ SmartVisionLink™-enabled provides easy intensity adjustment in both continuous and OverDrive™ modes
- ✔ NanoDrive™ provides the ability to turn the light fully on in less than 500 ns
- ✔ Industrial aluminum housing
- ✔ Three independent lighting zones

Smart VisionLink nanoDrive™

REV 07/27/26

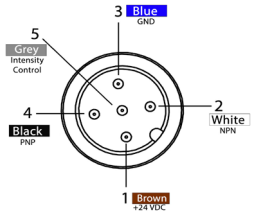
SPECIFICATIONS

	Continuous Operation	OverDrive™ Operation
Electrical Input	24 VDC +/- 5%	
Input Current	Max. 850 mA	Peak 6 A during strobe
Input Power	Max. 20 W	Peak 144 W during strobe
PNP Trigger	2 mA @ 4VDC | 7 mA @ 12VDC | 13.4 mA @ 24VDC	
NPN Trigger	12 mA @ Common (0VDC)	
Mode Control	Connect pin 5 to 1 - 10 VDC (10 - 100% output); 24VDC (Max)	Connect pin 5 to GND (See wiring configuration for more information)
Trigger Input	PNP > +4 VDC (24 VDC max.) to activate **or** NPN ≥ GND <1VDC to activate **(not both)**	
Strobe Duration	Min. 30 µs | Max. ∞	Min. 1 µs | Max. 50 ms
Strobe Trigger Latency	10 µs	600 ns
Strobe Frequency	Max 4 kHz or 1 / Duty Cycle as calculated, whichever is less.[1]	
Duty Cycle	Not Applicable	Max 10%[1]
Analog Intensity	The output is adjustable from 10% - 100% of intensity limit by a 1 - 10 VDC signal. Jumpering pin 5 to pin 1 will provide maximum intensity. Intensity limit can be remotely adjusted via SmartVisionLink™[2]	Light is set to maximum intensity by default in OverDrive™ mode and can only be adjusted via SmartVisionLink™[2]
Connection	5-pin M12 connector	
Operating Temperature	-10° to 40° C (14° to 104° F) | RH max 80% non-condensing humidity	
Storage Temperature	-20° to 70° C (-4° to 158° F) | RH max 80% non-condensing humidity	
IP Rating	IP65	
Weight	~0.9 kg | ~2.0 lb	
Compliances	CE, IEC 62471, RoHS	
Warranty	10 years[3]	

[1]See page 9 for more information
[2]SmartVisionLink™ requires the purchase of the BTM-1000 bluetooth module, sold separately, and the SmartVisionLink™ app, free to download on the Apple App and Google Play stores.
[3]See SmartVisionLights.com/warranty for details.

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

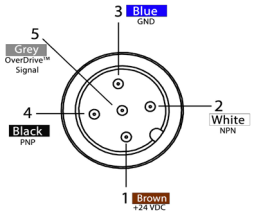
For proper light function, apply either a PNP or NPN signal, not both.

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

For maximum intensity, tie pin 5 to pin 1 at +24 VDC.
*For continuous mode: PNP (pin 4) can be tied to +24 VDC (pin 1) **or** NPN (pin 2) can be tied to Ground (pin 3).*

WIRING CONFIGURATION (continued)

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

To enable OverDrive™ mode, tie pin 5 to pin 3.

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

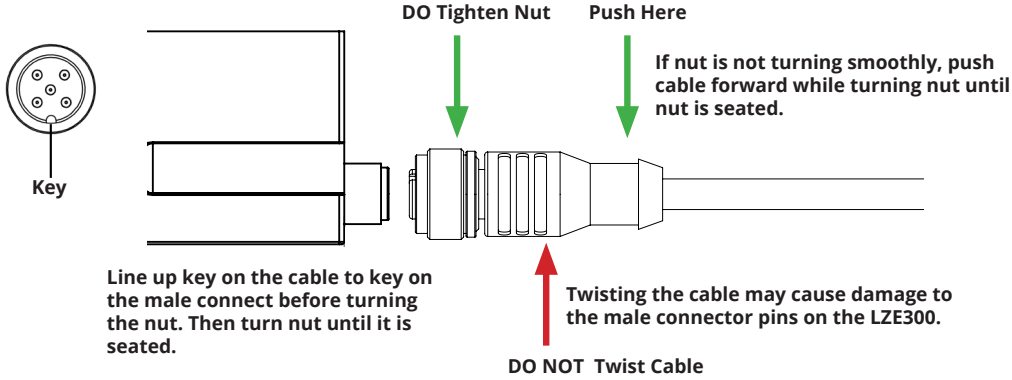
Failure to supply light with correct input current will result in inconsistent lighting behavior.
(see Product Specifications for requirements)

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.

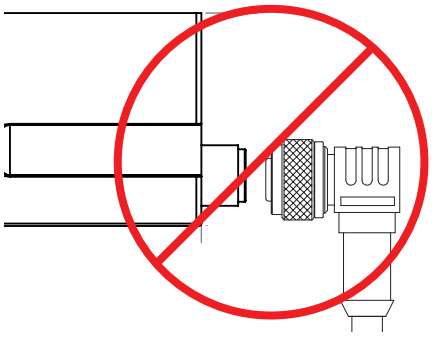


WARNING:

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.

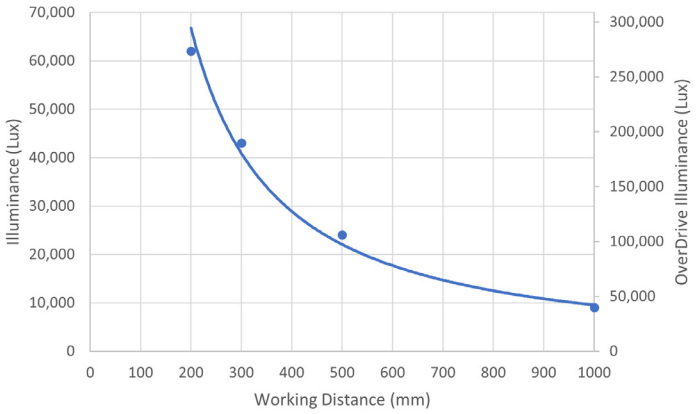


LIGHTING PATTERNS

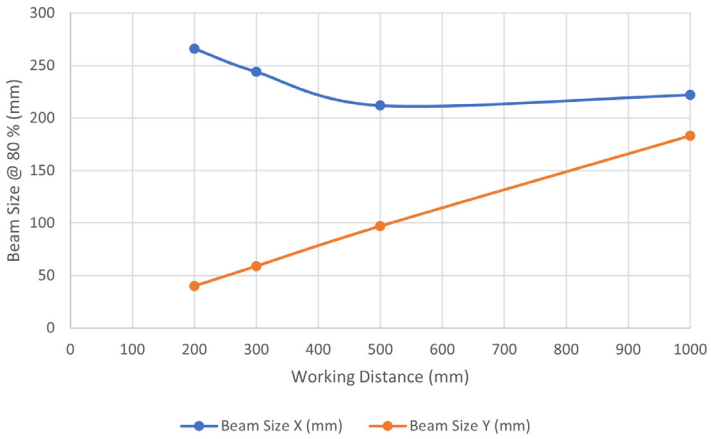
The LZE300 is recommended to be used at a working distance between 300 mm to 1000 mm. **Illuminance values taken on white light - 5700K**

Standard (10°) lighting patterns

Illuminance -vs- Working Distance

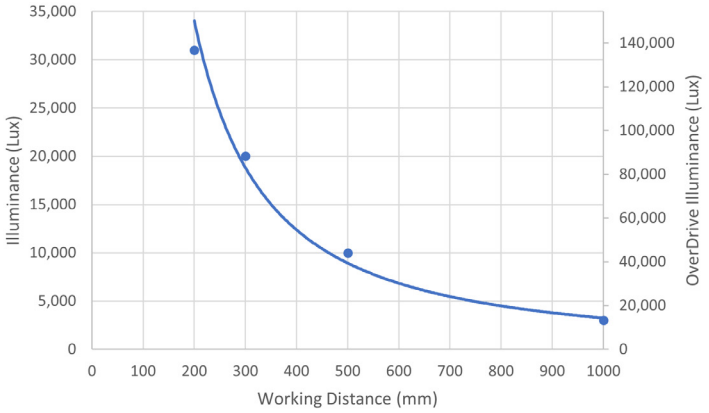


Beam Size at 80% Max Intensity -vs- Working Distance

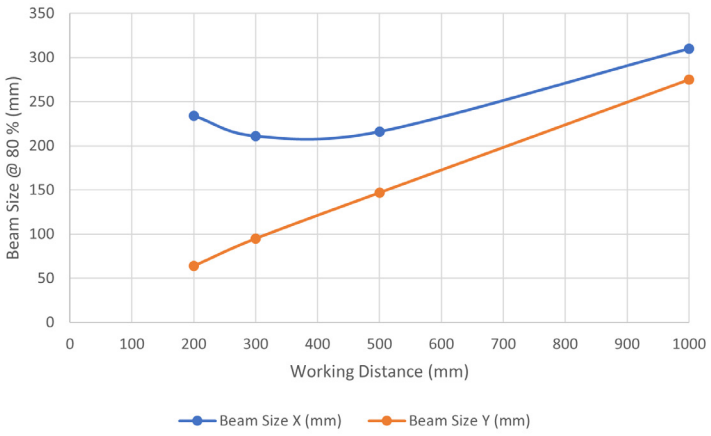


Wide (25°) lighting patterns

Illuminance -vs- Working Distance



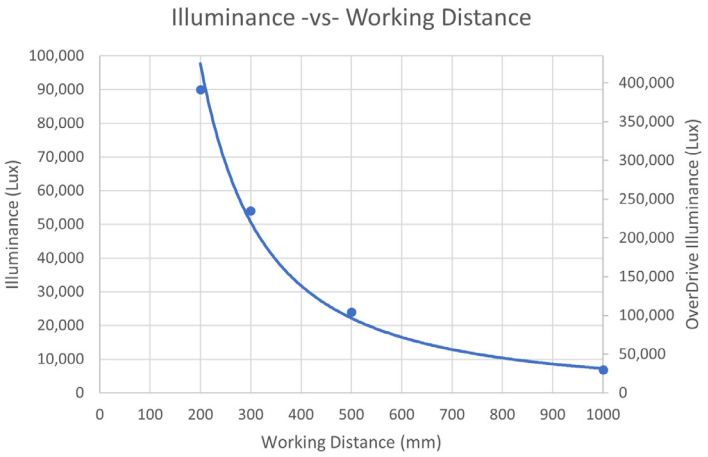
Beam Size at 80% Max Intensity -vs- Working Distance

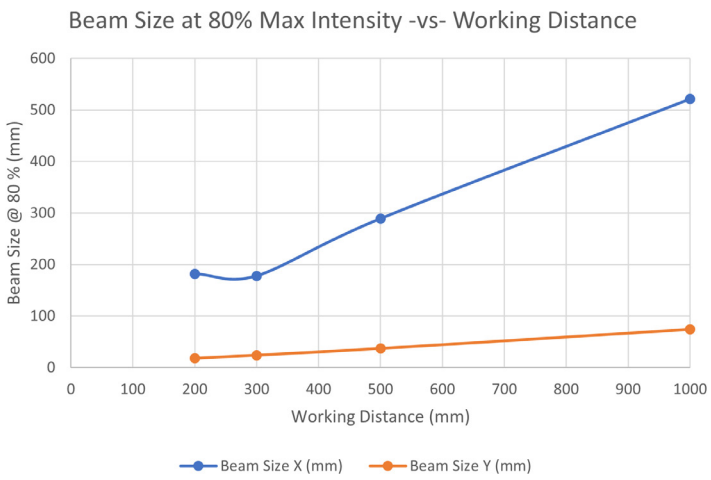


LIGHTING PATTERNS (continued)

The LZE300 is recommended to be used at a working distance between 300 mm to 1000 mm. **Illuminance values taken on white light - 5700K**

Line (10° x 50°) lighting patterns

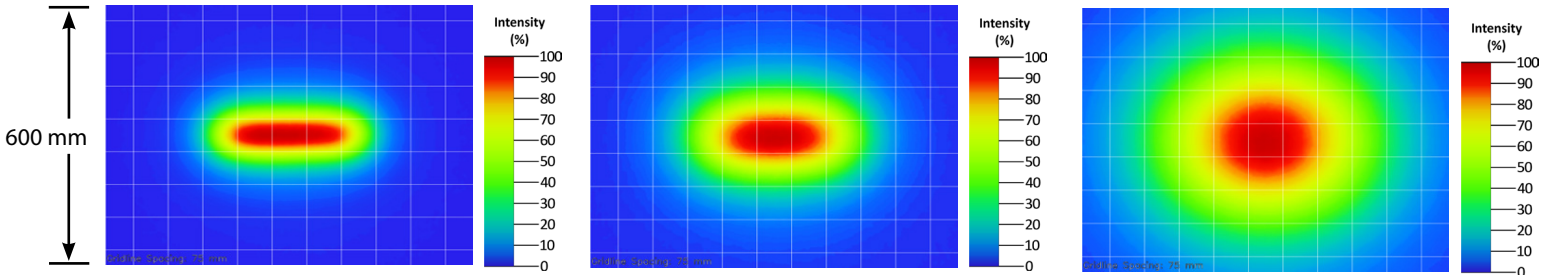




BEAM PATTERNS

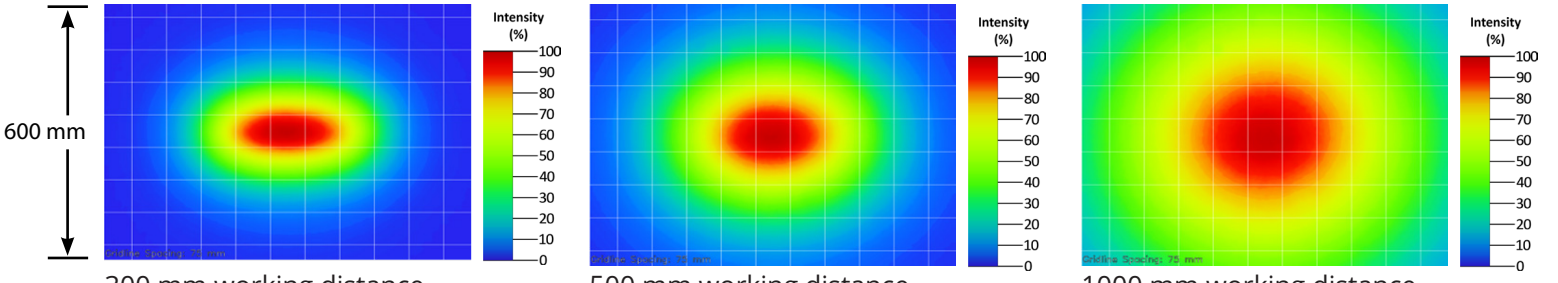
The LZE300 is recommended to be used at a working distance between 300 mm to 1000 mm. **Illuminance values taken on white light - 5700K**

Standard (10°) beam patterns



300 mm working distance | 500 mm working distance | 1000 mm working distance

Wide (25°) beam patterns

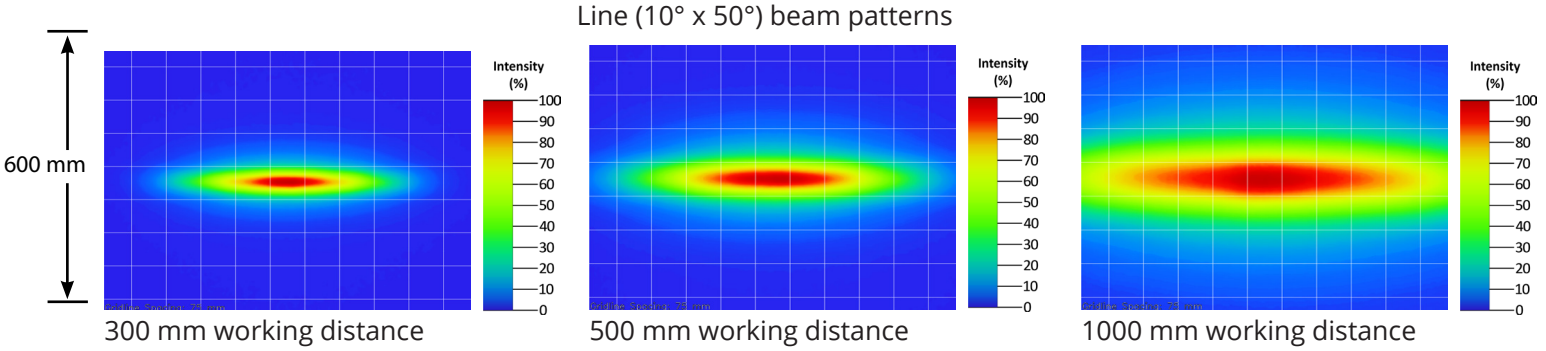


300 mm working distance | 500 mm working distance | 1000 mm working distance

BEAM PATTERNS (continued)

The LZE300 is recommended to be used at a working distance between 300 mm to 1000 mm. **Illuminance values taken on white light - 5700K**

Line (10° x 50°) beam patterns



300 mm working distance

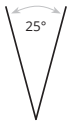
500 mm working distance

1000 mm working distance

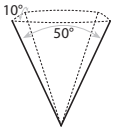
LENS OPTICS

NARROW (Standard)
The standard lens option uses a 10° beam angle lens. Standard lenses create a narrow beam of illumination and are used for long working distances.

WIDE
The wide lens option uses a 25° beam angle lens. They create a floodlight effect and can be used for short working distances.



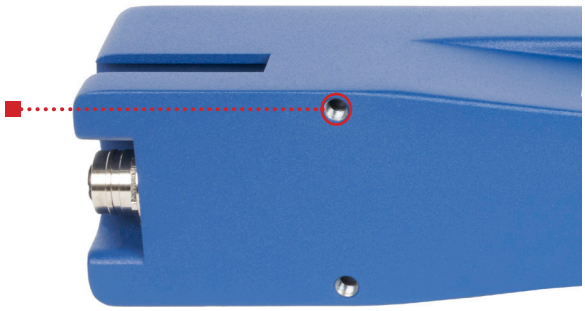
LINE
The line lens option uses a 10° x 50° beam angle lens. They project a thin, narrow beam of illumination.



MOUNTING

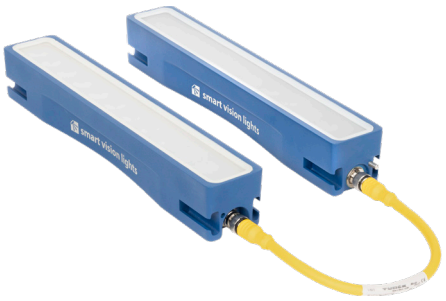
Four M5 screw holes are located on the bottom of the light for easy mounting.

Four M5 screws included with light.



DAISY-CHAIN LIGHTS*

The LZE300 daisy-chain option provides the ability to use cables to connect together two or more LZE300 lights. The lights are able to be spaced apart from each other. Up to six LZE300 lights can be daisy-chained together.

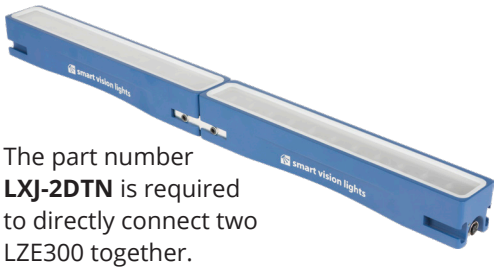


5-Pin M12 Connector
(Female)

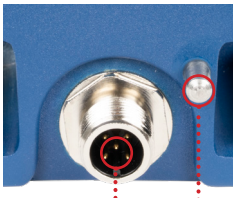
*For this type of connection, be sure to use a -DC suffix when filling out the part number.
Ex. LZE300 - 625 - W25 - DC - LPI = LZE300, 625 nm, Wide Lens (25°), Daisy Chain, Linear Polarizer Installed.
Not compatible with direct connect or plug options.

DIRECT CONNECT*

The LZE300 direct connect option provides the ability to connect 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 LZE300 together.



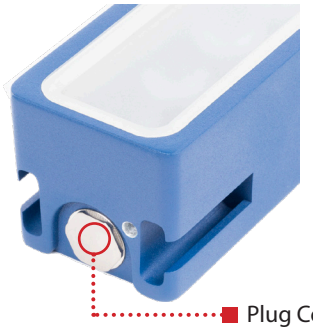
5-Pin M12 Connector
(Male)

Alignment Pin

Part Number: LXJ-2DTN

*For this type of connection, be sure to leave the suffix blank when filling out the part number.
Ex. LZE300 - 625 - W25 - LPI = LZE300, 625 nm, Wide Lens (25°), Direct Connect, Linear Polarizer
Not compatible with daisy-chain or plug options.

PLUG*



If multiple units are not going to be used, a plug termination can be ordered.

*For this type of connection, be sure to use -PG when filling out the part number.
Ex. LZE300 - 625 - W25 - PG - LPI = LZE300, 625 nm, Wide Lens (25°), Plug, Linear Polarizer Installed
Not compatible with daisy-chain or direct connect options.

EYE SAFETY

According to IEC 62471:2006. Full documentation available upon request with purchase of product.

Notice

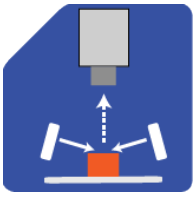
Exempt Group: No photobiological hazard to eyes or skin even for continuous, unrestricted use. Applicable for wavelengths 625 and 850.

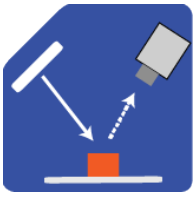
Caution

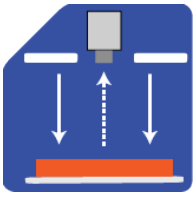
Risk Group 1: Possibly hazardous optical radiation emitted from this product. Do not stare at operating lamp. May be harmful to eyes. Safe for most applications except prolonged exposure. Applicable for wavelengths 470, 530, and WHI.

ILLUMINATION

The LZE300 works best for:


Dark Field

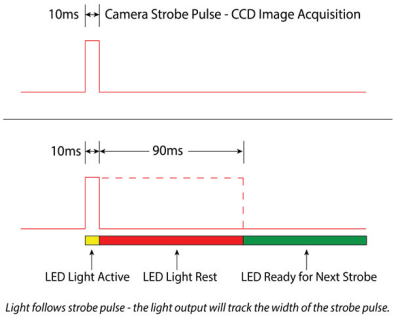

Bright Field


Direct Lighting

DUTY CYCLE

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)

Maximum Strobe Frequency is 1/ calculated duty cycle or 4,000 strobes per second, whichever is less.

NANODRIVE™

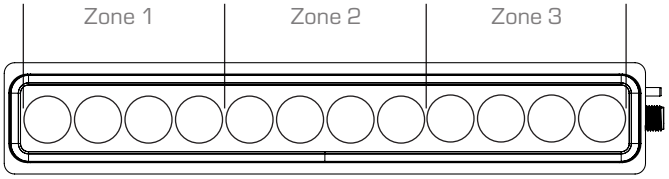
To keep up with faster image acquisition by high-speed cameras, lighting applications require light sources to reach full intensity in a shorter amount of time. To meet this demand, the NanoDrive™ has been developed to deliver full power to a light in 500 nanoseconds or less. The NanoDrive™ is designed 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. All NanoDrive™ lights are able to be set to continuous or OverDrive modes, depending on user configuration. NanoDrive™ technology is patent-pending.

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.

ZONE CONFIGURATION

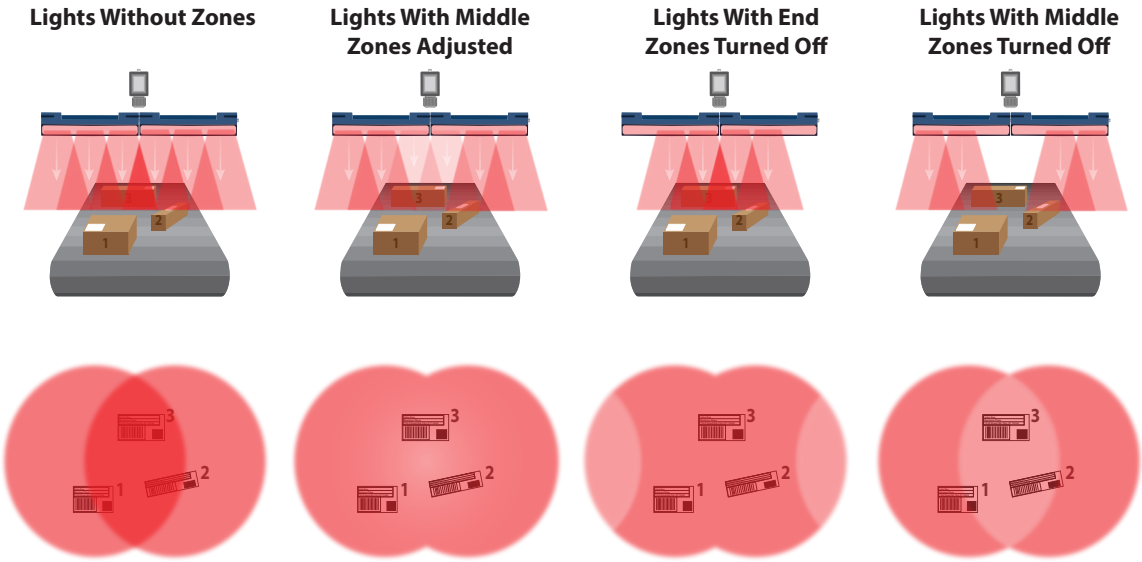
The LZE300 is divided into 3 zones. Each zone intensity level can be set independent of the other zones using the SmartVisionLink™ app and controller, such as the BTM-1000 (Bluetooth module). Each zone is 100 mm in length.



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.



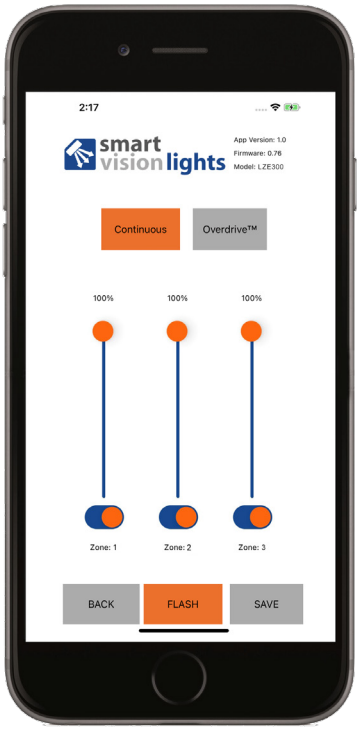
SMARTVISIONLINK™

The LZE300 is SmartVisionLink™-enabled and is designed so the intensity limit can be adjusted using the SmartVisionLink™ app*.

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 limit 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.

Visit SmartVisionLights.com/SmartVisionLink for more information.

*Requires the purchase of the BTM-1000 bluetooth module, sold separately.



CONNECTING A BTM-1000

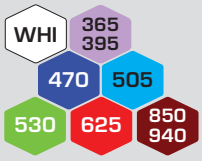
The BTM-1000 can be connected directly to a light or attached to a jumper cable that is connected to a light. Once the light's intensity limit is set to a desired level, the BTM-1000 can be removed from the light or cable.

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

PART NUMBER GUIDE

LZE300 – □□□ – □ – □□ – □□□

COLOR:



LENS:

Leave blank for Standard (Narrow, 10°)

W = Wide 25°

L = Line (10° x 50°)

CONNECTOR:

Leave blank for Direct Connect

DC = Daisy-Chain

PG = Plug

LINEAR POLARIZER*:

Leave blank for none

LPI = Factory Installed

Part Number Examples:

LZE300-625	LZE300, 625 nm Red Wavelength, Standard (Narrow 10°) Lens, Direct Connect
LZE300-WHI-W	LZE300, White, Wide Lens (25°), Direct Connect
LZE300-470-W-LPI	LZE300, 470 nm Blue Wavelength, Wide Lens (25°), Linear Polarizer Installed, Direct Connect
LZE300-470-W-DC-LPI	LZE300, 470 nm Blue Wavelength, Wide Lens (25°), Daisy-Chain, Linear Polarizer Installed,

Additional wavelengths and lens options available upon request.
**For lights with lenses, running in continuous operation while using a linear polarizer with certain wavelengths (e.g., white, blue) may burn the polarizer. Incorrect usage of the polarizer is not covered by warranty.*

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

Replacement Mounting Screws

Description	Part Number
Replacement Mounting Screws	SC0058

Connector (Only for Direct Connect)

Description	Part Number
Set of 2 Connectors	LXJ-2DTN

SmartVisionLink™

Part Number	Description
BTM-1000	Bluetooth Module

Linear Polarizer

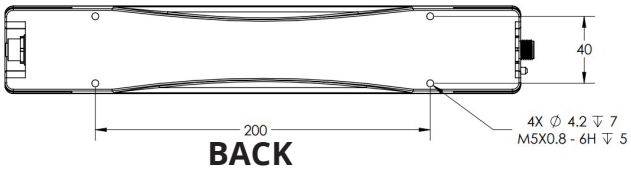
Description	Part Number
Linear Polarizer Kit	LZE300-LP

Variable Control Pot*

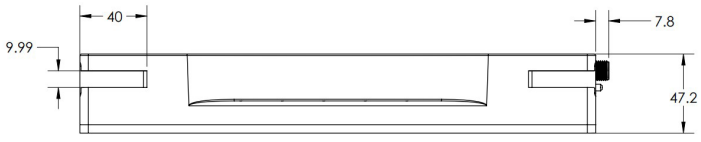
Description	Part Number
Variable Control Pot	IVP-C1

PRODUCT DRAWINGS

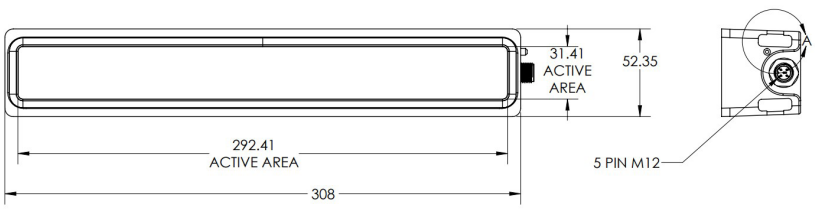
*CAD files available on our website
Drawings are in mm



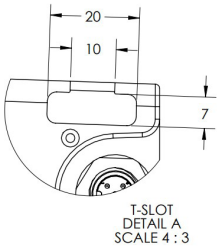
BACK



SIDE



FRONT



*Continuous mode only

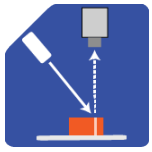
GLOSSARY

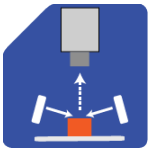
This glossary covers all Smart Vision Lights product families; some content in this section may not apply to this specific light.

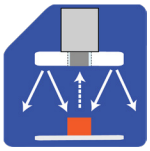
TERMINOLOGY

Continuous Operation The light stays on continuously.
OverDrive™ Integrated driver that produces a high-current strobe to the LEDs to drive them beyond their nominal continuous operation output.
Multi-Drive™ Integrated driver that combines continuous operation and OverDrive™ strobe mode
NanoDrive™ Integrated driver that provides fast switching where the light can go from off to on in less than 500 ns.
Built-in Driver The driver contained within the light that controls the current to the LEDs and provides PNP, NPN, and analog dimming controls.
SmartVisionLink™ Integrated feature that enables lighting control through the Bluetooth module and app.
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 Widens the angle of emission by scattering light in all directions.
Pattern Area Lighting Modulated lighting pattern placed over a backlight's surface used to enhance defect detection on transparent and glossy surfaces
SafeStrobe Limiter to keep the light in safe working parameters.
Direct Connect Connect lights in a series without the use of cables.
Daisy-Chain Connect lights in a series with the use of cables.

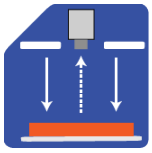
TYPES OF ILLUMINATION

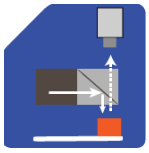

Projector

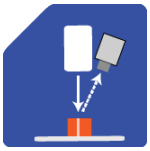

Dark Field

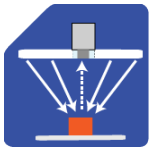

Radial

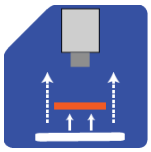
Bright Field

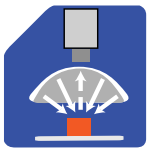

Direct


Axial


Line

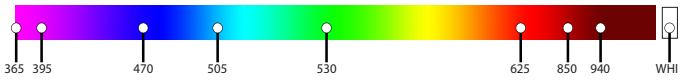

Diffuse Panel


Backlight


Dome
"Light Tent"

COMMON COLOR / WAVELENGTHS LEGEND

Wavelengths options range from 365 nm to 1650 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, 1550 nm, and 1650 nm.*

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

ASR American Systems Registrar
ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17021-1 MANAGEMENT SYSTEMS CERTIFICATION BODY
ISO 9001:2015 Certified QMS

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