

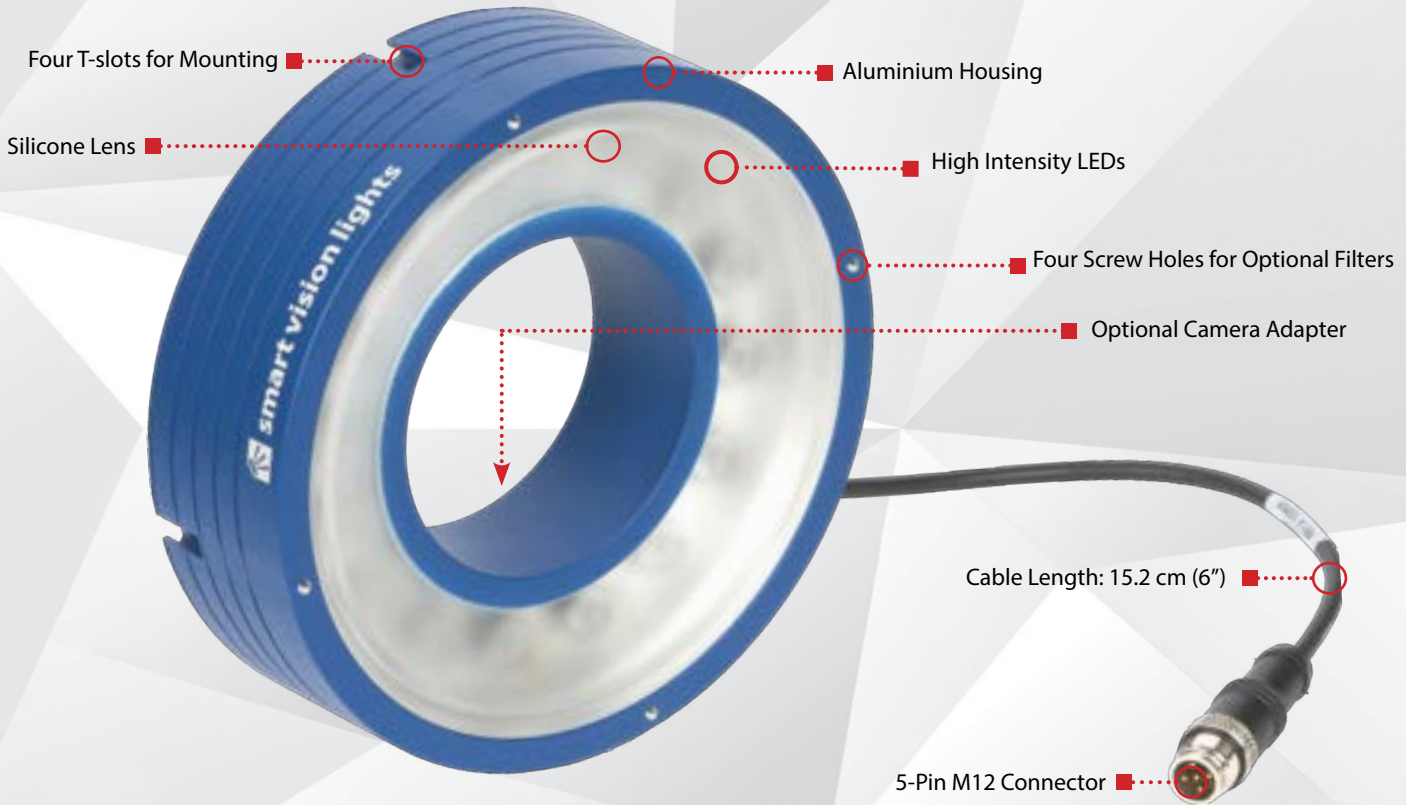


smart
vision lights

RMX140 Ring Light

MULTI-DRIVE™

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



Warranty
10
YEAR

Tested
IEC
62471

Compliant
CE
RoHS

Rated
IP
65

Connector
5-PIN
M12

PRODUCT HIGHLIGHTS

- ✓ Built-in Multi-Drive™ allows the light to work in continuous operation or OverDrive™ strobe mode
- ✓ Silicone lens offers high transmission across a broad spectrum
- ✓ PNP and NPN strobe input
- ✓ Over-current protection
- ✓ 5-pin M12 quick connect





PRODUCT DESCRIPTION

The built-in driver on the RMX140 Series features Multi-Drive™, which allows the user to operate the light in constant operation or OverDrive™ strobe mode depending on the wiring method. The industry-standard 5-pin M12 connector makes for simple wiring. The 1–10 V analog signal line gives the user total control over intensity in continuous operation mode. Grounding the signal will put the light into OverDrive™ strobe mode. The silicone lens offers high-transmission across a broad spectrum.



PRODUCT SPECIFICATIONS

| | CONTINUOUS OPERATION | OVERDRIVE™ STROBE MODE |
|-----------------------|---|--|
| Electrical Input | 24 V DC +/- 5% | |
| Input Current | Max. 510 mA | Peak 4.5 A during strobe |
| Input Power | Max. 12.5 W | Peak 108 W during strobe |
| PNP Trigger | 2.8 mA @ 4 V DC 8.8 mA @ 12 V DC 13.4 mA @ 24 V DC | |
| NPN Trigger | 14.4 mA @ Ground (0VDC) | |
| Trigger Input | PNP > +4 VDC (24 VDC max.) to activate or NPN > GND (<1VDC) to activate (not both) | |
| Mode Control | Connect pin 5 to 1-10 VDC (10 - 100% output); 24 VDC (Max) | Connect pin 5 to GND (see Wiring Configuration for more information) |
| Strobe Duration | Minimum 30 us Maximum ∞ | Minimum 30 us Maximum 50 ms |
| Duty Cycle | Not applicable | Max. 10% |
| Strobe Input | Not applicable | PNP > +4 V DC or greater to activate NPN > GND (< 1 V DC) to activate |
| Connection | 5-pin M12 connector | |
| Operating Temperature | -10° - 40° C (14° - 104° F) RH max 80% non-condensing humidity | |
| Storage Temperature | -20° to 70° C RH max 80% non-condensing humidity | |
| IP Rating | IP65 | |
| Weight | 365 g | |
| Compliances | CE, RoHS, IEC 62471 | |
| Warranty | 10 years* | |

*See SmartVisionLights.com/warranty for more information



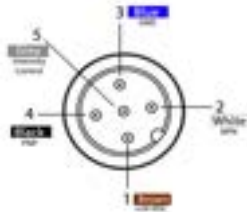
RESOURCE CORNER

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)

| 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

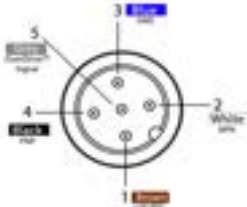
** For maximum intensity, it is possible to tie pin 5 to pin 1 at +24 V DC.

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 requirement.)

OVERDRIVE™ STROBE 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

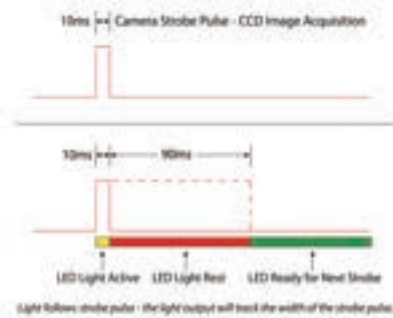
(See Product Specifications for requirement.)



DUTY CYCLE (OVERDRIVE™ MODE ONLY)

This section applies only if light is in OverDrive™ strobe 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

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

Rest Time is 90 ms for 10-µs 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)

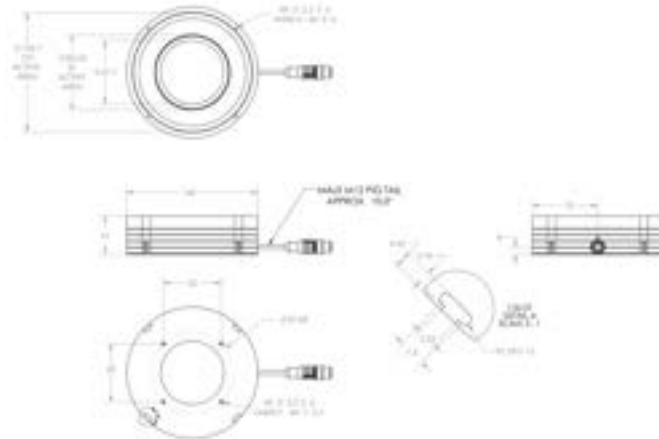
Maximum Duty Cycle for OverDrive™ light is 10% (0.1)

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



PRODUCT DRAWING

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



LIGHT PATTERNS

Smart Vision Lights recommends the RMX140 be used at a working distance between 100 mm to 500 mm.

LIGHTING PATTERN FOR THE RMX140 **with Narrow 10° Lenses**

| Continuous Operation Mode | |
|---|-------------------|
| Typical Output Performance | Illuminance (Lux) |
| Distance = 200 mm | 34,000 |
| <i>Illuminance measurement taken on White Light — 5700K</i> | |

| OverDrive™ Mode | |
|---|--------------------|
| Typical Output Performance | Illumination (Lux) |
| Distance = 200 mm | 272,000 |
| <i>Illuminance measurement taken on White Light — 5700K</i> | |

LIGHTING PATTERN FOR THE RMX140 **with Narrow 30° Lenses**

| Continuous Operation Mode | |
|---|-------------------|
| Typical Output Performance | Illuminance (Lux) |
| Distance = 150 mm | 40,000 |
| <i>Illuminance measurement taken on White Light — 5700K</i> | |

| OverDrive™ Mode | |
|---|--------------------|
| Typical Output Performance | Illumination (Lux) |
| Distance = 150 mm | 320,000 |
| <i>Illuminance measurement taken on White Light — 5700K</i> | |

LIGHTING PATTERN FOR THE RMX140 **with Standard 50° Lenses**

| Continuous Operation Mode | |
|---|-------------------|
| Typical Output Performance | Illuminance (Lux) |
| Distance = 120 mm | 25,000 |
| <i>Illuminance measurement taken on White Light — 5700K</i> | |

| OverDrive™ Mode | |
|---|--------------------|
| Typical Output Performance | Illumination (Lux) |
| Distance = 120 mm | 200,000 |
| <i>Illuminance measurement taken on White Light — 5700K</i> | |

LIGHTING PATTERN FOR THE RMX140 **with Wide 80° Lenses**

| Continuous Operation Mode | |
|---|-------------------|
| Typical Output Performance | Illuminance (Lux) |
| Distance = 100 mm | 35,000 |
| <i>Illuminance measurement taken on White Light — 5700K</i> | |

| OverDrive™ Mode | |
|---|--------------------|
| Typical Output Performance | Illumination (Lux) |
| Distance = 100 mm | 280,000 |
| <i>Illuminance measurement taken on White Light — 5700K</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 five times** the power of continuous operation.



SAFESTROBE™ TECHNOLOGY

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.

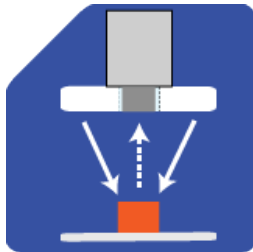


ILLUMINATION

RMX140 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.

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

RMX140 —



COLOR:



LENS:

Leave blank for Standard (50°)

N10 = Narrow (10°)

N30 = Narrow (30°)

W80 = Wide (80°)

Part Number Examples:

RMX140-625 (RMX140, 625 nm Red Wavelength)

RMX140-WHI-N10 (RMX140, 625 nm Red Wavelength, 10° Narrow lenses)

Additional wavelengths available upon request
365 and 395 only available in 10° and 30° lenses



MOUNTING

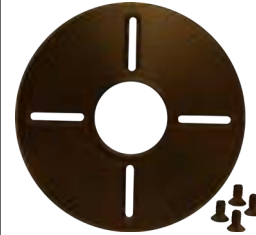
Mounting options include four T-slots and four M4 threaded holes on the RMX140.

Hardware included with light:

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



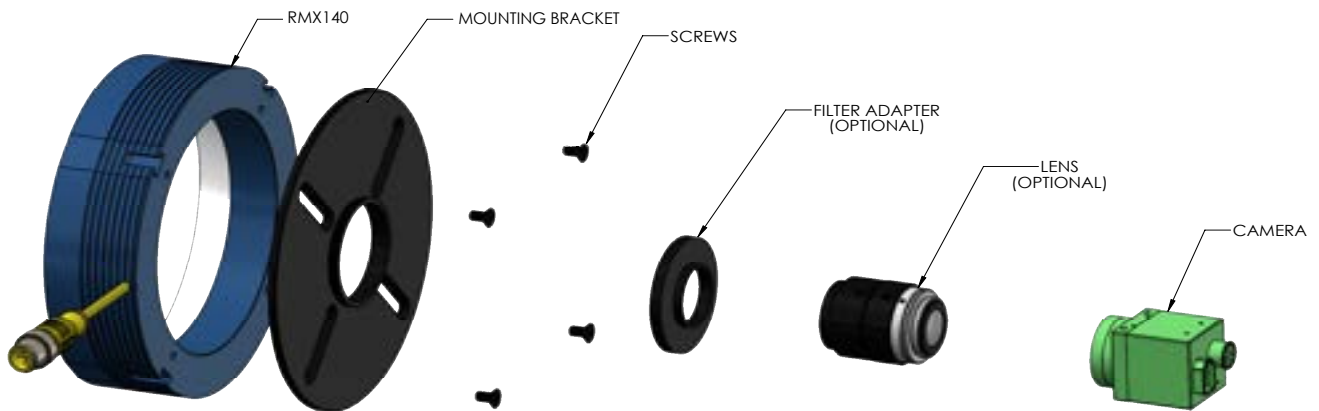
Optional Mounting Equipment



The **optional ADP0002-KIT** can be used to mount a camera or lens directly to the RMX140.




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 |
| 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 |

| Mounting Bracket | |
|--|-------------|
|  | |
| Description | Part Number |
| Camera Mount | ADP0002-KIT |

| Camera Adapter | |
|--|-------------|
|  | |
| Description | Part Number |
| Camera Adapter | DF34.9-46 |
| Camera Adapter | DF55-46 |
| Camera Adapter | DF60-46 |
| Camera Adapter | DF60.75-46 |

| Mounting Bracket | |
|---|-------------|
|  | |
| Description | Part Number |
| Mount Bracket | BKT0030-KIT |

| Power Cables | |
|---|-------------|
|  | |
| Lengths | Part Number |
| 5 m | 5PM12-5 |
| 10 m | 5PM12-10 |
| 15 m | 5PM12-15 |



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.

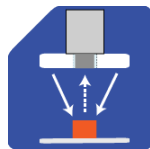
TYPES OF ILLUMINATION



Projector



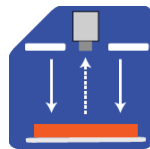
Dark Field



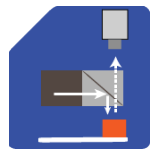
Radial



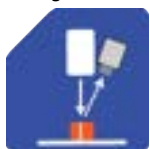
Bright Field



Direct



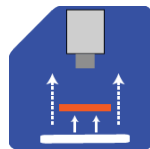
Axial



Line



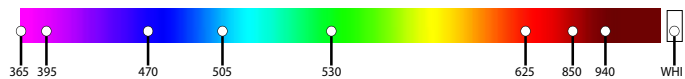
Diffuse Panel



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** is available in SWIR wavelengths.