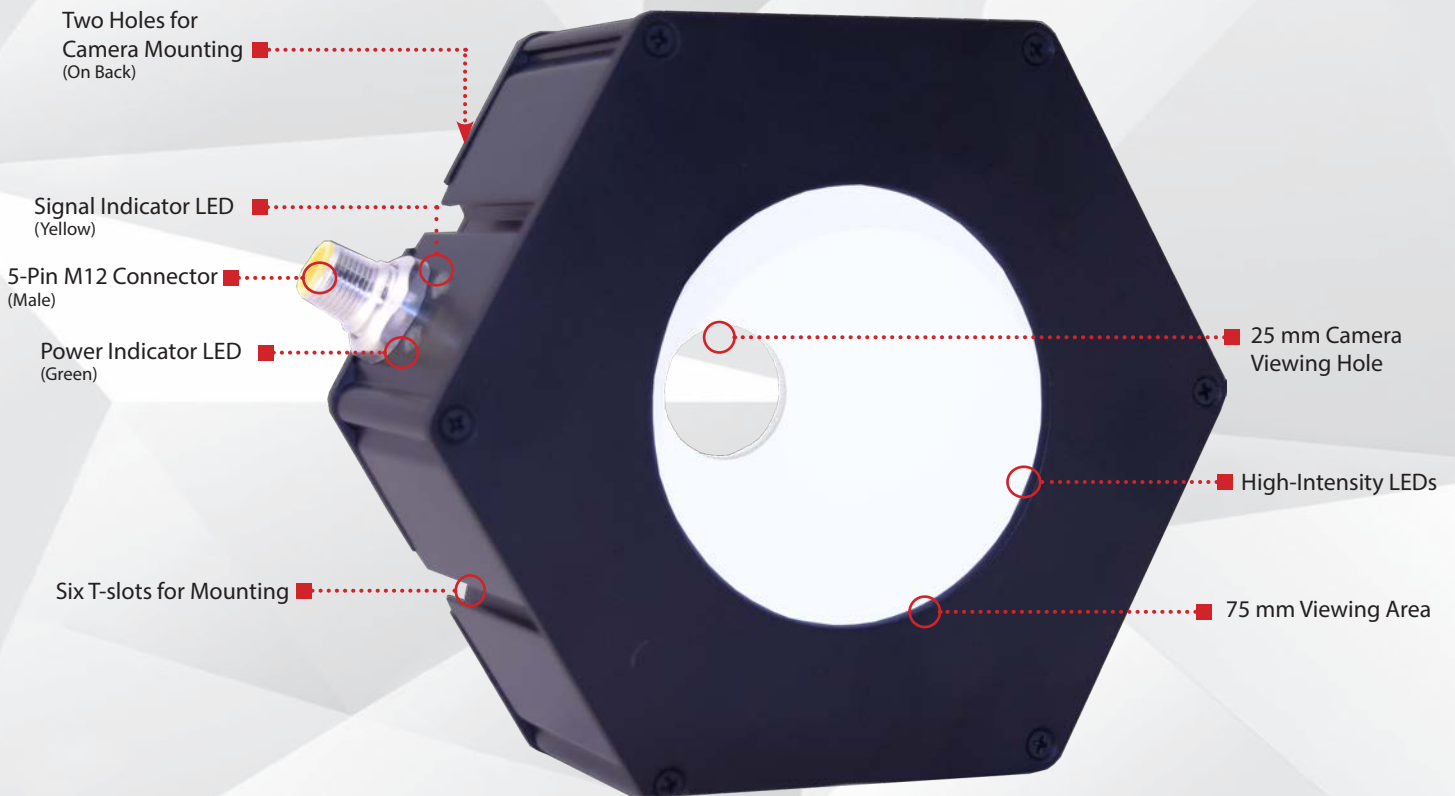


## P R O D U C T D A T A S H E E T



Warranty

**10**  
YEAR

Compliant

**IEC**  
62471

Compliant

**CE**  
RoHS

Rated

**IP**  
**50**

Connector

5-PIN  
M12

## PRODUCT HIGHLIGHTS

- ✓ Built-in Multi-Drive™ allows the light to work in continuous operation or OverDrive™ mode
- ✓ SafeStrobe™ technology ensures protected operation of LEDs
- ✓ Built-in driver; no external wiring needed
- ✓ PNP and NPN strobe input
- ✓ 5-pin M12 quick connect



## PRODUCT DESCRIPTION

The DDL-100 is a dome light with a 75mm viewing area designed for reading code and imperfections on rounded or highly reflective products, and for inspecting products with an even, uniform, and repeatable light intensity. The DDL-100 was designed with simplicity and functionality in mind. It can operate in either constant ON or OverDrive™ strobe mode. NPN and PNP strobe operation with a built-in 1–10VDC analog intensity control allows for further versatility. The industry standard 5-pin M12 connector makes for easy installation.



## PRODUCT SPECIFICATIONS

	CONTINUOUS OPERATION	OVERDRIVE™ STROBE MODE
Electrical Input	24VDC +/-5%	
Input Current	Max. 570 mA	Max. 2.2 A
Wattage	Max. 13.3 W	Max. 53 W
PNP Line	4 mA @ 4VDC   10 mA @ 12 V DC   20 mA @ 24VDC	
NPN Line	15 mA @ ground (0VDC)	
OverDrive™ Strobe Mode	<b>Not applicable</b>	Connect pin 5 to GND (see Wiring Configuration for more information)
Strobe Duration	<b>Not applicable</b>	Min. 10 $\mu$ s   Max. 50 ms (see SafeStrobe™ Technology for more information)
Duty Cycle	<b>Not applicable</b>	Max. 10%
Strobe Input	<b>Not applicable</b>	PNP: +4VDC or greater to activate 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 NPN: GND (<1VDC) to activate	<b>Not applicable</b>
Connection	5-pin M12 connector	
Ambient Temperature	-18°–50° C (0°–122° F)	
IP Rating	IP50	
Weight	134 g	
Compliances	CE, RoHS, IEC 62471	
Warranty	10 years. For complete warranty information, visit <a href="http://smartvisionlights.com/warranty">smartvisionlights.com/warranty</a> .	



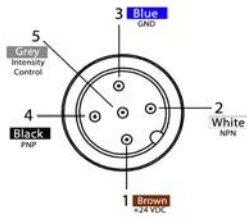
## RESOURCE CORNER

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)

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.

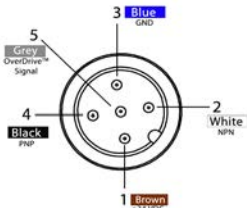
For maximum intensity, it is possible to tie pin 5 to pin 1 at +24VDC.

For continuous mode, tie PNP (pin 4) to +24VDC (pin 1) or tie NPN (pin 2) to ground (pin 3).

For proper function, apply either 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)

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*

\*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)



## LIGHT PATTERNS

Smart Vision Lights recommends that the DDL-100 be used at a working distance between 25 mm and 100 mm.

### LIGHTING ILLUMINATION FOR THE DDL-100

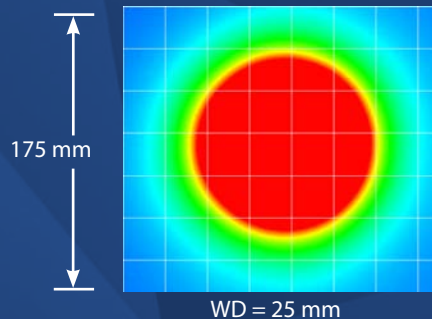
Continuous Operation Mode	
Typical Output Performance	Illumination (Lux)
Distance = 25 mm	30,000
<i>Illuminance measurement taken on White Light — 4800K</i>	

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 25 mm	150,000
<i>Illuminance measurement taken on White Light — 4800K</i>	

### The DDL-100 Dome Light produces a uniform light pattern.

WD = Working Distance

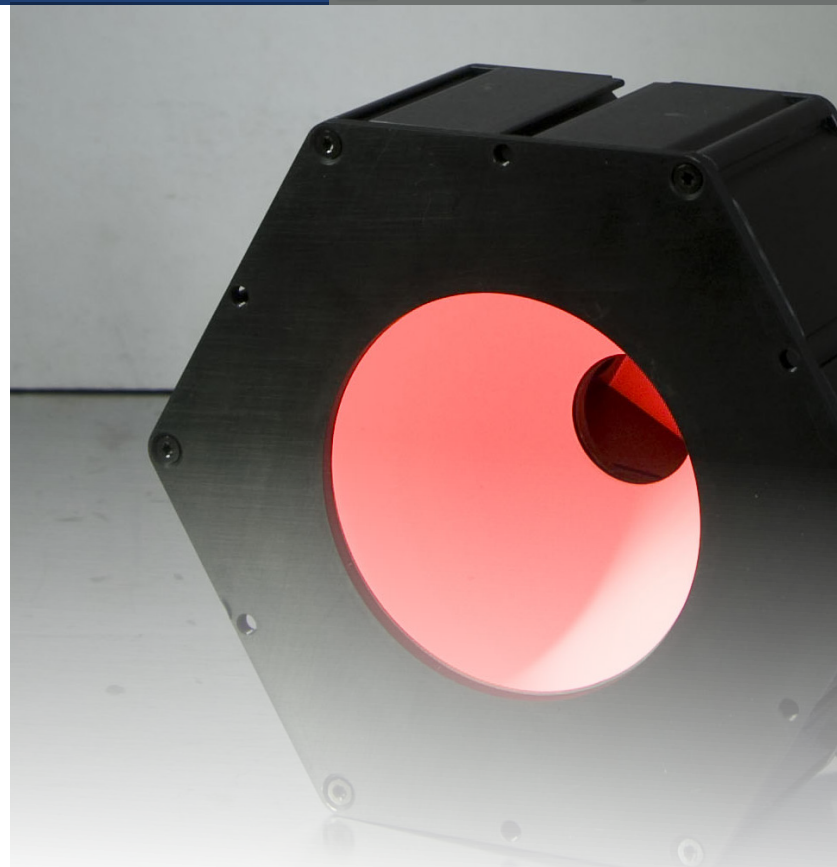
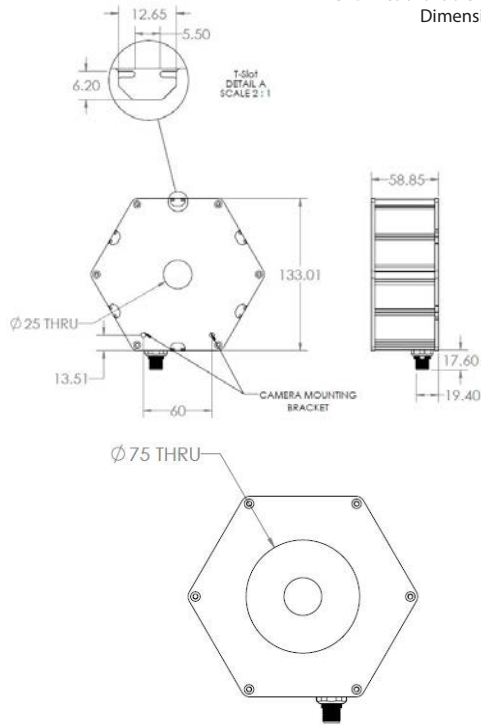
(Grid set to 25 mm x 25 mm)





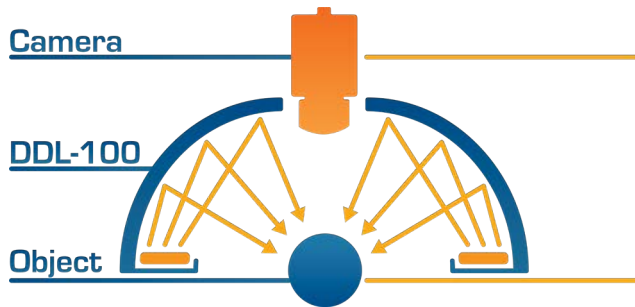
## PRODUCT DRAWING

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



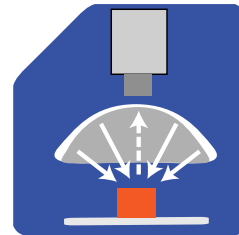
## LIGHT OUTPUT CUTAWAY

The dome shape gives the product a particular advantage in uniformity when illuminating and reading OCR codes on reflective or round surfaces.



## ILLUMINATION

DDL-100 Series of Dome Lights work best for:



Dome "Light Tent"



## 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 wavelength 625.

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

## PART NUMBER

**DDL-100** –         

COLOR:

WHI

470

530

625

**Part Number Example:**  
**DDL-100-625** (DDL-100, 625 Red Wavelength)

*Additional wavelength available upon request.*

## MOUNTING

Six standard industrial T-slots for mounting the DDL-100 are included. The DDL-100 has two M4 threaded holes on the back for mounting a camera. See Accessories for camera mounting options.

**Hardware included with light:**  
 (2) M4x8 mm screws (hex)  
 (2) T-nuts



## MULTI-DRIVE™

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



With Multi-Drive™ users can run the driver continuously or in OverDrive™ at any allowed intensity by simply setting the product configuration. OverDrive™ operation has **up to ten times** the power of continuous operation.

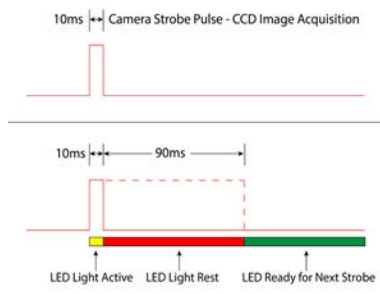
## SAFESTROBE™ TECHNOLOGY

Safe Strobe™ technology applies safe working parameters to ensure that high-current LEDs are not damaged by being driven beyond their limits such as maximum strobe time or duty cycle. SafeStrobe™ is built into the DDL-100.

## DUTY CYCLE (OVERDRIVE™ MODE ONLY)

**This section applies only to OverDrive™ Mode.**

The duty cycle (D) is related to the strobe time (ST) and the 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).**

## ACCESSORIES

Camera Mount	
	
Description	Part Number
Right Angle Mount	BKT0004

Camera Mount	
	
Description	Part Number
Adjustable Point Mount	BKT0007

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

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

## 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) mode into one easy-to-use light.

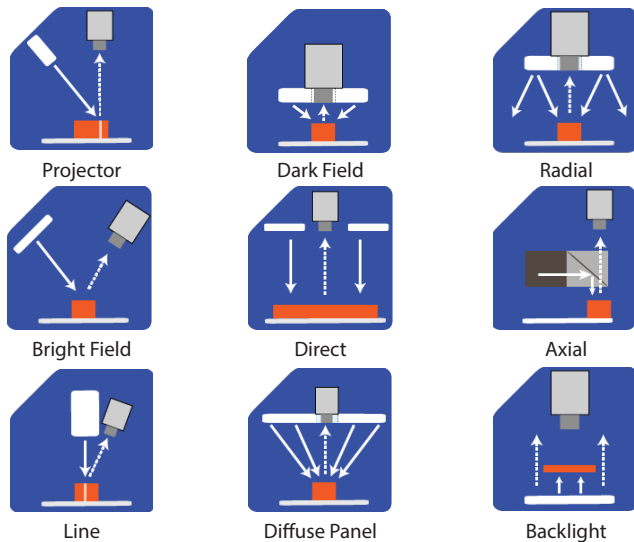
**Built-In Driver** Allows full function without the need of an external controller.

**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.

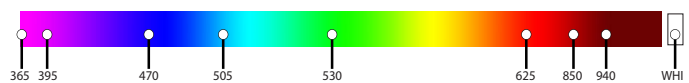
**Diffusers** Used to widen the angle of light emission, reduce reflections, and increase uniformity.

### TYPES OF ILLUMINATION



### 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.



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