



**vario2** HYBRID

**LED ILLUMINATORS**



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Raytec Vario2 Hybrid User Instruction Version 1.1

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**Box Contents:** VARIO2 Hybrid illuminator with 35° beam angle ILS 60° beam angle ILS

**Accessories (optional):** VARIO Remote Controller for additional programming of the unit 80° beam angle IHD 120° beam angle ILS

## Safety Information



### **Eye Safety : IR Light (850nm and 940nm)**

Caution – IR emitted from this product EN62471 Risk Group 2 Do not stare at the lamp. Avoid exposure or use appropriate shielding / eye protection. Risk Group 2 for cornea / lens infrared hazard. Hazard distance for VAR2-hy4 ; VAR2-hy6; VAR2-hy8 is 2000mm. Hazard distance for VAR2-hy16 is 2500mm.

### **Eye Safety : White Light**

Caution – EN62471 Risk Group 2 Classification - Possible hazardous optical radiation emitted from this product. May be harmful to eyes, do not stare at the lamp.

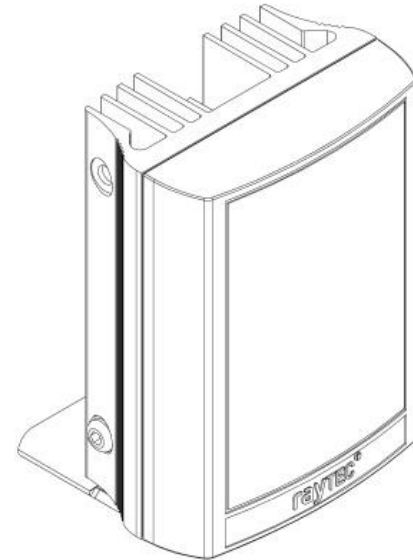
Hazard distance for all variants is 1500mm.

### **Eye Safety : EHV**

69.2% of RG2 limit at 200mm from the lamp

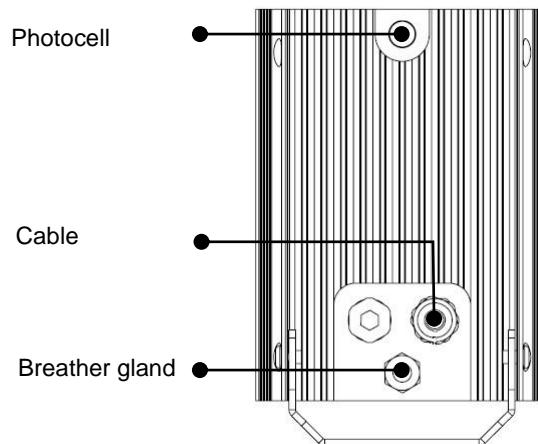
## Installation Steps – Quick Guide

1. The Vario2 Hybrid Illuminators (IR850nm with White Light or IR940nm with White Light) are factory set and delivered with a 35° beam width. To alter to 10°, simply remove Interchangeable Diffuser System (ILS) lens. To alter to 60°, replace with the other ILS lens supplied. See detailed instructions later in this document.
2. Mount Illuminator.
3. Connect the Illuminator to a properly rated low voltage power supply (24 DC only).
4. Connect the Hybrid Input wires to the trigger which will command the Illuminator to turn on the White Light Section of the Illuminator.
5. Complete configuration and final set-up using Remote Controller (this is an optional accessory).



## Wiring - six core cable:

- Black: 0V
- Red: 24V DC
  
- White: Photocell Following Contact<sup>(1)</sup>
- Yellow: Photocell Following Contact<sup>(1)</sup>
  
- Orange: Hybrid Input<sup>(2)</sup>
- Purple: Hybrid Input<sup>(2)</sup>



(1) Volt Free Output; Non-polarity sensitive

(2) Volt Free/Dry Contact or TTL Input (see step 4 for more details)

## Factory Default Set-Up:

- 35° Beam Angle
- Max 100% Power – Both Infra-Red and White Light LEDs
- Hybrid Input – Open(Orange and Purple wires not connected) (Note: The Illuminator will turn on the IR Light LEDs when the photocell indicates that it is dark)
- Photocell sensitivity – MID
- Timer - OFF
- Status LEDs – ON
- Programming function will auto-disable after 4 weeks

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# Complete Set up and Installation

## Step 1. Select different beam angle – if required

LED illuminator is factory set and delivered with a 35° beam width angle. To alter to 10°, simply remove Interchangeable Lens System (ILS) lens. To alter to 60°, replace with other ILS lens supplied.

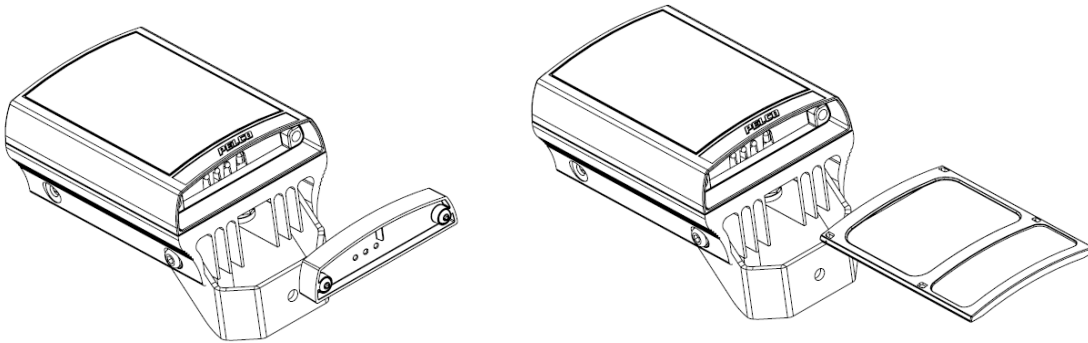
Other angle ILS lenses are available to order: 80° and 120°.

All ILS lenses will be clearly marked with the angle which they will produce when inserted into ILED or WLED illuminator.

Please handle ILS lenses with care – and do not touch optical film.

Only 1 ILS lens can be inserted into the product at anytime. The product cannot accommodate multiple ILS lenses at the same time.

We would recommend that power is turned off when replacing ILS lenses.



Remove base plate from unit using 2.5mm allen/hex key. Remove any ILS lens currently installed and insert the required ILS lens.

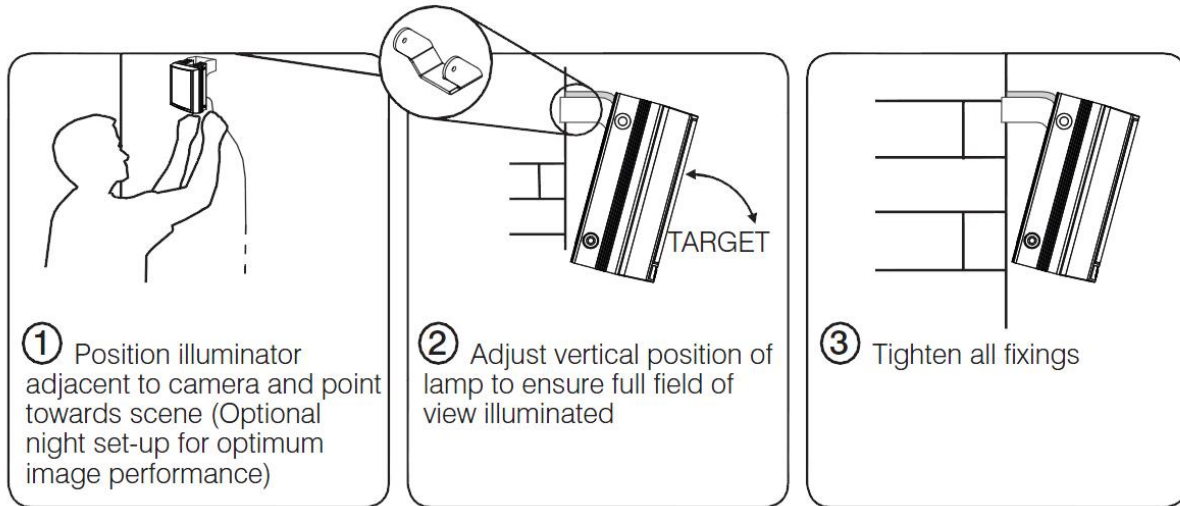
Re-attach the base.

### **IMPORTANT NOTE:**

- Ensure that the gasket is correctly located and the screws fastened tightly to ensure and maintain IP66 rating of the product.

## Step 2. Mounting Illuminator

All Vario Hybrid illuminators are delivered as standard with the bracket at the bottom of the unit. This can be moved to the top of unit if required.



## Step 3. Connect to low voltage power supply input 24 DC only

The illuminators are operational with 24V DC voltage only. The Red wire must be connected to the positive side of the power supply and the black wire to negative.

## Step 4. Hybrid Input function (Orange & Purple)

The Hybrid input can be used to control whether the unit is emitting Infra-Red or White Light. As a default, the Hybrid inputs are not wired together (Open circuit) for standard photocell controlled on/off operation of the unit in IR Light mode.

Photocell State	Hybrid Input	Timer <sup>(3)(4)</sup>	IR LEDs	White Light LEDs
Light	Open Circuit or Short Circuit	Off	Off	Off
Dark	Open Circuit	Off	On	Off
Dark	Closed Circuit	Off	Off	On
Dark	Open Circuit	On	On	Off
Dark	Closed Circuit	On	Off	On – For duration of the timer
Disabled <sup>(4)</sup>	Open Circuit	Off	On	Off
Disabled <sup>(4)</sup>	Closed Circuit	Off	Off	On
Disabled <sup>(4)</sup>	Open Circuit	On	On	Off
Disabled <sup>(4)</sup>	Closed Circuit	On	Off	On – For duration of the timer

(3) – The timer function is used to control the white light only.

(4) – Disabling the photocell or enabling the timer require a Vario Remote control.

By connecting the Hybrid input wires (orange and purple) to an external device such as a camera output or a PIR detector, the lamp can be automatically switched between white light and infra-red receiving a signal.

To use the Hybrid feature it is important that the input wires be connected to the appropriate triggering device either as a volt-free or TTL input.

Hybrid Input Type	State
Volt free input/dry contact:	Non polarity sensitive: Short circuit = Light on, Open Circuit – Light off
TTL input:	Orange = TTL +, Purple = TTL (GND) 0V = Light on, 3V = Light off

## Step 5. Photocell following output (White & Yellow) OPTIONAL

The Photocell following output can be used to manually control the day/night operation of a camera. The volt free output is open when the photocell senses daytime ambient light levels, and is closed when it senses nighttime ambient light levels.

# Remote Controller

Optional Accessory

## Power Select

Quick and easy selection of 5 accurately defined power settings. Provides exact amount of light required for the scene requirements.

## Photocell Adjust

To select 3 different photocell sensitivity levels to accommodate different operational requirements

When used in conjunction with the TEL and DIM buttons the power levels of the White Light and Infra-red LEDs can be set to different power levels.

## Timer Settings

the timer function allows the illuminator to be triggered via the hybrid input and remain on for a pre-defined period of time

## Photocell Disable

Results in Infra-Red LEDs being on 24 hours/day when the hybrid input is open. Closing the hybrid input switches to White Light on and turns the IR off.

## Timer disable

Timer function is turned off

## TEL

Must be depressed for 4 seconds to enable power adjust of the White Light LEDs. This mode will time out after 1 minute or after a subsequent 4 second button press

## DIM

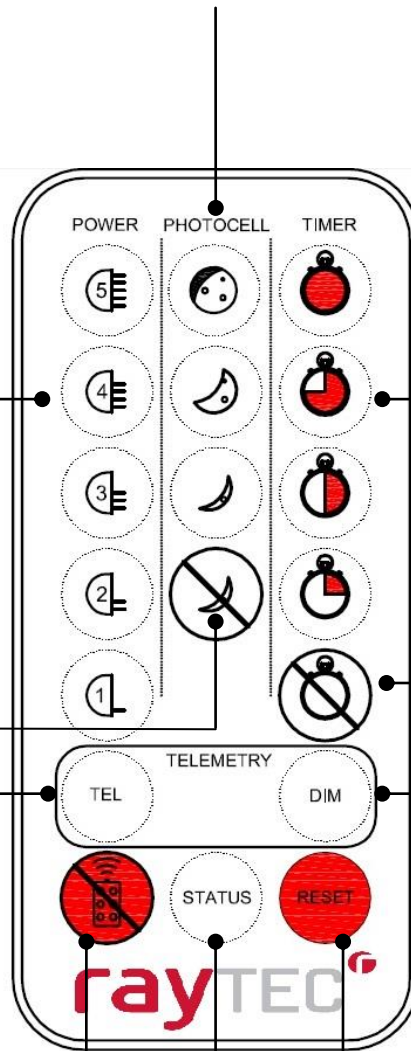
Must be depressed for 4 seconds to enable power adjust of the Infra-Red LEDs. This mode will time out after 1 minute or after a subsequent 4 second button press

## Disable Remote Control Set-Up

Must be depressed for 4 seconds to lock-in settings and prevent further alterations

## Restore Factory Default Settings

must be depressed for 4 seconds



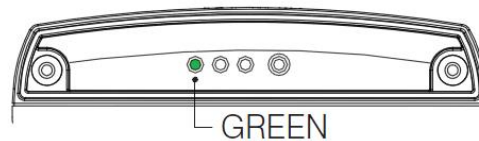
## Status

LED Feedback System  
Turns Status LED's On or Off

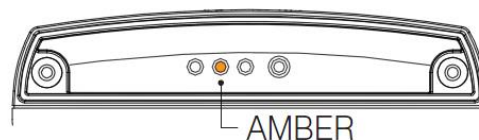
## LED Feedback System

### In Programming Mode

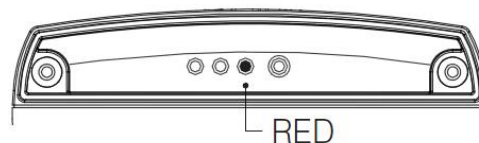
Solid Green status LED indicates unit has power applied. FLASHING GREEN status LED indicates a problem with the remote control IR receiver. The maximum remote operating distance is 8m (26ft).



Flashing Amber status LED indicates unit is in programming mode. Solid Amber indicates unit receiving valid command from remote control device.

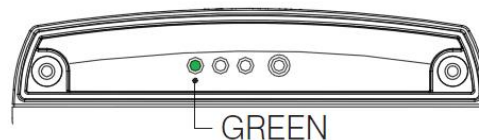


Solid Red status LED indicates an internal LED fault, and a flashing Red status LED indicates that there is a problem with the input voltage. **Please note:** once the voltage problem has been corrected, the user must disable remote control set-up or power the unit on and off to stop the red status LED flashing.  
(For VAR2-hy16 models the LED Fault indication is disabled)

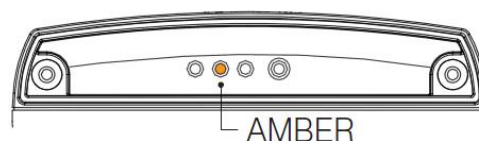


### In Normal Operating Mode

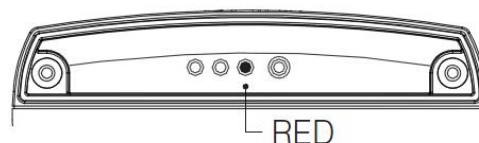
Solid Green status LED indicates unit has power applied. FLASHING GREEN status LED indicates a problem with the remote control IR receiver. The maximum remote operating distance is 8m (26ft).



Solid Amber status LED (non flashing) indicates a problem with the input voltage level. **Please note:** once the voltage problem has been corrected, the user must disable remote control set-up or power the unit on and off to extinguish the amber status LED.



Solid Red status LED indicates an internal LED fault.  
(For VAR2-hy16 models the LED Fault indication is disabled)



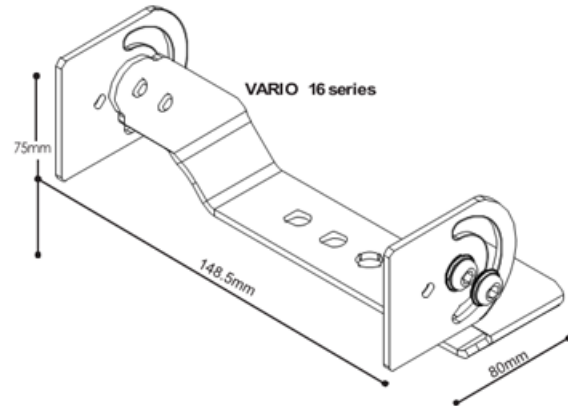
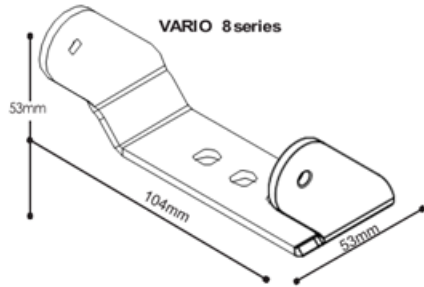
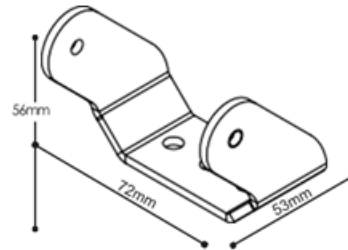


# Standard Bracketry :

Supplied with the Product (Model Dependant)

(not to scale, dimensions rounded to nearest mm)

Vario 6 Series



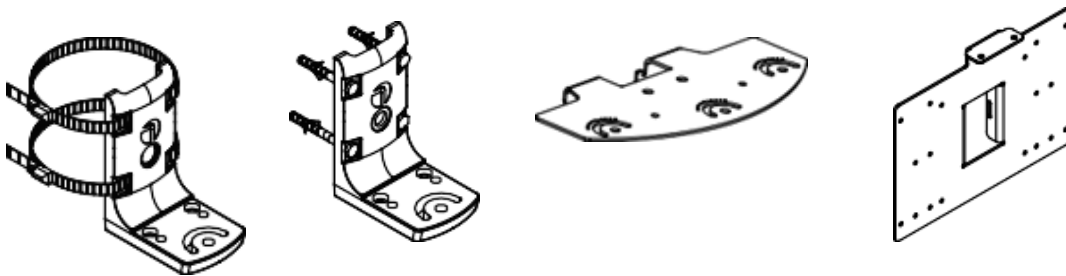
## Optional Bracketry (not to scale - other Bracketry also available)

VUB-Pole

VUB-Wall

VUB-Plate

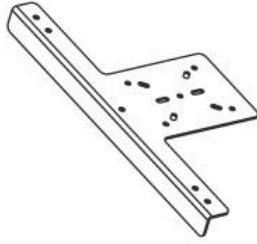
VUB-PSU Plate



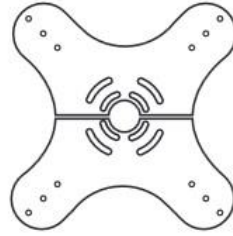
Wall Mount



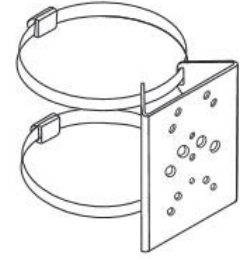
Ptz Mount



Dome Mount



Pole Mount



# Specifications

Infra-Red Series & White-Light Series

	VAR2-HY4		VAR2-HY4-C		VAR2-HY6		VAR2-HY8		VAR2-HY8-C		VAR2-HY16		VAR2-HY16-C	
	IR	WL	IR	WL	IR	WL	IR	WL	IR	WL	IR	WL	IR	WL
Max Distance @ 10°	130m (427ft)	70m (230ft)	Contact Raytec	99m (324ft)	219m (718ft)	99m (324ft)	293m (961ft)	142m (466ft)	Contact Raytec	142m (466ft)	455m (1493ft)	192m (630ft)	Contact Raytec	192m (630ft)
Max Distance @ 35° x 10°	70m (230ft)	42m (138ft)		53m (173ft)	123m (403ft)	53m (173ft)	163m (535ft)	76m (249ft)		76m (249ft)	219m (719ft)	97m (318ft)		97m (318ft)
Max Distance @ 60° x 25°	49m (161ft)	22m (72ft)		30m (98ft)	67m (219ft)	30m (98ft)	93m (305ft)	46m (151ft)		46m (151ft)	123m (404ft)	55m (180ft)		55m (180ft)
Max Distance @ 80° x 30°	32m (105ft)	16m (52ft)		23m (75ft)	50m (164ft)	23m (75ft)	68m (223ft)	33m (108ft)		33m (108ft)	93m (305ft)	43m (141ft)		43m (141ft)
Max Distance @ 120° x 50°	22m (72ft)	12m (39ft)		15m (49ft)	33m (108ft)	15m (49ft)	44m (144ft)	21m (69ft)		21m (69ft)	59m (194ft)	28m (92ft)		28m (92ft)
Angle	10°x10° or 35°x10° to 60°x25° or 80° x 30° to 120° x 50°													
Consumption	13W max		21W max				40W				78W			
Input Voltage	24V DC only													
Weight	0.95kg (2.1 lbs)						1.65kg (3.6 lbs)				3.1kg (6.8 lbs)			
IP Rating	IP66													
Temp Range	-50 to +50°C (-58 to 122°F)													
Cable Length	2.7m													
Cable Specification	RED/BLACK – Power-Telemetry WHITE/YELLOW – Photocell following contact ORANGE/PURPLE – Hybrid Input													
Colour	Black													
Wavelength	850nm	WL	940nm	WL	850nm	WL	850nm	WL	940nm	WL	850nm	WL	940nm	WL
Colour Temperature	6000K	-	-	6000K ~	-	6000K ~	-	6000K ~	-	6000K ~	-	6000K ~	-	6000K ~
CRI	>70	-	-	>70	-	>70	-	>70	-	>70	-	>70	-	>70
Dimensions	100 x 135 x 66mm 4" x 5" x 2.5" approx.						135 x 180 x 68.2mm 5" x 7" x 2.6" approx.				180 x 277 x 75mm 7" x 11" x 2.9" approx.			
Certification	CE, ROHS, WEE													

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# Troubleshoot

Ensure all tests are undertaken by qualified personnel and ensure safe working practices are followed at all times.

## Step 1: Basics

- Check polarity of Lamp connection Red= +, Black= Gnd
- Ensure power is 24V DC
- Ensure Hybrid wires are shorted or closed contact input (zero volts) is applied to see White Light LEDs being illuminated.
- Check photocell is working. Cover photocell fully, light should turn on. It is sometimes difficult to see Infra-Red lamps working in high brightness conditions; this can be checked by using the hybrid input to switch between Infra-Red and White Light modes.
- Ensure power supply is suitably rated to product – see specifications in the previous section.
- If longer cables are used, ensure sufficient voltage is provided to allow for drops across the cable.

## Step 2: Lamp Test

- Check that the proper amount of current is being drawn (amount will depend on power setting of unit. Please note to use the appropriate multimeter setting depending on how the unit is being powered (DC).
- To test this, you must ensure that the photocell is fully covered (or disabled using optional remote controller) and ensure hybrid wires are shorted out or closed contact input (zero volt) is applied.

## Step 3: Set up camera, lens, and illumination

- Check model number to Raytec performance specification of camera to ensure required distance is achievable.
- Check unit is set to max power.
- Check orientation of unit and ensure it is pointing in correct direction.
- Check the angle of unit (ILS) – Too narrow may cause hot spots and the aperture of the camera lens to close down. Too wide and there may be insufficient light on scene and light going where it is not needed.
- Check the LED Feedback System – if a flashing red light is visible in programming mode, please check the input voltage of the unit. The feedback system will respond differently depending on what mode the unit is in (see below).

## Programming mode – (AMBER LED flashes 1 second on/1 second off)

- Solid GREEN - Power Applied
- Flashing GREEN - Remote IR receiver problem
- Solid RED - Internal LED Fault Detected
- Flashing RED - Voltage supply problem detected
  - o Please note – once the voltage problem has been corrected, the user must disable remote control set-up or power the unit on and off to stop the red status LED flashing.
- Solid AMBER - Valid command being received, this remains lit for the duration that the button on the remote is held. After a valid command has been received the Amber LED will continue to flash.

## Normal operating mode

- Solid GREEN - Unit powered up and operating normally
- Flashing GREEN - Remote IR receiver problem
- Solid RED - Internal LED fault detected
- Solid AMBER - Voltage supply problem detected
  - o Please note – once the voltage problem has been corrected, the user must disable remote control set-up or power the unit on and off to extinguish the amber status LED.
- Check that the unit is responding to the remote. If not, do the following:
  - o Programming may be disabled. Turn power off/on to ensure unit returns to programming mode.
  - o Status indicators may be turned off. Turn on with remote. This can be done even if programming has been disabled.
  - o In extreme sunlight conditions, distance between remote and unit may need to be reduced.
  - o Battery failure. Check battery on remote (CR2025). Test 3 volt battery, replace if necessary. Ensure battery has clean contacts.
  - o Remote failure. Test with new remote.

## Step 4: Call Raytec for further assistance

If the Raytec lamp or remote control is still not delivering the required performance, please contact us for further assistance:

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## Raytec Warranty

Please register you Raytec LED Illuminator(s) for its 5 year warranty by visiting [www.rayteccctv.com/products/warranty-card](http://www.rayteccctv.com/products/warranty-card).