VARIO2 LIGHTHOUSE KIT

raytec

Installation and Setup Guide

1 Package Contents

Qty.	Description
1	Vario2 VLK fitted with 4m of 6 Core Power/Aux Cable and 4m of Cat5e cable attached
1	WBOV Bracket Assembly
2	IR front windows
2	60 deg Diffusers
1	Instructions

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3   Safety Information

		1.5m
Isolate supply before removing cover	Install in a well-ventilated area	**Eye Safety : IR Variants (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 is 1500mm. Max IR EHV (Exposure Hazard Value) : 69% of Risk Group 2 Limit at 200mm from the lamp. **Eye Safety : White Light Variants** 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 is 1500mm. Max WL EHV (Exposure Hazard Value) : 68% of Risk Group 2 Limit at 200mm from the lamp.

Installation shall be carried out by suitably trained and qualified personnel.
The Unit is Class lll for insulation
The unit is suitable for use Outdoors and Indoors

4   Introduction

The following guide is for Vario2 VLK products with two integrated Lamps only.
VARIO2 Lighthouse Kit (VAR2-VLK) is a fully integrated lighting and housing solution designed for easy camera integration, quick and easy mounting with the ability to mount up to two IP or analogue cameras.

VAR2-VLK provides two integrated VARIO LED illuminators, available in Infra-Red, White-Light or Hybrid (one illuminator WL and one illuminator IR). Lighting and cameras can be used together for a variety of applications including CCTV, ANPR/LPR and thermal. The VAR2-VLK Control Interface delivers the highest level of flexibility and control for meeting exact operational requirements for outstanding 24/7 performance. Lighting can be easily configured for activation via photocell or on demand via camera or external input (e.g. on detection of motion). Lighting on demand delivers real savings through reduced electrical consumption and when using White-Light provides a powerful, visible deterrent. The integrated photocell can be used to trigger switching of camera day/night mode in conjunction with the illuminators.

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VAR2-VLK provides integrated bracketry for easy mounting. It is cable managed and pre-wired with power/aux cable and CAT5e cable. PoE for the cameras is available using an external PoE source (not supplied). An optional VARIO PSU is available to provide 24V AC/DC and the option for Cat5e termination.

Vario2 is the next generation of Infra-Red and White-Light illuminators from Raytec. Using the latest PLATINUM Elite SMT LEDs, VARIO2 allows cameras to generate longer illumination distances using less power. VARIO2 features an interchangeable lens system with angles of 10, 35 and 60 degrees out of the box incorporating VARIO's Hot-spot Reduction Technology to deliver highly even illumination where it is most needed. With the optional hand-held remote control and a new suite of advanced security features, VARIO2 also makes set up and commissioning quicker, easier and safer.
VAR2-VLK also offers Adaptive Illumination for even greater flexibility to adapt the horizontal beam angle.
An optional VARIO remote control provides the ability to set-up the illuminators quickly and safely from ground level.

The VAR2-VLK gives the user all the functionality of two Vario2 lamps with additional features such as: -
1. Integrated command and control to allow the lamps and cameras to be interconnected so that they work in unison to provide optimum lighting for a given circumstance.
2. Provision for up to two cameras, these could be: -
   a. IP enabled cameras (24V or PoE)
   b. Analogue cameras
   c. Thermal Imaging cameras
   d. Or any combination of the above.
3. Integrated heater to eliminate condensation from the viewing windows.
4. Integrated bracketing system which allows for the camera position to be positioned in all 3 axes (Pan and Tilt).
5. External Command and Control via the auxiliary power cable.
6. IR, WL or Hybrid(one WL Illuminator and one IR illuminator) lighting technology can be provided.
7. Hotspot reduction technology with interchangeable diffuser angle options available.
8. Managed cable system.
9. Wall mount and pole mount options.
10. VAR2-VLK Advanced Security Settings, allowing for Programming inputs on both the VARIO remote control and on the illuminators (which can be disabled if required). Additionally, the VARIO remote control can be used to send a PIN code to lock in settings, limit access and allow adjustment of individual lamp control.
11. LED Statues Indicator gives quick operational feedback on status and performance of the illuminators. Allows simple and quick commissioning of the installation and easy maintenance reviews.
12. Green Technology – in-built green features such as power adjust, telemetry control and timer function enhance the potential for energy savings.

The system is designed to operate from a 24V supply. Provision is made to allow IP cameras to be PoE powered from a PoE enable switch, router or mid-span (not provided).

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5   Easy Set up

1. Fit cameras inside the VAR2-VLK.
2. Configure the VAR2-VLK.
3. Mount VAR2-VLK to column or wall. (See accessories for suitable brackets).
4. Mount the PSU (optional extra).
5. Route Cables from Camera Housing to PSU and terminate.
6. Optional: Set-up adjustments.
7. Optional: Adjust beam angle of illuminators.
8. Adjust alignment.
9. Position illuminator pointing towards scene.
10. Adjust vertical angle. Adjust horizontal angle via Adaptive Illumination (AI) (if required).
11. Tighten all fixings.
12. Apply power.

For full description of optional adjustments – see sections below.

Note :

The external cables cannot be replaced. If they are damaged and the customer is unable to shorten and re-use the cables, the unit must not be powered.

6   Factory Default Settings

Programming Mode
35˚ Beam Angle ILS (Interchangeable Lens System)
Max 100% Power
Telemetry Input – active (closed)
Photocell sensitivity – MID
Status LEDs – ON, No PIN set

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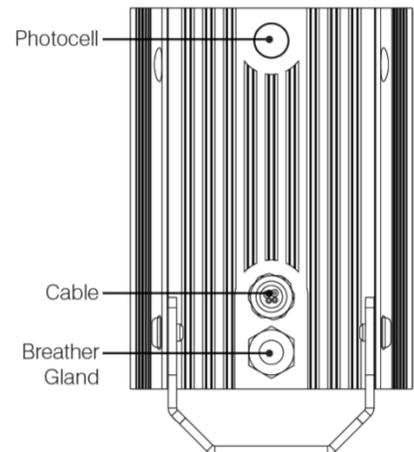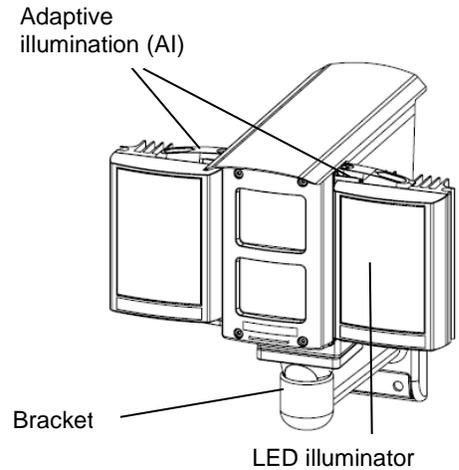
7   Installing Camera(s)
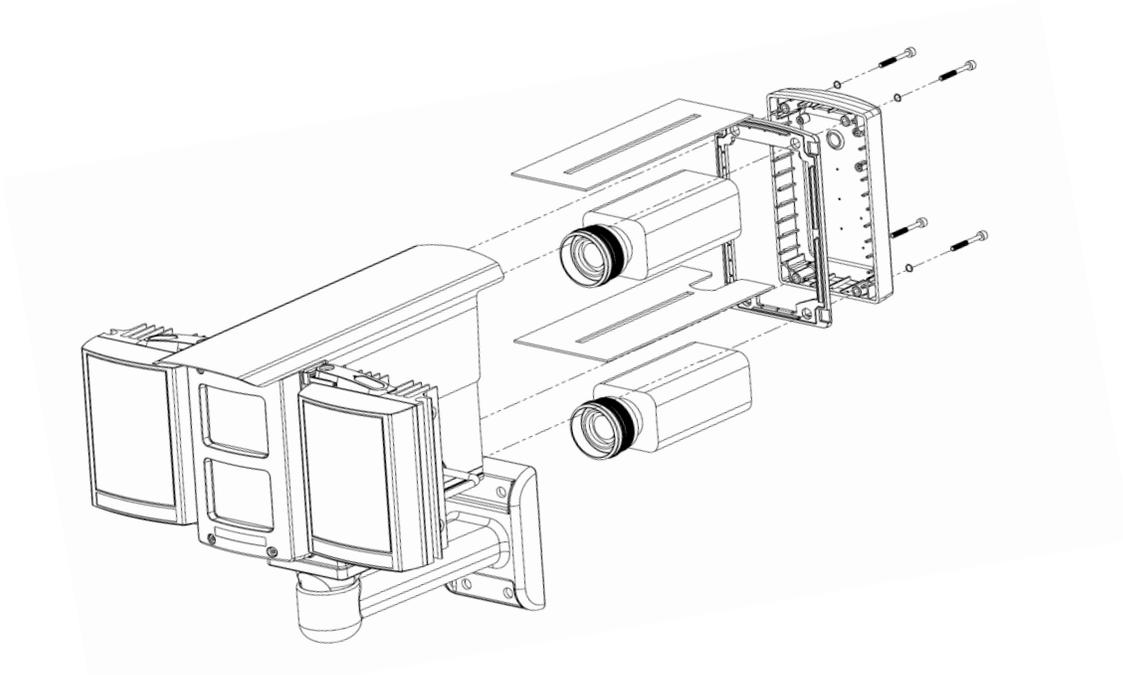
Provision is made inside the body of the VAR2-VLK to locate two cameras. Two slider plates are provided to allow cameras to be located in the centre or top positions of the housing.

To access, remove the rear cover of the housing using a 3mm Allen key. This gives access to both slider plates.

Remove the plate to which you wish to mount the camera. A slot is provided to allow the camera to be attached to the plate with the appropriate size screw and mounting spacer (not supplied – camera specific), and allows the position of the camera to be set.

The camera lens should not extend more than 12.8mm beyond the slider plate to avoid hitting the inside of the front window.

The following diagrams show the available space available to install a camera and lens into the top and centre positions within the camera housing: -

Diagram 1 labels: FRONT, 61 MAX HEIGHT, 90.5 MAX WIDTH, 12.8 PROTRUSION BEYOND PLATE, 174.5 MAX CAM/LENS LENGTH, *224.5 (VLK Long Version)

Diagram 2 labels: FRONT, 56.5 MAX HEIGHT, 48 HEIGHT, 74.5 MAX WIDTH, 12.8, 150.1 CAM/LENS LENGTH, *200.1 (VLK Long Version), 174.5 MAX CAM/LENS LENGTH, *224.5 (VLK Long Version), BOTTOM
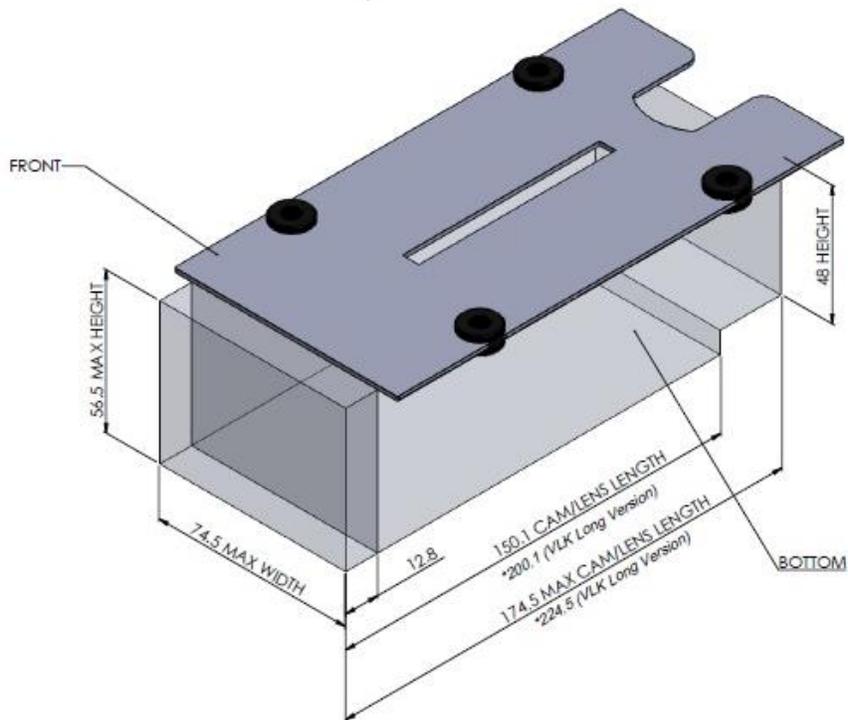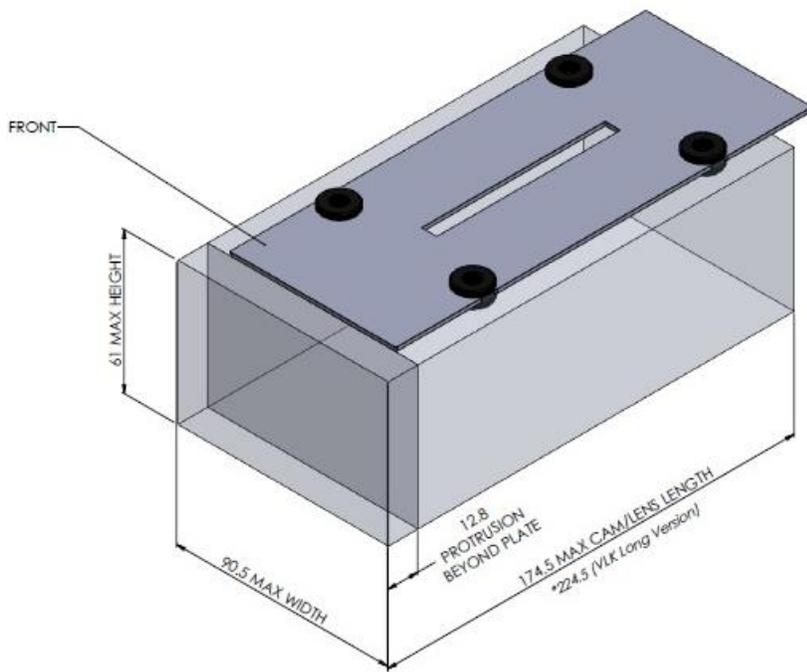
- For VAR2-VLK please use the VLK Long version dimensions where stated in the diagrams above

Ensure the camera is secure before sliding the plate back into the housing. Check for clearance both at the front and at the rear of the camera adjust as required.

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7.1　Camera Wiring Interfaces

The camera(s) now need to be connected to the VAR2-VLK electrically. There are several things to consider here and will determine what connections need to be made: -

- How will the camera be powered?
  - o 24V
  - o PoE
- Does the camera have outputs that need to be used to control part or all of the illuminators?
- Does the camera need input from the illuminator or system, e.g. Photocell Status?
- How is the video to be distributed?
  - o Ethernet
  - o Twisted Pair
  - o Coax
- If two cameras are fitted which will be designated Camera 1 and which Camera 2?

7.1.1　Connections Diagram

Inside the camera housing located in the bottom slot there is a distribution panel which should be used to make the electrical connections. The picture below shows the connections available.
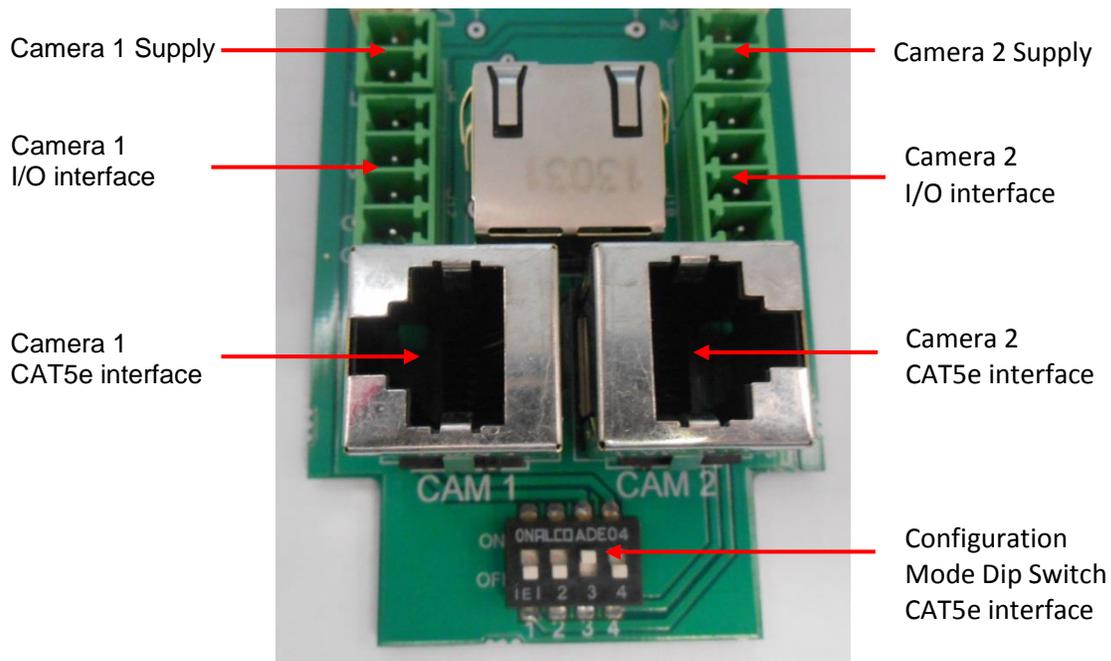
Camera Wiring Interface Plugs
(Two sets Supplied)

Supply +ve
Supply –ve

Not Used +ve
Signal Ground
Control Input
Control Output

Camera CAT5e Patch Cable
(Optionally Supplied)

8   System Configuration

The following information details the possible interconnections between lamps and cameras and the links made using the Configuration Mode DIP Switch. Links that are permanently hard wired are marked HW. Links that are made by turning ON (closing) switches 1 to 4 are identified by number. Configurations marked X are not valid.

Selection Options

Element		A										
PC Lamp1	A	X	B									
PC Lamp2	B	1	X	C								
Cam1 IN	C	HW	1	X	D							
Cam2 IN	D	1	HW	1	X	E						
PC Aux	E	HW	1	HW	1	X	F					
Tel Lamp1	F	X	X	X	X	X	X	G				
Tel Lamp2	G	2	X	2	X	2	3	X	H			
Cam1 OUT	H	X	X	X	X	X	HW	3	X	I		
Cam2 OUT	I	2	X	2	X	2	3	HW	3	X	J	
Tel Aux	J	X	X	X	X	X	HW	3	HW	3	X	K
Signal Ground	K	X	X	X	X	X	X	4	X	4	X	X

Note : PC=Photocell, Tel=Telemetry,   Aux=Auxiliary

Hard Wired Connections	PC Lamp1 is linked to Cam1 IN and PC Aux PC Lamp2 is linked to Cam2 IN Cam1 OUT is linked to Tel Lamp1 and Tel Aux Cam2 OUT is linked to Tel Lamp2
Switch 1 OFF (Default Setting)	No Action
Switch 1 ON	Connects PC Lamp1 to PC Lamp 2 PC Lamp1 **or** PC Lamp2 status (day/night) is linked to Cam1 IN, Cam2 IN and PC Aux
Switch 2 OFF (Default Setting)	No action
Switch 2 ON	Connects Tel Lamp2 and Cam2 OUT to PC Lamp1, Cam1 IN and PC Aux.
Switch 3 OFF	No Action
Switch 3 ON (Default Setting)	Connects Tel Lamp1 to Tel Lamp2 and links to Cam1 OUT **or** Cam2 OUT **or** Tel Aux which can switch both Lamps on (under Photocell control) or operate lamp timer / dimming modes.
Switch 4 OFF (Default Setting)	No action
Switch 4 ON	Tel Lamp2 and Cam2 OUT is linked Signal Ground.

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There are many possible custom configuration scenarios. The following schematic diagram illustrates the possible interconnections and the examples are intended as a guide only.
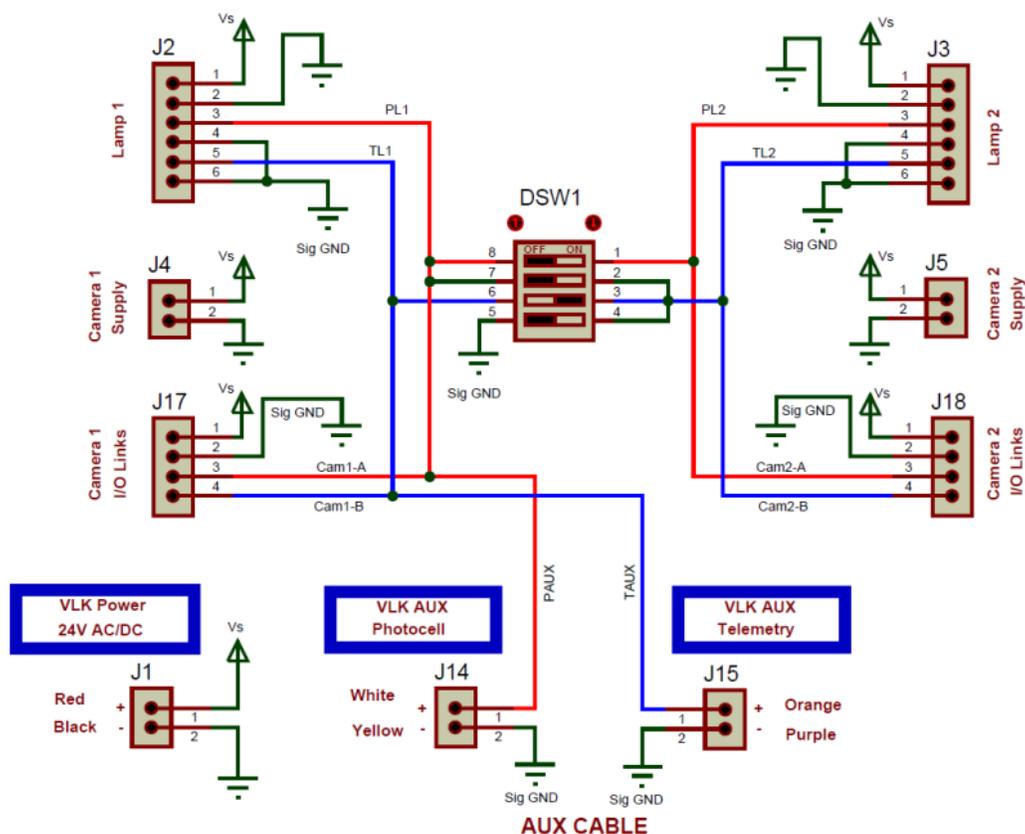
Example 1 : (Default Setting)	Switch 1	Switch 2	Switch 3	Switch 4
	OFF	OFF	**ON**	OFF
Both Lamps enabled by either Aux Telemetry, Cam1 O/P or Cam2 O/P : Short Circuit=ON Conditional on Photocell status – Lamp ON in darkness (Unless Lamp Pcell is optionally disabled) Cameras (or a PIR) can switch the lamp ON when motion is detected. Telemetry is a remote switch.				

Example 2 : (Photocell Linking)	Switch 1	Switch 2	Switch 3	Switch 4
	ON	OFF	**ON**	OFF
Common photocell status on Lamp1 and 2 (unless disabled) is reported to both camera inputs. Allows camera day/night switching and synchronised ON/OFF switching as Example 1.				

Example 3 : (Forced Telemetry)	Switch 1	Switch 2	Switch 3	Switch 4
	ON	OFF	**ON**	**ON**
Common photocell status on Lamp1 and 2 (unless disabled) is reported to both camera inputs. Camera Day/Night switching is maintained but both Lamps are forced ON in the dark state. Camera output control and Aux Telemetry function are disabled.				

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Example 4 : (Hybrid Lamps)	Switch 1	Switch 2	Switch 3	Switch 4
	OFF	OFF	OFF	**ON**

With Lamp1 = White Light, Lamp2=InfraRed
Lamp2 (IR) is ON if photocell status is dark (or permanently ON if photocell is disabled)
Lamp1 (WL) is enabled if Cam1 O/P detects motion or by PIR via Aux Telemetry.
Turning ON of Lamp1 is conditional on its photocell, if it is enabled.
Cam1 day/night switching can be achieved via the Lamp1 photocell output.

Example 5 : (Thermal Imaging)	Switch 1	Switch 2	Switch 3	Switch 4
	ON	**ON**	**ON**	OFF

With both Lamps = White Light, Cam1 = Thermal imaging, Cam2 = Colour IP type.
If lamp photocells are disabled, both Lamps are turned ON via Cam1 O/P on motion detection.
This action is detected by Cam2 I/P which can activate video capture streaming.

SW1	SW2	SW3	SW4	Function
0	0	0	0	
0	0	0	1	With Lamp1 = White Light, Lamp2=InfraRed Lamp2 (IR) is ON if photocell status is dark (or permanently ON if photocell is disabled) Lamp1 (WL) is enabled if Cam1 O/P detects motion or by PIR via Aux Telemetry. Turning ON of Lamp1 is conditional on its photocell, if it is enabled. Cam1 day/night switching can be achieved via the Lamp1 photocell output.
0	0	1	0	Both Lamps enabled by either Aux Telemetry, Cam1 O/P or Cam2 O/P : Short Circuit=ON Conditional on Photocell status – Lamp ON in darkness (Unless Lamp Pcell is optionally disabled) Cameras (or a PIR) can switch the lamp ON when motion is detected. Telemetry is a remote switch.
0	0	1	1	
0	1	0	0	
0	1	0	1	
0	1	1	0	
0	1	1	1	
1	0	0	0	
1	0	0	1	
1	0	1	0	Common photocell status on Lamp1 and 2 (unless disabled) is reported to both camera inputs. Allows camera day/night switching and synchronised ON/OFF switching as Example 1.
1	0	1	1	Common photocell status on Lamp1 and 2 (unless disabled) is reported to both camera inputs. Camera Day/Night switching is maintained but both Lamps are forced ON in the dark state. Camera output control and Aux Telemetry function are disabled.
1	1	0	0	

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1	1	0	1	
1	1	1	0	With both Lamps = White Light, Cam1 = Thermal imaging, Cam2 = Colour IP type. If lamp photocells are disabled, both Lamps are turned ON via Cam1 O/P on motion detection. This action is detected by Cam2 I/P which can activate video capture streaming.
1	1	1	1	

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9 Camera Housing Installation

9.1 Wall / Pole Mounting

The VAR2-VLK is supplied with a WBOV mounting bracket. This is designed to fit directly to a wall or to a pole (with optional Pole Mount Bracket – see list of approved accessories) and provides full x, y, z adjustment of the system.

Mounting holes should be prepared using the supplied template (See Appendix) and cable entry hole shall be prepared prior to installing the Camera Housing assembly.

9.2 External Wiring

The standard model comes pre-wired with two cables fitted to the camera housing:-

- 6 Core Power/Aux Cable
- Cate5e Ethernet cable
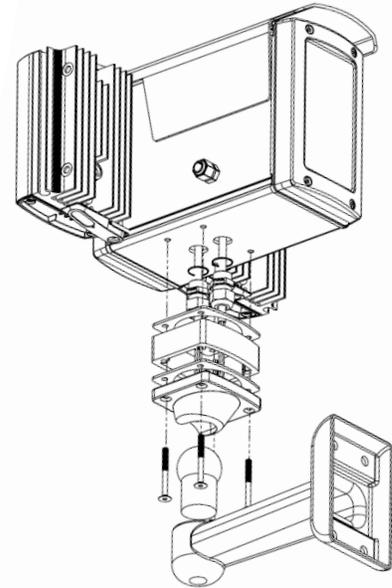
The external cables are supplied with the unit and come attached to the VAR2-VLK.
The cables have a maximum length of 4m.

These cables pass through the wall bracket (WBOV) and enter the bottom of the Camera housing through two cable glands (See Diagram). The Unit is designed to allow the cables to be managed and therefore routed through the WBOV bracket assembly as supplied.

Other options for cable entry are available on request.

It is important to prepare the mounting method and holes prior to fitting the camera housing.

9.2.1 Power/Auxiliary Cable

A six core cable is provided with a maximum outside diameter of 8.5mm; the arrangement is defined below in table xx.

Cable Colour	Cable size (AWG)	Type	Function
Red	18	24V AC or DC	Supply Positive
Black	18		Supply Negative
White	22	TTL or Volt Free Contact	Photocell Following Contact Positive
Yellow	22		Signal Ground
Orange	22	TTL or Volt Free Contact	Telemetry Positive
Purple	22		Signal Ground

(Photocell Following TTL may be camera dependant from system configuration used)

9.2.1.1 Power Cable
A primary supply input of 24VDC or 24VAC is required to operate the unit. {An HV Input (110/230VAC) PSU unit is optionally available including simple Cat5e termination}.

9.2.1.2 Photocell Following Contact.
Short circuit=dark, Open circuit=light.
Note photocell sensitivity and operation settable via optional lamp remote control.

9.2.1.3 Telemetry control input.
Used for remote lamp ON/OFF function via external switch such as PIR control. TTL low or short circuit=ON, TTL high or open circuit=OFF. The Telemetry control is open circuit by Factory default.

9.2.2 Cat5e Cable
A single Cat5e cable is supplied to provide connection to two IP cameras. This is achieved by utilising the spare two pair of cables. The pin/cable assignment is shown in table below: -

Cable Colour	RJ45 Pin Assignment (J7)	Camera	Camera RJ45 Pin Assignment
Orange/White	1	1	1
Orange	2	1	2
Green/White	3	1	3
Blue	4	2	2
Blue/White	5	2	1
Green	6	1	6
Brown/White	7	2	3
Brown	8	2	6

The Cat5e cable is factory fitted to the unit. One end is terminated with a RJ45 connector and fits into connector J7 inside the VAR2-VLK Camera housing. The other end of the Cat5e cable is left un-terminated for the customer to terminate appropriately for their installation.

It is possible to use PoE for the cameras using an external PoE PSU (not supplied). This is achieved by ensuring the PoE Power Supply provides power over the data pairs of a Cat5e interface i.e. wires 1, 2 ,3 and 6.

Alternate camera arrangements are possible and will need modification/additional cables as deemed necessary.

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10 Mechanical Alignment

Point unit towards scene (Optional night time set-up for optimum image performance)
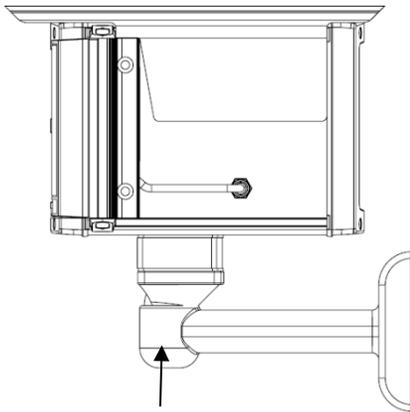
Loosen Allen Screw to allow for adjustment, tighten once adjustment complete

Adjust vertical and rotational angle using WBOV bracket attached to base

Rotational Adjustment

Tilt Adjustment
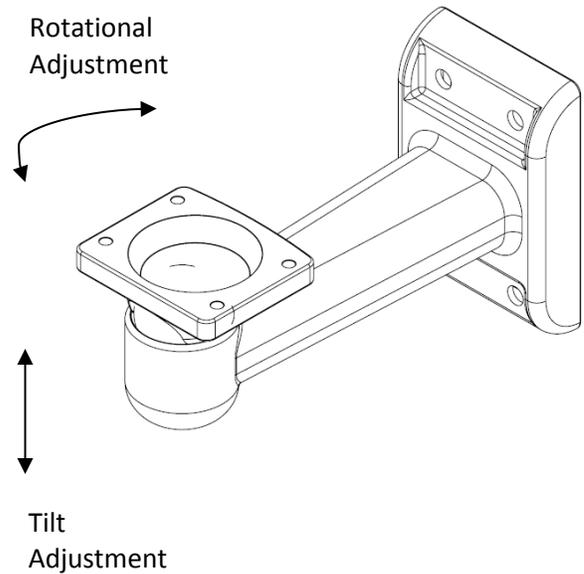
Please Note: Always keep product in same orientation.

Top AI Bolts x2

Adjust horizontal angle via Adaptive Illumination (AI) if required – loosen 4 x AI bolts shown – adjust - tighten

Bottom AI Bolts x2

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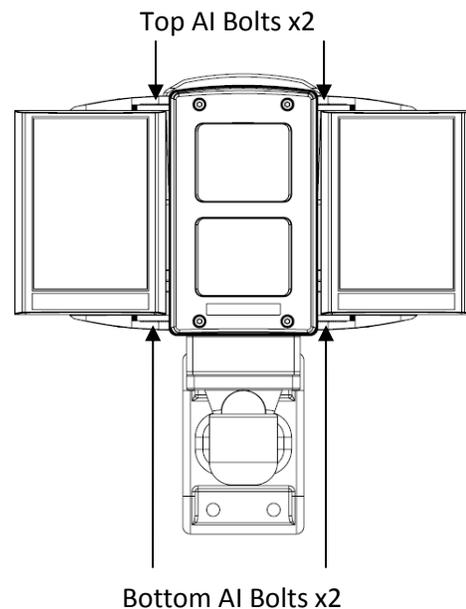
11 Illuminator Modes and Feedback System

11.1 Programming Mode and Operating Mode

On powering up the unit the two illuminators automatically enter Programming Mode. The Programming Mode automatically times out after 7 Days (or after 30 minutes if the manual buttons are pressed) or until the user actively changes to Operating Mode. The LED Indicators also give feedback if you are using the PIN or Manual Control Modes
Factory Default: On initial power-up : Programming Mode.
To enter operating mode from programming mode you can either use Vario Remote Controller or the manual buttons on the illuminators (please see following sections for detail)

All functions of the remote control and buttons are available in Programming Mode.

The only function of the Remote Control available during Operating Mode is LED Status Indicators Enable/Disable, entering a PIN or disabling manual buttons (if done at the same time as disabling the remote).

The manual buttons are available in Operating mode unless they have already been disabled by the user

11.2 **Feedback System**

Left Hand Side — ┐   ┌ — Right Hand Side
(LHS) LED   (RHS) LED
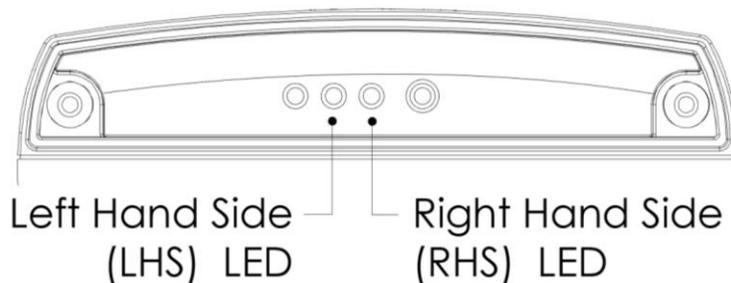
During Programming Mode and Operating Mode the two LED's indicate the following status on the illuminators (unless detailed below):

- LHS SOLID GREEN: Power Applied
- LHS FLASHING GREEN: Remote control IR received problem
- RHS FLASHING AMBER: Indicates unit is in programming mode
                                 (Programming Mode Only)
- RHS SOLID AMBER: Indicates that a valid command is being received
                                 (Programming Mode Only)
- LHS FLASHING RED: Voltage supply problem detected
- LHS SOLID RED: Illuminator fault detected

12 Optional Lamp Remote Controller

The VAR2-VLK VARIO Remote Controller (VRC) is an optional accessory which operates on illuminator settings only; it cannot be used for settings on any other part of the VAR2-VLK unit. For control interfaces between illuminators lamps and cameras, see the sections 7 & 8.

If you require the two lamps to be set up differently you will need to use the PIN function and control.

VARIO Remote Controller (VRC)
Optional Accessory

Full instructions provided with VRC when supplied

Photocell Adjust
To select 3 different photocell sensitivity levels to accommodate different operational requirements.

Timer Setting
The timer function allows the illuminator to be triggered via the telemetry input and remain on for a pre-defined period of time.

Power Select
Quick and easy selection of 5 accurately defined power settings, 1=20%, 2=40%, 3=60%, 4=80% 5=100%. Provides exact amount of light required for the scene requirements.

POWER   PHOTOCELL   TIMER

30 mins
10 mins
3 mins
1 min

Photocell Disable
Lamp operates from telemetry input only

Timer disable

TELEMETRY

Selects telemetry Input — TEL

DIM — Selects dimming function on telemetry wires.

Disable Remote Control Set-Up
Must be depressed for 4 seconds to lock-in settings and prevent further alterations and disable manual buttons

STATUS   RESET — Restores Factory Default Settings. Must be depressed for 4 seconds.

LED Status Indicator
Turns status LED's On or Off and PIN Entry

For extra security VARIO2 allows a PIN (Personal Identification Number) to be set. There are five buttons / characters on the remote that can be used for this purpose : Power 5, Power 1, Min Photocell (Smallest moon), Max Timer (Full Red Circle) & Timer Disable (Timer Circle image with a line through) . Note – invalid characters will not be recognised.

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13 Remote Control Operation for PIN set and Manual Button Disable / Enable

The illuminators have an additional security feature which allows you to protect the settings using a PIN. A benefit of this for the Vario2 VLK is that If each illuminator is set with a different PIN, the Illuminators can be adjusted separately from the ground. (For first time installation and PIN setting, cover the base of one lamp to stop both lamps being set the same). For both lamps to be set the same, ensure both lamps are in Prog. Mode and are programmed with the same remote control from an acceptable distance.

Summary Table

Action Required	Available Mode	Step1	Step 2	LHS LED	RHS LED	Comment
Disable Remote	Prog. Mode	Press <Disable Remote Control> for 4 seconds	N/A	Solid Green	Flashing Amber – Solid Amber - Off	Right Hand flashing Amber LED will stop RHS LED will go Amber when the button is pressed and turn off when in Operating Mode
Disable Manual Buttons	Operating Modes	Press <Disable Remote Control> for 4 seconds	N/A	Solid Green – After 4 seconds Flashing Red (Returns to Solid Green after button release)	Off – Solid Amber - After 4 seconds Flashing Red (Returns to Solid Green after button release)	Must be done within 5 minutes of Disabling remote / entering Operating Mode. Change will take effect after 30 minutes
Create or Change PIN	Prog. Mode	Press <Status Button> for 4 seconds	Enter valid PIN character x 4	Green – Intermittent Flashing Red / Green - Green	Solid Amber – Flashing Red counts down the No. of valid characters required – Flashing Amber	Stays in Programming Mode after PIN created or changed
Enter existing PIN	Prog. Mode	Press <Status Button> for 4 seconds	Enter valid PIN character x 4	Green – Intermittent Flashing Red / Green - Green	Solid Amber – Flashing Green counts down the No. of characters required – Flashing Amber	Enters Programming Mode after valid PIN entered If invalid PIN entered both LEDs flash red and unit will stay in Operating Mode
Delete PIN	Prog. Mode	Press <Status Button> for 4 seconds	Press <Re-Set> button 4 times	Green – Intermittent Flashing Red / Green - Green	Solid Amber – Flashing Red counts down the No. of valid characters required – Flashing Amber	Stays in Programming Mode after PIN deleted

13.1 Extra VRC Functionality :

- PIN Function

The same PIN can be used simultaneously for both illuminators or each illuminator can have a separate PIN

The PIN is set by using the Vario Remote Control (VRC). There are five buttons / characters on the remote that can be used for this purpose.

5 Valid PIN Characters Shown with a

Disable Manual Button

Hold Disable Remote button for 4 seconds to disable manual buttons. Can only be completed if the remote control has already been disabled

This must be done within 5 minutes of disabling remote

PIN Set
Hold STATUS button for 4 seconds to enter PIN Mode
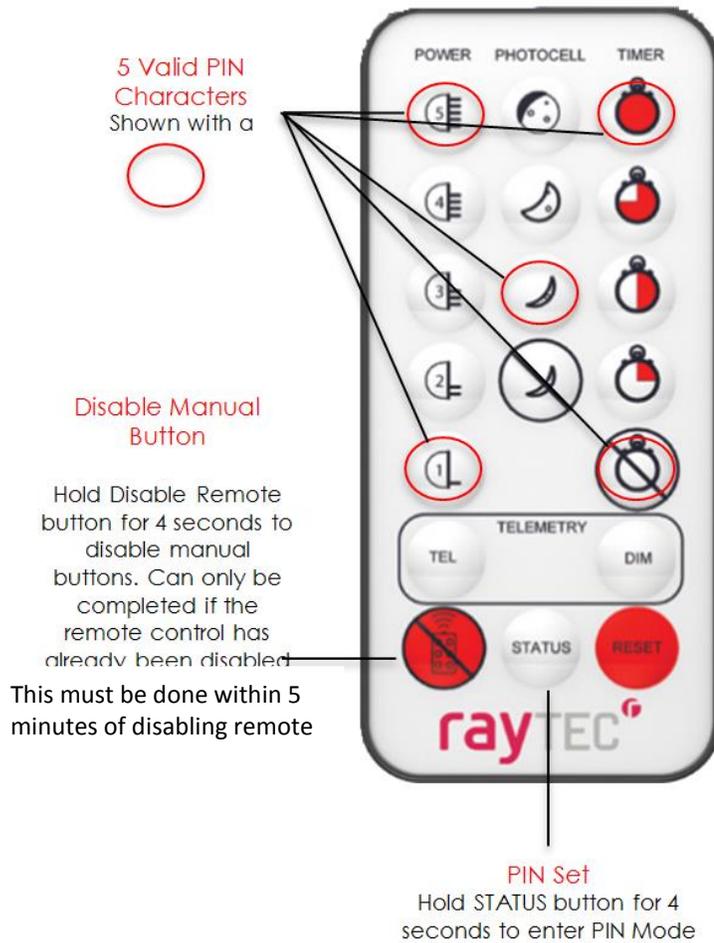
Note : Unless detailed as part of the functionality, if an invalid or blocked command is attempted, both LEDs will flash RED

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13.2 PIN Function Detail :

The PIN is set by using the Vario Remote Control (VRC). There are five buttons / characters on the remote that can be used for this purpose. They are Power 5, Power 1, Min Photocell (Smallest moon), Max Timer (Full Red Circle) & Timer Disable (Timer Circle image with a line through) . Note – invalid characters will not be recognised.

To create a PIN, press STATUS BUTTON for 4 seconds. LHS LED will flash RED/GREEN. This indication will always show that you are in PIN mode. RHS LED FLASHING RED shows there you are in PIN set mode. The number of flashes indicates how many characters are required to complete the PIN entry. There are four characters to be entered to successfully set up a PIN.

As you enter the characters, the number of flashes will decrease until all characters are entered. Note, illegal characters will not be recognised and will not reduce the number of flashes. When the PIN is set the illuminator will revert to Programming Mode.

When a PIN is Set :
Using the remote you can access the illuminator settings from operating mode by entering the PIN.
You cannot access Programming Mode by power re-cycling only.

In operating mode, if you want to go back into programming mode simply enter your PIN. To do this, press STATUS BUTTON for 4 seconds. LHS LED will flash RED/GREEN to show you are in PIN mode. RHS LED FLASHING GREEN shows that a PIN has been previously set. As you input the four correct characters the number of flashes will reduce and you will be returned to programming mode.

If legal characters but not the correct sequence of characters is entered the number of flashes will still reduce and after 4 characters have been entered an error will be shown by both LED`s flashing RED.
If an illegal character is used when entering a pin, it will be ignored and the PIN character count will not reduce.

To delete an existing PIN you first need to be in Programming Mode by entering your PIN. Once in Programming Mode, press STATUS BUTTON for 4 seconds to go into PIN set mode. LHS LED will flash RED / GREEN and RHS LED FLASHING RED. Instead of entering one of the known legal characters press the RESET BUTTON four times. The illuminator will return to programming mode. Note – if you delete the PIN and the illuminator times out into operating mode, you will not be able to go back to programming mode without recycling the power.

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*Note - If you forget your pin and need to make adjustments to the illuminator(s) you need to do full Re-set. This requires power recycling whilst pressing the two manual control buttons at the same time. This will restore factory default settings AND remove the previously programmed PIN. Both LEDs will flash AMBER to signify that the process has been completed.

*Note – If you need to check if a PIN is set up, In Operating Mode hold the status button down for 4 seconds and if both LEDs flash RED, this means there is no PIN present.

14 Manual Control Buttons

Manual control buttons for each illuminator are accessed by removing the base plate at the bottom of the unit (2 screws).
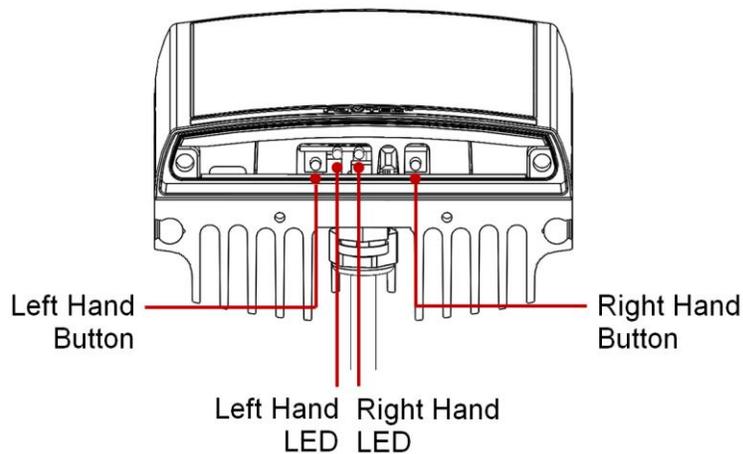
The two manual control buttons gives a wide selection of user control :

1. Power Control – 100%, 80%, 60%, 40%, 20% of maximum. (Factory Default is 100%)

2. Photocell Control – 3 levels, 25 Lux on, 50 Lux off, 10 Lux on 30 Lux off, 5 Lux on 15 Lux off and photocell disable.

3. Turn LED indicators on & off

4. Illuminator Reset Options

5. Disable Remote Control and enter Operating Mode or Enable Remote Control and enter Programming Mode

6. Button Enable & Disable

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Summary Table

Action Required	Step1 : LHS Button	LHS LED	Step 2 : RHS Button	RHS LED	Comment
Power Adjust	1 x Push	Solid Red	Each Push cycles through power levels	Green flashes indicate level. High power (5 flashes) to Low power (1 flash)	
Photocell Adjust	2 x Push	Solid Green	Each Push cycles through photocell levels	Green flashes indicate setting. Low sensitivity to High sensitivity. Solid Red indicates Photocell disabled	
Status Indicator LEDS On / Off	3 x Push	Solid Amber	Each Push cycles between On and Off	On – Green Off - Red	
Factory Re-set (Does not Re-set PIN)	1 x Long Push (4 Seconds)	Flashing Red – After 4s Flashing Amber	Push and Hold until both LEDs flash Amber	Solid Red – After 4s Flashing Amber	Reverts to Programming Mode unless a PIN is present. If a PIN is present reverts to original mode before re-set
Disable Remote and Enter Operating Mode or Enable Remote and Enter Programming Mode	1 x Long Push (4s) and 1 x short Push	Flashing Green	Push to cycle Disable / Enable	Disable – Red Enable - Green	Reverts to the Mode requested unless a PIN is present. If a PIN is present and you are in Operating Mode you cannot change to Programming Mode
Disable / Enable Manual Buttons	1 x Long Push (4s) and 2 x short Push	Flashing Amber	Push to cycle Disable / Enable	Disable – Red Enable - Green	Buttons will be Disabled 30 minutes after this selection is made – This is to allow the user to re-enable manual buttons if required
Full Re-set (including PIN re-set)	Keep both buttons depressed during power up – LEDs will both flash Amber		Keep both buttons depressed during power up – LEDs will both flash Amber		Illuminator will revert to Programming Mode, Full factory default including No PIN

The number of button pushes indicated in the table is based on the user starting with the illuminator in either programming or operating mode.

If the user has already started to program the units, then the number of button pushes on the left hand will take them to the next function as per the sequence in the table.

If no buttons are pressed within 2 minutes then the illuminator will automatically default back into the previous mode it was in – programming or operating mode.

The buttons are active in both programming mode and operating mode regardless of whether a PIN is present or not unless you have previously disabled the manual buttons

As soon as manual button mode is entered by pressing the Left Hand Button, the standard LED indicators will be disabled and will indicate a new set of information, Standard LED indicators are enabled after exiting manual button modes.

Note : Unless detailed as part of the functionality, if an invalid or blocked button push is attempted, both LEDs will flash Red

14.1 Mode Selection by using LHS Button :

A momentary press of LHS button turn LHS LED solid RED and enters the user into the Illuminator Settings Modes.
In these modes you can change the following settings :

- Power Level
- Photocell sensitivity
- Indicator LED status (On or Off)

A continuous 4 second press of the LHS button turns LHS LED flashing RED and enters the user into the Illuminator Security Modes.
In these modes you can change the following Security/Configurations :

- Illuminator Re-set
- Disable Remote Control and enter Operating Mode or Enable
  Remote Control and enter Programming Mode
- Manual Button Enable / Disable

*Note – If the status indicator LEDs are disabled and you use the manual buttons the indicator LEDs will still illuminate accordingly

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14.2 Manual Setting / Level Indication using RHS Button :

The RHS BUTTON will only have an effect if you have selected a mode using LHS Button – pressing RHS Button without previously pressing LHS Button will have no effect on the Illuminator operation – it is used to control the setting for the mode chosen by LHS Button

When you select a mode using LHS BUTTON, the LHS LED will confirm which mode you are in and RHS LED will show the current setting / level of that mode for the Illuminator.

Sequential presses of RHS BUTTON will take you through the available options to get to the required setting you want within that mode. The Illuminator will stay at this setting / level providing you do not push the RHS BUTTON again. Once you have reached the required setting as shown in the following text, EITHER press the LHS BUTTON to cycle through the modes until LHS LED extinguishes showing that you are at the end of the mode loop OR you can also wait 2 minutes for the illuminator to time out and the value shown by RHS LED will be stored into the illuminator memory.

The settings programmed will be retained on power recycling unless a reset has been performed, in which case the factory defaults will be applied.

14.3 Illuminator Settings Mode Detail :

Enter this mode by a momentary press of LHS button to turn LHS LED solid RED.

Pressing the LHS button again will turn the LED solid GREEN and pressing a third time will turn the LED solid AMBER. Each of these colours indicates which setting mode you are in.

A further momentary press of LHS Button will exit from the mode entry, both LEDs will go out for 1 second and then return to the standard indication of either operating mode or programming mode (depending on which mode the Illuminator was in previously before selecting manual controls.

The following modes are available :

Power Level Mode (LHS LED : Solid RED)

RHS LED :

20% Power Setting: 1 Flash GREEN

40% Power Setting: 2 Flashes GREEN

60% Power Setting: 3 Flashes GREEN

80% Power Setting: 4 Flashes GREEN

100% Power Setting: 5 Flashes GREEN

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Photocell Level Mode (LHS LED : Solid GREEN)

RHS LED:

Low sensitivity: 1 Flash GREEN

Medium Sensitivity: 2 Flashes GREEN

High Sensitivity: 3 Flashes GREEN

Disabled photocell: Solid RED

Enable / Disable Status Indicator LEDs Mode (LHS LED: Solid AMBER)

RHS LED:

Enable LEDs: Solid GREEN

Disable LEDS: Solid RED

NOTE – If no buttons are pressed within 2 minutes the Illuminator times out and returns to the previous mode it was in – either operating or programming mode.

14.4 Illuminator Security Modes Detail :

Enter this mode by a long 4 second press of LHS button to turn LHS LED Flashing RED.

Pressing the LHS button again momentarily will turn the LHS LED Flashing GREEN and pressing a third time momentarily will turn the LHS LED Flashing AMBER. Each of these colours indicates which setting mode you are in.

A further momentary press of LHS Button will exit from the mode entry, both LEDs will go blank for 1 second and then return to the standard indication of either operating mode or programming mode (depending on which mode the illuminator was in previously before selecting manual controls)

The following modes are available :

Illuminator Reset Mode (LHS LED : Flashing RED)

RHS LED: Solid RED

Keep RHS BUTTON depressed for 4 seconds. RHS LED stays solid RED and then after 4 seconds both LEDs flash AMBER to show the illuminator has been reset. This operation is equivalent to the factory reset button on the remote control. It will not re-set a PIN if one is present.

Remote Control Disable and Enter Operating Mode or Remote Control Enable and enter Programming Mode (LHS LED : Flashing GREEN)

RHS LED:

Enable Remote: Solid GREEN

Disable Remote: Solid RED

Note : If there is a PIN present and the Illuminator is in Operating mode you cannot enable the Remote Control and enter Programming Mode

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Enable & Disable of Manual Control Buttons (LED A : Flashing AMBER)

RHS LED:

Enable Manual Button Control – Solid GREEN

Disable Manual Button Control – Solid RED

Note : If the illuminator is in Operating Mode and the buttons are currently disabled, you cannot re-enable.

NOTE – If no buttons are pressed within 2 minutes the illuminator times out and returns to the previous mode it was in – either Programming Mode or Operating Mode.

14.5 Disabling the Manual Buttons :

If the Illuminator is in Operating Mode, once the disable manual buttons command is executed the buttons will be disabled after 30 minutes. This is to allow the user to re-enable manual buttons if required.

During this 30 minutes the button response will be the following

- LHS Button
    o Illuminator Settings Mode cannot be accessed. A momentary press of the button will not be recognised and the indicator LEDs will not change
    o Illuminator Security Mode can be accessed in the normal way by a continuous 4 second press
- RHS Button
    o Pushing this button will cause both indicator LEDS to flash RED

Once the 30 minutes has expired any button push (LHS or RHS) will cause both indicator LEDs to flash RED and the manual buttons are fully disabled

14.6 Disabling the Manual Buttons Using the Remote :

The manual buttons can be disabled using the remote.

Once the illuminator is put into Operating mode if the disable remote control Set Up button (see remote section) is pressed again and held for 4 seconds the manual buttons will be disabled. This is shown by both indicator LEDs flashing RED after 4 seconds.

Note : This command can only be used within 5 minutes of the illuminator being put into Operating Mode using the Remote Control

(If the Manual Buttons are already disabled , both LEDs will flash RED straight away)

15 Power Up Functionality

Power Up Functionality :

After power is supplied to the unit :

If no PIN is present the Illuminators will go into Programming Mode for 7 Days and then will default to Operating Mode

- During this time if the remote is used to change settings the illuminators will still default into Operating Mode after 7 Days from the power up (unless the remote disable button is used to change the illuminator to Operating Mode)
- During this time if the manual buttons are used in either Illuminator Settings Modes or Illuminator Configuration Modes the Illuminator will default into Operating Mode 30 minutes after the last button press

16 Illuminator RESET Options

There are Two Re-set options for resetting the illuminators on your VAR2-VLK2 unit

Settings Re-set :

Pressing and holding the RESET BUTTON in programming mode on the remote control or using the manual buttons to complete a RESET will restore the factory settings to the illuminator. Note : If a PIN is present it will not be removed and the illuminator will return to the mode you were in (Programming or Operating) prior to the re-set . Both indicator LEDs will flash AMBER when completed.

Full Re-Set :

The other option to reset your illuminator is available by recycling the power whilst holding down the two manual buttons. This is a FULL RESET and will restore factory settings AND remove the PIN if one has been set.

Both Indicator LEDs will flash AMBER when completed.

17 Illuminator Beam Angle Adjustment

17.1 Beam Angle of Illuminators – Changing the Lens Insert

Each Illuminator is factory set and supplied with 35° ILS (Interchangeable lens System) . To alter the beam angle to 10°, simply remove the ILS as detailed below. ILS inserts for 60° are supplied with the unit.

Alternative 80° and 120° are available to order.

All ILS lenses will be clearly marked with the angle which they will produce when inserted into the lamp. Please handle ILS lenses with care – and do not touch optical film. Only 1 ILS lens can be inserted into each illuminator at any time.

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

Remove base plates of one or both illuminators using 2.5mm Allen/hex key.

Insert required ILS lens and re-attach base plate firmly ensuring gasket is correctly located.

Lens Insert
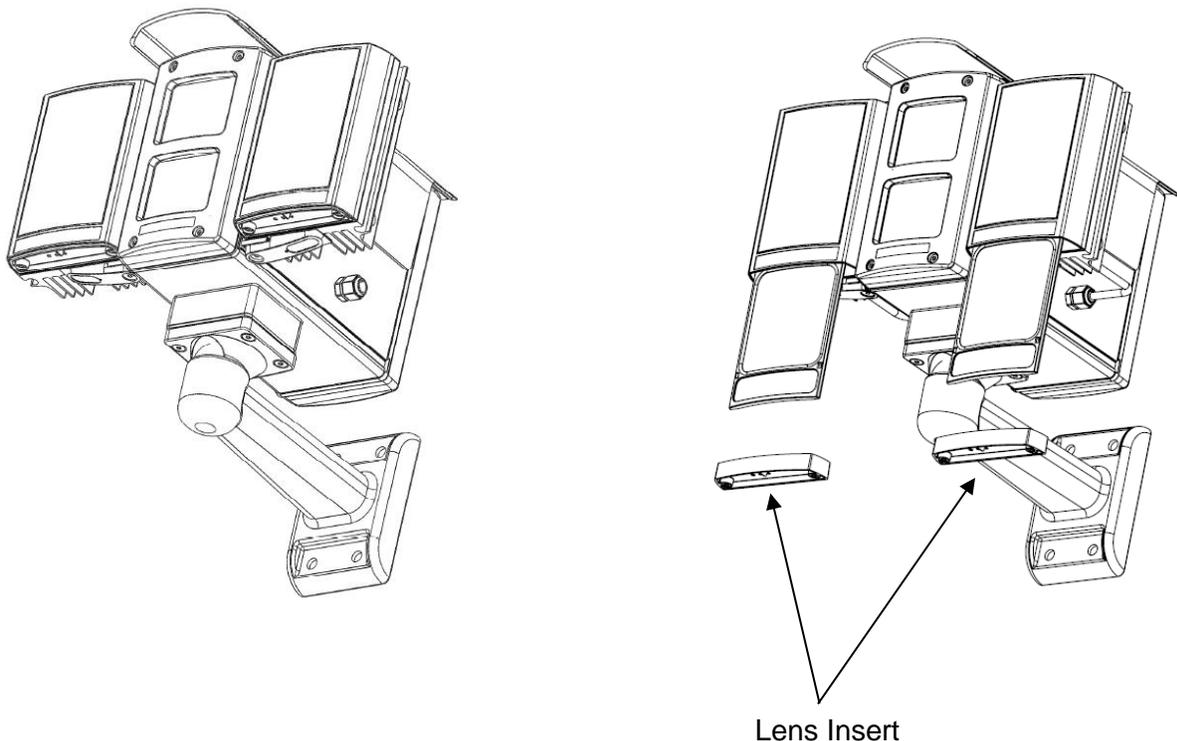
IMPORTANT NOTE: Ensure base plate is securely located, the gasket is correctly located and the screws correctly fastened to ensure and maintain IP66 rating of the product

18 Optional PSU Installation

18.1 PSU Mounting

Ensure the power supply is mounted securely to a flat external surface in a well ventilated area
Ensure the power supply enclosure is fully sealed and water tight before operation

Mount PSU with glands
pointing down and lid fitted
as shown

18.2 Wiring Interfaces

Isolate the primary supply at all times whilst the lid is removed from the PSU.

24 VDC Power

PC Aux

Tel Aux

Cat5e Termination
IDC Punch Down
Suitable Tool :-Knipex
97-40-10

Mains Supply
100-240VAC
16mm Gland
Cable OD 4-8mm

Power/Aux Cable
16mm Gland
Cable OD 4-8mm

Cat5e Camera Cable
12mm Glands
Cable OD 3-6.5mm

Multiplexed Cat5e
16mm Gland
Cable OD -4mm

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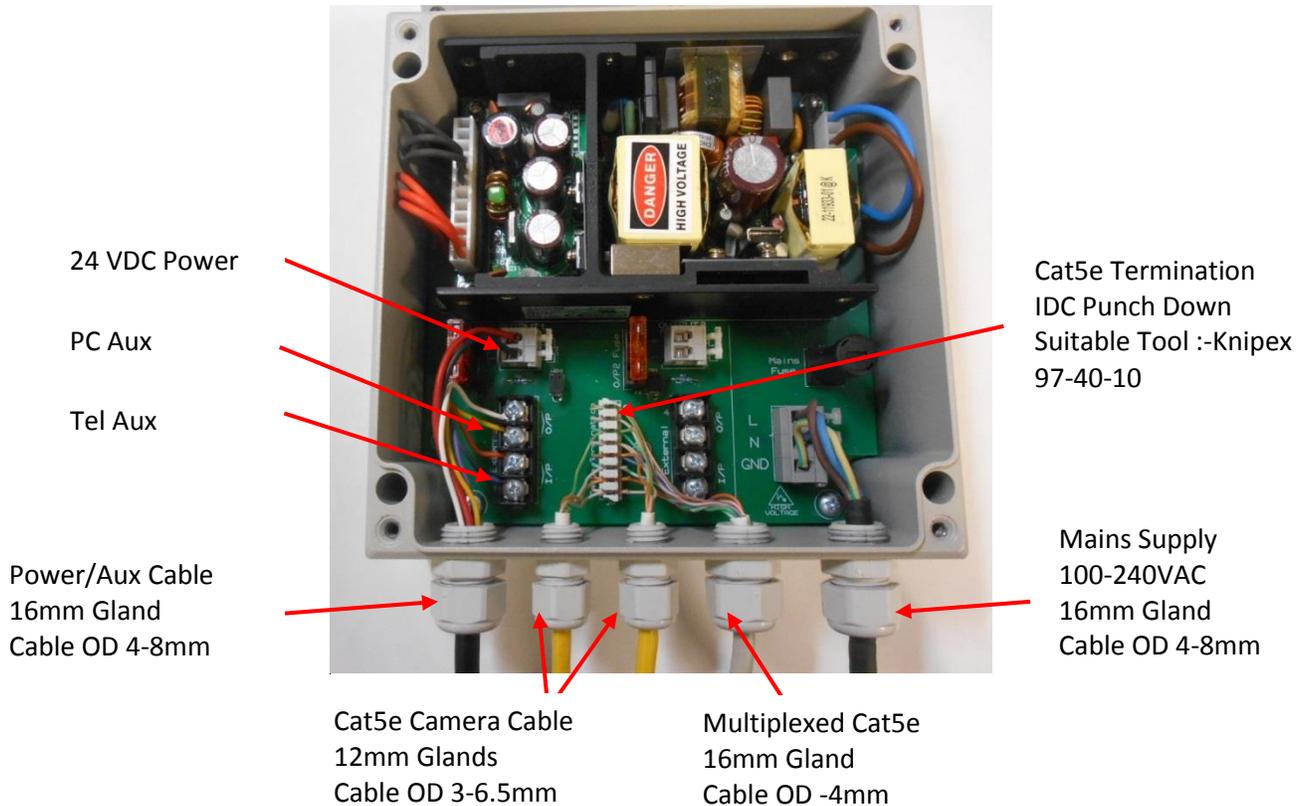
19 Troubleshoot

Ensure all tests are undertaken by a qualified, trained engineer.
Ensure safe working practices are followed at all times.

Step 1: Basics
- Check power supply voltage is correct and applied
- Check Telemetry configuration allows lamps on
- Check Lamps are not remote disabled
- Check Camera supplies are connected and on
- Check all interface wiring

If OK…

Step 2: Set-up Camera, lens and illumination
- Check alignment of lamp
- Match angle of illumination with angle of camera/lens – change angle if required
- Check camera lens – fully open at night & set correctly

Step 3: Call Raytec for further assistance
Note down:
- Model and serial number of illuminator
- Camera make and model(s) in use
Lens make and model(s) in use

If you are still not achieving the stated performance with your VAR2-VLK unit, please contact us for further assistance.

(Note : The light source (LEDs) of the illuminators is not replaceable. When the unit reaches its end of life the whole unit shall be disposed of and re-cycled where possible)

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20 Specifications

Mechanical :-	
VAR2-VLK Unit :- Dimensions (LxWxH)	336 x 302 x 173mm (13.2 x 11.9 x 6.8")
Weight	4.6 kg (10.1 lbs) : including Wire and Bracket
Mount	4 x M5 Holes at 40 x 62mm (1.57 x 2.44")
Optional PSU :- Dimensions (LxWxH) Weight Mount	REFER TO PSU DATASHEET
Electrical :-	
VAR2-VLK Unit :- - IP Cable - Power / AUX Cable - Camera Power - Lamp Power - Heater	CAT5 Screened 8 x 24AWG Pre-wired 4m(13ft) 6-Core 18AWG 24V AC/DC Pre-wired 4m(13ft) 6W / camera Typical 25W (Max) / Lamp 5W max
Optional PSU :- - Power Supply Input - Power Supply Output - Wiring Glands	REFER TO PSU DATASHEET
Environmental :-	
Environmental Rating	IP66
Operating Temperature Storage Temperature	-50°C to +50°C (58°F to 122°F) ***note: this may change depending on camera(s) inserted***
Certification :-	
CE ROHS WEEE	

- The supply to the unit should be limited to / fused at 5A

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Available Variants :

For any other variant requests please contact Raytec

VAR2-VLK Model	VAR2-VLK-W4-2	VAR2-VLK-I4-2	VAR2-VLK-I6-2	VAR2-VLK-I4-C-2	Contact Raytec	Contact Raytec	Contact Raytec
Lamps	2xWL	2xIR (850)	2xIR (850)	2xIR-C (940)	WL + IR4	WL + IR6	WL + IR4-C
Beam Angles	Maximum Distance m (ft) (Camera / Lens dependant)						
10°	155 (509)	220 (722)	282 (925)	***	110 / 144 (361 / 472)	110 / 200 (361 / 656)	110 / *** (361 / ***
35°	92 (302)	120 (394)	169 (554)	***	65 / 78 (213 / 256)	65 / 120 (213 / 394)	65 / *** (213 / ***
60°	49 (161)	76 (249)	99 (325)	***	35 / 54 (115 / 177)	35 / 70 (115 / 230)	35 / *** (115 / ***
80°	35 (115)	51 (167)	71 (233)	***	25 / 36 (82 / 118)	25 / 50 (82 / 164)	25 / *** (82 / ***
120°	25 (82)	34 (112)	42 (138)	***	18 / 24 (59 / 79)	18 / 30 (59 / 98)	18 / *** (59 / ***

*** *Contact Raytec*

20.1 Dimensions

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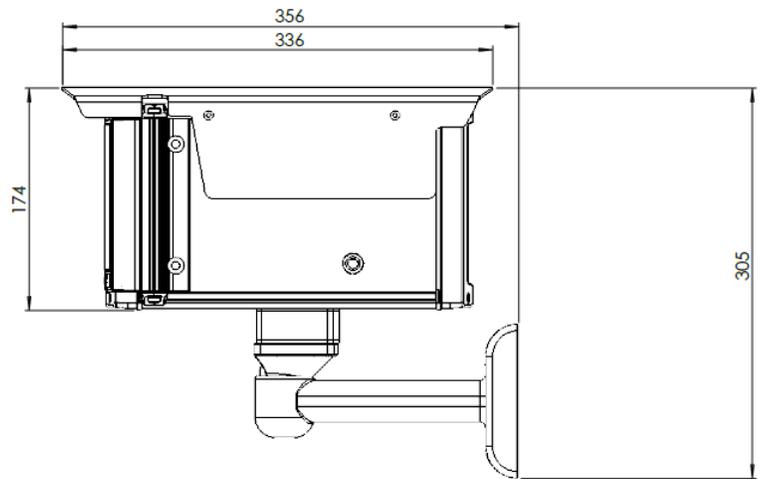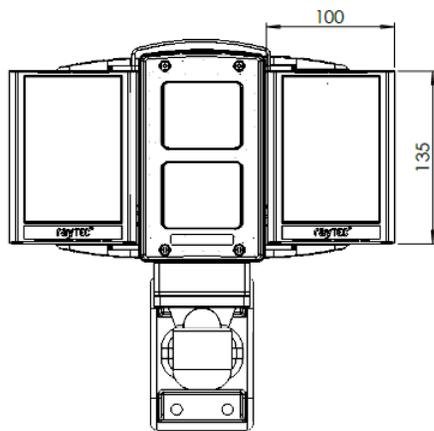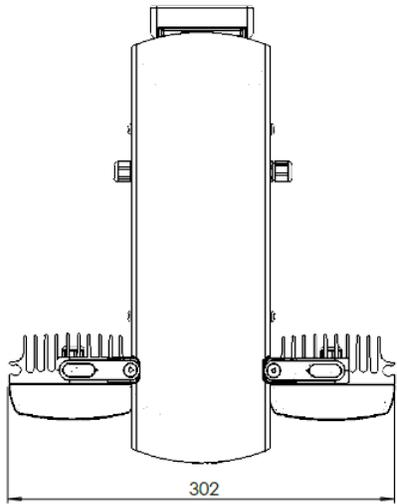
Bracket – WVOB Wall fixing Template

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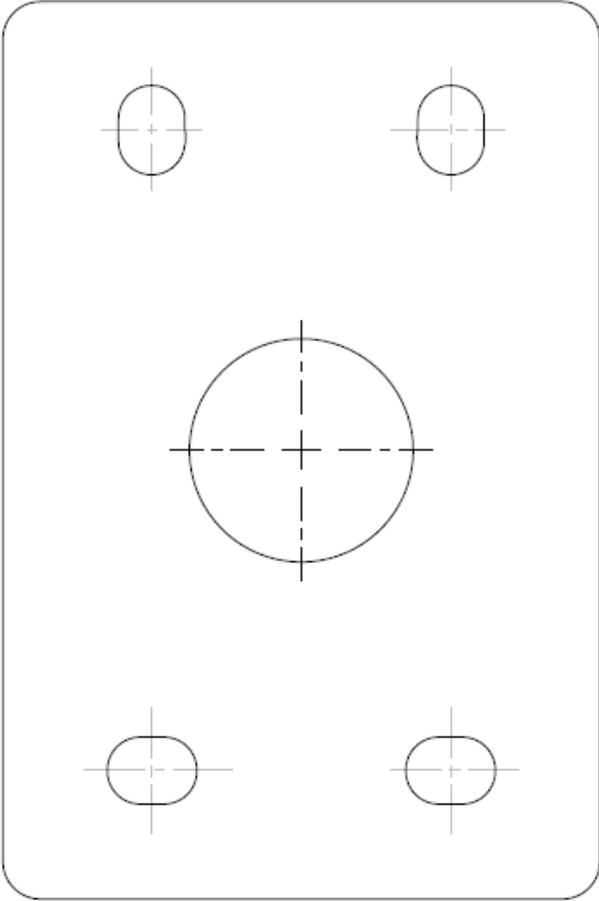
21 List of Approved Accessories

Part Number/ Reference	Description
VRC	Vario Lamp Remote Controller
VLK Patch	IP Camera Cat5 Patch Cable (one per camera)
VLK Plug Set	Camera Wiring Interface 2way and 4way Plugs (one set per camera)
Vario 100 PSU	Power Supply Unit – Mains Supply Type
PBC-1	Pole Mount Single Bracket. (50/170mm diameter)
PBC-2	Pole Mount Dual Bracket. (50/170mm diameter)
PBC-PSU-ADAP	Power supply mounting adapter plate for PBC-1 or 2
Diff-80	80deg diffusers
Diff-120	120deg diffusers
TLK Front	Front cover for thermal camera installation with Germanium window

Optional TLK Front

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