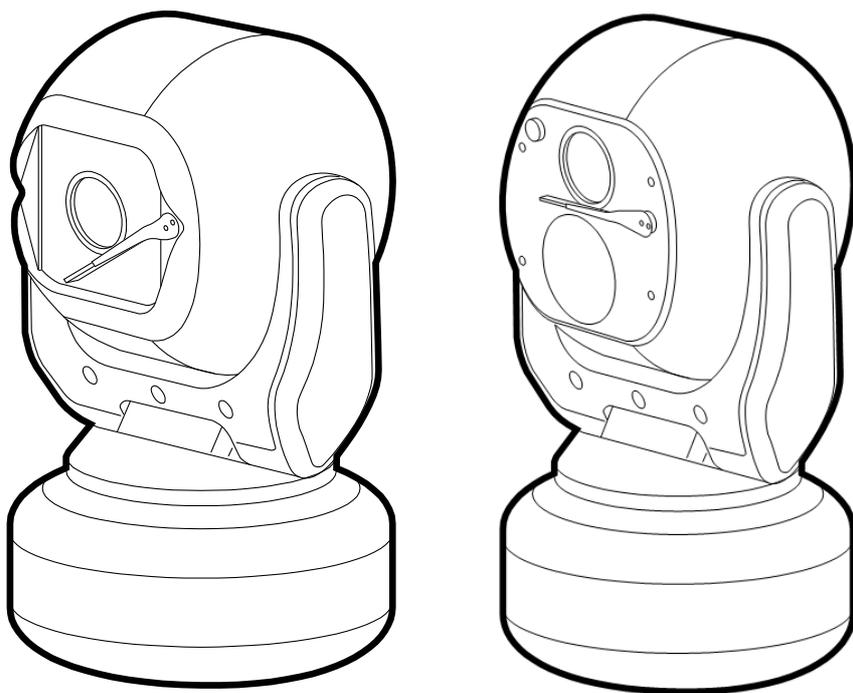


Oculus & Oculus Ti

installer's guide



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Safety Information

Before installing the equipment, please read this guide carefully.

To prevent electrical shock hazards, disconnect the power from electrical sources **before** working on the equipment.

Make all connections with the power turned off. Do not make or remove connections when the power is turned on.

Before using the product ensure that all cables are correctly connected and that the power cables are not damaged.

Ensure that the product is secured correctly in all situations. Do not place the equipment on to a trolley, table desk or other platform that is not stable; to avoid the product from falling over.

Ensure that the power supply to be used is correct for the equipment and the correct input voltage for your region. If unsure, contact your local power supply company. If the power supply or cables are broken, do not use them. Contact a qualified electrical services technician or your retailer.

Do not use any equipment that appears damaged or incomplete. If you detect damage, contact your dealer immediately.

Do not allow connectors to be exposed to long-term water immersion.

Do not allow electrical contacts or leads to be exposed to dust, humidity or moisture. Do not allow electrical contacts or cable-ends to become wet.

The equipment must be firmly secured using appropriate fixings and fastening as appropriate to the mounting surface that the unit is being affixed to.

Disclaimer

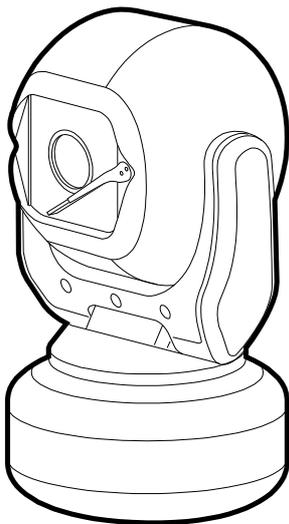
The manufacturer reserves the right to change specifications and procedures integral to the operation, control and programming of this product at any time and without prior notice.

Introduction

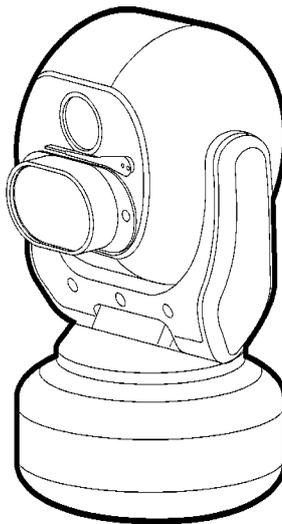
These are no ordinary cameras. Thanks to careful development and rigorous testing, these cameras are equipped to survive in harsh environments and provide enhanced features. Two main models are available to offer optical only or optical plus thermal imaging abilities.

The numerous benefits of both camera types include:

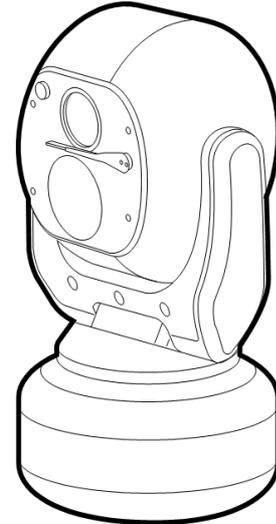
- Flat toughened glass window – scratch resistant, maintenance-free and optically correct,
- Integral Wiper – to clean away rain and deposits caused by wind, sea spray and road traffic,
- Hard anodised aluminium castings, with powder coating to prevent corrosion in the harshest of marine environments,
- M4 marine grade stainless steel case fastenings,
- Optional washer system interface,
- Optional infra-red LED illumination system,
- Multiple native control protocols: RS485 and Co-axial (FSK),



Optical only.



Optical plus LED lamp.



Optical plus Thermal imaging

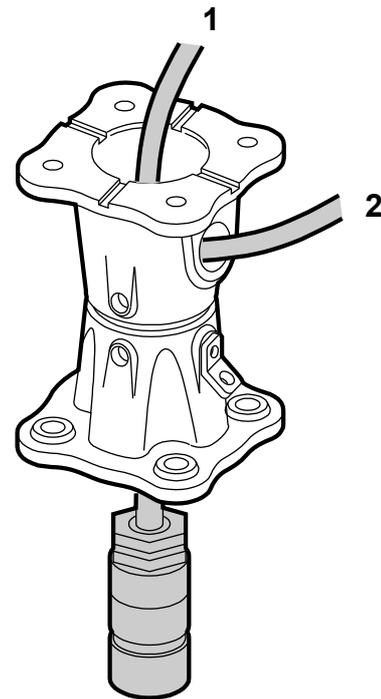
Installation

Camera mounting

The camera is designed to be mounted upright or hanging. By nature of its rugged construction the camera is a heavy item and thus requires a substantial and stable mounting. The camera can be supplied with an optional mount adaptor to allow fixing to industry standard brackets, towers or columns.

The mount adaptor has two cable entry points:

- (1) A pass-through hole in the end plate to allow the composite cable to enter unseen from a column, tube or bracket type mounting, plus
- (2) A conduit thread (M25) in the side wall to permit composite cable entry via a flexible conduit attached to the adaptor.

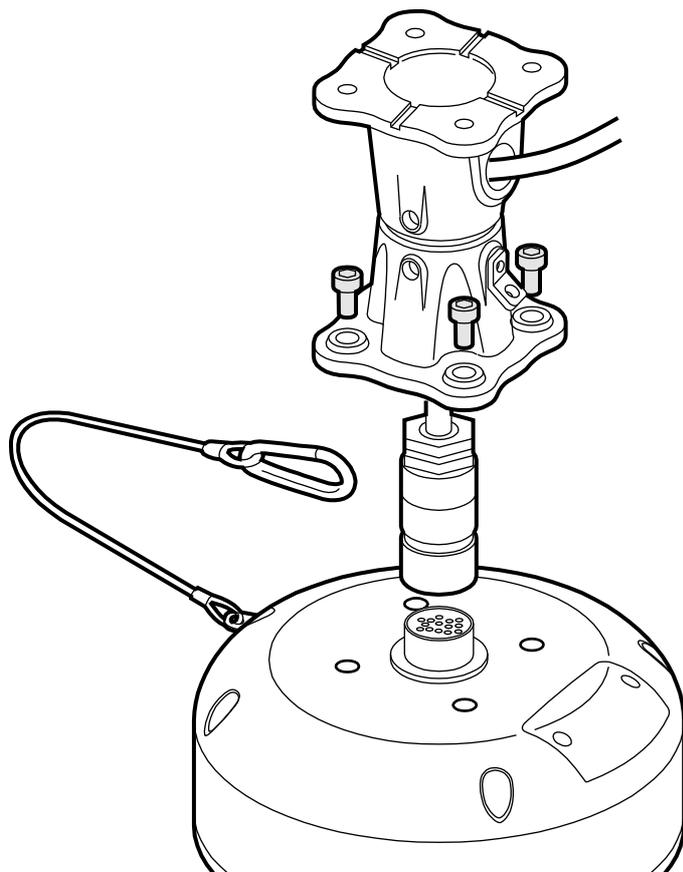


To mount the camera

- 1 Thread the composite cable through the appropriate entry hole into the mount adaptor before it is fixed to the column or bracket.
- 2 To avoid placing strain upon the electrical connections, arrange the composite cable such that approximately 120mm of the weatherproof connector protrudes out from the smaller plate that will connect to the camera.
- 3 Secure the mount adaptor to the supporting structure using M8 bolts, washers and Nyloc® type nuts where appropriate.

IMPORTANT: Always use sprung washers and Nyloc® nuts in order to significantly reduce the possibility of bolts working loose due to vibration during operation.

Cable entry path must be watertight to avoid ingress and build-up of water around the connector.



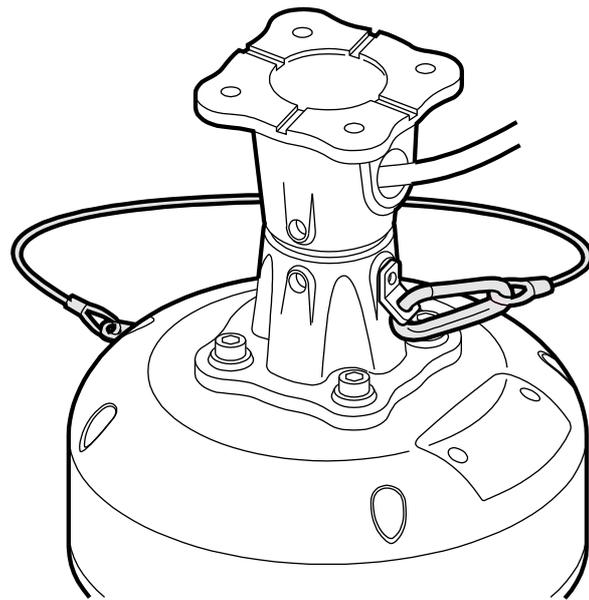
4 Remove the four hex head bolts from the camera base and push the connector back into the mount adaptor.

5 Offer the camera to the mount adaptor and clip the lanyard onto the lug of the mount adaptor. In addition to being an essential safety device during operation, the lanyard is useful as a temporary hanging point when the camera is being mounted in the inverted position.

6 Carefully note the orientation notches of cable connector and camera socket. Align the notches accordingly and insert the connector onto the socket of the camera base. Twist the connector's retaining ring until it fully locks into place.

7 Align the four holes of the mount adaptors with those on the camera base and insert the four hex head bolts.

8 Tighten the bolts to approximately 1.6Kg/m. Do not over tighten bolts.



IMPORTANT: Ensure that the lanyard is connected to the appropriate lug on the mount adaptor when the camera mounting is complete. Also, double check all bolts for correct positioning and appropriate tightness.

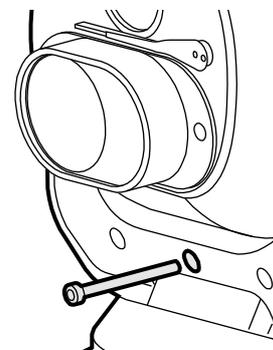
To tilt the camera head

When mounting upright, the camera head can be cantered to allow it a field of view clear of the pan motor section of the housing.

1 Unscrew and withdraw the M5 socket head retaining bolt from the middle of the front of the yoke.

2 Carefully tip the yoke assembly forward.

3 Re-insert the bolt from the rear of the yoke and tighten to approximately 0.97Kg/m. **Do not over tighten the bolt.**

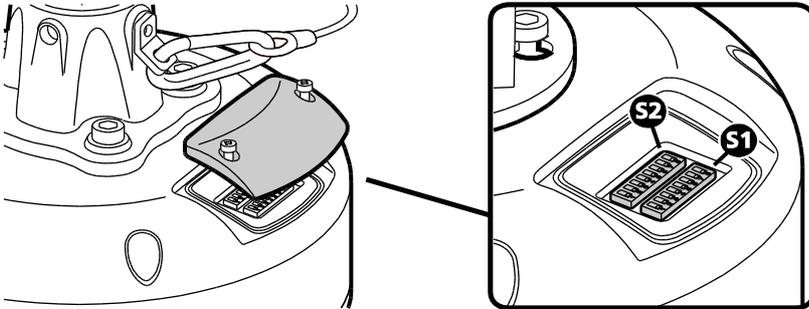


The camer's Setup > Configuration menu should be adjusted to indicate that the head has been cantered, in order to ensure appropriate operation.

Configuration switches

These switches set the address and protocol of the camera. If all switches are off then the address is taken from the camera's internal memory and can be set using the menu. The default for the internal memory is 1.

Settings related to telemetry control can be configured using two banks of switches (S1 and S2) located behind a removable panel within the hub of the camera. To access the switches, remove the two retaining screws and remove the panel:



Device ID address (block S1, switches 1 to 8)

The 8 switches are the binary code of the address so switch 1-1 is equal to 1, switch 1-2 to 2, switch 1-3 to 4, etc. (powers of 2).

For instance, an address of 65 would be 1+64, requiring switches 1 and 7 to be on.

Some sample values are in the table below.

Camera address	S1-1 (1)	S1-2 (2)	S1-3 (4)	S1-4 (8)	S1-5 (16)	S1-6 (32)	S1-7 (64)	S1-8 (128)
0	Off	Off	Off	Off	Off	Off	Off	Off
1	On	Off	Off	Off	Off	Off	Off	Off
2	Off	On	Off	Off	Off	Off	Off	Off
3	On	On	Off	Off	Off	Off	Off	Off
4	Off	Off	On	Off	Off	Off	Off	Off
5	On	Off	On	Off	Off	Off	Off	Off
-								
100	Off	Off	On	Off	Off	On	On	Off
101	On	Off	On	Off	Off	On	On	Off
-								
255	On	On	On	On	On	On	On	On

If all switches are off then the address is taken from the internal memory and can be set using the communications menu. The default setting for the internal memory is device No.1.

The boot screen will indicate which address is selected and whether it was set by the switches or by the firmware. [S] - Selected on Switches or [F] - Selected in Firmware/Menu.

Protocol (block S2, switches 1 to 5)

Sets the protocol and communication parameters.

The protocols that can be selected using the protocol switches are:

Protocol	S2-1	S2-2	S2-3	S2-4	S2-5	#
Set using camera menu	Off	Off	Off	Off	Off	0
FV300, 9600, 8, Odd, 1	On	Off	On	On	Off	13
Pelco-D, 9600, 8, N, 1	Off	On	On	Off	On	22
Pelco-D, 2400, 8, N, 1	Off	On	Off	On	Off	10
Pelco-P, 9600, 8, N, 1	On	Off	Off	Off	Off	1
Pelco-P, 2400, 8, N, 1	Off	On	Off	Off	Off	2
Philips, 9600, 8, N, 1	On	On	Off	Off	Off	3
Philips, 2400, 8, N, 1	Off	Off	On	Off	Off	4
Vicon, 4800, 8, N, 1	On	Off	On	Off	On	21
Vicon, 9600, 8, N, 1	Off	Off	On	Off	On	20
OCP, 9600, 8, N, 1	On	On	On	On	On	31

Unsupported switch settings default the protocol to that which is set in the camera menu.

If all protocol switches are off then the protocol is taken from the internal memory and can be set using the menu. The default setting for the internal memory is Pelco-D, 9600 baud, 8 data bits, no parity and 1 stop bit.

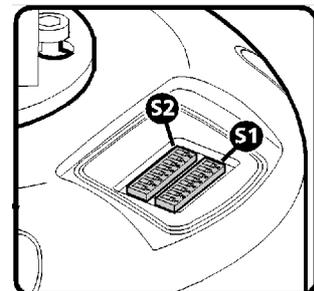
The boot screen will indicate which protocol is selected and whether it was set by the switches or by the firmware. [S] Selected on Switches or [F] Selected in Firmware/menu.

Termination (block S2, switch 8)

Sets the termination for the RS485 interface. For protocols which use RS485 control signals via the twisted pair link within the camera's composite cable, you can determine whether or not the camera is terminated. The camera should be terminated whenever it is situated as either the only device connected to a controller or the last device within a chain of similar devices.

Termination	S2-8
Termination off	Off
Termination on	On

Note: Switches 6 and 7 on block S2 are unused and should remain off.



Oculus camera menus

Apart from the basic hardware communication settings covered in the Installation section, all configuration of the camera takes place using the internal menu. There are two versions:

- A quick menu that contains only the most commonly used settings, and
- A comprehensive main menu where all settings are accessible.

The two menus are accessed in slightly different ways.

The quick menu

To access the quick menu you need to issue a preset **198** command to the camera. When using SSUtility, click the **Goto** button, enter **198** in the popup dialog and click **OK**.

Note: The Quick menu does not require a password to gain access to key camera settings (and also provides a backdoor entrance to the main Setup menu. Therefore you are recommended to disable the quick menu (Hide quick menu option) once all configuration settings have been made.

The menu contains only the most common settings that may need to be changed during installation or service:

```
Silent Sentinel Oculus
Version n.nnn (xxxx) xx
SN: FFFFFFFF POST: 000000000

>Communications
Orientation          Upright
Disable OSD         Off
Hide quick menu     Off
Setup menu
Reboot camera
Exit menu
```

Default values shown.

- **>Communications** accesses the settings for the camera ID, the protocol and the communications parameters such as baud rate and parity. See the section 'Communications' within the Main menu chapter for details about each option.
- **Orientation** – sets the installation orientation for the camera. Cameras may be mounted in a hanging, upright or upright tilted position. Setting the correct orientation will allow the camera to set the horizon level. This setting requires a re-boot of the camera to take effect.
- **Disable OSD** – disables display of optional OSD telemetry messages such as the camera text, the compass data and the date and time. Individual items can be controlled from the Telemetry menu accessed through the full setup menu. This option does not hide messages that are shown in response to user actions.
- **Hide quick menu** – disables the access to this menu from preset 198. If this menu is enabled then it is possible for a user to access the full setup menu without recourse to the password. If this menu is hidden it can be re-enabled from the Miscellaneous menu via the full setup menu.
- **Setup menu** – provides access to the full setup menu where all of the camera options can be controlled. No password is required. See the section 'Setup' within the Main menu chapter for details about each option.
- **Reboot camera** – reboots the camera. This is required by some configuration changes and is also useful if you suspect there may be a camera error as the Power-On Self Test (POST) is run.

The main menu

The main menu provides access to all camera configuration features and contains numerous sub-menus within it:

```
Silent Sentinel Oculus
Version n.nnn (xxxx) xx
SN: FFFFFFFF POST: 00000000

>Goto preset
>Run tour
>Setup (protected)
Reboot camera
Exit menu
```

- **Goto preset** – shows a list of the pr esets. Selecting a preset will apply it. Presets that are defined are marked with an '@' symbol.
- **Run tour** – shows a list of the tours and mimic tours. Selecting a tour will run it. The Menu preset (default Preset-2) to exit a running tour.
- **Setup (protected)** – accesses the setup and configuration menu (see below for details). The setup password will be requested before access to the menu is allowed. The default setting for the password is **AAAAAA** (6 characters).
- **Reboot camera** – resets the camera as though it has just been powered on. This is required by some configuration changes and is also useful if you suspect there may be a camera error as the POST is run.

Setup

```
Silent Sentinel Oculus
Version n.nnn (xxxx) xx
SN: FFFFFFFF POST: 00000000

>Camera 1 options
>Camera 2 options
Communications
Configuration
Miscellaneous
Presets
Privacy patches
Privacy zones
Telemetry
Tours
Video settings
Exit menu
```

The setup menu is protected by a password. The default setting for the password is **AAAAAA** (6 characters) – this can be changed within the Miscellaneous section.

Select the highlighted character to add it to the password then select OK to submit it and open the SETUP menu.

The SETUP menu contains sub-menus that allow the settings of the camera operating parameters, preset positions, tours, telemetry (on-screen display items) and privacy zones.

- **Camera 1 options** – provides access to the module specific options for the optical camera.
- **Camera 2 options** – shown only if a thermal imaging or second video module is fitted.

The **Communications**, **Configuration**, **Miscellaneous**, **Presets** and **Privacy patches** options are covered in the sections below.

Camera 1 options

Silent Sentinel Oculus	
Version n.nnn (xxxx) xx	
SN: FFFFFFFF POST: 000000000	
Picture mode	COL/MON
AE ModeD	Auto
Shutter	1/1
Iris	F1.6
Backlight comp	Off
WDR mode	Off
White balance	Auto
ICR threshold	28
Digital zoom	On
Mirror Image	Off
Flip Image	On
Module number	1097
Reset (on reboot)	
Exit menu	

Default values shown.

Picture mode – selects if camera shows a colour or monochrome (IR/low light sensitive) image. COL/MON will automatically select colour or monochrome dependent on image brightness .

AE mode – determines if camera image settings are set automatically or biased to manually selected values (set within this menu).

Shutter – If AE Mode is Manual or Shutter the shutter speed is held to this value.

Iris – If AE Mode is Manual or Iris the Iris position is held to this value.

Backlight comp. – enables the Backlight compensation facility of the camera.

WDR mode – enables the Wide Dynamic range function of the camera.

White balance – sets if the picture colour balance is Automatic of biased to a selected ambient lighting type..

ICR threshold – sets the image/scene brightness level that the camera will automatically change between colour and monochrome pictures, (if picture mode is COL/MON) .

Digital zoom – enables digital enlargement of the image. This is operated as an extension of the optical zoom function – beyond the maximum optical telephoto.

Mirror image – enables horizontal reversing of the picture – does not re-orientate PT operation.

Flip Image. – enables vertical reversing of the picture – does not re-orientate PT operation.

Module number – displays the video module's identity code – for factory/servicing use..

Reset (on reboot) – will cause the video module to be reset when the Oculus is next rebooted. Factory and servicing use only.

Camera 2 options

Silent Sentinel Oculus	
Version n.nnn (xxxx) xx	
SN: FFFFFFFF POST: 00000000	
Colour polarity	White
Slave zoom	On
Exit menu	

Thermal Imaging Camera Variant.

Colour polarity – allows the thermal image grey-scale to be toggled between White-is-hot and Black-is-hot.

Zoom slave – enables the thermal imager digital enlargement to operate in unison with the Optical camera's zoom movements. When this is set to Off the Thermal zoom is controlled using the CAM 2 mode, (Ref. Appendix 1; Extended Function Preset 9).

Communications

Silent Sentinel Oculus	
Version n.nnn (xxxx) xx	
SN: FFFFFFFF POST: 00000000	
Camera number	1
Protocol	PelcoD
Auto-protocol	On
BBV-coax enable	On
Baud rate	9600
Data-bits	8-bits
Parity	None
Stop-bits	1
Exit menu	

Default values shown.

- **Camera number** sets the protocol address for the camera – this is ignored if the protocol address is set using the switches (switches SW1-1 through SW1-8). Default is Camera 1 – selected in firmware menu.
- **Protocol** sets the RS485 protocol – this is ignored if the protocol is set using the switches (switches SW2-1 through SW2-5). The protocol will not be changed until the camera is rebooted.
- **Auto-protocol** selects whether the camera will automatically select a protocol to match the incoming control commands. The camera can detect OCP/CBC, Pelco-D, Pelco-P and Vicon formats (Not applicable if protocol is set by switches).
- **BBV-coax enable** selects whether the BBV decoder is active. The BBV control protocol is presently not supported. This function should be disabled if not being used.
- **Baud rate, Data-bits, Parity** and **Stop-bits** are used to configure the RS485 serial port and should be adjusted only if necessary.

Default settings are Pelco-D, 9600. 8 bit data, No parity, 1 Stop-bit.

Configuration

Silent Sentinel Oculus	
Version n.nnn (xxxx) xx	
SN: FFFFFFFF POST: 000000000	
Orientation	Upright
Positioning speed	4
Low voltage PSU	Off
Pan limit left	0
Pan limit right	0
Tilt limit down	0
Tilt limit up	0
Set North	Store
Wash duration	15
Wiper duration	7
Heater function	Off
Heater threshold	0
Ext-pos functions	2
Exit menu	

Default values shown.

- **Orientation** sets the installation orientation for the camera. Cameras may be mounted in a Hanging, Upright or upright-Tilted position. Setting the correct orientation will allow the camera to set the horizon level. This setting requires a re-boot of the camera to take effect.
- **Positioning speed** controls the rate the camera moves under operator control and when moving to preset positions. The slowest rate is 1 which is equivalent to 22.5 degrees per second maximum and the fastest rate is 8 which is equivalent to 180 degrees per second maximum. This is the peak rate. Slower rates are available through the zoom dependant speed control and via the settings for the preset points.
- **Low voltage PSU** allows for use of 12VDC power from battery systems, adjusting power consumption accordingly. (IR lamp models limited to 13VDC in this mode).
- **Pan limit left and right** set limits for the camera travel. The figures are in degrees and the zero point of the camera needs to be included in the sweep of the travel (although it can be the left or right limit). When these values are both set to 0 (zero) then the camera travel is unlimited.
- **Tilt limit down** and **tilt limit up** can be used to limit the tilt travel range. The zero point needs to be included in the range; although it can be the top or bottom limit.
- **Set North** sets the current camera pan position to be north. This affects the display of the compass bearing and axis readouts on the telemetry display.
- **Wash duration** sets the period for the wash cycle. This is in seconds.
- **Wiper duration** sets the period for the wiper cycle. This is in seconds.
- **Heater function** allows you to declare whether the optional temperature control device within the camera housing is a heater or a cooler. If 'Heater' is chosen, the Heater threshold setting below will represent a negative Centigrade value, whereas if the 'Cooler' setting is selected, the Heater threshold will represent a positive Centigrade value.
- **Heater threshold** determines the temperature (0 to 40 Centigrade) at which the optional temperature control device within the camera housing should be activated. The value will either represent a positive or negative Centigrade value depending on whether the temperature control device is a heater (negative) or a cooler (positive).
- **Ext-pos functions** sets the base preset number for first of the extended functions that are available as presets – Menu preset override.

Miscellaneous

```
Silent Sentinel Oculus
Version n.nnn (xxxx) xx
SN: FFFFFFFF POST: 000000000

>Date and time
Debug messages      Off
>Diagnostics
Hide quick menu     Off
Idle func (tour)    0
Idle timeout        5
IR Lamp Auto-On     Auto
POST                On
Return to Off-pos   On
Z-dependent speed   On
Focus speed         60
Change password
Exit menu
```

Default values shown.

- **>Date and time** sets the date and time for the cameras real-time-clock display.
- **Debug messages** controls the display of additional information on the OSD which can help to diagnose camera problems.
- **>Diagnostics** displays hardware diagnostic information for factory and servicing purposes.
- **Hide quick menu** allows you to prevent access to the Quick Menu using Preset 198.
- **IR Lamp Auto-on**, when set to Auto, allows an optionally fitted LED illuminator to be switched on automatically in low light conditions. When set to On or Off the lamp is in a permanent state.
- **Idle func (tour)** selects which tour will be initiated if the idle time-out period elapses. Selecting Zero disables the function.
- **Idle timeout** sets the wait period from the last operator input until the Idle function is automatically started.
- **POST** controls whether a power-on-self-test is performed at start-up. If turned off, some functions will no longer be available.
- **Return to Off-pos** controls the camera behaviour after a power-loss. If this option is on then the camera will automatically return to the previous position.
- **Z-dependent speed** enables the pan and tilt speed to be dynamically adjusted to match the zoom setting of the lens – the camera will pan and tilt slower when zoomed in and faster when zoomed out.
- **Focus speed** sets the nominal rate of focus movement, (applies to specific lens versions only).
- **Change password** allows you to alter the six digit password used to protect the setup menu.

Presets

Each preset allows you to define a camera pan and tilt position as well as a zoom setting. You can define up to 128 presets which can then be either accessed using a Goto command, selected from the Goto Preset menu or can be linked together within one or more camera tours.

When you choose the Presets option within the menu, the list of presets will be shown. The '@' suffix indicates that the corresponding preset has position data stored within it.

```
Edit preset...
001@ 002@ 003@ 004@ 005@
006@ 007@ 008@ 009@ 010@
011@ 012@ 013@ 014@ 015@
016@ 017@ 018@ 019@ 020@
021@ 022@ 023@ 024@ 025@
026@ 027@ 028@ 029@ 030@
031@ 032@ 033@ 034@ 035@
036@ 037@ 038@ 039@ 040@
041@ 042@ 043@ 044@ 045@
```

Highlight the required preset number and select it to view the available options:

```
Silent Sentinel Oculus
Version n.nnn (xxxx) xx
SN: FFFFFFFF POST: 00000000

Preset          1
Store preset
Erase preset
Exit menu
```

- **Store preset** saves the current camera pan/tilt/zoom position in the selected preset.
- **Erase preset** clears the location stored within the selected preset.

Privacy patches

Privacy patches can be used to obscure objects from view. Eight privacy patches can be configured and the state for each patch is shown as either 'Enabled', 'Disab' or 'Empty'.

```
Silent Sentinel Oculus
Version n.nnn (xxxx) xx
SN: FFFFFFFF POST: 00000000

Patch 1           Enabled
Patch 2           Enabled
Patch 3           Enabled
Patch 4           Enabled
Patch 5           Enabled
Patch 6           Enabled
Patch 7           Empty
```

- **Enabled** patches are both defined and active - the camera will not be able to view them.
- **Disabled** patches are defined but are currently inactive.
- **Empty** patches are undefined.

When a patch is selected, you will see a status screen for that patch, as shown below.

```
Silent Sentinel Oculus
Version n.nnn (xxxx) xx
SN: FFFFFFFF POST: 00000000

Patch Status      Empty
Set at current pos
Recall position
Clear patch
Exit menu
```

- **Patch Status** is used to select whether the patch is active or not.
- **Set at current pos** configures the patch to obscure the current view. The view is calculated from the current pan, tilt and zoom positions and it will be obscured immediately so you can verify if the privacy patch setting is correct.
- **Recall position** moves the camera to the position used to define the privacy patch.
- **Clear patch** disables the patch and clears the data from the camera memory.

To create a new privacy patch

- 1 Place the camera into the required pan/tilt/zoom position such that the area to be obscured lies well within the borders of the video screen.
- 2 Enter the **Setup** menu, choose **Privacy patches** and then the required **Patch** number.
- 3 Choose the **Set at current pos** option.

Telemetry

```
Silent Sentinel Oculus
Version n.nnn (xxxx) xx
SN: FFFFFFFF POST: 000000000
```

```
Disable OSD           Off
Camera text          Text1
Camera text X        2
Camera text Y        1
>Cardinal text
Cardinal text X      12
Cardinal text Y      0
Compass display      TILT
Compass text X       15
Compass text Y       0
Datetime display     TIME
Datetime X           2
Datetime Y           0
Prepos text          Prepos
Prepos text X        15
Prepos text Y        0
Environmental X      24
Environmental Y      14
Exit menu
```

This section deals with all of the various messages that can be overlaid onto the video display in order to assist the operator.

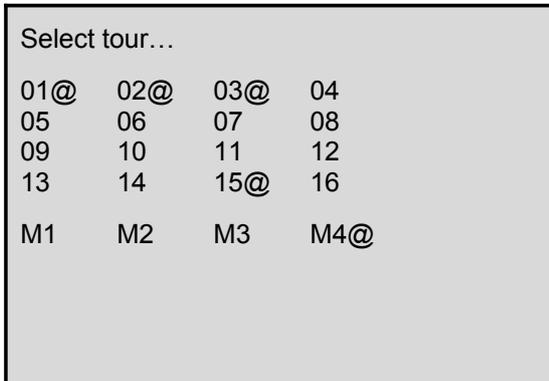
Default values shown.

- **Disable OSD** - disables display of fixed OSD telemetry messages such as the camera text and date/time. This option does not hide messages that are shown in response to user actions.
- **Camera text** - This allows the camera-name text to be edited.
- **Camera text X** and **Camera text Y** - These control the position of the camera-name text on the screen. Setting either the X or Y value to 0 will hide the camera text.
- **>Cardinal text** - This opens a submenu for editing the cardinal position texts. There are 8 text strings associated with the North, North-East, East, South-East, South, South-West, West and North-West compass sectors.
- **Cardinal text X** and **Cardinal text Y** - These control the position of the cardinal text labels on the screen. Setting either the X or Y value to 0 will hide the text.
- **Compass display** - The compass display shows the camera's Pan and Tilt co-ordinate values. These can be displayed as either 'PAN', 'TILT' or 'BOTH'.
- **Compass text X** and **Compass text Y** - These control the position of the co-ordinate text on the screen. Setting either the X or Y value to 0 will hide the display.
- **Datetime display** - The time can be displayed as 'TIME' or 'DATE'. The 'DATE' display includes the time.
- **Datetime text X** and **Datetime text Y** - These control the position of the time text on the screen. Setting either the X or Y value to 0 will hide the text.
- **Prepos text** - This allows the text label shown beside the Preset position numbers to be edited, (default: Prepos *n*).
- **Prepos text X** and **Prepos text Y** - These control the position of the Preset position text on the screen. Setting either the X or Y value to 0 will hide the text.
- **Environmental X** and **Environmental Y** - These control the position of the internal (PCB) Temperature/Humidity information on the screen. Setting either the X or Y value to 0 will hide the text.

Tours

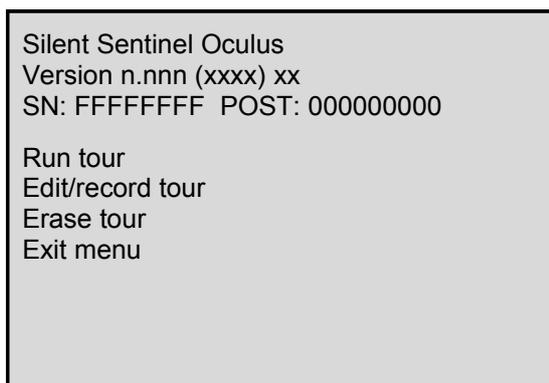
A Position tour is a collection of one or more preset positions that the camera will be instructed to visit in sequential order. Up to 16 tours can be defined and each can contain up to 60 preset positions, placed in any order.

A Mimic tour (4 available) stores a record of the camera's pattern of movements for a period of up to 5 minutes each.



Position Tours

The '@' suffix indicates that the corresponding tour has been programmed. When you select a tour number, you will see an options screen for that tour:



- **Run tour** – runs the current tour. Menu preset (default Preset-2) to exit a running tour.
- **Edit/record tour** – allows a tour to be edited in a sub-menu - see below.
- **Erase tour** – removes the tour from the camera memory.

To edit / create a Position tour

- 1 Enter the **Setup** menu, choose **Tours** and then the required Position Tour number (1 - 16).
- 2 Choose the **Edit/record tour** option.
- 3 Choose the **Add** option to display the list of available positions ('@' indicates a preset position is programmed).
- 4 Highlight and select the required preset. See below for details about adjusting speed and dwell time.
- 5 Repeat steps 3 and 4 until all of the required presets have been added to the tour.

For each preset within the tour you can adjust the positioning speed and dwell time. To edit a specific step in the tour, highlight the preset number and select it to see the menu below:

```

Silent Sentinel Oculus
Version n.nnn (xxxx) xx
SN: FFFFFFFF POST: 000000000

Select preset          1
Speed                  Med
Dwell (secs)          3
Remove preset
Exit menu

```

Mimic Tours

To create/replace a Mimic tour.

- 1 Position the camera to where you wish to start the tour.
- 2 Enter the **Setup** menu, choose **Tours** and then the required Mimic Tour number (M1 – M4).
- 3 Choose the **Edit/record tour** option. The tour will start to record immediately, displaying a count-down of the available time.
- 4 Pan / Tilt / Zoom the camera as required for the tour pattern.
- 5 To end and store the recording, select Goto Preset 1 command.
- 6 To cancel the recording select the Menu function/ Goto Preset 2 command.

Video settings

This section deals with the default video feed at power on and allows the level and gain to be adjusted for the video outputs.

```

Silent Sentinel Oculus
Version n.nnn (xxxx) xx
SN: FFFFFFFF POST: 000000000

Video feed 0          0
Video level 0         36
Video gain 0          128
Video level 1         36
Video gain 1          128
Alt video switch      Off
Exit menu

```

- **Video feed 0** selects the default video feed at power on (0 - optical or 1 – thermal (if applicable)).
- **Video level 0** allows you to adjust the signal amplitude for the optical camera feed, (Default 36).
- **Video gain 0** allows you to adjust the signal gain for the optical camera feed, (Default 128).
- **Video level 1** allows you to adjust the signal amplitude for the thermal camera feed, (Default 36).
- **Video gain 1** allows you to adjust the signal gain for the thermal camera feed, (Default 128).

Appendices

Appendix 1 – Extended functions

Twelve extended functions are supported. The base preset number can be set in the menu (the default is 2) for use with controllers of limited preset numbering all functions have fixed location preset value that can be used to initiate them

The currently defined functions are:

Preset #	Extended Functions	
1	Fixed 1	Select when in menus and preset 1 otherwise.
2 (Default)		Menu
Base Value	Fixed 199	
3 (Default)		Colour/Mono Toggle
Base+1	Fixed 200	
4 (Default)		Wiper function
Base+2	Fixed 201	(Do not wipe when window is dry.)
5 (Default)		Wash function
Base+3	Fixed 202	
6 (Default)		Shutter speed toggle
Base+4	Fixed 203	
7 (Default)		Video feed toggle between output channel 1 & 2.
Base+5	Fixed 204	
8 (Default)		Thermal Polarity - Black hot / White hot toggle [Thermal models]
Base+6	Fixed 205	White Light toggle - On / Off [White light models]
9 (Default)		CAM2 selection - entering this mode will display CAM2 on the OSD and the zoom and focus functions will be isolated to the 2nd camera or lens (where fitted). The command can be used to toggle between modes or normal operation will resume after 30 seconds.
Base+7	Fixed 206	
10 (Default)		BLC – Toggle Back-light-compensation (BLC)
Base+8	Fixed 207	
11 (Default)		WDR - Toggle wide-dynamic-range (WDR)
Base+9	Fixed 208	
12 (Default)		Auto-focus (for keyboard without AF key)
Base+10	Fixed 209	
13 (Default)		Auto-Iris (for keyboards without AI key)
Base+11	Fixed 210	
	Fixed 197	Re-enters the boot screen to show protocol and switch settings
	Fixed 198	Quick installation menu

Appendix 2 – Power and signal connections

Camera power requirements

The camera can accept a range of input voltages, as follows:

- Input voltages 14-36VDC or 14-26VAC.
(12VDC Low-power mode available on non-IR models.)
- Power 45W (peak) – [60W IR models.]

These figures do not include the requirements of any optional heating or cooling devices added within the camera, nor optional infra-red lighting systems.

Power supply units are available for both mains feeds and low voltage DC automotive power sources.

Multiway Connector / Cable allocations.

A	Power +	Red		
B	Power -	Black		
F	Video 1 Ground	Coax 1 Screen		
G	Video 1 Signal	Coax 1 Core		
H	Video 2 Ground	Coax 2 Screen		
K	Date +	UTP Green (or Yellow)		
L	Data -	UTP Blue		
M	Earth	Green/Yellow		
ll		Grey – Drain wire	Common to pin M Earth	
N	Aux Pos	Orange	Wash pump relay closing contact	
P	Aux Neg	White	Wash pump relay closing contact	
S	Video 2 Signal	Coax 2 Core	Only on twin-camera models	
T				
U				
V				

Standard 10m cable: CA-RCM10D-10

Appendix 3 – Fault Finding – Checks to undertake.

Camera does not power-up.

Power correctly connected. Check for cable faults, breaks or poor connections. Fuses may be missing. Blown fuses/breakers should be checked for other causes.

Voltage at camera. Voltage loss in cables or supply droop under load may result in too low a voltage at the camera input.

Measurements at the PSU may not show voltage at camera. Measurements should be taken as close to camera as possible both open circuit and under load.

Insufficient available current. PSU may not be providing enough current at a given voltage or PSU may be tripping if the demanded current exceeds its limits.

Camera movement is incorrect

Orientation. Is camera orientation correctly set in menus to match the real-world orientation of camera? [SETUP > CONFIGURATION > ORIENTATION]

Ensure unit rebooted after orientation changed. The PTZ unit must be rebooted (or power Off/On) for this change to take effect.

Controller reverse. Some controllers have the facility to reverse the PT telemetry sent when controls are moved (e.g. Send LEFT commands when the joystick is moved to right).

Limited or no Pan-Tilt.

Check if Pan or Tilt limits have been set. Non-Zero values apply movement restrictions which, if small, can appear as no-movement.

[SETUP > CONFIGURATION > PAN LIMIT LEFT (PAN LIMIT RIGHT, TILT LIMIT DOWN, TILT LIMIT UP)]

Jumpy movement, irregular PT.

Is Position Speed too high. Check Position speed value – Default is 4. The position speed should be reduced if the unit is inclined, the location is exposed to wind, the mounting is not absolutely level or other site conditions could cause resistance to movements. [SETUP > CONFIGURATION > POSITIONING SPEED]

Mounted level and stable Confirm if mounting position is level and stable. Angled fittings and movement (sway) may cause motor skipping or prevent the Pan motion.

Is telemetry from controller steady Check that the controller (Joystick, Matrix, VMS) is sending steady, not irregular, commands.

Intermittent command transmission. Dropped messages may result in irregular or apparently random movement and loss of control depending on the protocols in use. Problems in telemetry transmission (cables, fibre, Ethernet, radio) can cause intermittent messages to reach the camera and result in incorrect operation.

Picture up side down / (Pan tilt reversed).

Check if picture flip is set. If only the picture is the wrong way (movement is correct) the video image may have been flipped.

[SETUP > CAMERA OPTION > FLIP IMAGE] (Normal value is ON).

Check Orientation is correct

No Picture

Check physical connections. Broken or incorrectly configured video cables, damaged plugs and faulty transmission equipment will prevent pictures being displayed.

Is correct coax output in use. The standard cable has two coax conductors, labelled 1 and 2. No picture is present on Coax No.2 for single camera models, this is used only on two-camera types. Only Coax No.1 should be connected on single camera models.

Thermal camera switching

Thermal imager models can switch images between the two coax outputs, both showing at all times. If one output is missing a picture, check if switching-over the cameras results in a change. The camera switching is operated by preset override Call Preset No.204 (or No.7 if overrides in default state – Refer Appendix 1).

No telemetry/control

Correct protocol set at both ends. Check that the controller and PTZ unit are both set to use the same command protocol. This is shown on the start-up screen when unit is repowered. (e.g. Protocol: PelcoD 9600 8N1 f)

Check correct Address/ID. Confirm camera is at expected address value. This is shown on the start-up screen when unit is repowered. (e.g. Cam: 001s)

Check Correct Baud Check that the controller and PTZ unit are both set to use the same Baud rate. This is shown on the start-up screen when unit is repowered. (e.g. 9600)

Ensure unit rebooted after Communications changed. The PTZ unit must be rebooted (or power Off/On) for these changes to take effect.

Wire orientation (Data-A/B) The RS-485 telemetry wires are the Blue/Yellow or Blue/Green (depending on cable version) twisted-pair conductors in the multicore cable.

Check and test that the correct wires are to the correct controller terminals. (Not all equipment manufacturers use the same A/B or +/- designation).

No Preset- Override Functions

Does Preset 2 recall to a position. Record a position in to Preset Position 2. Does Recall Preset Position 2 moving to a location when instigated? This indicates preset overrides have been moved to a non-default value.(Refer Appendix 1). Try Recall Preset Position 199 (if controller allows this) .

Check new value in controller range. If the preset functions have been moved to new positions, check that the new values are within the range of the controller.

Try all functions Menu, Wipe, Mono functions should all be called in case the symptom is specific to particular function(s) If the controller allows use the fixed range preset calls (199-210) (refer operator guide)

Wiper not stopping.

Check for latched controller. Check controller does not send repeated wiper instructions. Some systems latch-on their wiper controls resulting in repeated calls to the camera to start wiper actions.

2) **Confirm cycle ends.** Confirm that WIPE caption appears and clears from screen. This indicates that the cycle intends to stop and is not receiving repeated instructions.

Wiper not starting.

Check wiper preset. If wiper action is being commanded with a Preset Override call – check that the Menu Preset is as expected. Wiper action is two values higher (e.g. Menu=2, Wiper=4).

Check command is received. Confirm that the instruction to start the wiper action has been received and processed. The WIPE caption will be displayed as the software starts the wiper's sequence. If no caption shows then the action has not been received and recognised.

Wiper boss depressed. Check that the wiper arm has not been pushed inwards in to the camera face-plate. If pressed inwards the boss can cause the mechanism to jam, stopping the wiper action and resulting in motor failure. Pull the wiper arm assembly forwards (hook finger under arm beside boss) to ease it away from the faceplate.

=====
=====

Appendix 4 – Further information

WEEE statement

This equipment contains electrical or electronic components that must be recycled properly to comply with Directive 2002/96/EC of the European Union regarding the disposal of waste electrical and electronic equipment (WEEE). Contact your local supplier for procedures for recycling this equipment.



Changes to control protocols

Keyboard manufacturers may update software or protocols in their keyboards without prior warning. This may change the way in which the camera behaves in relation to keyboard operation. We can accept no responsibility for such changes in keyboard manufacturer software and/or protocols.



Safety

Installation of this product should only be carried out by a competent and suitably qualified engineer. If you are in doubt, you should refer the installation to a suitably qualified person.

Class.

This is a Class A product intended for use in non-residential/non-domestic environments.

If used in residential/domestic situations it may cause radio interference which will require the user to take adequate remedial measures.

Appendix 5 – General Specifications

Mechanical

Construction	Die-Cast hard anodised, powder coated aluminium, with A4 stainless fittings.	
IP Rating	IP67	
Turning Diameter Height Height with adaptor	Normal	Offset
	220mm / 8.66"	370mm / 14.57"
	370mm / 14.57"	340mm / 13.86"
Weight (with adaptor)	500mm / 19.68" 470mm / 18.50"	
Rotation	Pan	Tilt
	Continuous (360°)	+90° to -30° Upright (-68° Inclined).
	>180°/sec [excl. ramping]	>180°/sec [excl. ramping]
Presets	127 + WASH preset (repeatability 0.05°)	
Tours	16 Position Tours – 60 steps each.	
	4 Mimic (Learn) Tours – 5 minutes each.	
Privacy Zones	Max. 8, on-screen simultaneously.	
Telemetry	RS485 half duplex – multiple protocols.	
Connection	10m composite cable with 19 way IP67 Neptune connector, (Accessory).	
Power	14-36VDC or 14-26VAC 55W peak power, 12VDC support available on some models)	(Low-
Operational Temp	-20 to +50°C (-4 to 122°F) [Ambient, Dry] [-40°C (-40°F) with additional heating option]	

Appendix 6 – Camera Modules

Optical modules

Optical Zoom	10x	18x	28x	36x
Image Sensor	Sony 1/3"	Sony 1/4"	Sony 1/4"	Sony 1/4"
Sensor Type	SuperHAD CCD	ExView CCD	ExView CCD	ExView CCD
Digital Zoom	12x	12x	12x	12x
Resolution (Def.)	530 TVL	530TVL	550TVL	530TVL
Horizontal Angle of View	52° (W) – 5.4° (T)	48° (W) – 2.8° (T)	55.8° (W) – 2.1° (W)	57.8° (W) – 1.78° (T)
Lens focal lengths (Wide – Tele.)	f= 5.1 – 51mm	f= 4.1 – 73.8mm	f= 3.5 – 98mm	f= 3.4 – 122.4mm
F-Stop range	(F1.8 to F2.1)	(F1.4 to F3.0)	(F1.35 to F3.7)	(F1.6 to F4.5)
Min working Distance (Wide – Tele.)	15mm – 800mm	290mm – 800mm	320mm – 1500mm	320mm – 1500mm
Minimum Scene Illumination	0.25 lux (50IRE)	0.7 lux (50IRE)	0.65 lux (50IRE)	1.4 lux (50IRE)
(Mono/IR Cut-filter Removed)	0.0004lux (ICR, 1/4sec)	0.01lux (ICR, 1/4sec)	0.005lux (ICR, 1/4sec)	0.01lux (ICR, 1/4sec)

Specifications common to all optical camera modules.

S/N ratio	More than 50dB
Electronic shutter	1/1 to 1/10000 sec.
White balance	Auto, Indoor, Outdoor.
AE control	Auto, Manual, Shutter bias.
Backlight compensation	Enabled

Thermal imaging modules

Detector	VOx Microbolometer (uncooled)
Spectral response	8 to 12 micrometers
Format	320 x 240 pixels
Pixel pitch	17um
Sensitivity	< 50mK (NE dT)
Refresh rate	25Hz (frames) (9Hz option)
Image Gain / Level	Automatic by DSP
Digital Zoom	4x
Display Polarity	White-is-hot / Black-is-hot

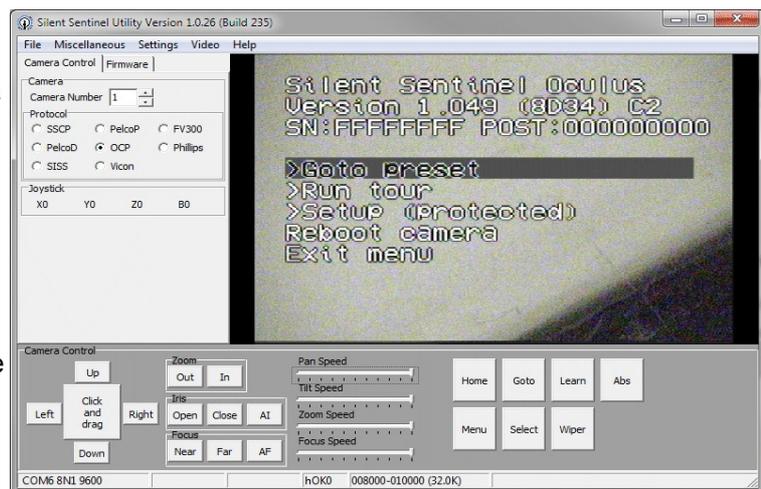
Athermalised Lenses – Fixed focus.

HFOV	9 °	16 °	40 °
	(35mm)	(19mm)	(7.5mm)
Detection Range – Man.	1600m	900m	370m
Detection Range – Vehicle	3500m	2000m	900m

Appendix 7 – Using SSUtility

SSUtility is a camera control application supplied by Silent Sentinel which allows you to operate multiple cameras that use a variety of control protocols. This section is intended to provide a brief overview to the operation of SSUtility. For details of installation and configuration, please see the *SSUtility Quick Guide*.

In operation, SSUtility provides a logical layout with the camera video window in the top right section, the camera comms/protocol settings in the top left corner and the control options at the base of the window:



Once you have chosen the correct COM port settings (within the Settings menu), *Camera Number* and Protocol, you should have control of the camera.

The items in the lower section control the camera in two main ways:

- The Up/Down/Left/Right and Zoom buttons usually control camera movement and zoom, however,
- When the camera menu is invoked, the Up/Down/Left/Right and Zoom buttons control the menu navigation and selection.

Using SSUtility to access and control the main camera menu

- 1 Click the Menu button in the lower section.
- 2 Control the on screen highlight bar as follows:
 - Use Up / Down to move the bar to the required menu item.
 - Use Zoom In to select a highlighted item.
 - Use Zoom Out (or Menu) to exit from an item or (at the top menu level), exit the menu.
 - Use Right and Left to increase or decrease a highlighted value, respectively.

Using SSUtility to access the Quick Menu

Oculus cameras include a quick menu that allows you to configure the most commonly used items without gaining access to all of the items within the Setup section of the main menu. *Note: The quick menu can be disabled within the main menu, which will deny access using this method.*

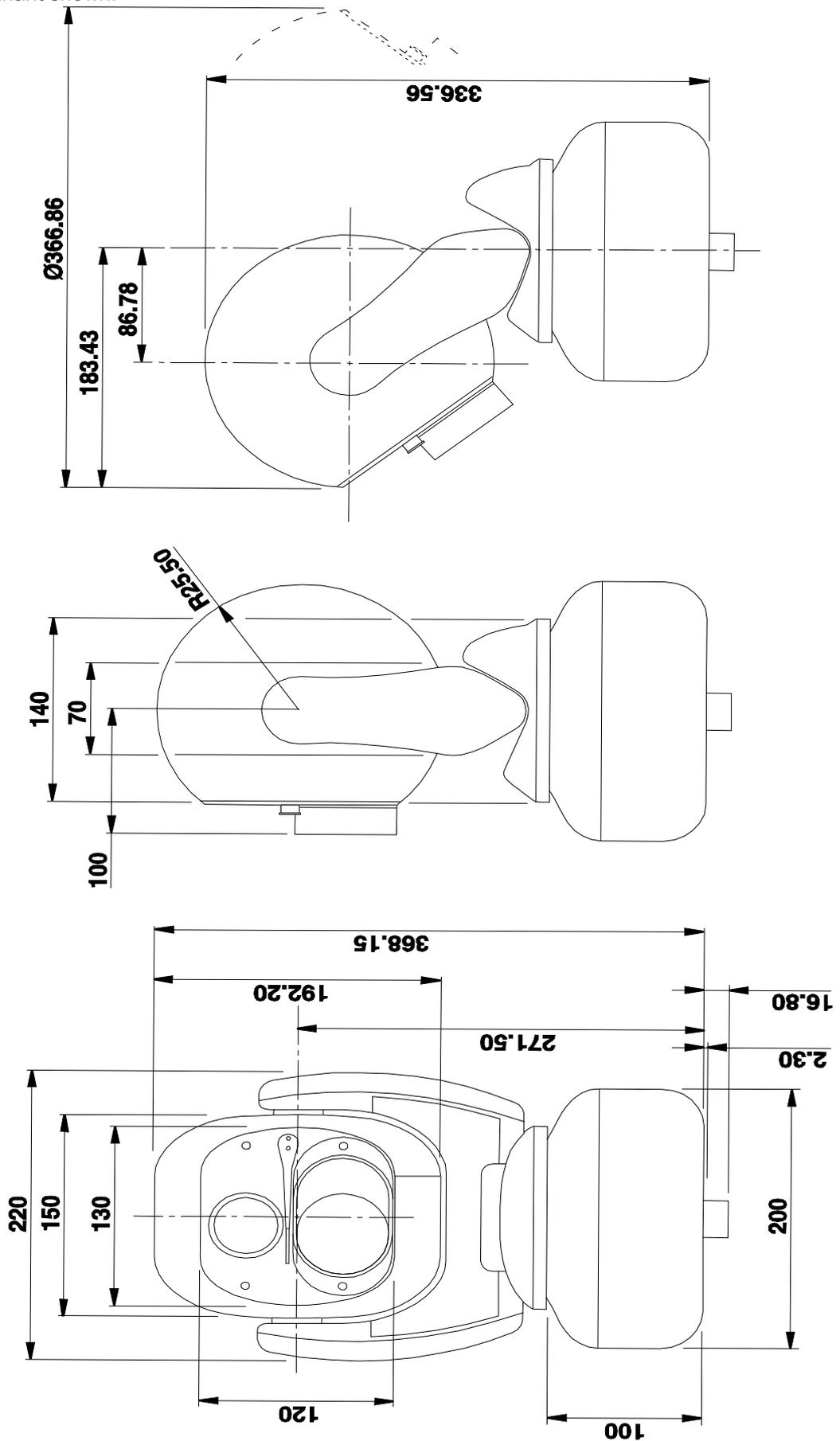
- 1 Click the **Goto** button.
- 2 Enter **198** in the popup dialog and click **OK**.

To create a new preset using SSUtility

- 1 Place the camera into the required pan/tilt/zoom position.
- 2 Click the **Learn** button.
- 3 Enter the number of the preset (between 1 and 128) to be used to store this position and click **OK**.

Appendix 8 – Camera unit dimensions

Oculus IR variant shown.



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