smart vision lights RMX140 *Ring Light*

MULTI-DRIVE™

For use with Allied Vision Alecs

PRODUCT DATA SHEET

multi drive™

Warranty	Tested	Compliant	Rated	Connector
10 YEAR	IEC 62471	CE RoHS	IP 65	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

Contents specific for Allied Vision Alecs cameras

This document applies to Smart Vision RMX140 being used with Allied Vision Alecs.

You can find the official product data sheet for general use at https://smartvisionlights.com.

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).

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 (strobes per second)
ST = Strobe Time (seconds)
D = Duty Cycle

Example

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

Strobe Rate is 1000 strobes per second

Calculating Duty Cycle

$$D = ST \times SR$$

SR = Strobe Rate (strobes 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 strobes 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
Illuminance measurement taken on White Light — 5700K	

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

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

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

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

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

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

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

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

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

OverDrive™ Mode	
Typical Output Performance	Illumination (Lux)
Distance = 100 mm	280,000
Illuminance measurement taken on White Light — 5700K	

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 / PRODUCT CODE (ALLIED VISION)

RMX140 – □□□ – □□□

COLOR:

WHI | 365 395 | 470 | 505 | 530 | 625 | 850 940

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

LENS:

Leave blank for Standard (50°)

N10 = Narrow (10°)

N30 = Narrow (30°)

W80 = Wide (80°)

Part Number Examples (Smart Vision):

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

Product Code (Allied Vision)	Product Name	Description
22428	Ring Light RMX140-WHI	Ring light white
22788	Ring Light RMX140-470	Ring light 470 nm
22789	Ring Light RMX140-530	Ring light 530 nm
22790	Ring Light RMX140-625	Ring light 625 nm
22429	Ring Light RMX140-WHI-MP with mounting plate	Ring light with mounting plate
22430	Polarizer RMX140-LP Add-On for RMX140	Polarizer for RMX ring light
22431	Ring Light mounting plate	Mounting plate between RMX 140 ring lights and Alecs

SMART VISION RMX140 WITH ALLIED VISION ALECS: OVERVIEW

MOUNTING FOR ALLIED VISION ALECS

NOTICE

Material damage

Follow the instructions in the Alecs User Guide at https://www.alliedvision.com/en/support/camera-documentation/smart-camera-documentation/alecs-documentation.

ACCESSORIES

Mounting plate details

RMX140 Ring lights for Alecs and accessories

You can find information on ring lights, polarizer add-on, mounting plate, and lighting cable connections at www.alliedvision.com/en/products/accessories/lighting.

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

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**

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.*