



smart vision lights

# LM75 Miniature "Mini" LINEAR LIGHT MULTI-DRIVE™

## PRODUCT DATA SHEET



|                               |                                  |                                |                                 |   |
|-------------------------------|----------------------------------|--------------------------------|---------------------------------|---|
| Warranty<br><b>10</b><br>YEAR | Compliant<br><b>IEC</b><br>62471 | Compliant<br><b>CE</b><br>RoHS | Rated<br><b>IP</b><br><b>65</b> | Connector<br><b>5-PIN</b><br><b>M12</b> |
|-------------------------------|----------------------------------|--------------------------------|---------------------------------|---|

### 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.



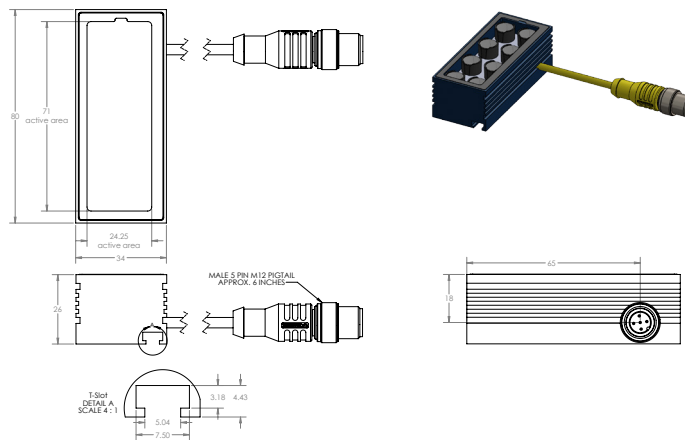
## PRODUCT SPECIFICATIONS

|                           | 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           | <b>Not applicable</b>   | Connect pin 5 to GND<br>(see Wiring Configuration for more information) |
| Strobe Duration           | <b>Not applicable</b>   | Min. 10 $\mu$ s   Max. 50 ms  |
| Duty Cycle                | <b>Not applicable</b>   | Max. 10%  |
| Strobe Input              | <b>Not applicable</b>   | PNP > +4VDC or greater to activate<br>NPN > GND (<1VDC) to activate     |
| Continuous Operation Mode | NPN can be tied to ground <b>OR</b> PNP can be tied to 24VDC (not both) | <b>Not applicable</b>   |
| On/Off Input              | PNP > +4VDC or greater to activate<br>NPN > GND (<1VDC) to activate     | <b>Not applicable</b>   |
| 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.



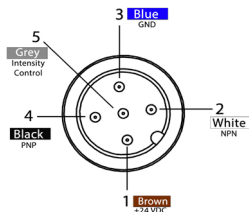
## RESOURCE CORNER

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 | 1-10 V DC       | GREY*      |

\* Some cables use green/yellow for pin 5

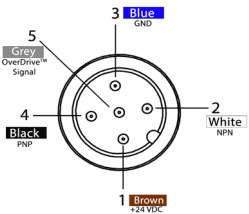
For maximum intensity, it is possible to tie pin 5 to pin 1 at +24 V DC.

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).

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

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

### OVERDRIVE™ OPERATION MODE



Pin layout for light (Male Connector)

| 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

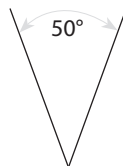
(see Product Specifications for requirements)



## LENSES

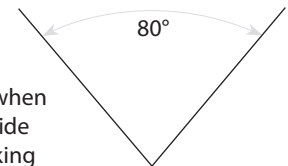
### STANDARD (NARROW)

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.



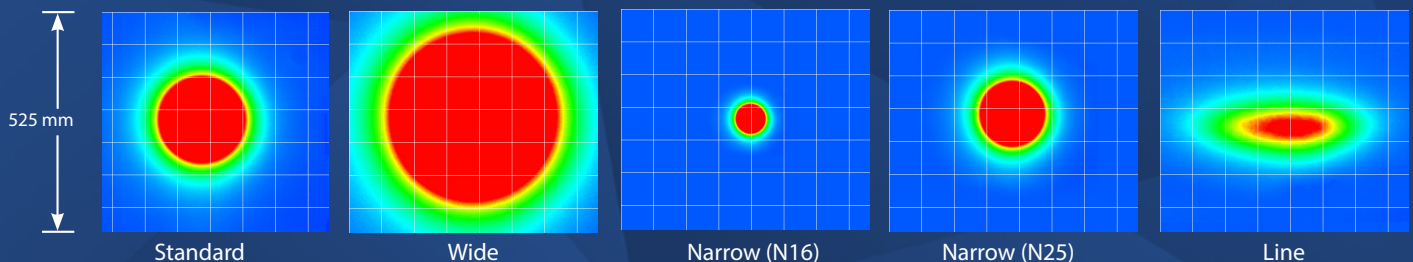
### LINE

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<br>mm (inches) | Pattern (80% - 100% measured<br>intensity)<br>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               |
| <i>Illumination measurement taken on White Light - 6500K</i> |                    |

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

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

| Working Distance<br>mm (inches) | Pattern (80% - 100% measured<br>intensity)<br>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 Performance                                   | Illumination (Lux) |
| Distance = 250 mm  | 3100               |
| <i>Illumination measurement taken on White Light - 6500K</i> |                    |

| OverDrive™ Mode  |                    |
|--|--------------------|
| Typical Output Performance                                   | Illumination (Lux) |
| Distance = 250 mm  | 31,000             |
| <i>Illumination measurement taken on White Light - 6500K</i> |                    |

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

| Working Distance<br>mm (inches) | Pattern (80% - 100% measured<br>intensity)<br>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             |
| <i>Illumination measurement taken on White Light - 6500K</i> |                    |

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

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

| Working Distance<br>mm (inches) | Pattern (80% - 100% measured<br>intensity)<br>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  | 5400               |
| <i>Illumination measurement taken on White Light - 6500K</i> |                    |

| OverDrive™ Mode  |                    |
|--|--------------------|
| Typical Output Performance                                   | Illumination (Lux) |
| Distance = 500 mm  | 54,000             |
| <i>Illumination measurement taken on White Light - 6500K</i> |                    |

## LIGHTING PATTERN FOR THE LM75 with Line Lenses

| Working Distance<br>mm (inches) | Pattern (80% - 100% measured<br>intensity)<br>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                                   | Illumination (Lux) |
| Distance = 500 mm  | 4200               |
| <i>Illumination measurement taken on White Light - 6500K</i> |                    |

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



## 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.



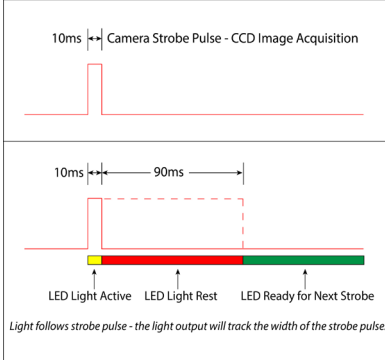
## SAFESTROBE™

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

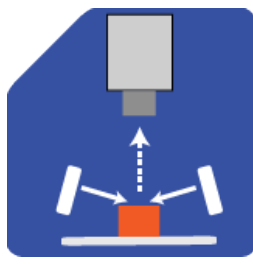
$$RT = \frac{10 \text{ ms}}{.1} - 10 \text{ ms} = 90 \text{ ms}$$

Rest Time is 90 ms for 10 ms Strobe Time

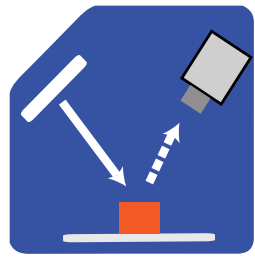
Maximum Duty Cycle for OverDrive™ light is 10% (0.1)

## 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)

\* UV wavelengths are not available.



## MOUNTING

Mounting options include T-slot on bottom of light.

### Hardware includes:

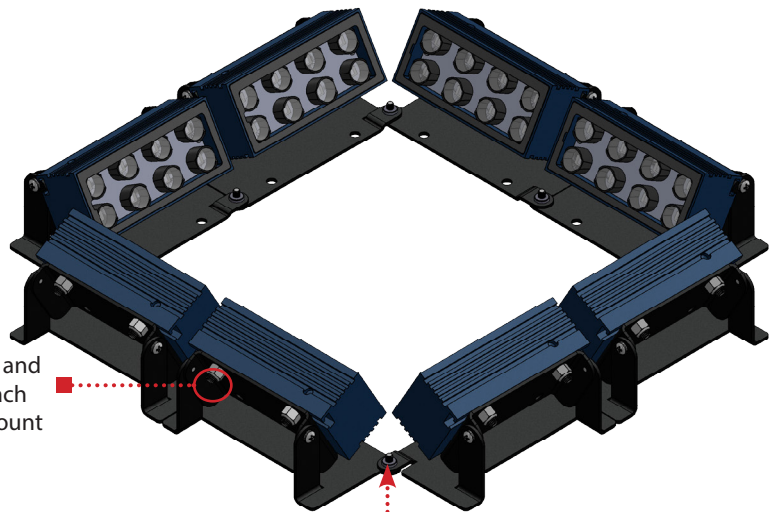
- (2) M4 x 16 screws
- (2) M4 nylon nuts



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.

| Optional Mounting Equipment |  |
|-----------------------------|--|
|                             | The <b>optional BKT0026</b> can be used to mount the LM75. |

Use screws and nuts to attach LM75 to mount



One M3 x 5 mm screw connects the mounts



## ACCESSORIES

| Power Cables |                           | Splitter                    |             | Jumper Cables<br>(Used with Splitter) |             | Power Adapters *   |                 |
|--------------|---------------------------|-----------------------------|-------------|---------------------------------------|-------------|--|-----------------|
|              |                           |                             |             |                                       |             |  |                 |
| Lengths      | Part Number               | Description                 | Part Number | Lengths                               | Part Number | Description  | Part Number     |
| 5 m          | 5PM12-5                   | 5-pin 2 way splitter        | 5PM12-2WS   | 300 mm                                | 5PM12-J300  | AC, 24 Volt, 1.7 Amp   | T1 Power Supply |
| 10 m         | 5PM12-10                  | <b>Mounting Bracket</b><br> |             | 1000 mm                               | 5PM12-J1000 | * <b>European Versions Available</b> (Add -EURO to end of T1. Example T1-EURO Power Supply)<br><br>T1 Power Supply is only recommended when using light in continuous operation. |                 |
| 15 m         | 5PM12-15                  |                             |             | 2000 mm                               | 5PM12-J2000 |  |                 |
| 10 m         | HF5PM12-10<br>(High Flex) | Description                 | Part Number |                                       |             |  |                 |
|              |                           | LM75 Mount                  | BKT0026     |                                       |             |  |                 |



## 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.

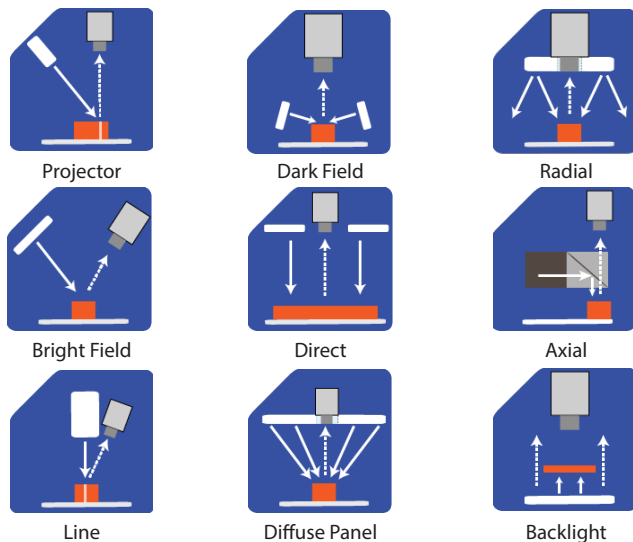
**Built-in Driver** The built-in driver allows full function without the need of an external controller.

**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.

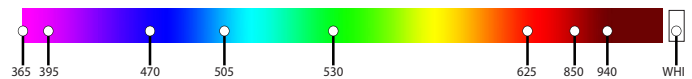
**Diffusers** Used to widen the angle of light emission, reduce reflections, and increase uniformity.

### 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.