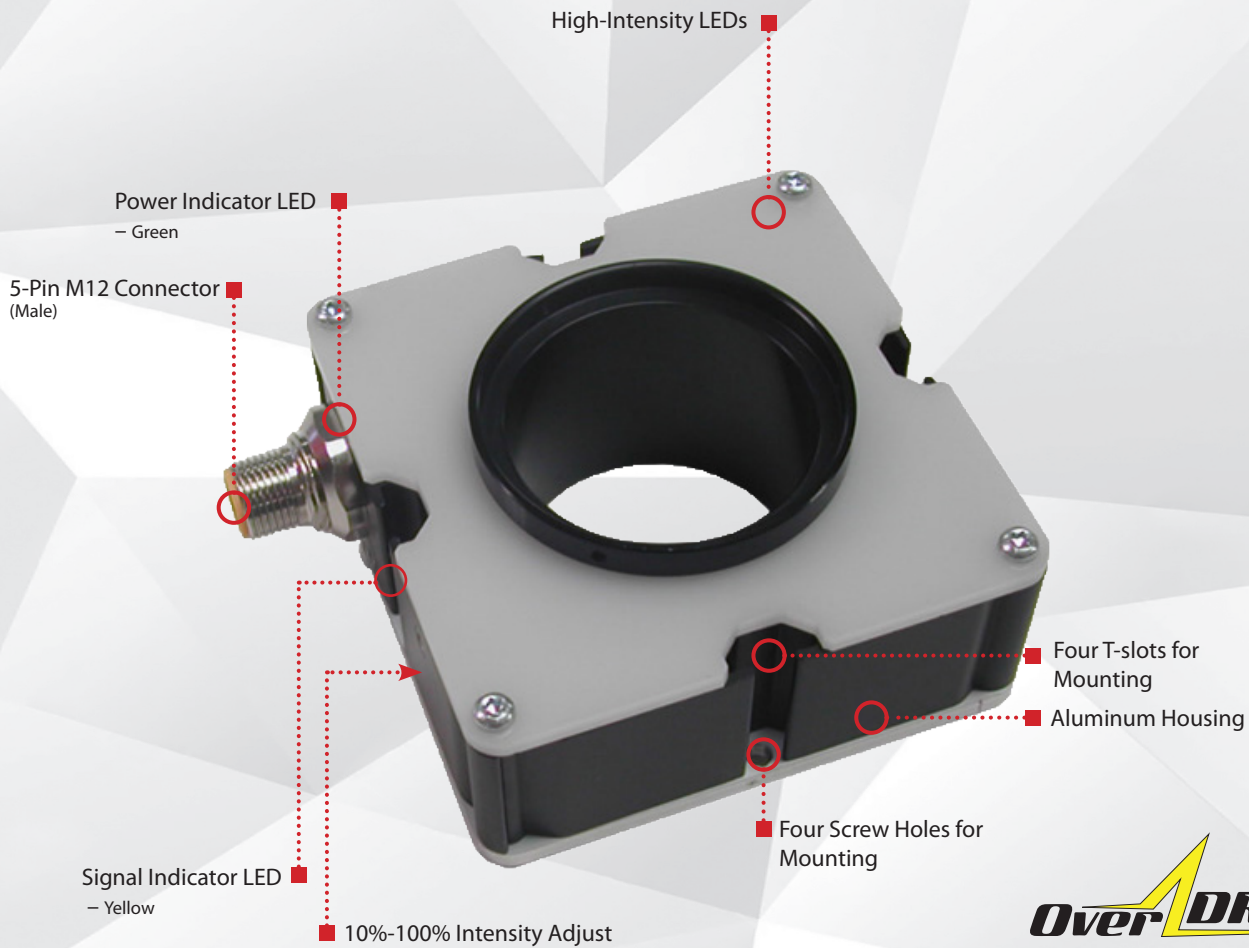


P R O D U C T D A T A S H E E T



Warranty <b>10</b> YEAR	Tested <b>IEC</b> 62471	Compliant <b>CE</b> RoHS	Rated <b>IP</b> <b>50</b>	Connector <b>5-PIN</b> <b>M12</b>
-------------------------------	-------------------------------	--------------------------------	---------------------------------	---

**PRODUCT HIGHLIGHTS**

- ✓ OverDrive™ — Up to five times brighter than a standard EZ Mount Ring Light
- ✓ SafeStrobe Technology
- ✓ T-Slot For Mounting
- ✓ Conversion Adapters for Different Cameras





## PRODUCT DESCRIPTION

The ODRD80's simple plug and play 5 Pin M12 connector provides ease of use while allowing for full control. The 10%–100% intensity control assists in gaining full control of the light output. The provided diffuse lens breaks up light into a more diffuse and even pattern - great for inspecting metallic or semi-metallic materials. A standard 42 mm inner hole diameter allows for use with nearly all camera systems with available step-up and step-down conversion kits adapters.



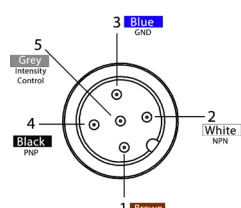
## PRODUCT SPECIFICATIONS

Electrical Input	24VDC +/-5%
Input Current	Peak 2 A during strobe
Input Power	Peak 48 W during strobe
PNP Trigger	2.8 mA @ 4VDC   8.8 mA @ 12VDC   17.6 mA @ 24VDC
NPN Trigger	14.4 mA @ Common (0VDC)
Trigger Input	PNP > +4 VDC (24 VDC max.) to activate or NPN ≥ GND <1VDC to activate (not both)
Strobe Trigger Latency	Min. 30 μs   Max. 125 ms
Strobe Duration	Max. 10%
Strobe Frequency	Max 4 kHz or 1 / Duty Cycle as calculated, whichever is less*
Power Indicator	Turns green when powered up
Status Indicators	Strobe indicator will turn red while resting and turn off when ready
Intensity Limit	270° turn pot. Turn clockwise to increases intensity limit.
Analog Intensity	The output is adjustable from 10%–100% of intensity limit by a 1 – 10VDC signal.
Connection	5-pin M12 connector
Operating Temperature	-10° to 40° C (14° to 104° F)   RH max 80% non-condensing humidity
Storage Temperature	-20° to 70° C (-4° to 158° F)   RH max 80% non-condensing humidity
IP Rating	IP50
Weight	~183 g
Compliances	CE, RoHS, IEC 62471
Warranty	UV LEDs have a 2 year warranty, all other LEDs have a 10 year warranty. For complete warranty information, visit <a href="http://smartvisionlights.com/warranty">smartvisionlights.com/warranty</a> .

\*See page 5 for more information



## 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	OverDrive™ Signal	1–10VDC	GREY*

\* Some cables use green/yellow for pin 5  
For maximum intensity, tie pin 5 to pin 1 at +24VDC.

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

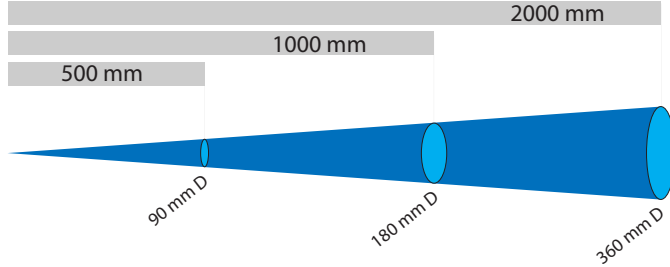
Additional resources are available on our website, including CAD files, videos, and application examples.



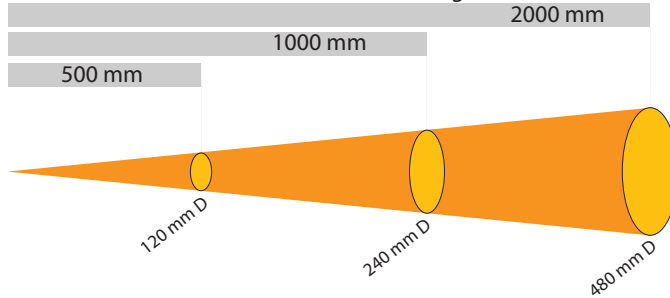
## LIGHT PATTERNS

Smart Vision Lights recommends the ODRD80 be used at a working distance between 50 mm to 2000 mm.

Illumination measurement taken on White Light—5700K



Illumination measurement taken on White Light—5700K



### LIGHTING PATTERN FOR THE ODRD80-XXX-N

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	90 mm (~5.9")
1000 mm (39.4")	180 mm (~11.8")
2000 mm (78.8")	360 mm (~23.6")

Typical Output Performance	Illumination (Lux)
Distance = 500 mm	6500
<i>Illuminance measurement taken on White Lights—5700K</i>	

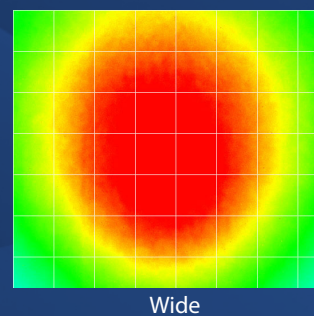
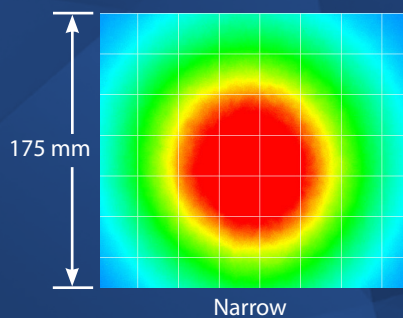
### LIGHTING PATTERN FOR THE ODR80-XXX

Working Distance mm (inches)	Pattern (80%–100% measured intensity) mm (inches)
500 mm (19.7")	120 mm (~3.1")
1000 mm (39.4")	240 mm (~3.54")
2000 mm (78.8")	480 mm (~5.3")

Typical Output Performance	Illumination (Lux)
Distance = 500 mm	4900
<i>Illuminance measurement taken on White Lights—5700K</i>	

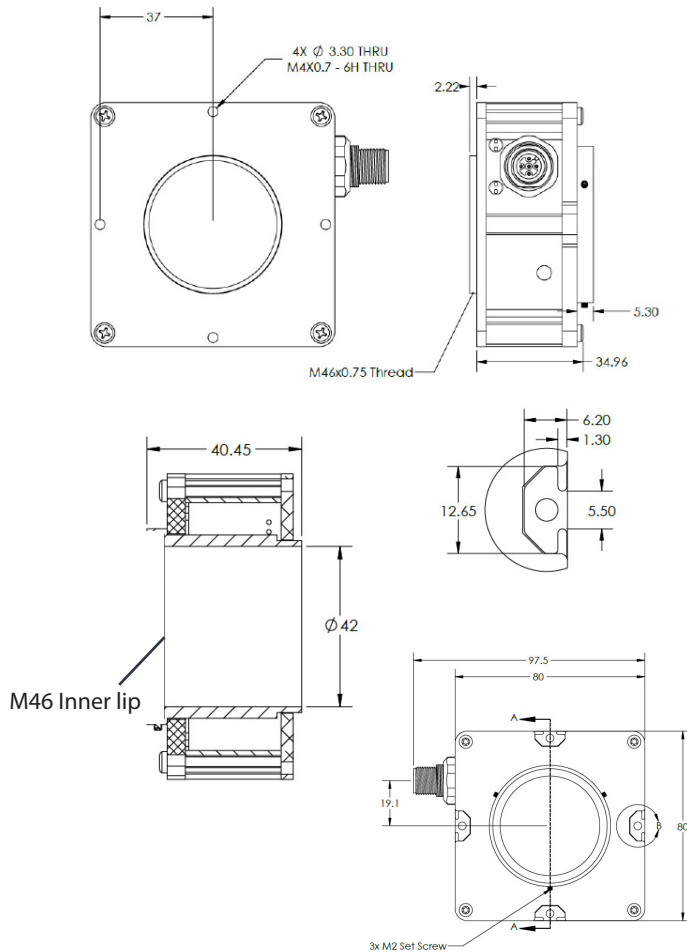
## The ODRD80 Ring Light produces a uniform light pattern.

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



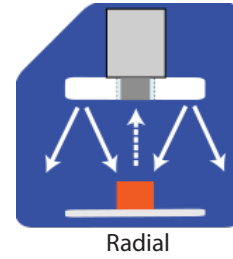
**PRODUCT DRAWING**

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



**ILLUMINATION**

ODRD80 Series of Ring Lights works best for:



**EYE SAFETY**



According to IEC 62471: 2006. Full documentation upon request.

**Notice**

**Exempt Group:** 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 eye. Safe for most applications except prolonged exposures. Applicable for wavelengths: 470, 505, 530, and WHI.

**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 and 395.



## PART NUMBER

**ODRD80** –



**COLOR:**



**LENS:**

Leave blank for Wide (40°)

N = Narrow

### Part Number Examples:

**R80-625** R80, 625 Red Wavelength, Standard (Wide) Lenses

**R80-WHI** R80, White, Standard (Wide) Lenses

Additional wavelengths and lens options available upon request.



## LENS OPTICS

### NARROW

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

### WIDE (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.

### When to Use a Linear Polarizers?

Polarizing filters can reduce reflections on specular surfaces.

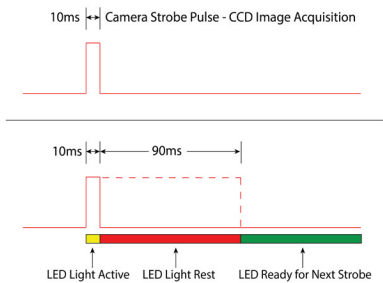
A Linear Polarizer has a typical transmission of 38 percent while blocking 62 percent of the light not in the polarization plane.

**WARNING:** Running a light in continuous operation while using a standard polarizer with certain wavelengths (ex. white, blue) may burning the polarizer.



## DUTY CYCLE

The Duty Cycle (D) is related to the Strobe Time (ST) and Rest Time (RT).



Light follows strobe pulse - the light output will track the width of the strobe pulse.

### Calculating Rest Time

$$RT = \frac{ST}{D} - ST$$

RT = Rest Time  
ST = Strobe Time  
D = Duty Cycle

#### Example

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

Rest Time is 90 ms for 10 ms Strobe Time

### Calculating Strobe Rate

$$SR = \frac{D}{ST}$$

SR = Strobe Rate (strokes per second)  
ST = Strobe Time (seconds)  
D = Duty Cycle

#### Example

$$1000 = \frac{0.1}{0.0001}$$

Strobe Rate is 1000 strokes per second

### Calculating Duty Cycle

$$D = ST \times SR$$

SR = Strobe Rate (strokes per second)  
ST = Strobe Time (seconds)  
D = Duty Cycle

#### Example

$$0.1 = 0.0001 \times 1000$$

Duty Cycle is 10% (0.1)

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

Maximum Strobe Frequency is 1 / calculated duty cycle or 4,000 strokes per second, whichever is less.

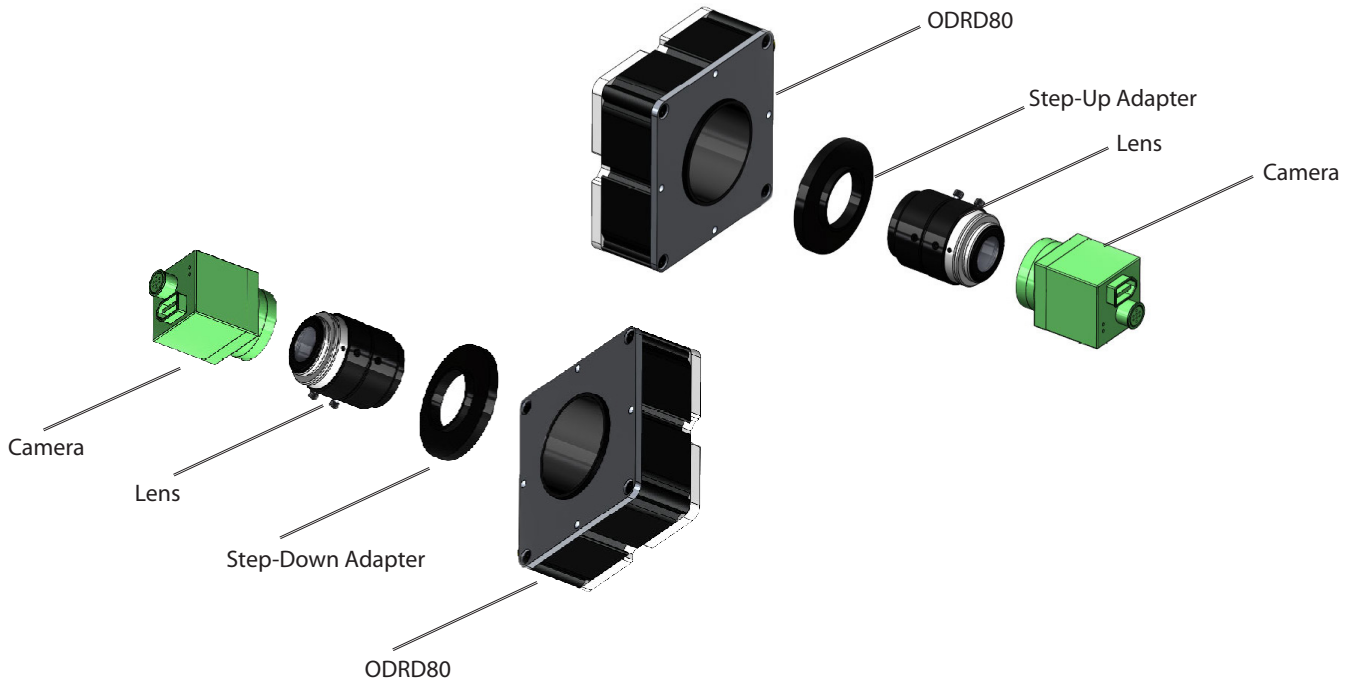


## STEP-UP/STEP-DOWN ADAPTER KITS

Step-Up/Step-Down Adapter Kits allow the M46 thread on ring lights to be mounted directly to the threads found on the front-end of most popular lenses.

Step-Up Adapters allow for mounting a lens that is smaller in diameter to an EZ Mount Ring Light, while Step-Down Adapters allow for mounting a larger lens to an EZ Mount Ring Light.

These kits include: a set of screws and a hex wrench.



## STEP-UP/STEP-DOWN ADAPTER KITS PART NUMBERS

### STEP-DOWN ADAPTER

**SD** –   – **46**

LENS THREAD SIZE      RING LIGHT THREAD SIZE

49  
52  
55  
58  
62  
67  
72

### STEP-UP ADAPTER

**SU** –     – **46**

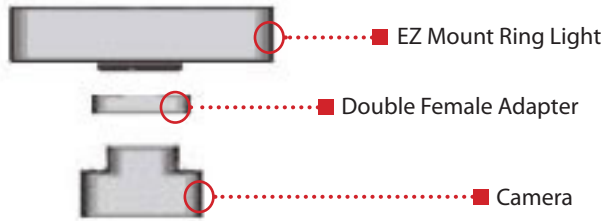
LENS THREAD SIZE      RING LIGHT THREAD SIZE

25.5  
27  
30.5  
34  
35.5  
37  
39  
40.5  
43



## CAMERA MOUNTING ADAPTERS

When mounting a camera directly on to an EZ Mount Ring Light, a Double Female (DF) threaded camera adapter is used.



### DOUBLE-FEMALE ADAPTER

DF--46

CAMERA  
THREAD SIZE

34.9  
55  
60

RING LIGHT  
THREAD SIZE

\*When mounting an EZ Mount Ring Light, a double-female adapter is used.



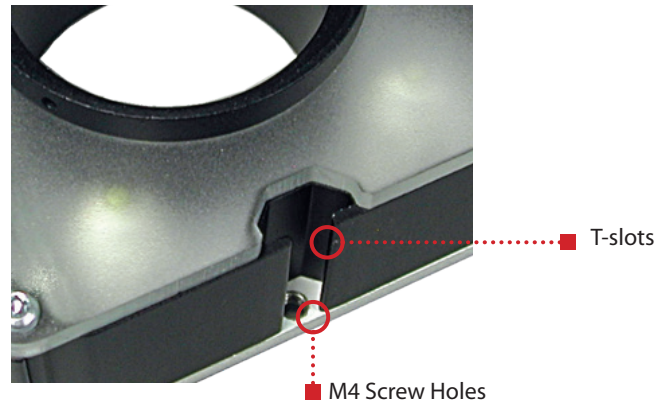
## MOUNTING

Mounting options include four T-slots and four M4 threaded holes on the ODRD80 EZ Mount ring light.

#### Optional Mounting Hardware:

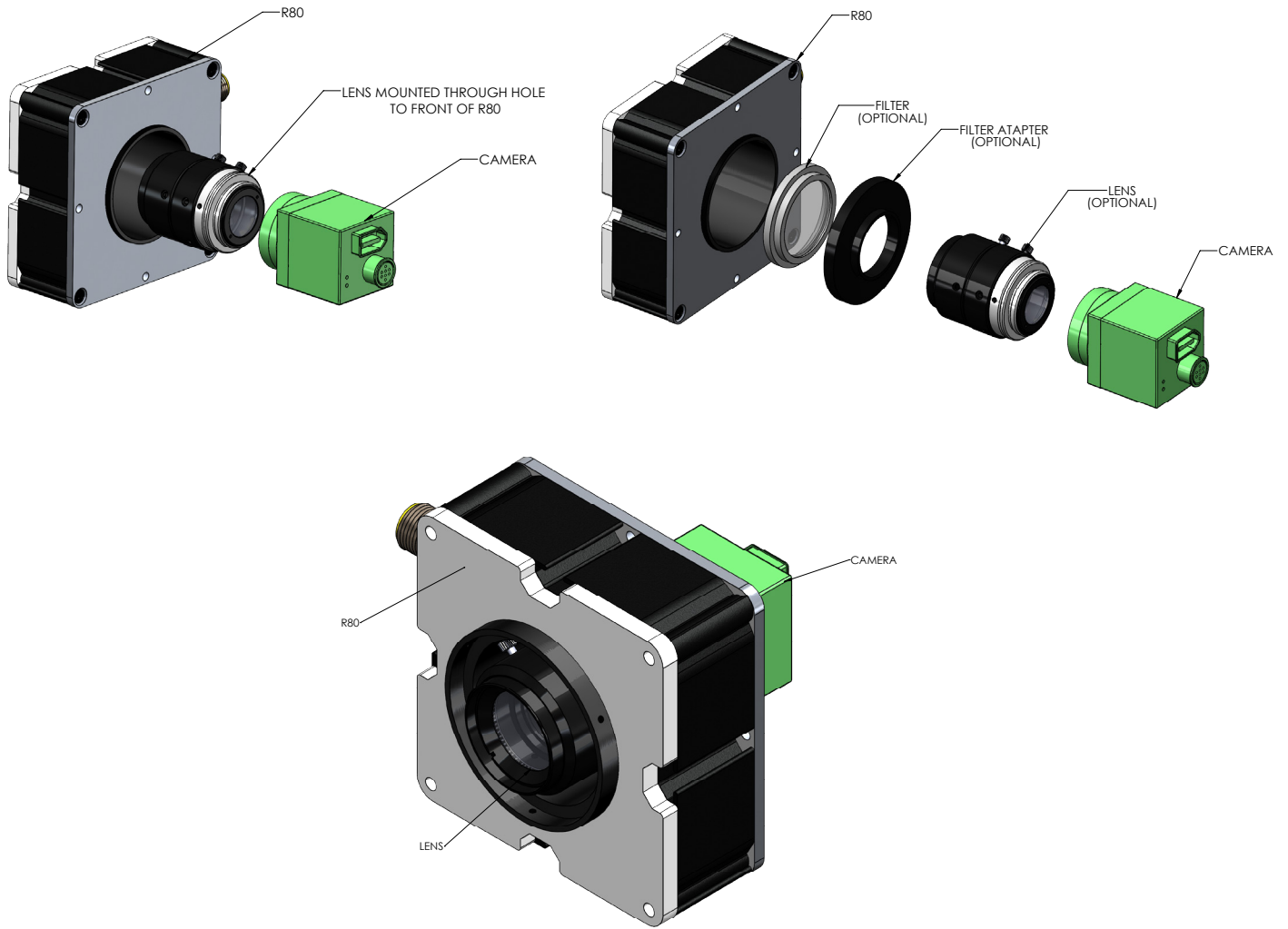
T-Slots = M5 x 0.8 mm T-Nut

Threaded screw Holes = M4 screws





## CAMERA MOUNTING EXAMPLES







## ACCESSORIES

### Step-Up Kits \*



Lens Thread Size	Part Number
25.5 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

### Power Cables



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

### Variable Control Pot



Description	Part Number
Controls the intensity of the light	IVP-C1

### Camera Adapters

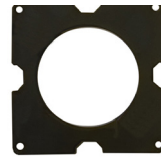
Camera Thread Size	Part Number
55 mm	DF55-46
60 mm	DF60-46
34.5 mm	DF34.5-46

### Camera Mounting Adapter



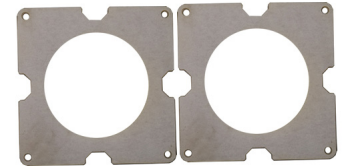
Description	Part Number
Adapter	BKT0030-KIT

### Linear Polarizer



Description	Part Number
Linear Polarizer Kit	R80-LP

### Diffuser



Description	Part Number
Diffuser Kit	R80-DKIT



## 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.

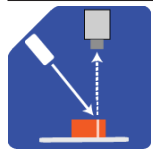
**Built-in Driver** The built-in driver allows full function without the need of an external controller.

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

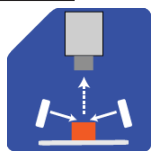
**Polarizers** Filters that reduce reflections on specular surfaces.

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

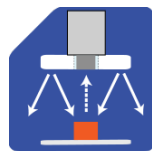
### TYPES OF ILLUMINATION



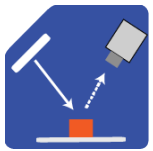
Projector



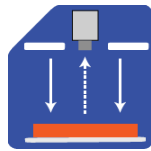
Dark Field



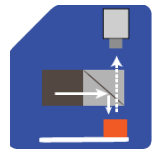
Radial



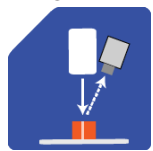
Bright Field



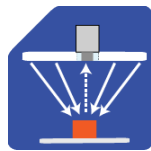
Direct



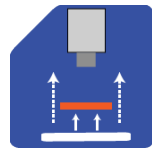
Axial



Line



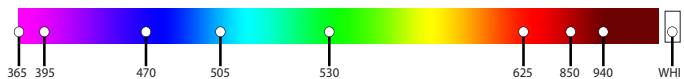
Diffuse Panel



Backlight

### 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.