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

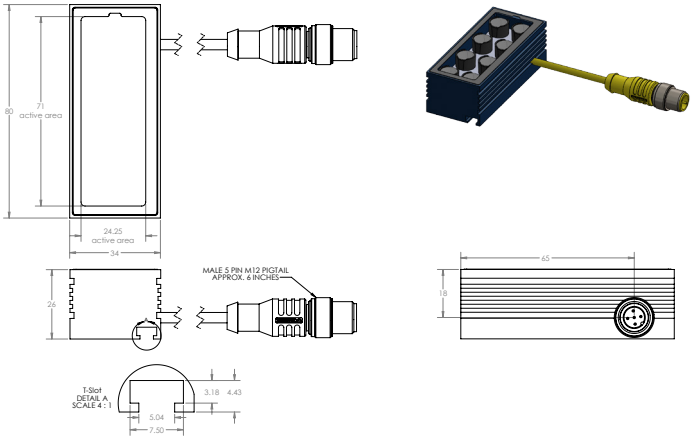
The LM75 compact linear light features an integrated Multi-Drive™ constant current driver that operates continuously or in OverDrive™ strobe mode depending on wiring method. The light can be mounted via a rear T-slot channel, also offers overcurrent protection and PNP and NPN strobe input.

PRODUCT SPECIFICATIONS

	CONTINUOUS OPERATION	OVERDRIVE™ OPERATION
Electrical Input	24 V DC +/- 5%	
Input Current	Max. 275 mA	Max. 3.1 A
Wattage	Max. 6.3 W	Max. 70 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	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.

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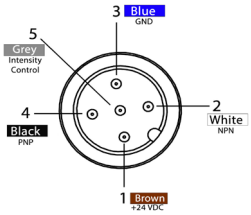
WIRING CONFIGURATION

CONTINUOUS OPERATION MODE



Pin layout for light (Male Connector)

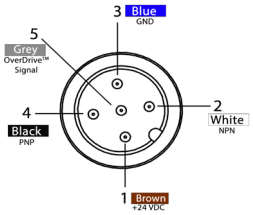
Pins	Function	Signal	Wire Color
1	Power In	+24VDC	BROWN
2	NPN	Sinking Signal	WHITE
3	GND	Ground	BLUE
4	PNP	Sourcing Signal	BLACK
5	Intensity Control	1-10 V DC	GREY*

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)

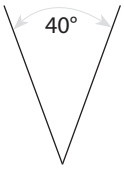
Pins	Function	Signal	Wire Color
1	Power In	+24VDC	BROWN
2	NPN	Sinking Signal	WHITE
3	GND	Ground	BLUE
4	PNP	Sourcing Signal	BLACK
5	OverDrive™ Signal	Ground	GREY*

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*

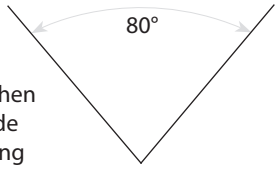
LENSES

STANDARD (NARROW)



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.

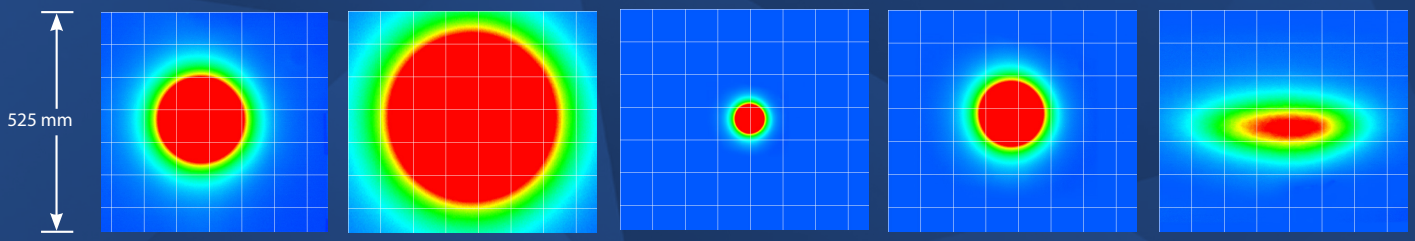
LINE

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

Additional lens options available upon request.

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 40° 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 Preformance	Illumination (Lux)
Distance = 250 mm	8600
Illumination measurement taken on White Light - 6500K	

OverDrive™ Mode	
Typical Output Preformance	Illumination (Lux)
Distance = 250 mm	86,000
Illumination 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 (~4.7") H x 240 mm (~4.7") V
500 mm (19.7")	480 mm (~18.9") H x 480 mm (~18.9") V

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

OverDrive™ Mode	
Typical Output Preformance	Illumination (Lux)
Distance = 250 mm	31,000
Illumination 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 Preformance	Illumination (Lux)
Distance = 500 mm	10,000
Illumination measurement taken on White Light - 6500K	

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

LIGHTING PATTERN FOR THE LM75 with Wide 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 Preformance	Illumination (Lux)
Distance = 500 mm	5400
Illumination measurement taken on White Light - 6500K	

OverDrive™ Mode	
Typical Output Preformance	Illumination (Lux)
Distance = 500 mm	54,000
Illumination 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 Preformance	Illumination (Lux)
Distance = 500 mm	4200
Illumination measurement taken on White Light - 6500K	

OverDrive™ Mode	
Typical Output Preformance	Illumination (Lux)
Distance = 500 mm	42,000
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.

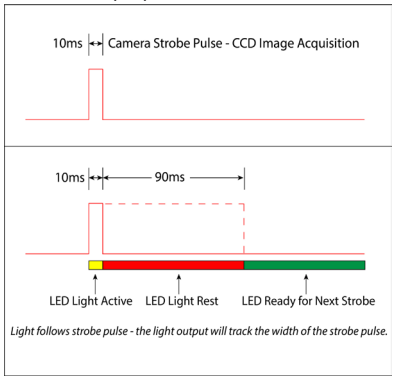
SAFESTROBE™

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

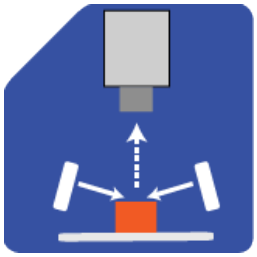
$$RT = \frac{10\ ms}{.1} - 10\ ms = 90\ ms$$

Rest Time is 90 ms for 10 ms Strobe Time

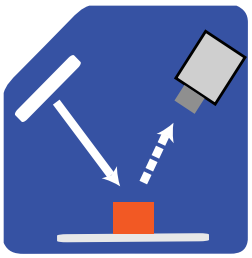
Maximum Duty Cycle for OverDrive™ light is 10% (0.1)

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:

WHI 470 530 625 850

LENS:

Leave blank for Standard (40°)

W = Wide (80°)

N16 = Narrow (16°)

N25 = Narrow (25°)

L = Line

Part Number Examples:

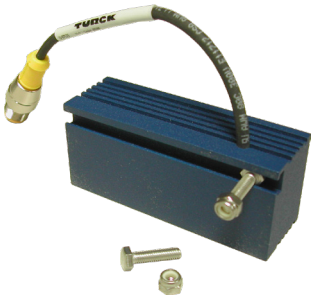
LM75-625 (LM75, 625 Red Wavelength)
LM75-WHI-W (LM75, White Wavelength, Wide Lenses)
LM75-470-N25 (LM75, 470 Blue Wavelength, Narrow 25° Lenses)

** UV wavelengths are not available.*

MOUNTING

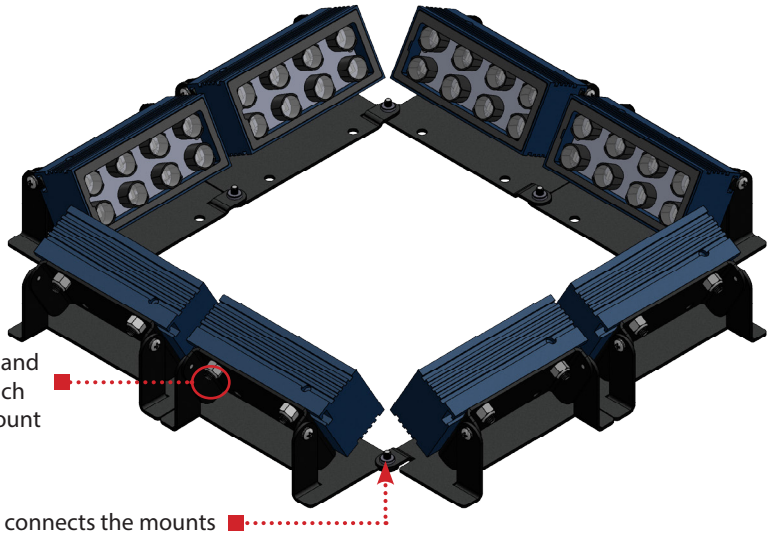
Mounting options include T-slot on bottom of light.

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.

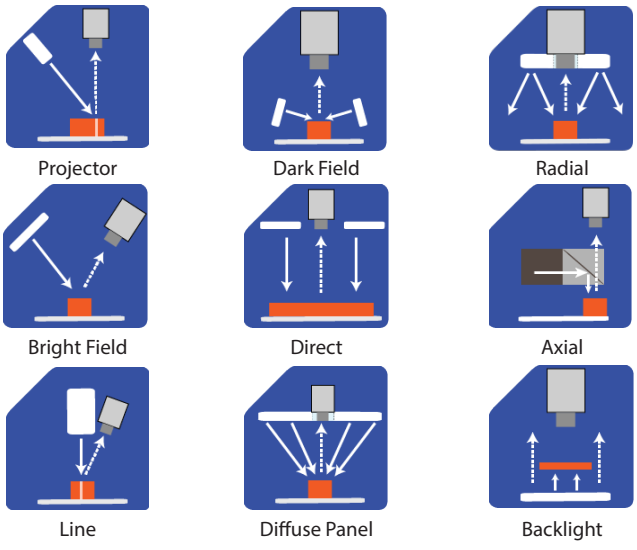
GLOSSARY

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

TERMINOLOGY

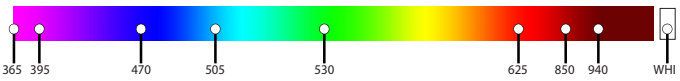
OverDrive™ Light includes an integrated high-pulse driver for complete LED light control.
Continuous Operation Light stays on continuously.
Multi-Drive™ Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.
Built-in Driver The built-in driver allows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