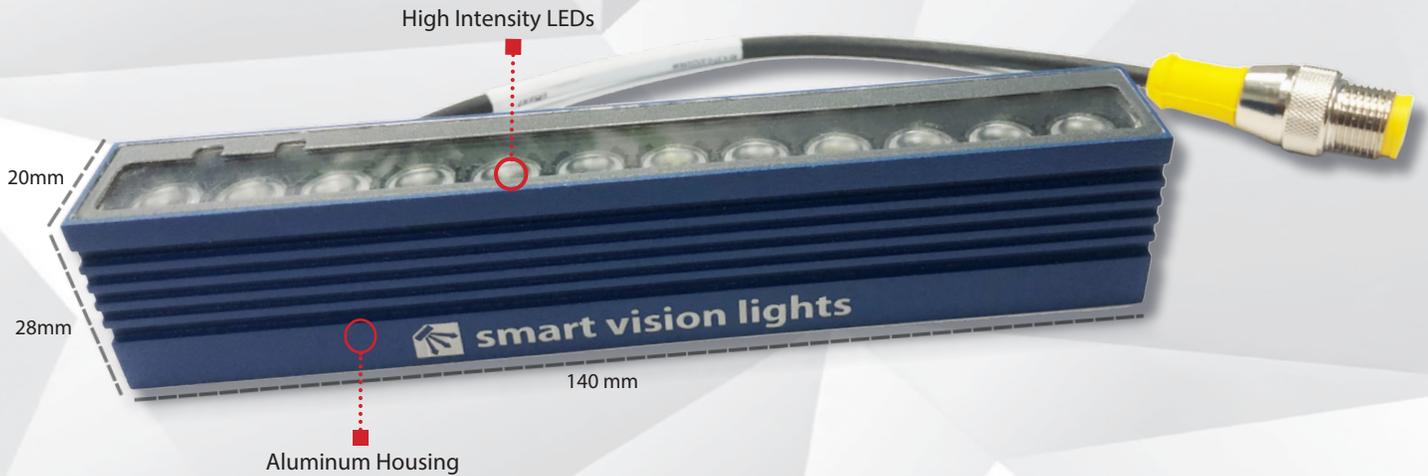




smart vision lights

LM150 *Miniature "Mini"* LINEAR LIGHT MULTI-DRIVE™

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



Warranty
10
YEAR

Compliant
IEC
62471

Compliant
CE
RoHS

Rated
IP
65

Connector
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.



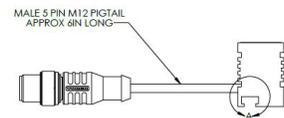
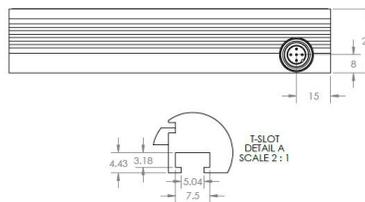
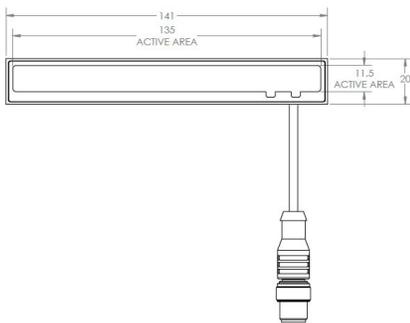
PRODUCT SPECIFICATIONS

	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 μ s 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	-18°-40° C (0°-104° F)	
IP Rating	IP65	
Weight	128g	
Compliances	CE, RoHS, IEC-62471	



PRODUCT DRAWING

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



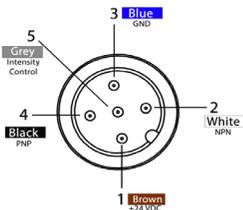
RESOURCE CORNER

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*

* Some cables use green/yellow for pin 5

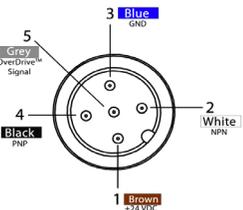
For maximum intensity, it is possible to tie pin 5 to pin 1 at +24VDC.

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).

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)

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*

* Some cables use green/yellow for pin 5

Failure to supply light with correct input current will result in inconsistent lighting behavior.

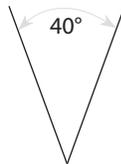
(see Product Specifications for requirements)



LENSES

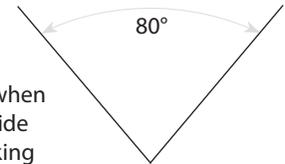
STANDARD (DEFAULT)

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
<i>Illuminance measurement taken on White Light — 5700K</i>	

OverDrive™ Mode

Typical Output Performance	Illumination (Lux)
Distance = 500 mm	110,000
<i>Illuminance measurement taken on White Light — 5700K</i>	

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
<i>Illuminance measurement taken on White Light — 5700K</i>	

OverDrive™ Mode

Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	70,000
<i>Illuminance measurement taken on White Light — 5700K</i>	

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
<i>Illuminance measurement taken on White Light — 5700K</i>	

OverDrive™ Mode

Typical Output Performance	Illumination (Lux)
Distance = 250 mm	92,000
<i>Illuminance measurement taken on White Light — 5700K</i>	

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
<i>Illuminance measurement taken on White Light — 5700K</i>	

OverDrive™ Mode

Typical Output Performance	Illumination (Lux)
Distance = 250 mm	40,000
<i>Illuminance measurement taken on White Light — 5700K</i>	



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
<i>Illuminance measurement taken on White Light — 5700K</i>	

OverDrive™ Mode

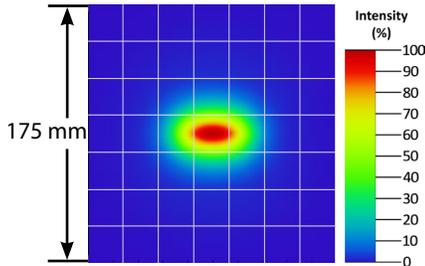
Typical Output Performance	Illuminance (Lux)
Distance = 500 mm	55,000
<i>Illuminance measurement taken on White Light — 5700K</i>	



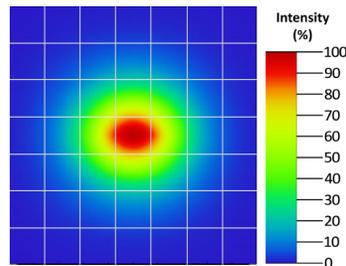
BEAM PATTERNS

Narrow 16° Lenses

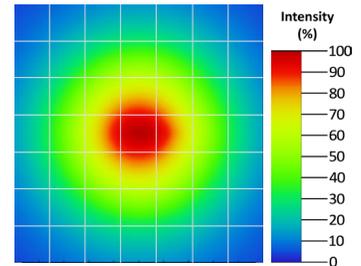
Working Distance: 250 mm



Working Distance: 500 mm

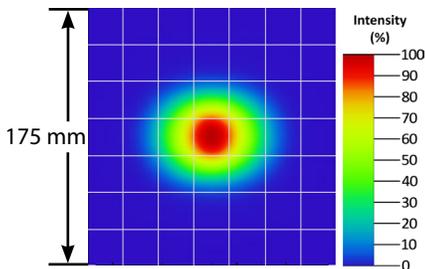


Working Distance: 1000 mm

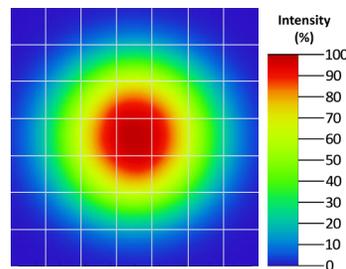


Narrow 25° Lenses

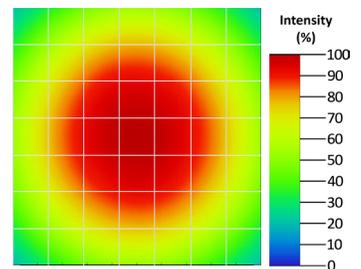
Working Distance: 250 mm



Working Distance: 500 mm



Working Distance: 1000 mm

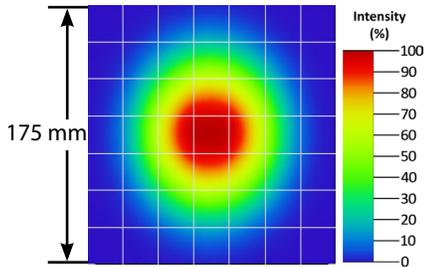




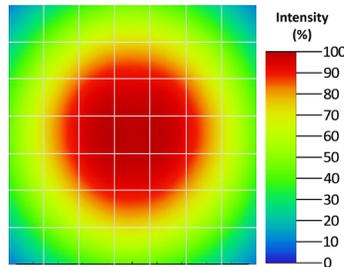
BEAM PATTERNS (CONTINUED)

Standard 40° Lenses

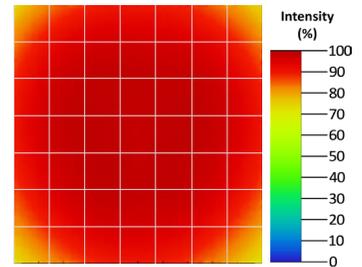
Working Distance: 250 mm



Working Distance: 500 mm

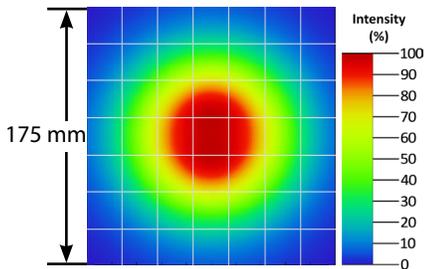


Working Distance: 1000 mm

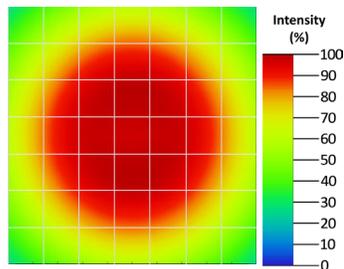


Wide 80° Lenses

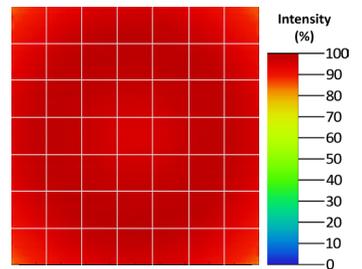
Working Distance: 250 mm



Working Distance: 500 mm

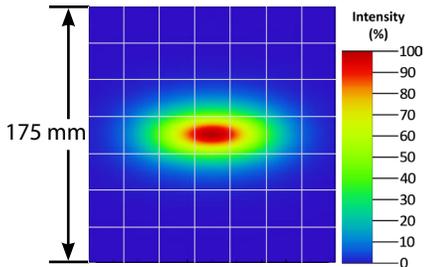


Working Distance: 1000 mm

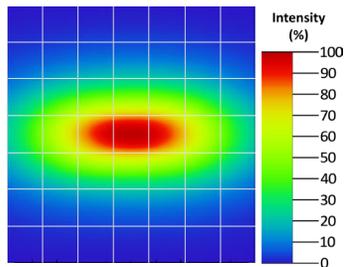


Line Lenses

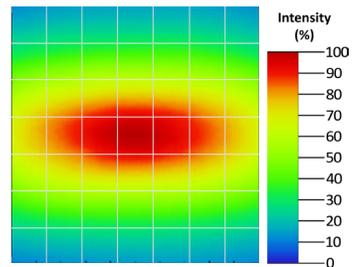
Working Distance: 250 mm



Working Distance: 500 mm



Working Distance: 1000 mm



EYE SAFETY



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.

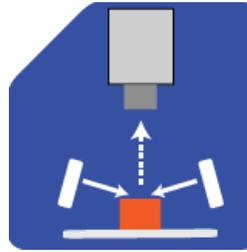
MULTI-DRIVE™

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™.

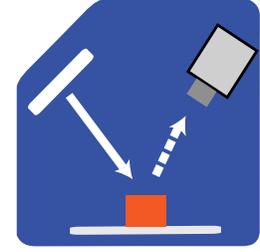


ILLUMINATION

LM150 Series of Mini Linear Lights works best for:



Dark Field



Bright Field

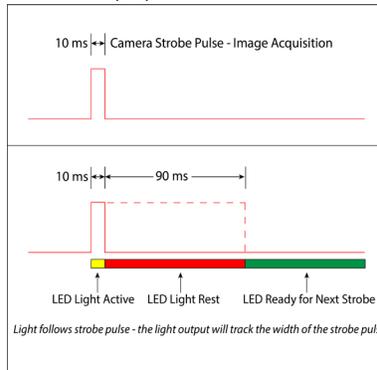
SAFESTROBE™

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

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

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)

* UV wavelengths are not available.



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.

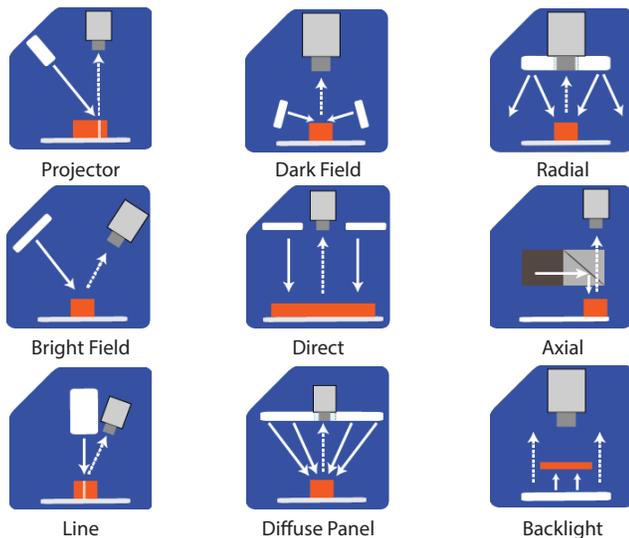
Built-in Driver The built-in driver allows full function without the need of an external controller.

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.

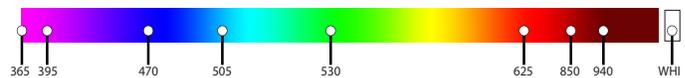
Diffusers Used to widen the angle of light emission, reduce reflections, and increase uniformity.

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.



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.