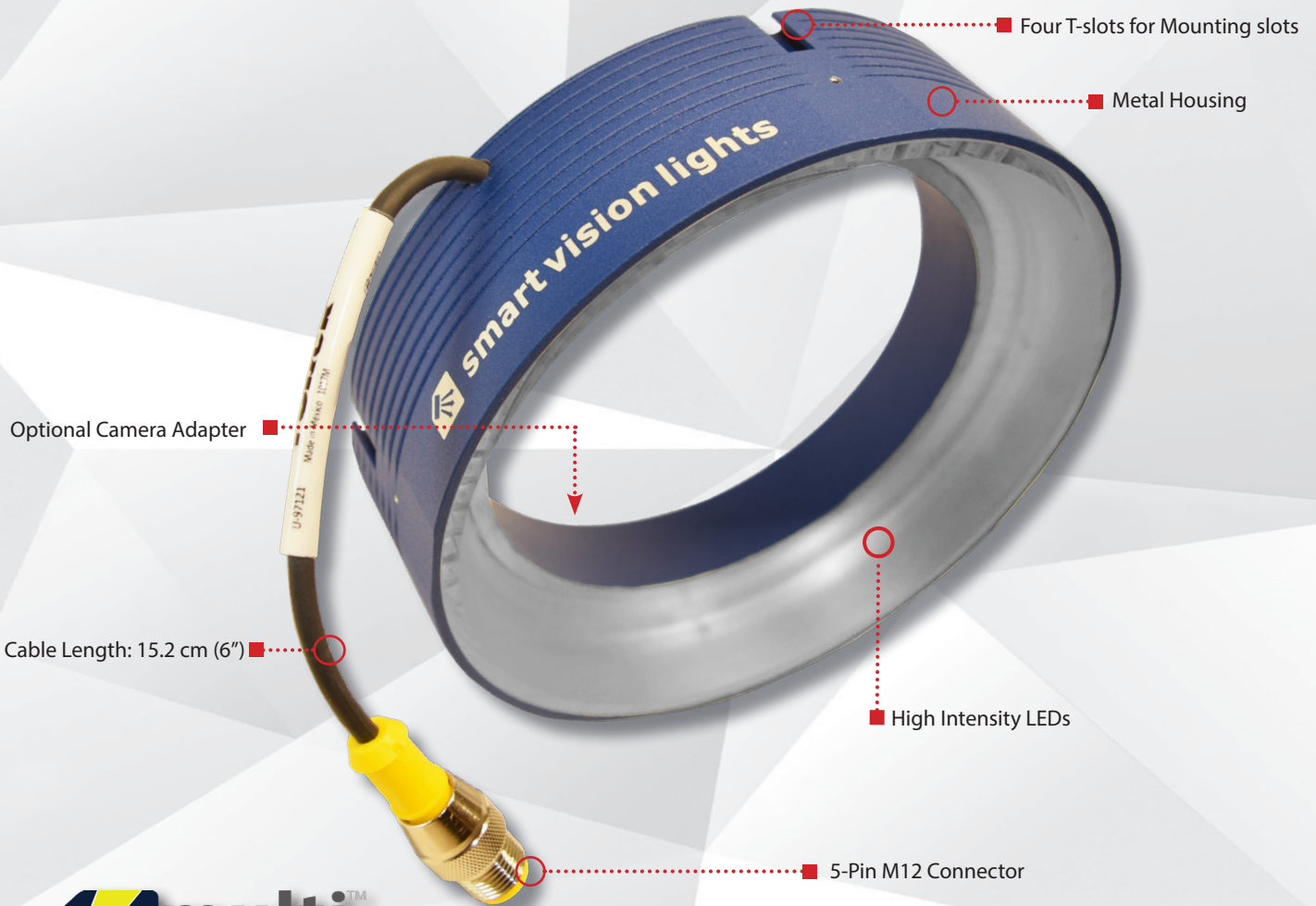




smart vision lights

RM140 *Miniature "Mini"* RING LIGHT MULTI-DRIVE™

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 65	Connector 5-PIN M12
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PRODUCT HIGHLIGHTS

- ✓ Built-in Multi-Drive™ allows the light to work in continuous operation or OverDrive™ mode
- ✓ Built-in driver, no external wiring needed
- ✓ PNP and NPN strobe input
- ✓ Over-current protection
- ✓ 5-pin M12 quick connect





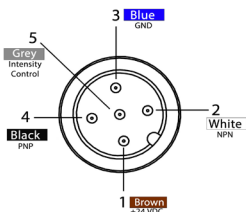
PRODUCT SPECIFICATIONS

	CONTINUOUS OPERATION	OVERDRIVE™ STROBE MODE
Electrical Input	24VDC +/- 5%	
Input Current	Max. 510 mA	Max. 4.5 A
Wattage	Max. 12.5 W	Max. 105 W
PNP Line	4 mA @ 4VDC 10 mA @ 12VDC 20 mA @ 24VDC	
NPN Line	15 mA @ Ground (0VDC)	
OverDrive™ Strobe Mode	Not applicable	Connect pin 5 to GND (see Wiring Configuration for more information)
Strobe Duration	Not applicable	Max. 50 ms
Duty Cycle	Not applicable	Max. 10%
Strobe Input	Not applicable	PNP > +4VDC or greater to activate NPN > GND (< 1VDC) 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 > +4VDC or greater to activate NPN > GND (< 1VDC) to activate	Not applicable
Connection	5-pin M12 connector	
Ambient Temperature	-18°–50° C (0°–122° F)	
IP Rating	IP65	
Weight	365 g	
Power Supply	A separate power supply for OverDrive™ (high-pulse operation) is recommended. (See Current for value)	
Compliances	CE, RoHS, IEC 62471	



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	1-10VDC	GREY*

* Some cables use green/yellow for pin 5

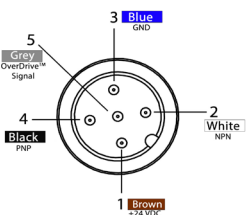
For maximum intensity, it is possible to tie pin 5 to pin 1 at +24VDC.

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 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



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)

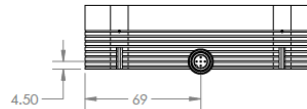
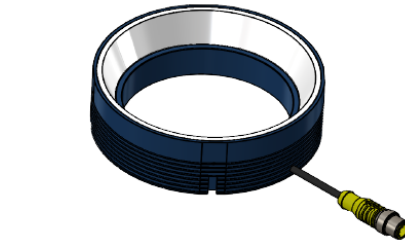
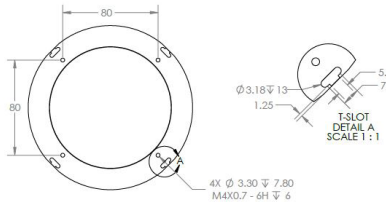
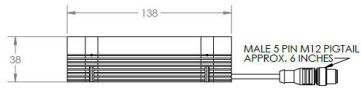
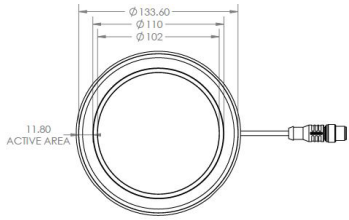


RESOURCE CORNER

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



PRODUCT DRAWING



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



LIGHT PATTERNS

Smart Vision Lights recommends the RM140 be used at a working distance between 50 mm to 200 mm.

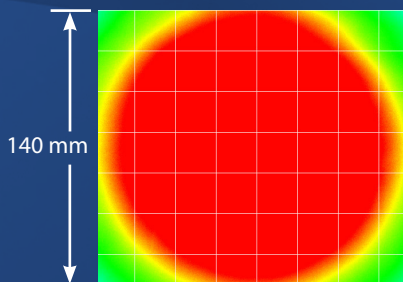
LIGHTING ILLUMINATION FOR THE RM140

Continuous Operation Mode	
Typical Output Performance	Illumination (Lux)
Distance = 100 mm	19,200
<i>Illumination measurement taken on White Light - 4800K</i>	

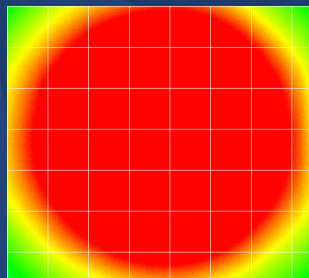
OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 100 mm	159,360
<i>Illumination measurement taken on White Light - 4800K</i>	

The RM140 Mini Ring Light produces a uniform light pattern.

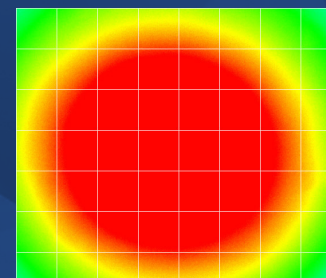
WD = Working Distance



WD = 50 mm



WD = 100 mm



WD = 200 mm

(Grid set to 20 mm x 20 mm)

MULTI-DRIVE™

Multi-Drive™ offers the best of both worlds. Continuous operation or 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.

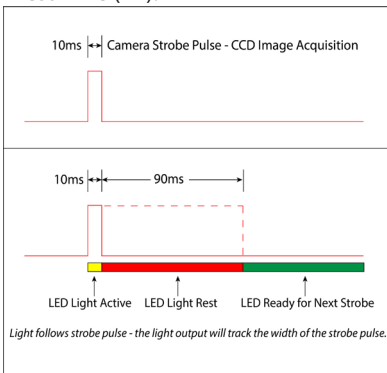


The Multi-Drive™ feature allows the user to run the light continuously or in OverDrive™ at the maximum allowed intensity by simply setting the product configuration. OverDrive™ operation is **up to five times** the power versus continuous operation.

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

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

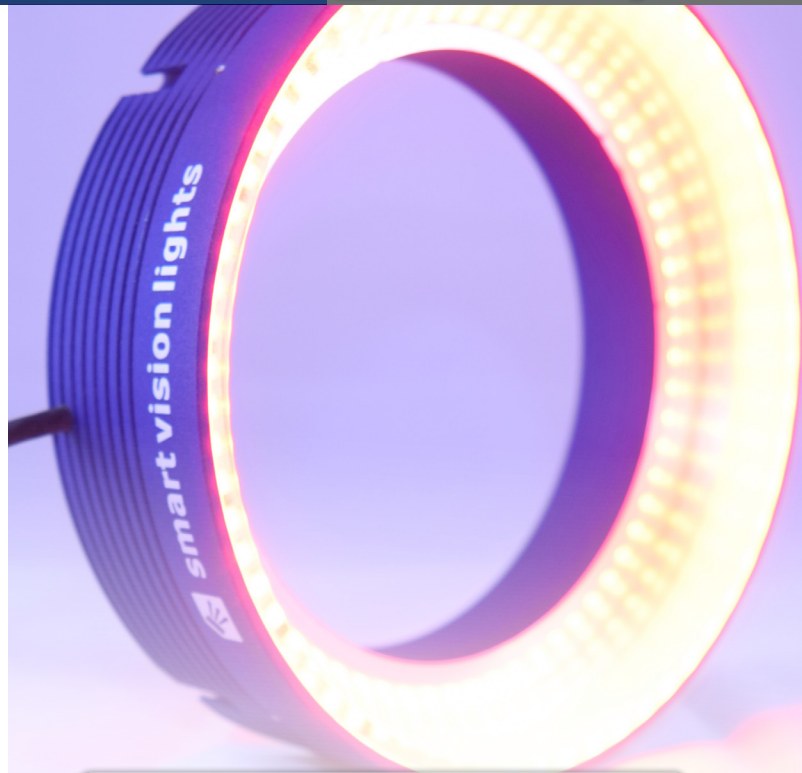
RT = Rest Time
ST = Strobe Time
D = Duty Cycle

Example

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

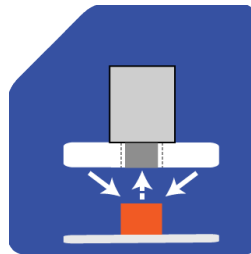
Rest Time is 90 ms for 10 ms Strobe Time

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

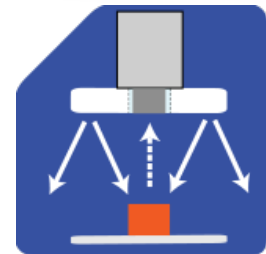


ILLUMINATION

RM140 Series of Mini Ring Lights works best for:



Dark Field



Radial

EYE SAFETY

According to IEC-62471:2006. Full documentation 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.



PART NUMBER

RM140 —

COLOR:



Part Number Examples:

RM140-625 (RM140, 625 Red Wavelength)

Additional wavelengths available upon request



MOUNTING

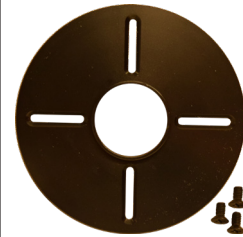
Mounting options include four T-slots and four M4 threaded holes on the RM140.

Hardware included with light:

- (2) M4 x 8 mm screws (Hex)
- (2) M5 x 10 mm screws (Hex)
- (2) T-Nuts



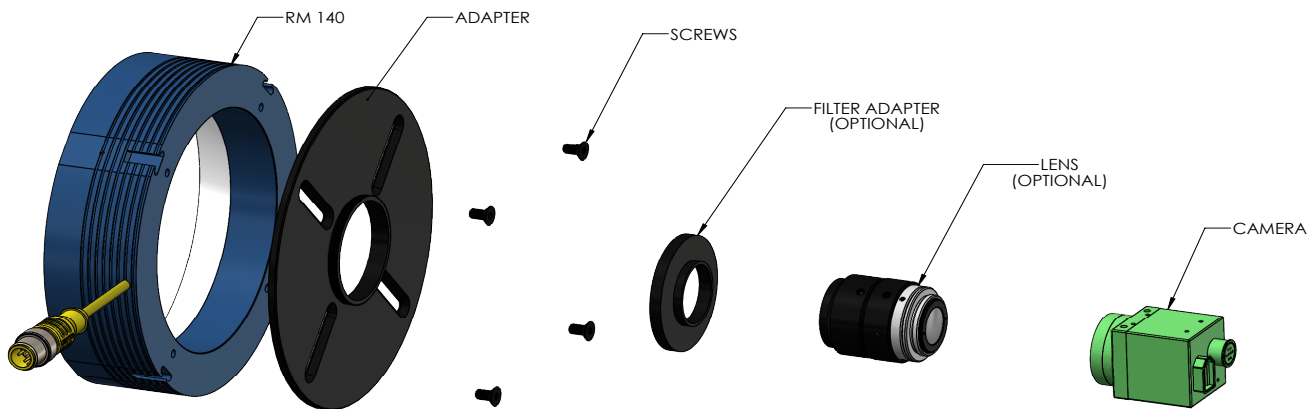
Optional Mounting Equipment



The **optional ADP0002-KIT** can be used to mount a camera or lens directly to the RM140.



CAMERA MOUNTING ADAPTER





ACCESSORIES

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

* Additional sizes available

Step-Down Kits



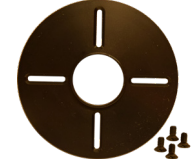
Lens Thread Size	Part Number
49 mm	SD49-46
52 mm	SD52-46
55 mm	SD55-46
58 mm	SD58-46
62 mm	SD62-46
67 mm	SD67-46
72 mm	SD72-46

Power Cables



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

Mounting Bracket



Description	Part Number
Camera Mount	ADP0002-KIT



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. OverDrive™ light part numbers start with OD.

Continuous Operation Light stays on continuously.

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

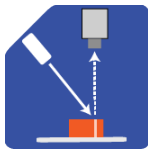
Built-in Driver The built-in driver allows full function without the need of an external controller.

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

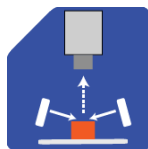
Polarizers Filters that reduce reflections on specular surfaces.

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

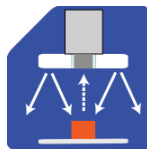
TYPES OF ILLUMINATIONS



Projector



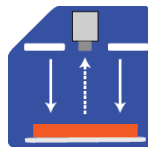
Dark Field



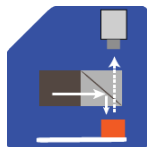
Radial



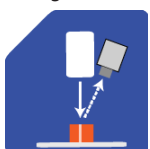
Bright Field



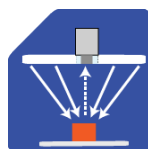
Direct



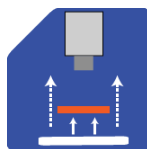
Axial



Line



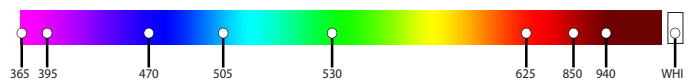
Diffuse Panel



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.