

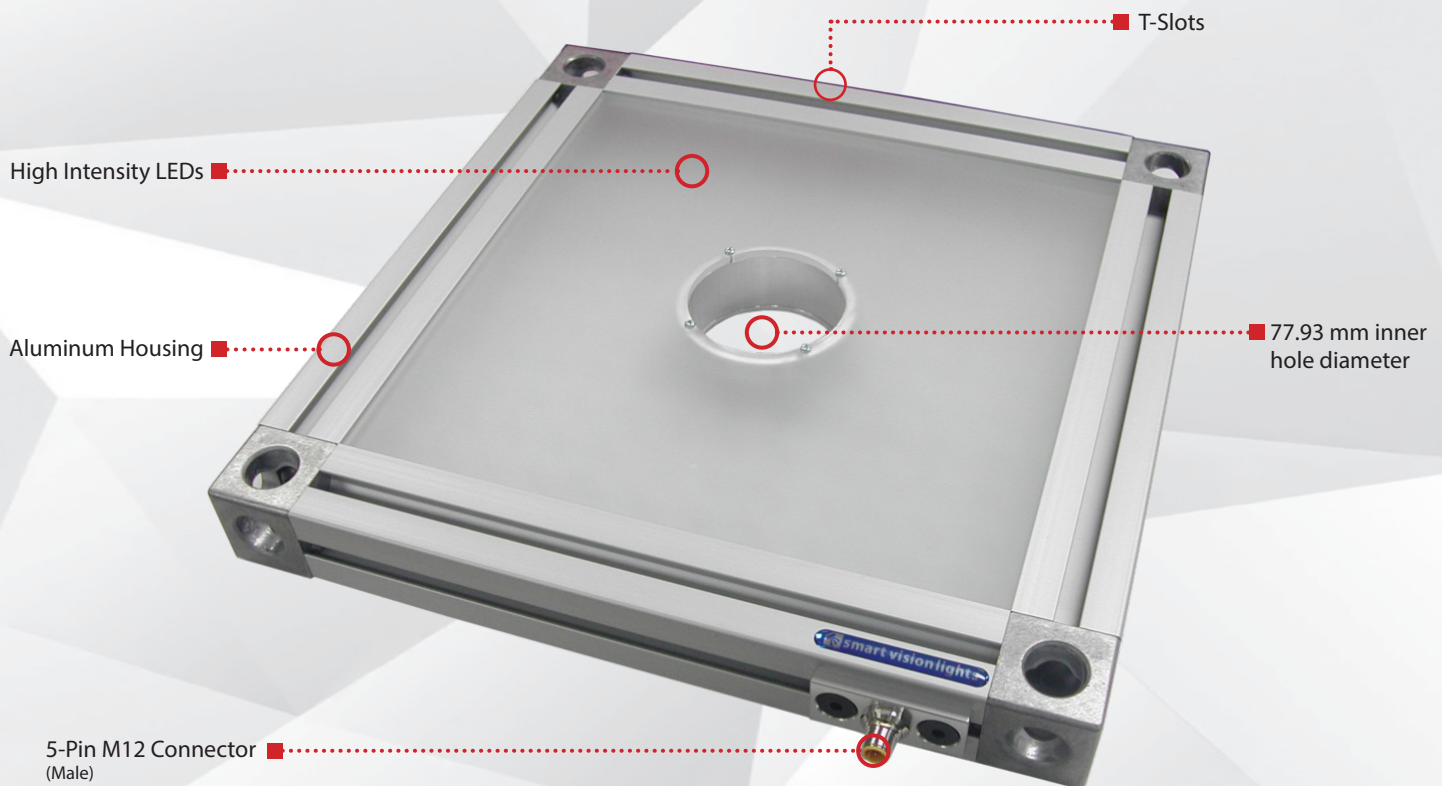


smart  
vision lights

# RL300

Large Area  
Long Distance  
**RING LIGHT**

## 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

- ✓ 5-pin M12 quick connect
- ✓ Built-in driver
- ✓ PNP and NPN strobe input





## PRODUCT DESCRIPTION

The all metal construction of the large ring light series of lights provides a small particle resistant and all around durable light. Its simple plug and play 5-pin M12 connector allows for ease of use while allowing for full control. The RL300 operates with either an NPN or a PNP signal and runs on an industry standard 24VDC. The 1-10VDC intensity control assists in gaining full control of the light output.

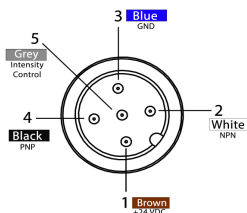


## PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/- 5%
Input Current	2 A
Input Power	48 W
On / Off Input	PNP > +4VDC or greater to activate   NPN > GND (<1VDC) to activate
PNP Line	2.8 mA @ 4VDC   8.8 mA @ 12VDC   17.6 mA @ 24VDC
NPN Line	14.4 mA @ Ground (0VDC)
Continuous Mode	NPN can be tied to ground <b>OR</b> PNP can be tied to 24VDC (not both).
Analog Intensity	The output is adjustable from 10–100% of brightness by a 1–10VDC signal. (Jumping pin 5 to pin 1 will provide maximum intensity).
Connection	5-pin M12 connector
Ambient Temperature	-18°–40° C (0°–104° F)
IP Rating	IP50
Weight	~183g
Compliances	CE, RoHS, IEC-62471



## WIRING CONFIGURATION



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 +24VDC (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)



## RESOURCE CORNER

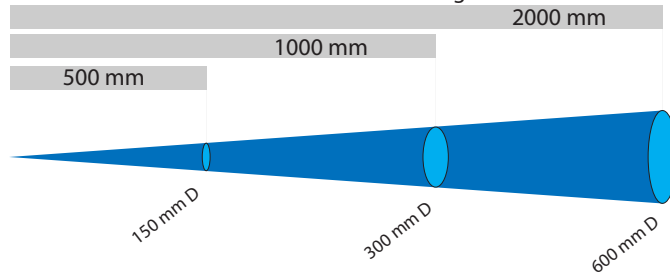
Additional resources are available on our website, including CAD files, videos, and application examples.



## LIGHT PATTERNS

Smart Vision Lights recommends the RL300 be used at a working distance between 500 mm to 4000 mm.

Illumination measurement taken on White Light – 6500 K



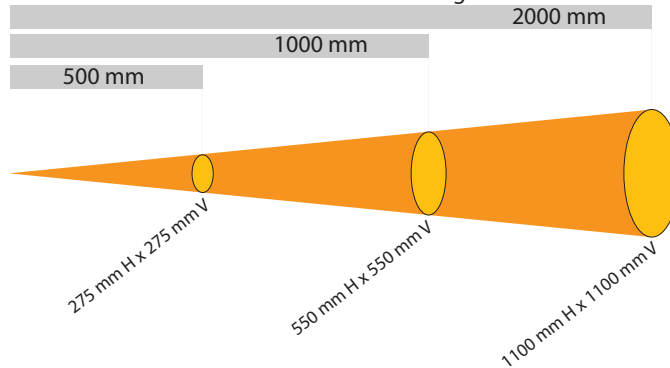
LIGHTING PATTERN FOR THE RL300

Working Distance mm	Pattern (80% - 100% measured intensity) mm
500 mm	150 mm D
1000 mm	300 mm D
2000 mm	600 mm D

Typical Output Performance	Illumination (Lux)
Distance = 500 mm	5500
Illumination measurement taken on White Lights - 6500K	

Illumination measurement taken on White Light – 6500 K



LIGHTING PATTERN FOR THE RL300

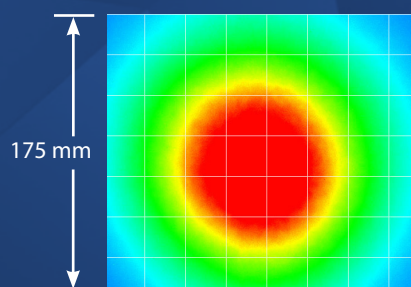
Working Distance mm	Pattern (80% - 100% measured intensity) mm
500 mm	80mm
1000 mm	90mm
2000 mm	135mm

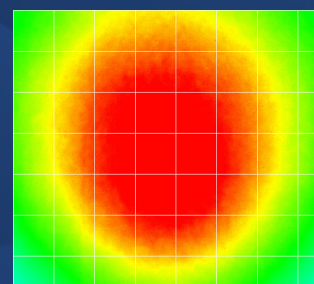
Typical Output Performance	Illumination (Lux)
Distance = 500 mm	9200
Illumination measurement taken on White Lights - 6500K	

**The RL300 Ring Light produces a uniform light pattern.**

Working Distance = 500 mm Grid set to 25 mm x 25 mm



Narrow

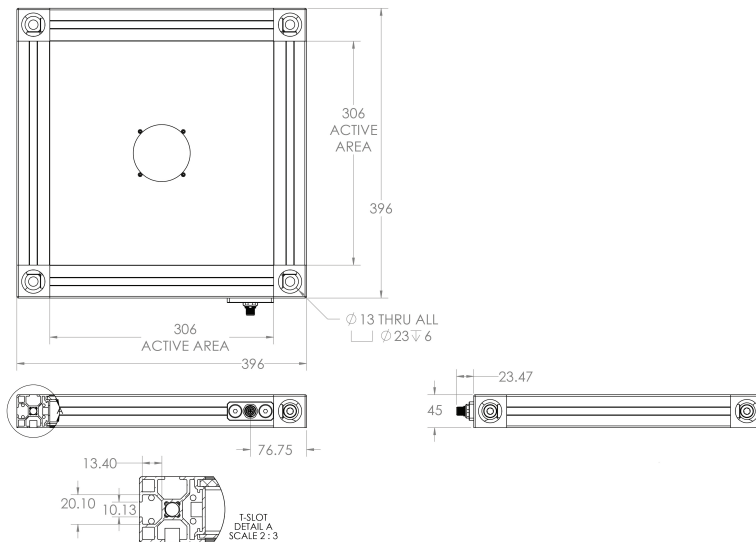


Wide



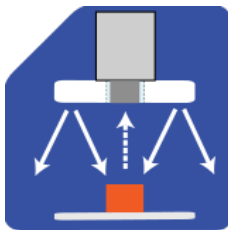
## PRODUCT DRAWING

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

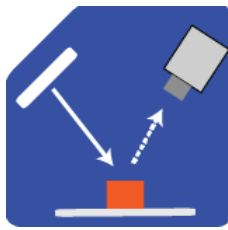


## ILLUMINATION

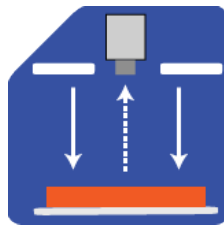
RL300 Series of Ring Lights works best for:



Radial



Bright Field



Direct



## 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, 850, and 940.

### 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, 505, 530, and WHI.

### Notice

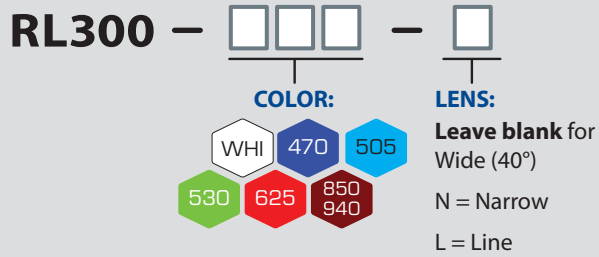
**Risk Group 1:** UV emitted from this product. Minimize exposure to eyes and skin. Use appropriate shielding. Safe for most applications except prolonged exposures. Applicable for wavelengths: 395

### Caution

**Risk Group 2:** UV emitted from this product. Eye or skin irritation may result from exposure. Use appropriate shielding. Does not pose optical hazard if aversion responses limit exposure. Applicable for wavelengths: 365



## PART NUMBER



### Part Number Examples:

**RL300-625** RL300, 625 Red Wavelength, Standard (Wide) Lenses

**RL300-WHI-N** RL300, White, Narrow Lenses

*Additional wavelengths and lens options available upon request*



## STANDARD LENS OPTICS

### NARROW

Narrow, 14° angle cone lenses are standard. They project a narrow beam of illumination and are used for long working distances.

### WIDE

#### Wide lenses are standard.

Wide, 30° angle cone lenses project a large area of illumination. They create a floodlight effect, can be used for short working distances.

*\* Additional lens options available upon request.*



## MOUNTING

Mounting options include four T-slots and four M4 threaded holes on the RL300 ring light.

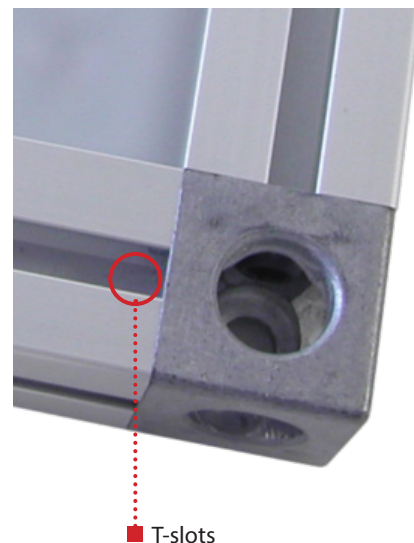
### Optional Mounting Hardware:

T-Slots = M5 x 0.8 mm T-Nut

Threaded screw Holes = M4 screws

### Camera Mount For RL300

Part #: BKT0005





## ACCESSORIES

### Power Cables



Lengths	Part Number
5 m	5PM12-5
10 m	5PM12-10
15 m	5PM12-15

### Jumper Cables



Length	Part Number
300 mm	5PM12-J300
1000 mm	5PM12-J1000
2000 mm	5PM12-J2000

### Camera Mounting Adapter



Description	Part Number
Camera Mount	BKT0005

### Step-Up Kits \*



Lens Thread Size	Part Number
25 mm	SU25.5-46
27 mm	SU27-46
30.5 mm	SU30.5-46
34 mm	SU34-46
35.5 mm	SU35.5-46
37 mm	SU37-46
39 mm	SU39-46
40.5 mm	SU40.5-46
43 mm	SU46-46

### Step-Down Kits



Lens Thread Size	Part Number
49 mm	SD49-46
52 mm	SD52-46
55 mm	SD55-46
58 mm	SD58-46
62 mm	SD62-46
67 mm	SD67-46
72 mm	SD72-46





## GLOSSARY

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

### TERMINOLOGY

**OverDrive™** Lights include an integrated high-pulse driver for complete LED light control.

**Continuous Operation** Lights stay on continuously.

**Multi-Drive™** Combines continuous operation and OverDrive™ strobe (high-pulse operation) mode into one easy-to-use light.

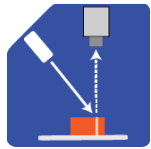
**Built-in Driver** The built-in driver allows full function without the need of an external controller.

**Camera to Light** Connecting the light directly to the camera, without the need for additional controllers or equipment.

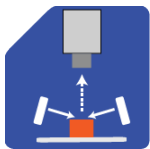
**Polarizers** Filters that reduce reflections on specular surfaces.

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

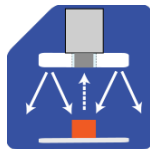
### TYPES OF ILLUMINATION



Projector



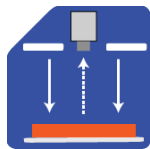
Dark Field



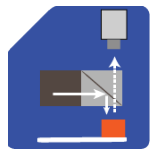
Radial



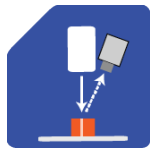
Bright Field



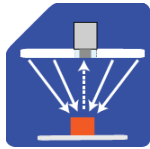
Direct



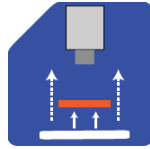
Axial



Line



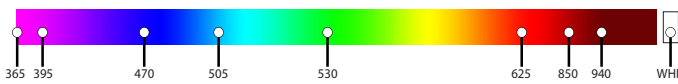
Diffuse Panel



Backlight

### 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's** is available in SWIR wavelengths.