



BlackHawk Installation/Configuration Manual



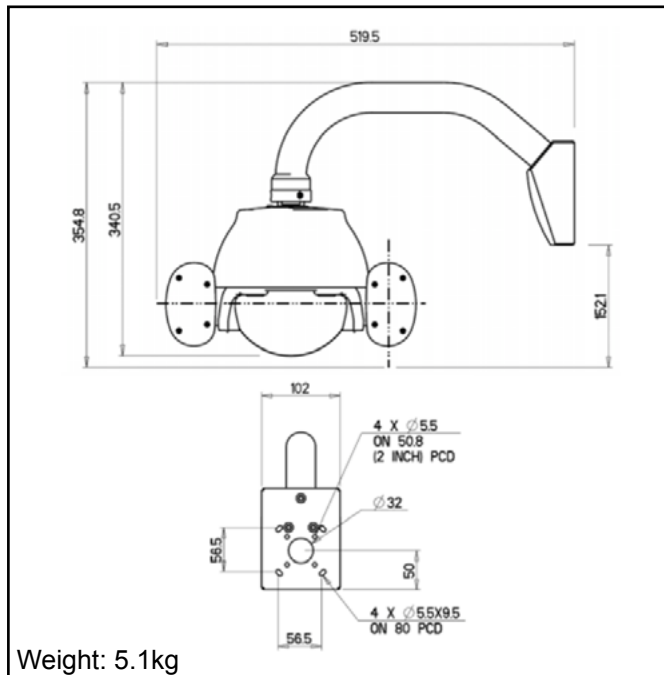
Table of Contents

| | |
|---|----|
| 1 Safety and Precautions | 3 |
| 2 Housing Dimensional Drawing | 3 |
| 3 Mounting Options | 4 |
| 4 Connections | 4 |
| 4.1 Standalone Alarmcard Setup | 9 |
| 5 Basic Twisted Pair/RS485 Data Wiring | 11 |
| 6 Blackhawk Protocol/Address setup | 12 |
| 7 BlackHawk OSD | 13 |
| 7.1 PIN Number | 13 |
| 8 OSD Operation/Navigation | 14 |
| 9 Special Presets | 16 |
| 10 Important - Care of Painted Surfaces | 17 |
| 11 Storage and Handling | 17 |
| 12 Warranty | 17 |
| 13 Camera Specification | 18 |

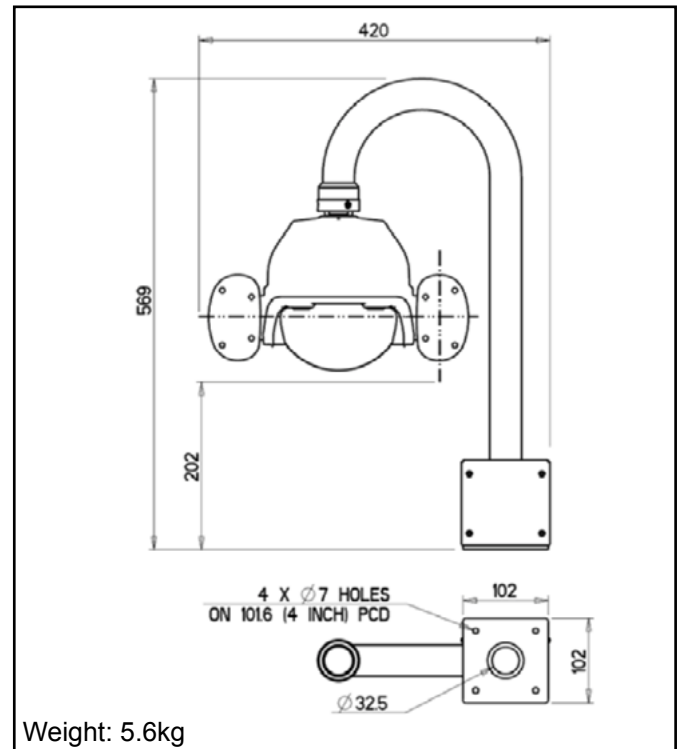
1 Safety and Precautions

1. Please read these notes before attempting to operate the 360 Vision Blackhawk, and keep for future reference.
2. DO NOT disassemble or remove covers. This will break the water seals and invalidate the warranty.
3. All servicing and repairs must be handled by 360 Vision Technology.
4. Avoid pointing the camera directly towards a bright light source (sunlight), or expose the camera to intensive light situations as this may damage the camera pick-up device.
5. Installation should be carried out by suitably qualified personnel, in accordance with local codes of practice and regulations.
6. 360 Vision Technology Limited accept no liability for any damage caused by incorrect or improper installation.
7. Use only 360 Vision Blackhawk power supplies.
8. Please handle the Blackhawk with care, as improper handling may cause damage within this unit.

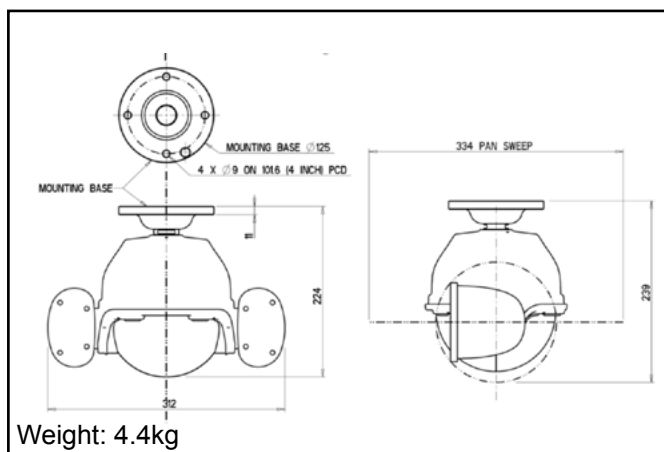
2 Housing Dimensional Drawing



External Wall Mount

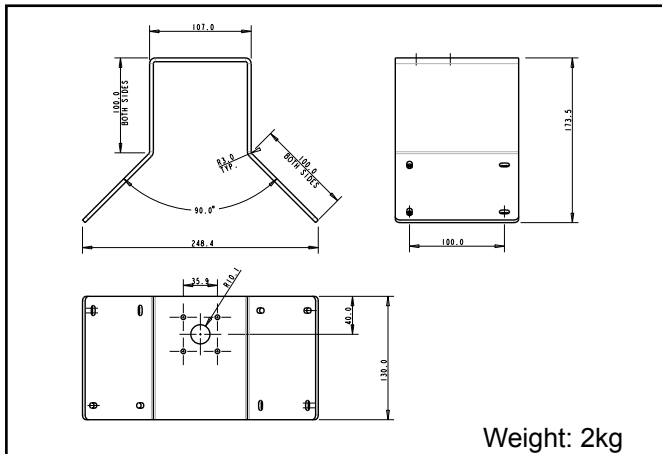


External Swan Neck Mount

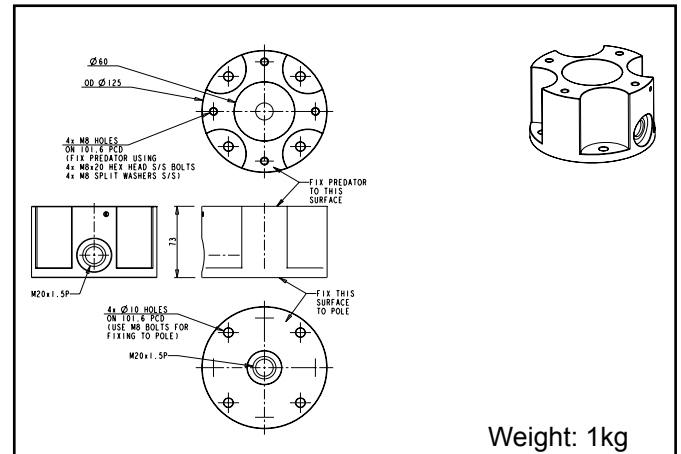


External Soffit Mount

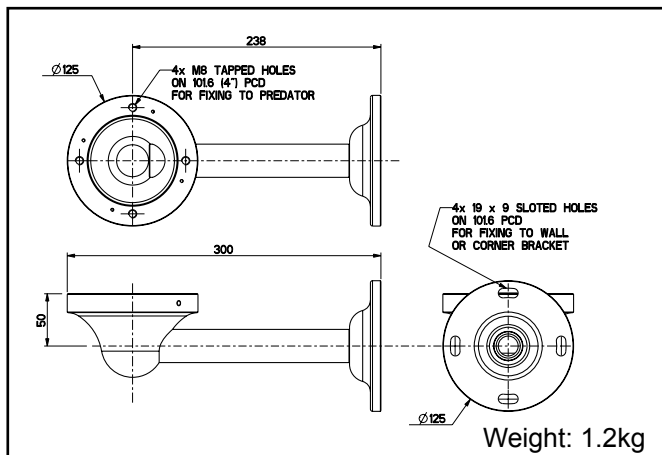
3 Mounting Options



External Corner Bracket



PMA Bracket



Wall Bracket (when used with Soffit version)

4 Connections

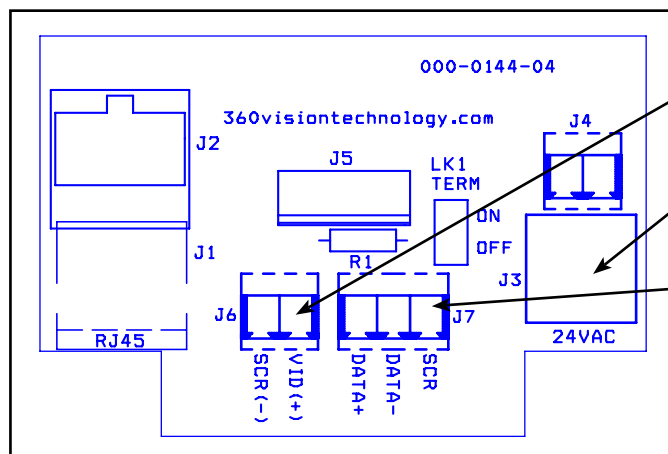
Cables for Connection from BlackHawk Power Supply

| | Cable Type | Maximum Distance |
|---------------------------|---|------------------|
| Mains | 3 x 0.75mm ² conductors with PVC insulation, PVC overall sheath (H03VV-F or H05RN-F) | 250m |
| Video | RG59BU (low quality cable conductor) | 250m |
| | RG59BU (Copper central conductor, RG11, CT125) | 1000m |
| Twisted Pair Data (RS485) | Belden 9841, Belden 9842, Belden 8723 | 3000m |

Cables for Connection from Power Supply to BlackHawk

| | Cable Size | BlackHawk Maximum Distances (Using BHD-PSU) |
|-------|---------------------|---|
| Power | 0.75mm ² | 30 metres |
| | 1.00mm ² | 40 metres |
| | 1.25mm ² | 50 metres |
| | 1.50mm ² | 60 metres |
| | 2.00mm ² | 100 metres |

External housing connection



External Wall and Swan Neck version

Video Connections

Connect video coax to J6.

Power Connections

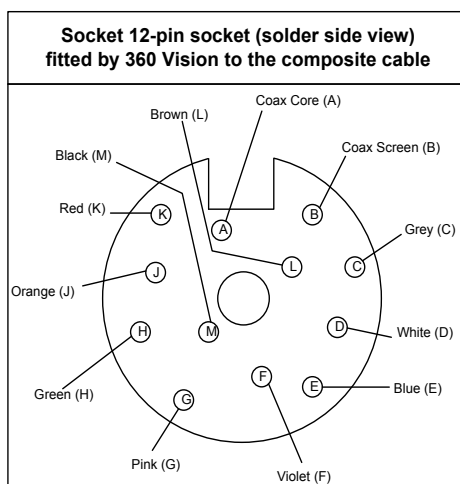
Connect 24Vac to J3

Data Connections/LK1 Termination

Connect RS485 data cable to J7.

Soffit version BlackHawk 12-way connector pin-out.

Below connection is used with the soffit version of the BlackHawk camera, when used with the PRED-PSU-UNI.
(see pg 7).



Pre-made cable options

| | |
|----------|--------------------|
| PRED-3M | Pre-made 3m cable |
| PRED-10M | Pre-made 10m cable |
| PRED-25M | Pre-made 25m cable |
| PRED-40M | Pre-made 40m cable |

Predator Composite Cable

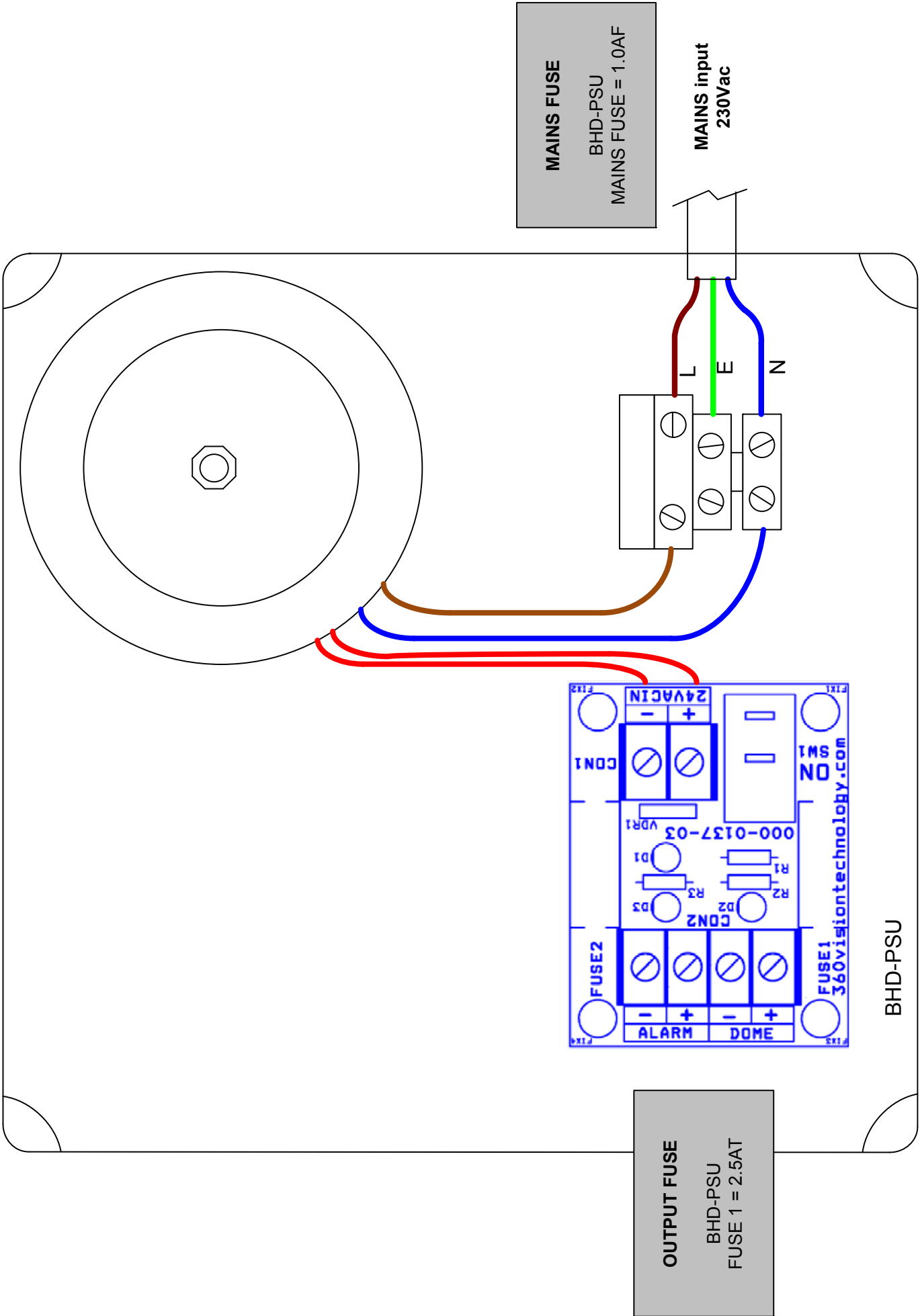
This pre-made Predator Composite Cable is available in 3m, 10m, 25m and 40m lengths. It contains video coax, power and data cables. One end is fitted with the IP68 12-way connector for direct connection to the BlackHawk, the other is supplied with all cables stripped and tinned ready to be connected to the two-part connectors which are supplied with the power supply.

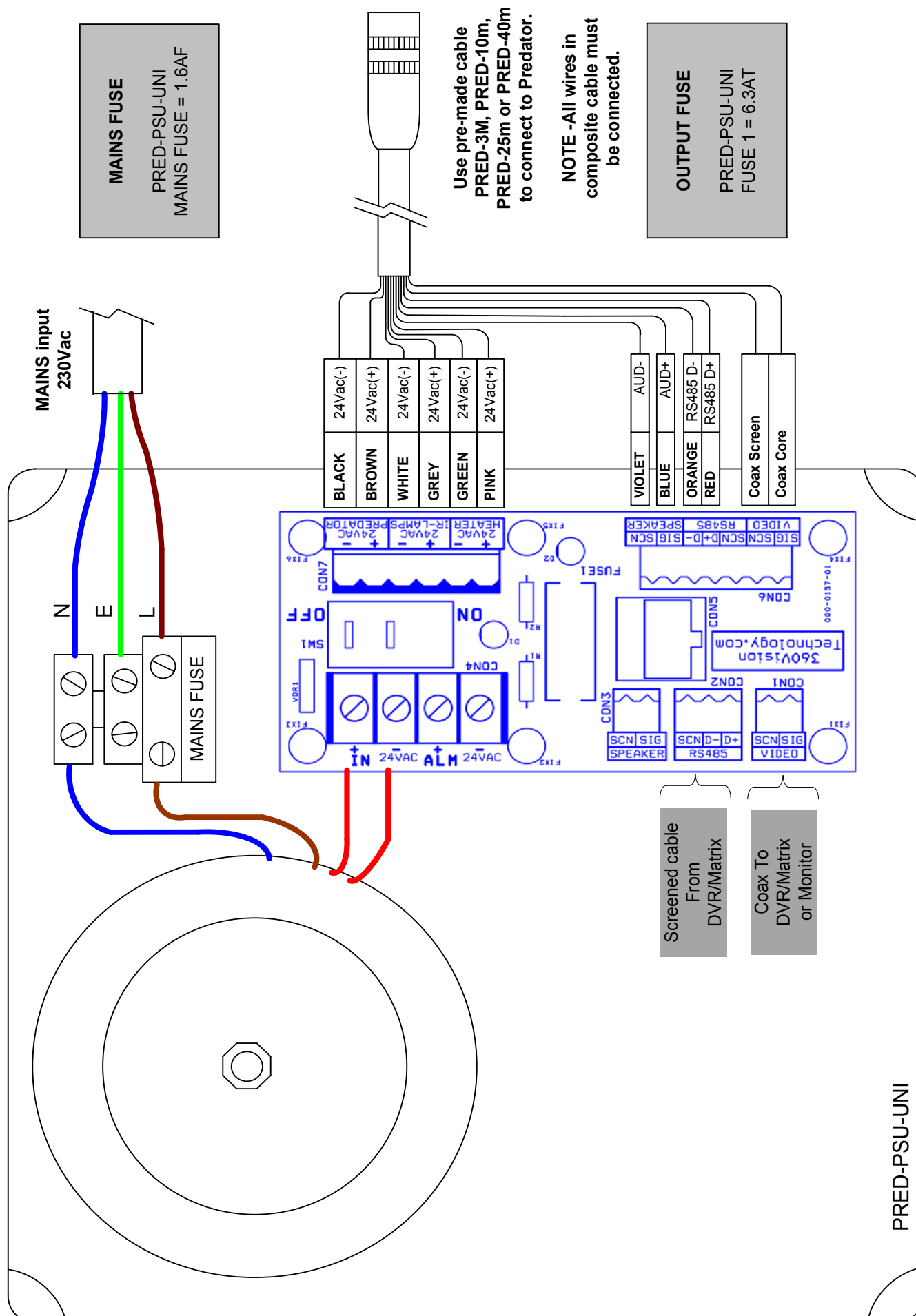
Connecting the composite cable to the BlackHawk

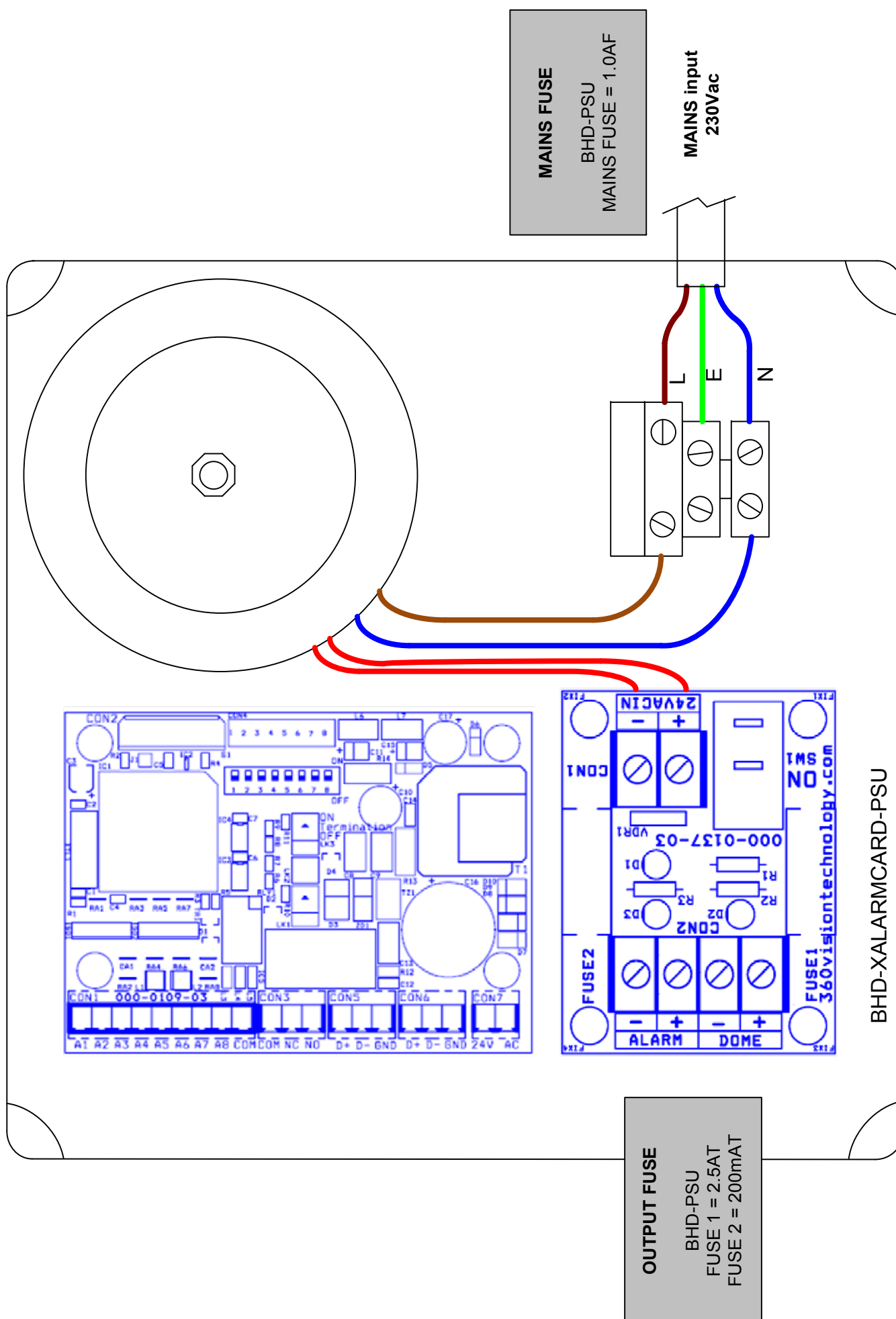
Route the cable through the brackets and cable glands before connecting it to the BlackHawk. Ensure that the pins and sockets are lined up correctly, insert the connector and tighten the locking ring to make the connector water tight.

It is important that the water should not be allowed to pool around the connector, as this will increase the risk of contamination and corrosion which may cause poor connections.

The connector on the base of the BlackHawk is rated IP68, when it is correctly connected and the locking ring is tight.







The BHD-XALARM-PSU has eight normally open/normally closed (Dilswitch S1, switch 8 on) alarm inputs on connector CON1 on the alarm PCB. When using normally closed contacts, all un-used alarm inputs must be connected to alarm in common CON1. Connect switches or volts free relay outputs from PIRs or other equipment to CON1 connector so that the terminal labelled COM is connected to the appropriate alarm input (A1 to A8) when the alarm contact is activated. There is also an alarm relay which can be used to activate alarms on other equipment (DVRs etc.). The alarm relay contacts (Common – ‘C’, Normally Open – ‘NO’ and Normally Closed – ‘NC’) use connector CON3 on the alarm PCB.

When an alarm is activated, the ALARM PCB will activate the alarm relay output and will send commands to set the Blackhawk to activate ‘alarm mode’. The Blackhawk will save the current status (pan, tilt, lens, tour and mimic) then it will seek the preset which corresponds with the active alarm number.

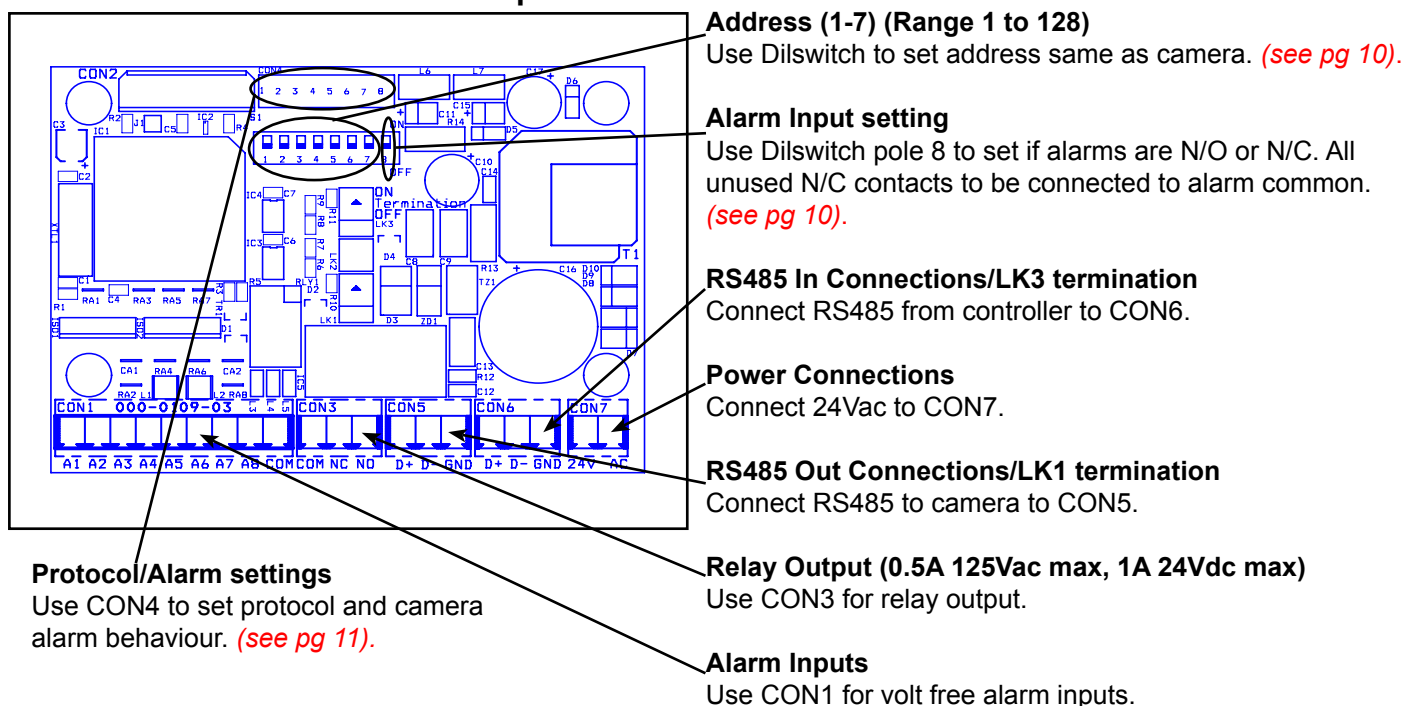
| Alarm Number | Preset Number | Alarm Number | Preset Number |
|--------------|---------------|--------------|---------------|
| 1 | 1 | 5 | 5 |
| 2 | 2 | 6 | 6 |
| 3 | 3 | 7 | 7 |
| 4 | 4 | 8 | 8 |

The alarm will remain active while the alarm input is active. After the alarm input becomes inactive, a 10 second alarm timer will start. The timer extends the alarm activity until the alarm timer expires. If the alarm input becomes active again before the timer has expired, the timer resets and will restart again when the alarm input becomes inactive and a further preset seek command is sent to the Blackhawk.

If an alarm is active and a further alarm becomes active, the latest alarm will interrupt the previous alarm. (i.e. the latest alarm has highest priority) The Blackhawk will seek the preset that corresponds with the new alarm. When the contacts become inactive, the Blackhawk will seek the preset that corresponds with the previous highest priority alarm that is still active. When all alarms inputs are inactive the alarm timer starts. After the timer expires, the Alarm PCB sends a command to the Blackhawk to end the ‘alarm mode’ and the Blackhawk will return to the status position and action that had been saved when first alarm became active. (Fit a link on the alarm card CON4 position 7 to disable the automatic return to the pre-alarm status when all alarms and the alarm time have expired).

When an alarm is active and the Blackhawk has automatically selected the appropriate preset, it is possible to send further commands (i.e. manual control) to the Blackhawk which will override the preset which had previously been automatically selected. Each time an automatic preset seek occurs as described in the previous paragraph; the manual control will be interrupted.

4.1 Standalone Alarmcard Setup

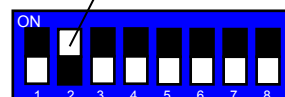


| | |
|------------------------|-----------|
| Dil Switch Settings | 1-7 |
| Address 1 to 128 range | See below |

| | |
|---|-----|
| Dil Switch Settings | 8 |
| Normally Open Contacts | Off |
| Normally Closed Contacts (un-used inputs must be connected to common) | On |

RS485 Address Settings

Switch is shown as white.

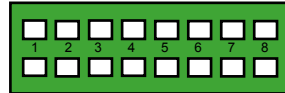


Example shows switch settings for camera address 3

| | | | | | | | |
|--|----|--|----|--|----|--|----|
| | 01 | | 17 | | 33 | | 49 |
| | 02 | | 18 | | 34 | | 50 |
| | 03 | | 19 | | 35 | | 51 |
| | 04 | | 20 | | 36 | | 52 |
| | 05 | | 21 | | 37 | | 53 |
| | 06 | | 22 | | 38 | | 54 |
| | 07 | | 23 | | 39 | | 55 |
| | 08 | | 24 | | 40 | | 56 |
| | 09 | | 25 | | 41 | | 57 |
| | 10 | | 26 | | 42 | | 58 |
| | 11 | | 27 | | 43 | | 59 |
| | 12 | | 28 | | 44 | | 60 |
| | 13 | | 29 | | 45 | | 61 |
| | 14 | | 30 | | 46 | | 62 |
| | 15 | | 31 | | 47 | | 63 |
| | 16 | | 32 | | 48 | | 64 |

CON4 Settings

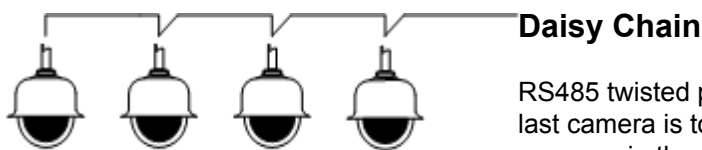
CON4



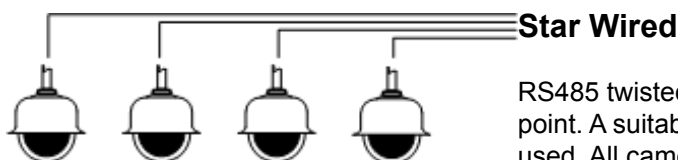
| Protocol Settings | 3 | 4 | 5 | 6 |
|---------------------------------|-----|-----|-----|-----|
| 360 Vision | Off | Off | Off | Off |
| Pelco D 9600 baud | On | Off | Off | Off |
| Pelco D 4800 baud | Off | On | Off | Off |
| Pelco D 2400 baud | On | On | Off | Off |
| Pelco P 9600 baud | Off | Off | On | Off |
| Pelco P 4800 baud | On | Off | On | Off |
| Pelco P 2400 baud | Off | On | On | Off |
| Alarm Settings | 7 | | 8 | |
| Normal Operation | Off | | Off | |
| No Pre-alarm, No White Light | On | | Off | |
| Forced White Light | Off | | On | |
| No Pre-alarm, White Light Timer | On | | On | |

5 Basic Twisted Pair/RS485 Data Wiring

The Blackhawk is capable of being controlled by either Coax Telemetry or Twisted Pair Telemetry (RS485). Below are wiring configurations for two wiring formats used for Twisted Pair Telemetry (RS485). The Blackhawk Soffit version camera **cannot** be wired in a Daisy Chain configuration as the RS485/twisted pair circuit is terminated/end of line, unless it is the last camera in the chain.



RS485 twisted pair cable is wired to each camera in a “chain”. Only the last camera is to have the RS485 (end of line) termination on, all other cameras in the chain must have the RS485 termination off.



RS485 twisted pair cable is wired to each camera in a “star” from one point. A suitable RS485 star driver/data distribution product must be used. All cameras in this wiring configuration must have the RS485 (end of line) termination on.

6 Blackhawk Protocol/Address setup.

All Blackhawk cameras are supplied set to 360 Vision protocol, camera twisted pair address 1. When the Blackhawk is switched on, an OSD (On Screen Display) is shown on the image from the camera for approx 20 seconds.

PRO:360VTL CAM:0001 S
Blackhawk Software Version

PRO: Protocol being used for telemetry (e.g. 360 Vision Technology Ltd)

CAM: Camera RS485 ID (e.g. Cam 1)

S or L: Short or Long cable run. Use the utility to set whether the coax used to send video is under or over 300m.

Second Line: Shows the Blackhawk Software Version loaded into the camera.

To change the above settings in the camera, 360 Predator utility software, a USB/RS485 cable (PRED-USB-485) and a laptop are required.

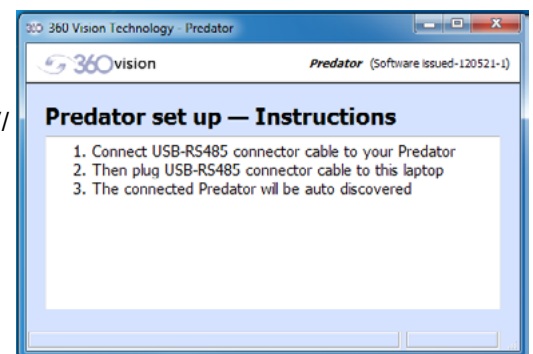
The Predator utility and PRED-USB-485 cable drivers can be found on the CD (shipped with the camera) or on the 360 Vision Technology FTP site (www.360visiontechnology.com/ftp).

Install the software (Predator-issued-120521-1-installer.exe) on the laptop being used. Connect the RS485 end of the cable fitted with a 3 way connector to the Blackhawk 3 way RS485 port. Run the utility on the laptop and then connect the USB end of the cable into the laptop. The utility will then look for new comms ports and then will look for the camera across all baud rates used.

Settings that can be altered from this software are:

- Protocol: 360 (Coax/RS485), Pelco P 2400/4800/9600, Pelco D 2400/4800/9600, Pelco Coaxitron (Extended version), VCL (Coax/RS485), Ultrak (RS485), Forward Vision (RS485)*, BBV/DENNARD C (FSK Coax), MARK MERCER (Coax), Molynx (Coax/RS485)*
- Coax Cable length: Longer than 300m or shorter than 300m.
- RS485 Address: Used on RS485 systems only.

*Molynx & Forward Vision are not available in the BlackHawk camera.



7 BlackHawk OSD

OSD (On Screen Display) is accessed by defining/programming preset 6 or 95.

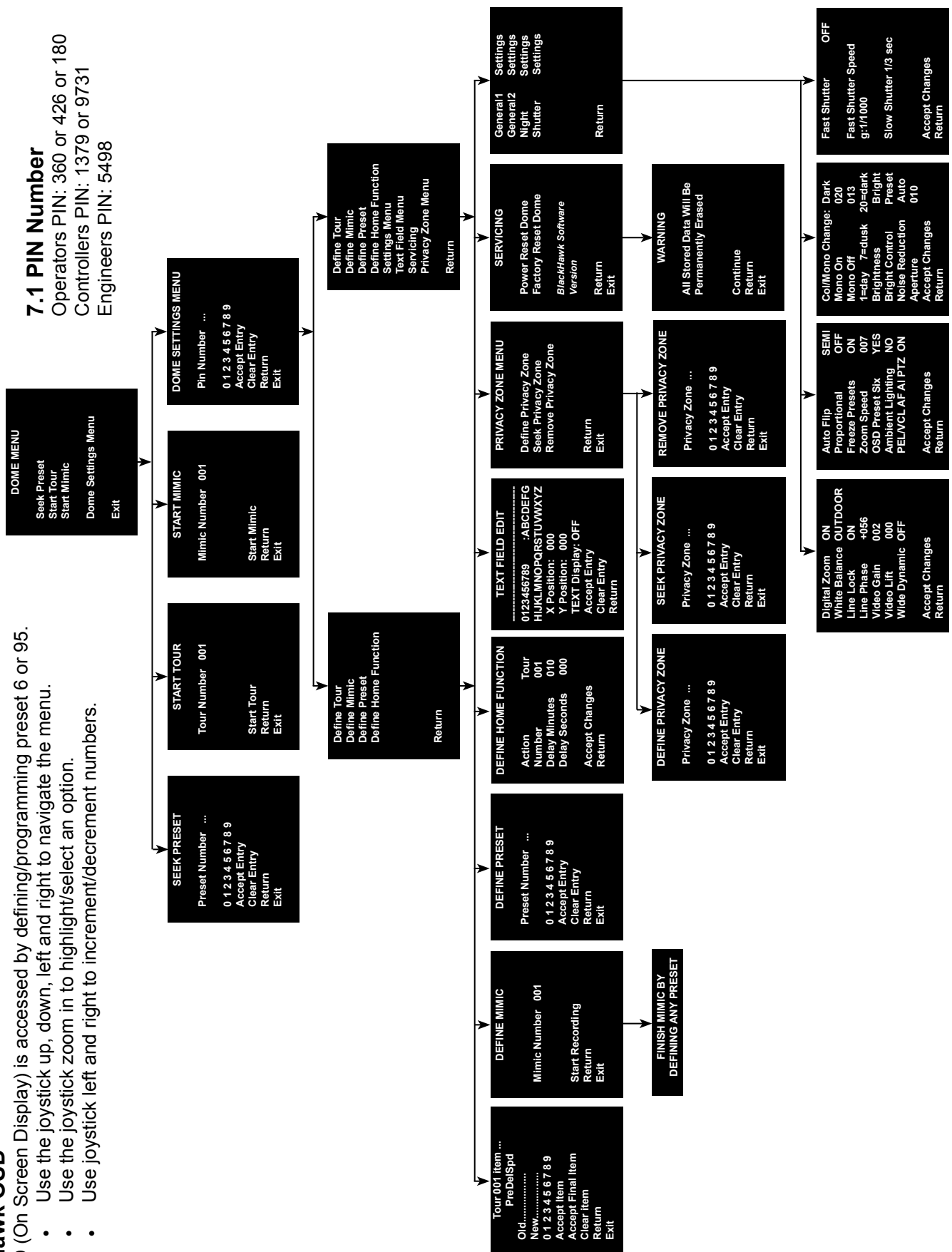
- Use the joystick up, down, left and right to navigate the menu.
- Use the joystick zoom in to highlight/select an option.
- Use joystick left and right to increment/decrement numbers.

7.1 PIN Number

Operators PIN: 360 or 426 or 180

Controllers PIN: 1379 or 9731

Engineers PIN: 5498



8 OSD Operation/Navigation

Dome menu

- Seek Preset
- Start Tour
- Start Mimic
- Dome Settings Menu

Define Tour

A tour of presets is stored in the BlackHawk as a list of tour points. Each tour point consists of a preset number, the dwell time for which the Blackhawk will pause and the speed parameter that will be used to seek the preset. Each of the four tours of presets can contain between 2 and 360 points.

When programming a tour of presets it is necessary to first store all the required presets into the Blackhawk and to define the required dwell times and speeds of travel that you will require the Blackhawk to use when the tour is started.

A maximum of four individual tours of presets can be stored in each Blackhawk. Each tour can have between 2 and 360 points, each point can be a preset in the range 1 to 360. Different points can use any preset number, including repeats of ones that have been used before. The speed that the camera will travel at to reach the preset can be in the range 1°/sec (slowest) to 100°/sec (fastest). To seek the preset at maximum speed, set speed to 0. The delay (dwell) at each point is defined in seconds, range 1 to 100.

This page will open on Tour 1, use the joystick left and right to change to another tour. To add item 1, use the joystick to tilt down. This will highlight the number line so that the tour can be programmed. Use the joystick to navigate along the number line and zoom in to select the number. This will add the number in to the NEW tour. Add in the figures for the item/point in the tour using the sequence labelled above (PREDELSPD. PRE is preset position, DEL is delay in seconds and SPD is speed at °/second). This is how the camera will be programmed to move to a preset for a period of time at a set speed. All nine figures must be added into the item. Figures must be added in three i.e. preset 21 will be added as 021.

Example of an item/point

021005100 = Move to preset 21 for 5 seconds at 100°/sec

Highlight ACCEPT ITEM and zoom in, this will add the item/point into the tour. The OLD item/point will be shown on the screen. If these settings are acceptable, highlight the ACCEPT ITEM option and zoom in. There is no need to add in these points again. Keep adding points until the tour is complete. On the final item/point of the tour highlight and zoom in on ACCEPT FINAL ITEM. This will complete the tour programming.

Define Mimic

When a mimic tour is started, the Blackhawk will perform all the actions which were defined when the mimic was programmed. Up to four mimic tours can be defined.

Before going into the OSD screen to programme a Mimic tour it is recommended to move the camera in to the start position, any movement or delay will be recorded once the recording has started.

Highlight and zoom in on START RECORDING, this will allow a mimic tour to be programmed into the camera. The mimic tour can then be used to playback any manual movement, preset seek or delay. Program a preset to end the mimic tour program.

Define Preset

Before going into the OSD screen to programme a preset, the camera must be in the position required. Once in the OSD you cannot manually move the camera.

Define Home Function

The camera will perform an ACTION (goto preset, start preset or mimic tour), after a period of inactivity. Use the NUMBER option to set which preset or tour to start, and the DELAY MINUTES/SECONDS to input the inactivity time period.

Settings Menu

Offers more camera options.

General 1

- Digital Zoom - Use this option to enable or disable digital zoom.
- White Balance - Change the camera white balance settings to suit the area.
- Line Lock - Used to line lock the camera.
- Line Phase - Can be used to manually adjust the line phase.
- Video Gain - Used to adjust the video level to suit different lengths of coax cable.
- Video Lift - Used to adjust the frequency of the video level to suit different lengths of coax cable.
- Wide Dynamic - Enable WDR. Options available are ON, Auto and Off. Default is off.

General 2

- Auto Flip - Use this option to set how the camera behaves when full tilt down is reached.
 - Semi - Requires a second tilt down command when at full tilt down to spin camera 180°.
 - Full - Automatically spins the camera 180°
- Proportional - Automatically reduces/increases pan/tilt speed depending on zoom ratio.
- Freeze Presets - This option freezes the image, when moving between presets.
- OSD Preset Six - Go into OSD using preset 95 and you can switch off OSD access using preset 6.
- Ambient Lighting - Sets how the camera will focus (when in mono) to suit the light source in the scene. If this is set incorrectly the image may not be in focus.
- PEL/VCL AF AI PTZ - Auto focus/iris will activate when PTZ is used, can be switched off. Default is on. Pelco and VCL protocols only.

Night

- Col/Mono Level - Col/Mono level settings can be changed to suit the site requirements. Options are dark, medium and light. Default is dark. This sets when the camera goes into 'mono mode'.
- Mono On - Range is 7 to 25. A lower value will set the level on when the scene is brighter, a higher value will set the level on when the scene is darker.
- Mono Off - Range is 1 to 20. A lower value will set the level off when the scene is brighter, a higher value will set the level off when the scene is darker.
- Brightness - Can be used to artificially brighten the image, options are low, medium and bright.
- Bright Control - Options are automatic or preset seek activation. *(See also Special Presets pg 16).*
- Noise Reduction - Used to reduce noise with scenes of low illumination. NR must be set to suit the environment. Default is off.
- Aperture - Can be used to increase the picture detail. Default is 3.

Shutter

- Fast Shutter - Option to enable fast shutter and set speed of the shutter.
- Slow Shutter - Option to alter the slow shutter speed. Altering this figure will have an effect on the low light capabilities of the camera.

Text Field Menu

Navigate along alpha-numeric characters and use zoom in to select. Choose text position by inputting x and y co-ordinates. Set text display to on, if required.

Servicing

- Power Reset - This will reboot the camera, no settings will be lost.
- Factory Reset - This will reboot the camera and all the settings will be lost.
- Blackhawk Software Version - This shows the software version of the camera.

Privacy Zone Menu

Can be used to obscure a scene within an image e.g. private residence. Move the camera to the position required for the privacy zone before going into the camera OSD. You cannot manually move the camera once in the OSD. Use the zoom to set the size of the privacy zone. Privacy zone will cover the whole scene viewed when set.

- Define Privacy Zone - Used to set a privacy zone.
- Seek Privacy Zone - Used to seek a privacy zone.
- Remove Privacy Zone - Used to remove a privacy zone.

9 Special Presets

| | | | |
|--|----------------------|--|---------------------|
| Illumination (when it is dark) | Seek 64 (On) | IR (mono/colour not changed) | Seek 66 (Off) |
| Night Sensor (when it is dark) | Seek 67 (Mono) | | Seek 68 (Colour) |
| Night Focus Range (when it is dark) | Seek 69 (Ambient) | | Seek 70 (IR) |
| De-Fog | Seek 87 (On) | | Seek 88 (Off) |
| Set Privacy Zone | Seek 91 | Scene being viewed | |
| Clear Privacy Zone | Seek 92 | Privacy zone being viewed | |
| Clear Privacy Zone | Seek 93 | All privacy zones | |
| Bright Control | Seek 240 (On) | Bright Control (change to set brightness level) | Seek 249 (Off) |

10 Important - Care of Painted Surfaces

The powder coating applied to the Blackhawk external housing is recognised as being in the forefront for quality and finish. However, in order to preserve the aesthetic finish it is recommended that the coating is regularly cleaned.

Regular cleaning on a maximum three month interval, using warm and mild detergent must be undertaken. Abrasive cleaners including strong solvent must NOT be used at any time.

In areas where the coating may come in contact with concentrated atmospheric pollutants [marine, chemical and especially bird droppings] it would be prudent to clean more frequently e.g. monthly.

Full documentation of the cleaning schedule MUST be maintained to ensure that a warranty claim can be considered.

If damage occurs to the coating (e.g. the Blackhawk is dropped, scrapped etc), repairs MUST be carried out immediately.

When the Blackhawk is installed in areas where there is a high risk of damage from birds or their droppings, additional precautions and measures should be used to keep the birds away from the Blackhawk e.g. fit anti-bird spikes.

11 Storage and Handling

Blackhawks should be handled with care and must not be dropped. When Blackhawks are inside the transit packaging which is used for despatch from the factory, they should not be stacked to a height of more than two Blackhawks.

When Blackhawks are being stored before installation they should be kept in the transit packaging and located in a dry indoor environment preferably between 1°C and 35°C which is dry and dust free. Humidity should be such that water vapour is non-condensing. Blackhawks can be allowed to be outside this range for short periods of time (24 hours maximum) for transport (e.g. in aircraft or vans) but must never be allowed to be outside the normal operating temperature range of -40°C to +60°C even during storage.

Before installation the Blackhawk should be clean and dry. (If necessary it should be cleaned and dried taking care that the cover is not scratched).

12 Warranty

This information and/or any technical information – whether received verbally or writing – is given in good faith but without warranty and this also applies where proprietary rights of third parties are involved. The information provided does not release you from your obligation to check its validity and to test the products suitability for the intended purpose(s) and use(s). The application, use and installation of the products either in isolation or in conjunction with other products used, provided and installed by you on the basis of the technical advice issued are beyond our control and therefore remain entirely your own responsibility.

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13 Camera Specification

| BlackHawk Specification | 18x | 28x | 44x |
|----------------------------|----------------------------|--------------------|--------------------|
| Colour/Mono | Yes | | |
| Imager | 1/4" type Super-HAD CCD II | | |
| Zoom - Optical, Digital | 18x, 12x | 28x, 12x | 44x, 12x |
| Pixels | 976(H) x 582(V) | | |
| Lines Resolution | 670 | | |
| Horizontal View Angle | 2.8°(T) ~ 48°(W) | 2.1°(T) ~ 55.8°(W) | 1.6°(T) ~ 68.8°(W) |
| Lens Size | 4.1 ~ 73.8mm | 3.5 ~ 98mm | 3.06 ~ 134mm |
| Min Sensitivity - Colour | 0.4 Lux | 0.4 Lux | 0.6 Lux |
| Min Sensitivity - Mono Int | 0.01 Lux | 0.01 Lux | 0.01 Lux |
| Signal Noise Ratio | >50dB | | |

| Features | All units have the following functions. |
|------------------------------|---|
| Video Output | 1V p to p, 75Ω |
| Scanning | PAL or NTSC |
| Focus/Iris | Auto/Manual |
| Presets | 360 |
| Tours | 4 (max 360 presets per tour) |
| Learned Patrols | 4 mimic tours (up to 30 minutes duration each) |
| Privacy Zones | Up to 32 |
| Variable pan speed/coverage | 0.1 ~ 120°/sec, 360° continuous rotation, absolute positioning. |
| Variable tilt speed/coverage | 0.1 ~ 120°/sec, 90° rotation, absolute positioning. |
| Auto Homing | Preset, Tour or Mimic. |
| Col/Mono Changeover | 4 levels (3 fixed preset, 1 user defined) |
| Operating temperature | -40°C ~ 60°C |
| Power | 24Vac/dc |
| Certification | CE approval : IP67 |