Silent Sentinel Utility 2.0
User Guide

Version: V2.0
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SILENT SENTINEL
VISION & MOTION CONTROL

Version Control

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1.0	Matthew Short	Matthew Short	04/01/2021
2.0	Kristian Dimitrov		14/01/2021

Contents

Introduction

SSUtility2.0 is an Administration tool provided by Silent Sentinel that allows users to quickly connect to the Silent Sentinel camera system and:

1 View the Videos Feeds

   a) Including snapshot and recording features

2 Control the Camera Platform and lenses

3 Easily control functions on the attached cameras

4 Quick access to OSD menu for camera platform administration.

Prerequisites

In order to run SSUtility2.0 a copy of VLC 32-bit must be installed on the host machine. This can be readily downloaded online and is also accessible via the Silent Sentinel help desk.

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Software Overview

SSUtility2.0 has two primary operating modes:

1 Dual Mode

    a) This is the standard mode of operation and offering a window comprising of Video and Control components.

2 Lite Mode

    a) This is an alternative mode of operation that primarily offers Control only, however, if required, video windows can be spawned.

    b) This is primarily to be used should the videos already be displayed through some third-party application.

Software Overview – Dual Mode

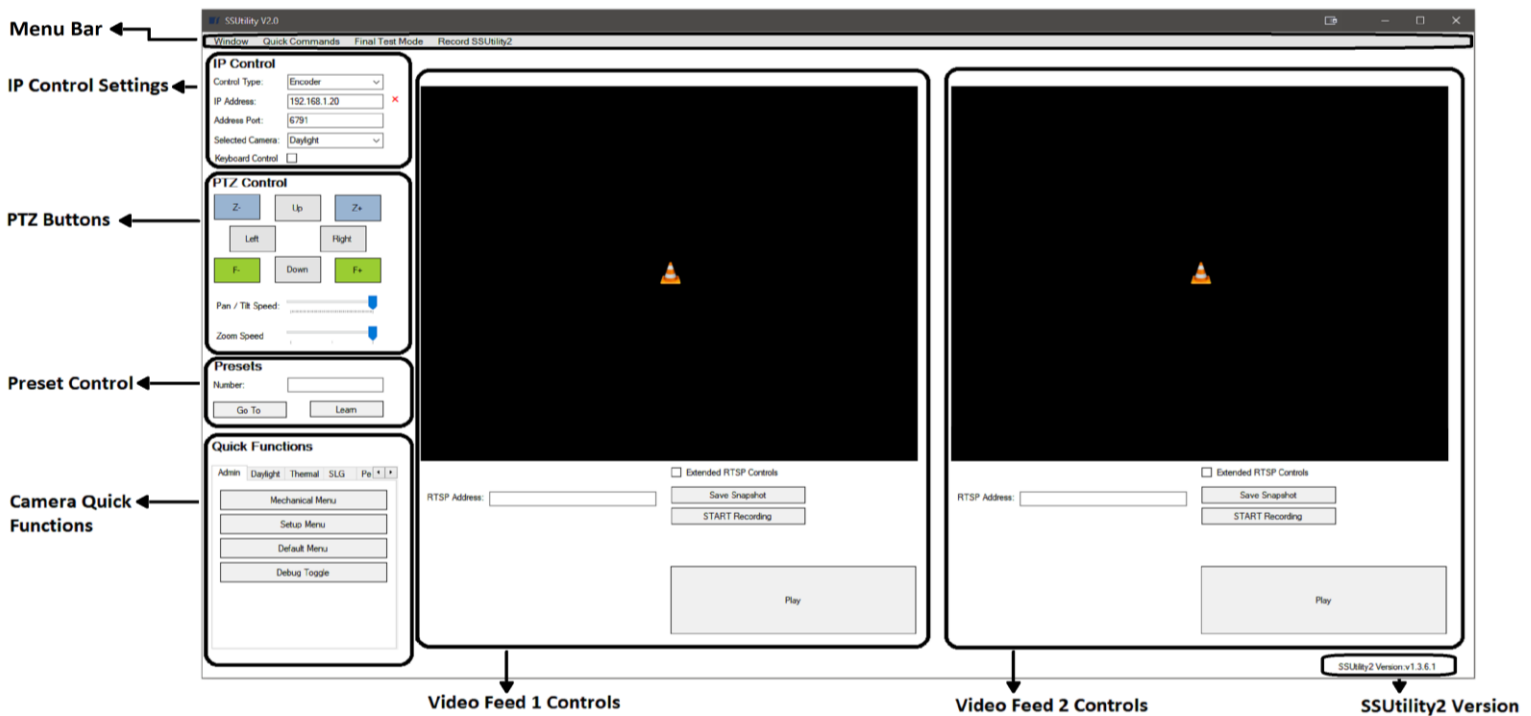Figure 1 below details the interface of the Dual Mode Layout.

Figure 1 – Dual Mode Layout

Software Overview – Lite Mode

Figure 2 below details the layout of Lite Mode.
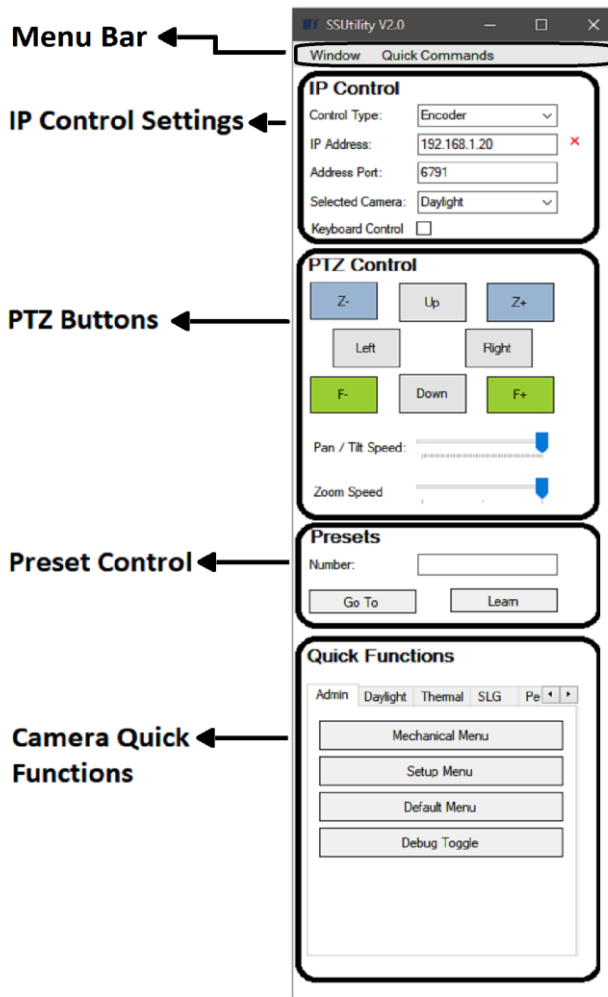

Figure 2 – Lite Mode Layout
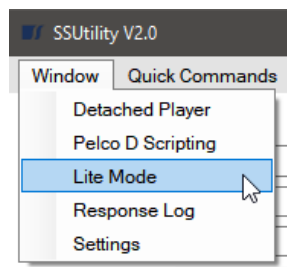
Figure 3 – Entering Lite Mode

Toggling between Lite/Dual Mode Instructions

Step	Comment
1.	Select Window on the Menu Bar.
2.	Select the Lite Mode/Dual Mode option.

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Camera Stream

The below section covers the connection to the camera, viewing of the video feeds and the control of the PTZ platform.

Camera Stream – Player Controls
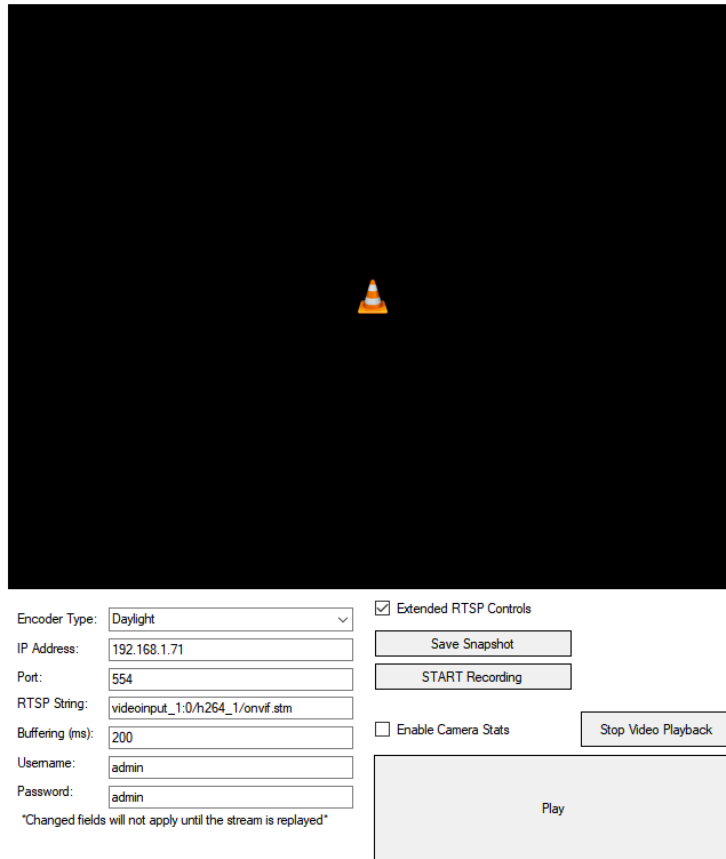
Figure 4 – Video Feed (with hidden controls shown)

Control Details

Control	Description
VLC Video Player	Plays video/audio and comes with its own in-built controls. The user can play an RTSP stream by entering the values in the required fields below.
Play	On selection, the software will attempt to connect to and display the entered RTSP stream.
Stop Video Playback	i. This control is hidden until a stream is being played. ii. Selecting this button will make it hide itself and disconnect from the camera stream.
Save Snapshot	This button saves a timestamped snapshot of the video player. The file is saved within a subfolder, named after the IP of the currently playing camera, in the following directory: i. *\Documents\SSUtility\Saved\[IP OF CAMERA]\Snapshots*

	ii.	If there is no camera connected the file is saved, named after the media type and the quantity of files within the folder, under the following directory:
		a. *\Documents\SSUtility\Saved*
	iii.	The file will be saved in the jpg format.
STAR/STOP Recording	i.	This button begins/ends a recording of the video feed. The resulting clip is saved within a subfolder, named after the IP of the currently playing camera, in the following directory:
		a. *\Documents\SSUtility\Saved\[IP OF CAMERA]\Recordings*
	ii.	If there is no camera connected the file is saved, named after the media type and the quantity of files within the folder, under the following directory:
		a. *\Documents\SSUtility\Saved*
	iii.	The file will be saved in the avi format.
Enable Camera Stats	i.	This option will be hidden until the program detects that the following requirements are met:
		a. A camera is connected to via the Control Panel.
		b. An RTSP stream is running on the same panel.
		c. The connected camera responds to a probing command.
		i. If it fails this check but should pass, try replaying the stream using the Play button.
	ii.	Enabling this option shows the Info Panel above the current player. This component is detailed later in the document.
Extended RTSP Controls	Enables the extended RTSP control dialogues detailed later in the next sub-sections.	

Camera Stream – Simple RTSP Mode

Figure 5 – Simple RTSP Video Interface

Control Details

Field	Description
RTSP Address	This is the full RTSP stream for the camera in the format: i. *RTSP://username:password@IPADDRESS:554/STREAMURL*

Enabling a Video Feed Instructions

Step	Comment
1.	Enter the full RTSP stream URL for the camera you are trying to connect to in the following format: i. *RTSP://username:password@IPADDRESS:554/STREAMURL*
2.	Select Play.
3.	If the RTSP stream URL was correct, the video feed will connect to the camera and begin to play video (and audio if it is supported).

Camera Stream – Extended RTSP Mode

Figure 6 – Extended RTSP Video Interface

Control Details

Field	Description
Encoder Type	This provides a drop-down that will auto-populate a few of the fields based on default values as per the cameras/encoders provided by Silent Sentinel.
IP Address	The IP address of the camera that the program will try to connect to.
Port	The camera's RTSP stream port that the program will use try and connect to the feed with (Default is 554).
RTSP String	The RTSP string of the camera RTSP URL that the program will attempt to use to connect to the feed.
Buffering (ms)	The duration of the video buffer that SSUtility2.0 should maintain. Increase this number if you are seeing video connection issues/breakups; Reduce this to have the program display the feed closer to real-time.
Username	The username of camera. This refers to the video stream authentication.
Password	The password of the camera. This refers to the video stream authentication.

Enabling a Video Feed Instructions

Step	Comment
1.	Select the appropriate drop down from 'Encoder Type'.
2.	Enter the IP Address of the Encoder.
3.	Change the RTSP Stream Port if required.
4.	Enter the RTSP String (if not provided by the default Encoder type drop-down).
5.	Change the buffering time as required.
6.	Enter the stream username (if not provided by the default Encoder type drop-down).
7.	Enter the stream password (if not provided by the default Encoder type drop-down).
8.	Select the 'Play' button.

Detached Video Players

SSUtility2.0 is built in a modular manner so video players used in the main window of Dual Mode are the same as Detached Video Players. These windows can be opened manually, repeatedly as to view multiple streams at once.
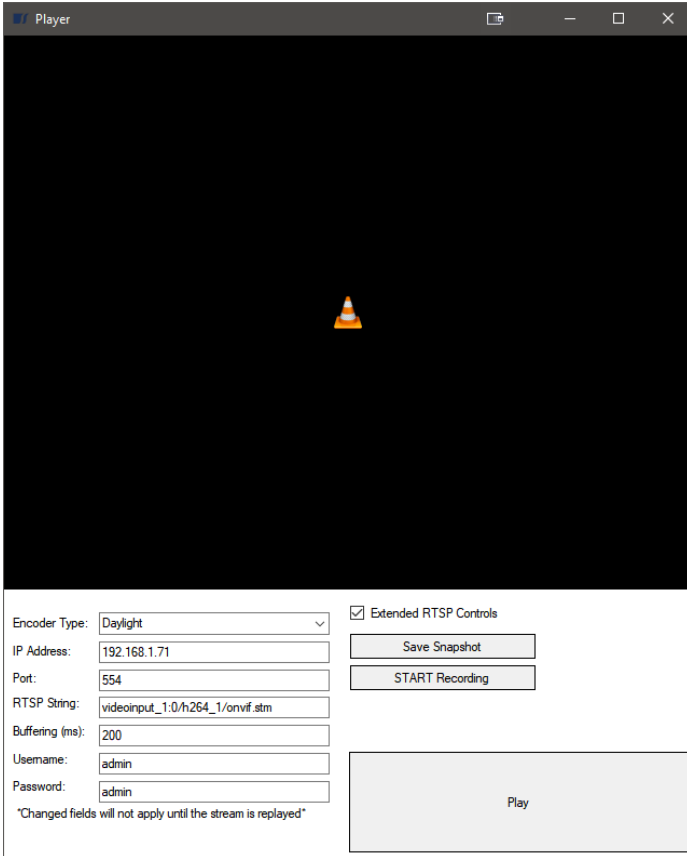
Figure 7 – Detached Video Player Layout (Simple RTSP)
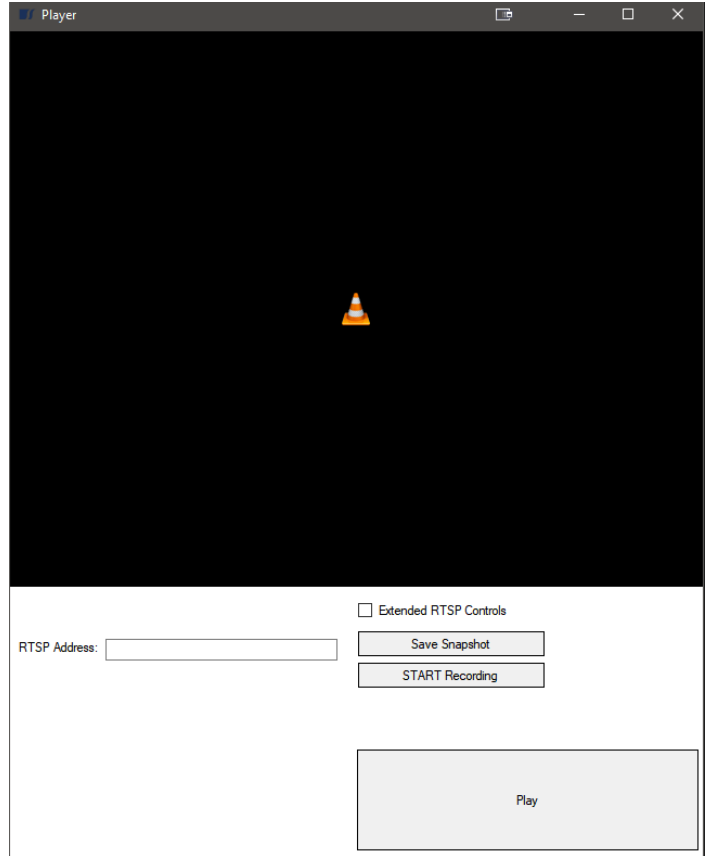
Figure 8 – Detached Video Player Layout (Extended RTSP)
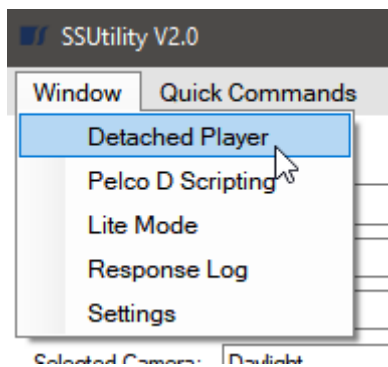
Figure 9 – Opening a Detached Player

Opening Detached Player Instructions

Step	Comment
1.	Select Window on the Menu Bar.
2.	Select Detached Player option.

Connection Control

This section of the program will allow the user to connect and control the camera. It is referred to in this document as the Control Panel. Other windows or components of the program will often have their default settings depending on this section's fields.

Figure 10 – Control Panel Layout

As the Control Panel contains several other components, the following sections will split up any details of the controls and their descriptions.

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Connection Control – IP Control

IP Control

Control Type:	Encoder ⌄
IP Address:	192.168.1.71 ✕
Address Port:	6791
Selected Camera:	Daylight ⌄
Keyboard Control	☐

Figure 11 – IP Control Layout

Control Details

Control	Description

Control Type	Auto-populates the TCP Port that Pelco D commands are sent to. This control comes with two default values:
	
	    i. Encoder
	          a. This will default all commands to the TCP Port on the Video Encoder housed within the camera.
	    ii. MOXA
	          a. This will default all commands to the TCP Port on the MOXA NPort housed within the camera.
	          b. NOTE: not all cameras will have a MOXA installed.

IP Address	i The IP address that Pelco D commands are sent to. ii Either Video Encoder or the MOXA.

Address Port	The default port to send the Pelco D commands to. This field is automatically adjusted when changing the control type; these values by default are:
	   i. Video Encoder Default Port: 6791
	   ii. MOXA NPort Default Port: 4001

Selected Camera	i. This primarily relates to the selected lens under control.
	   ii. Where Pelco D is concerned, this drop-down dictates whether commands are sent to Pelco D address 1 or 2 (1 = daylight module, 2 = thermal module).
	   iii. Custom addresses are supported (e.g., the user can type 3, 4, 5, etc. in this field manually).

Keyboard Control	When selected the software maps certain keyboard keys to PTZ controls. This is especially useful for navigating the OSD menus. Control mapping:
	   i. Arrow Keys
	         a. Up = Tilt up
	         b. Down = Tilt down
	         c. Left = Pan left
	         d. Right = Pan right
	   ii. Other Keys
	         a. Return = Zoom In
	         b. ESC = Zoom Out

Connection Instructions

Step	Comment
1.	Select the appropriate drop-down setting from 'Control Type'.
2.	Enter the IP Address of the Video Encoder or MOXA. *NOTE: Upon exit of the text box or pressing the return key, the software will attempt to verify the connection to the Video Encoder/MOXA by sending a 'Ping' request. If this is successful a green check mark is displayed. If this is unsuccessful a red cross is displayed.*
3.	Change the port if required by modifying the 'Address Port' field.
4.	Select the required camera to control with the 'Selected Camera' drop-down. The user can also manually enter an address (1,2,3,4...etc.) if necessary, within the same field.
5.	Verify control by use of the PTZ buttons.

Connection Control – PTZ Control
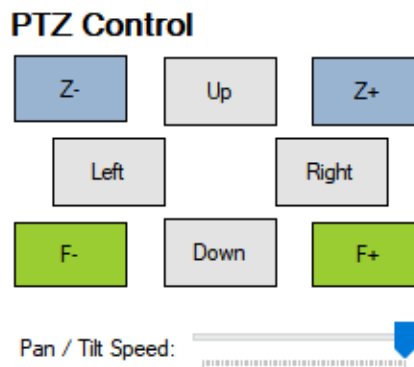
Figure 12 – PTZ Control Section

Control Details

PTZ Control	Corresponding Command
Up	Tilt Up
Down	Tilt Down
Left	Pan Left
Right	Pan Right
Z+	Zoom In
Z-	Zoom Out
F+	Focus Far
F-	Focus Near
Pan / Tilt Speed	Scale PT speed from 0 – 100%

Connection Control – Presets

Figure 13 – Presets Section

Control Details

Control	Description
Number	Preset number in question.
Go To	Send a preset call command to the PT for the preset position within the 'Number' text box.
Learn	Send a preset save command to the PT for the preset position within the 'Number' text box.

Preset Go To Instructions

Step	Comment
1.	Enter the preset value in the 'Number' text box
2.	Select the 'Go To' button

Preset Learn To Instructions

Step	Comment
1.	Enter the preset value in the 'Number' text box
2.	Select the 'Learn' button

Quick Functions

Most of the functionality within the Daylight and Thermal camera modules is carried out by triggering pre-configured preset commands. Within SSUtility2.0, these presets have been mapped to user friendly buttons to aid with the quick control/deployment/testing of this functionality.

The quick functions are housed within the tab control as seen in figure 14 below.
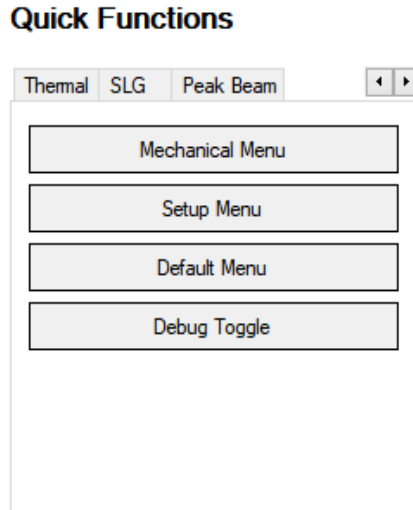
Figure 14 – Quick Functions

Please note, not all the listed functions are available on all cameras/lenses.

The quick function categories are listed as follows:

Control Details

Menu Entry	Description
Admin	Quick entry into the various OSD menus.
Daylight	Daylight lens camera functions
Thermal	Thermal lens camera functions
SLG	Signal Light Gun functions.
Peak Beam	Peak Beam functions

The following section will detail all the presets included within the program, detailing their functions.

Quick Functions – Admin

Figure 15 – Admin Quick Functions

Control Details

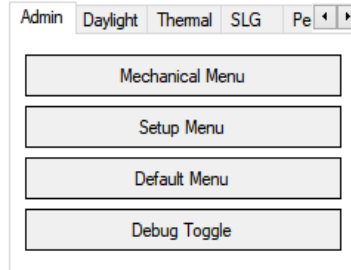| Button	Preset Description
Mechanical Menu	Quick entry to the Mechanical Menu allows for hardware configuration of PT and attached Cameras/Lenses.
Setup Menu	Quick entry to the Setup Menu allows for functional configuration of PT and attached Cameras/Lenses.
Default Menu	Quick entry to the camera's base menu.
Debug Toggle	Toggle to enable/disable debug menu which shows overall diagnostic information.

Quick Functions – Daylight

Figure 16 – Daylight Quick Functions

Control Details

Button	Preset Description
Auto Focus	Triggers a one-shot autofocus on the daylight lens.
Colour / Mono	Switches the daylight camera between colour and mono mode
Wiper	Triggers the wiper attached to the daylight camera
WDR On / Off	Toggles Wide Dynamic Range on/off.
Toggle Stabilisation	Toggles stabilisation on/off
Extender	Toggles the x2 extender on/off

Quick Functions – Thermal

Figure 17 – Thermal Quick Functions

Control Details

Button	Preset Description
Auto Focus	Triggers a one-shot autofocus on the thermal lens.
Do NUC	Triggers a one-shot NUC.
White/Black Hot	Toggles between black and white-hot colour palettes.
ICE/CLAHE	Toggles ICE/CLAHE On/Off.
Stabilisation	Toggles Stabilisation On/Off.
Cycle Palettes	Cycles between colours palettes. *NOTE: These need to be configured in the Setup Menu for the Thermal Camera.*
Digital Zoom In	Stepped Digital Zoom In.
Digital Zoom Out	Stepped Digital Zoom Out.
ICE/CLAHE +	Increase ICE/CLAHE Strength.
ICE/CLAHE -	Decrease ICE/CLAHE Strength.
Brightness -	Decrease Brightness by '1'.
Brightness +	Increase Brightness by '1'.
Contrast -	Decrease Contrast by '1'.
Contrast +	Increase Contrast by '1'.

Quick Functions – Signal Light Gun

Quick Functions

Admin	Daylight	Thermal	SLG	Pe ◄ ►

Steady Green On	Steady Red On
Flashing Green	Flashing Red On
Flashing Red / Green	
Flashing White On	
All Lights Off	

Figure 18 – Signal Light Gun Quick Functions

Control Details

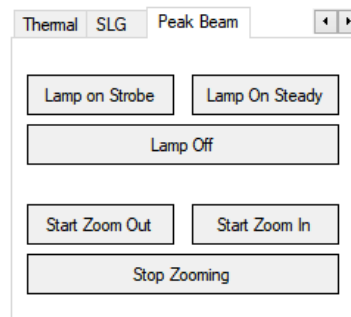| Button	Preset Description
Steady Green On	As described.
Steady Red On	As described.
Flashing Green On	As described.
Flashing Red On	As described.
Flashing Red / Green	As described.
Flashing White On	As described.
All lights off	As described.

Quick Functions – Peak Beam

Quick Functions

Thermal	SLG	Peak Beam	◄ ►

Lamp on Strobe	Lamp On Steady
Lamp Off	
Start Zoom Out	Start Zoom In
Stop Zooming	

Figure 19 – Peak Beam Quick Functions

Control Details

Button	Preset Description
Lamp On Strobe	As described.
Lamp On Steady	As described.
Lamp Off	As described.
Start Zoom Out	As described.
Start Zoom In	As described.
Stop Zooming	As described.

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Menu Bar

SSUtility2.0 has other functionality that can be accessed through the menu bar at the top of the program.

Figure 20 –Menu Bar Component

Control Details

Button	Description

Window	Select this to show a submenu with options to open the components detailed below:
	   i. Detached player
	   ii. Pelco D scripting
	   iii. Lite/Dual mode
	   iv. Response log
	   v. Settings Menu

Quick Commands	i. Select this to show a submenu with preset commands to be quickly used.
	   a. Set pan = 0
	   b. Quick pan
	   c. Quick tilt
	ii. Some options may open a window asking for input, these will send their command, with the value entered in the textbox, to the camera after the 'Done' button is pressed.
	   a. Figure 27 below details the layout of the 'Quick pan' command.
	
	Figure 21 – Quick pan Quick Command Window

Final Test Mode	This option will be hidden to most users.

Record SSUtility2	i. Starts recording the entire SSUtility2 window.
	   a. To stop recording, reselect the same option which will be named 'Stop Recording' if the program is currently recording.
	ii. The file will be saved in the following format, in the following location:
	   a. ScreenRecording[Number of files in directory].avi
	   b. *Documents\SSUtility\Saved\SSUtility2*

Settings Menu

The settings menu can be used to make changes to the way the SSUtility2.0 operates.

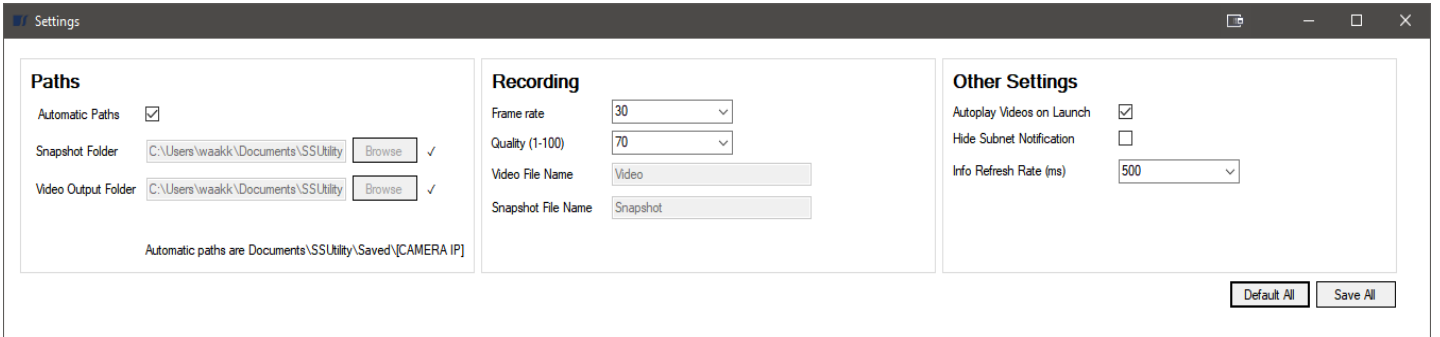*NOTE: These all settings here relate to the SSUtility2.0 software only, not the camera platform.*
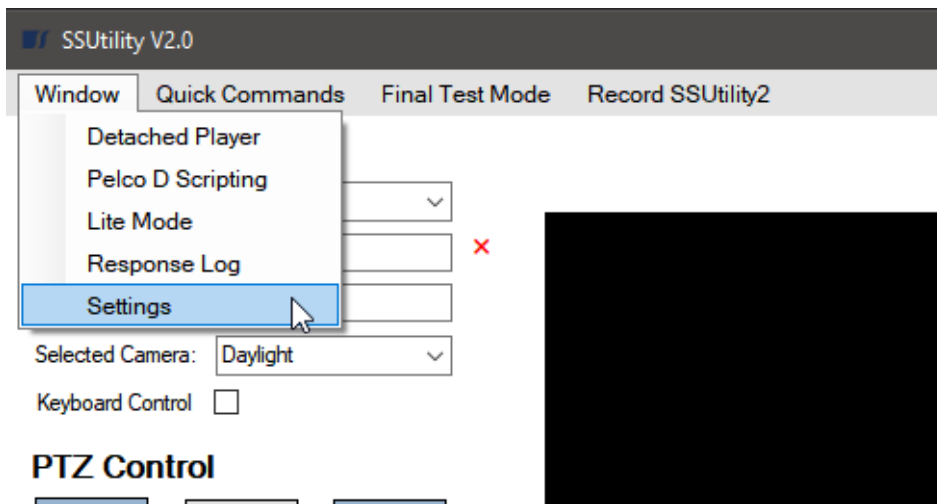

Figure 22 – Settings Menu

Figure 23 – Opening the Settings Menu

Opening the Settings Window Instructions

Step	Comment
1.	Select 'Window' from the Menu Bar.
2.	Select the 'Settings' option.

Settings – Paths

Figure 24 – Path Settings Section

Control Details

Setting	Description	Default Value
Automatic Paths	i. Generates the save paths based on the current camera's IP address. ii. Automatically generates file names based on time/date taken.	On
Snapshot Folder	i. Is disabled if Automatic Paths is enabled. ii. Manually enter a directory to save outputted snapshots to. iii. Will use the Snapshot File Name field and the number of files within the target directory as a file name.	*Documents\SSUtility\Saved*
Video Output Folder	i. Is disabled if Automatic Paths is enabled ii. Manually enter a directory to save outputted video files to. iii. Will use the Video File Name field and the number of files within the target directory as a file name.	*Documents\SSUtility\Saved*

Settings – Recording

Figure 25 – Recording Settings Section

Control Details

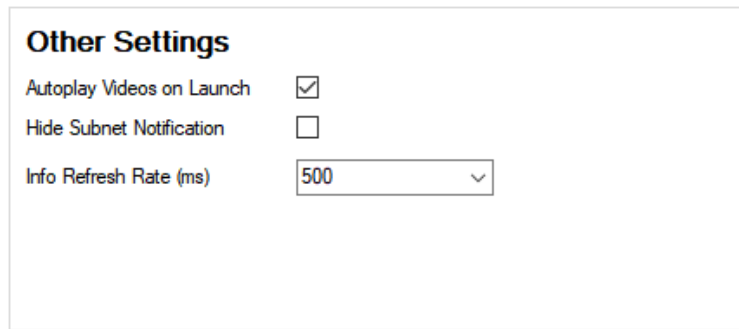| Setting	Description	Default Value
Frame rate	i. Frame rate that any recording will be taken in and outputted with. ii. Lower this value for better performance, increase it for smoother looking videos. iii. There are several recommended preset values available to select using the drop-down but manual values are possible too.	30
Quality (1-100)	i. The image quality that the video file will be outputted with (in percentage of minimum to maximum image quality). ii. Lower this value for better performance, increase it for clearer looking videos. iii. There are several recommended preset values available to select using the drop-down but manual values are possible too.	70
Video File Name	i. Is disabled if Automatic Paths is enabled. ii. File name of any outputted videos. iii. Will have the number of files within the directory appended to it to avoid overwriting.	Video
Snapshot File Name	i. Is disabled if Automatic Paths is enabled. ii. File name of any outputted videos. iii. Will have the number of files within the directory appended to it to avoid overwriting.	Snapshot

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Settings – Other Settings

Figure 26 – Other Settings Section

Control Details

Setting	Description	Default Value
Hide Subnet Notification	i. Entering an IP address into the IP Control section which does not match the local machine's IP subnet will display an error. Toggling this setting on suppresses this message.	Off
Autoplay Videos on Launch	i. If toggled on, camera streams are automatically connected to and played on application launch.	On
Info Refresh Rate (ms)	i. Adjusts the rate at which camera info panels (above the main windows video feeds) update their information (in milliseconds per cycle of all data to update). ii. Lower this for better program performance overall. iii. Increase this for more real-time data. iv. Setting this field to '0' will disable the info panels.	500

Settings – Other Buttons

Figure 27 – Settings Menu Buttons

Control Details

Button	Description
Default All	i. Resets all settings back to their default values (as stated in this document). ii. Pressing this will show a confirmation box to make sure it was not selected accidentally. iii. Defaulting the values does not save them so the user must use the 'Save All' button to confirm the changes once again.
Save All	i. Saves and applies all settings within the Settings window. ii. These settings are saved in *Documents\SSUtility\config.txt*. iii. Pressing this will show a confirmation box to make sure it was not selected accidentally.

Pelco D Scripting

SSUtility2.0 sends commands to any connected cameras following a format detailed later in this document. The Pelco D Scripting window allows users to send multiple commands, in series, to access functionality not directly supported within the main program itself.
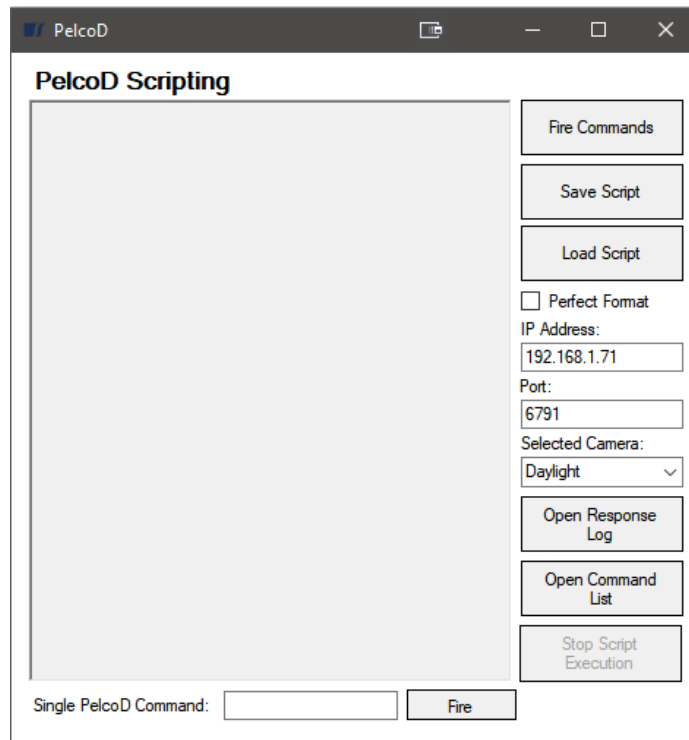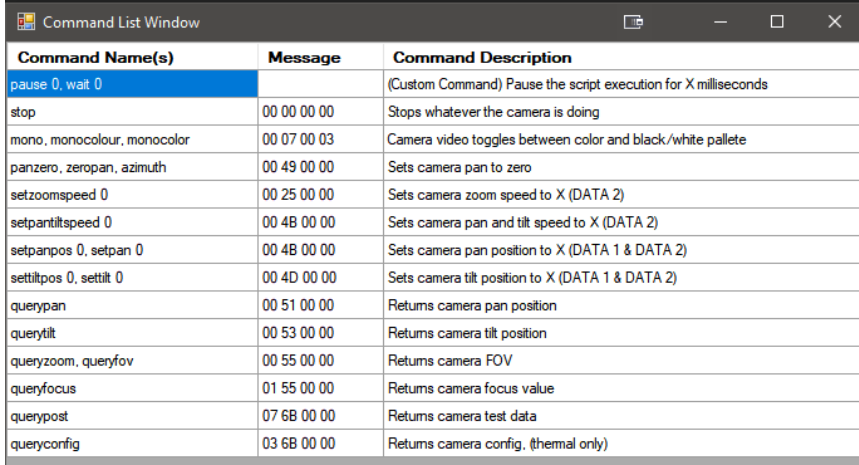

Figure 28 – Pelco D Scripting Window

Control Details

Control	Description
Scripting Box	This textbox can be used to enter in either preset or raw commands. i. Preset commands come in the format of a singular word, sometimes composed of multiple words with no space in between. a. These commands can be found in the Command List window covered below. b. An example preset command is 'mono'. ii. A standard command is composed of seven two-bit parts in hexadecimal: a. *FF* b. The selected camera lens (Usually *00* or *01*) c. CMND 1 d. CMND 2 e. DATA 1 f. DATA 2 g. Checksum of the command (sum of all bits except FF, %256) iii. raw commands are the raw commands that the program uses to communicate with the camera. The program can automatically generate some of the command depending on whether the Perfect Format checkbox is enabled.

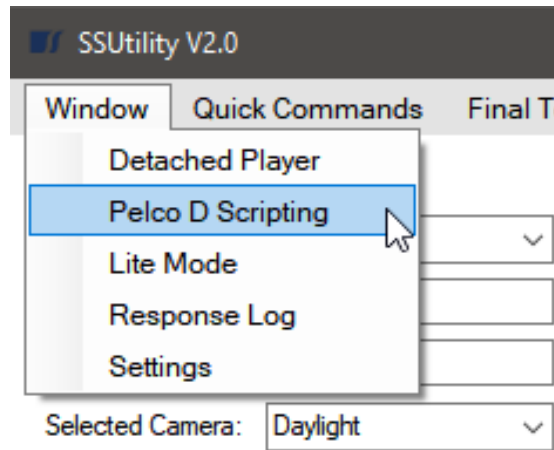|	
	a. Perfect Format disabled example: *00 53 00 00* b. Perfect Format enabled example: *FF 01 00 53 00 00 54* iv. Commands are read, in series, from top to bottom with a minor delay in between sending each.
Fire Commands	Begins script execution, reading from the Scripting Box.
Save Script	Saves the current script in the desired location as a text document.
Load Script	Loads any text document into the scripting textbox.
Perfect Format	Toggles the Perfect Format option on/off. Functionality is covered above.
IP Address	The IP Address of the camera that the program will communicate with.
Port	The port of the Encoder/MOXA on the camera (usually 6791/4001).
Selected Camera	This relates to which camera lens the script commands will be sent to if Perfect Format is disabled.
Open Response Log	Opens the Response Log which is detailed in a later section.
Open Command List	Opens the Command List Window which contains all the preset commands within SSUtility2.0's Pelco D Scripting as seen below in figure 29. i. Double-clicking on a command or its corresponding message will copy that text into the Pelco D Scripting Window's Scripting Box. ii. Commands with another separated by a comma denote that the software will recognise them as the same thing. iii. Some commands require a value. These are denoted by the command being followed by a zero. iv. Custom commands are for the software only. The camera does not receive any message. v. DATA 1 and DATA 2 refer to the message portion of the command only. Using the command name will automatically generate the message depending on the value given. *Figure 29 – The Command List Window*
Stop Script Execution	i. Is disabled until script execution begins. ii. Stops the script before sending the next command.
Single Command Scripting Box	i. Used to send or hold a single command. ii. Is also affected by Perfect Format.
Fire Single Command	Sends the command inside the Single Command Scripting Box similarly to how the Fire Commands button sends commands in the Scripting Box.

Figure 30 – Opening the Pelco D Scripting Window

Opening the Pelco D Scripting Window Instructions

Step	Comment
1.	Select 'Window' from the Menu Bar.
2.	Select the 'Pelco D Scripting' option.

Response Log

The response log saves communication between the camera and software. Its main purpose is to be used to see the output of query commands.
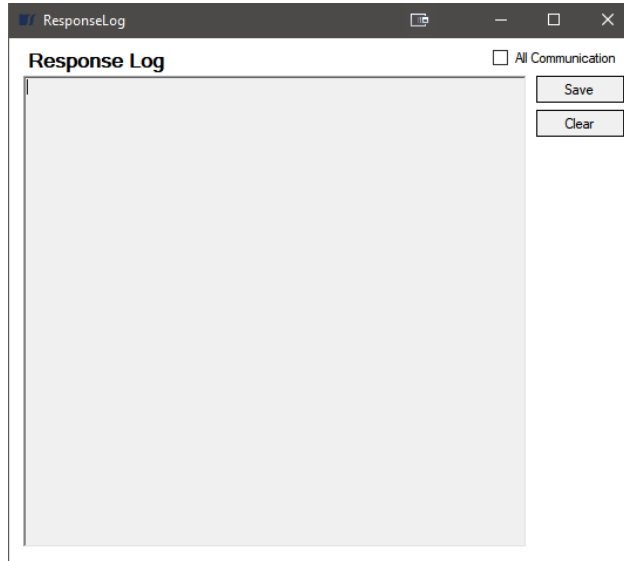

Figure 31 – Response Log Window

Opening the Response Log Window Instructions

Step	Comment
1.	Select 'Window' from the Menu Bar.
2.	Select the 'Response Log' option.

Control Details

| Control	Description
Response Log Textbox	Records messages from the software and responses from the camera. i. If All Communication is disabled (it is on software launch), some lower priority messages are automatically deleted. ii. Will automatically label messages with the IP of the sender, also appending a timestamp.
All Communication	Toggling this control on will make the software record extra details: i. Commands sent from the software will be shown. a. The program will also translate the commands into their message form. ii. Commands sent from the Info Panels that retrieve pan, tilt and FOV data. iii. Some hidden error messages sent by the program.
Save	Saves the current text within the Response Log Textbox into a text document.
Clear	Clears all text within the Response Log Textbox after a confirmation prompt.

Info Panels

Two Info Panels are in SSUtility2.0; One above each VLC Video Player provided in Dual Mode. These primarily serve as to show data on the rotation and zoom setting of the camera. These are both usually disabled and hidden until a camera is connected to and streaming video.
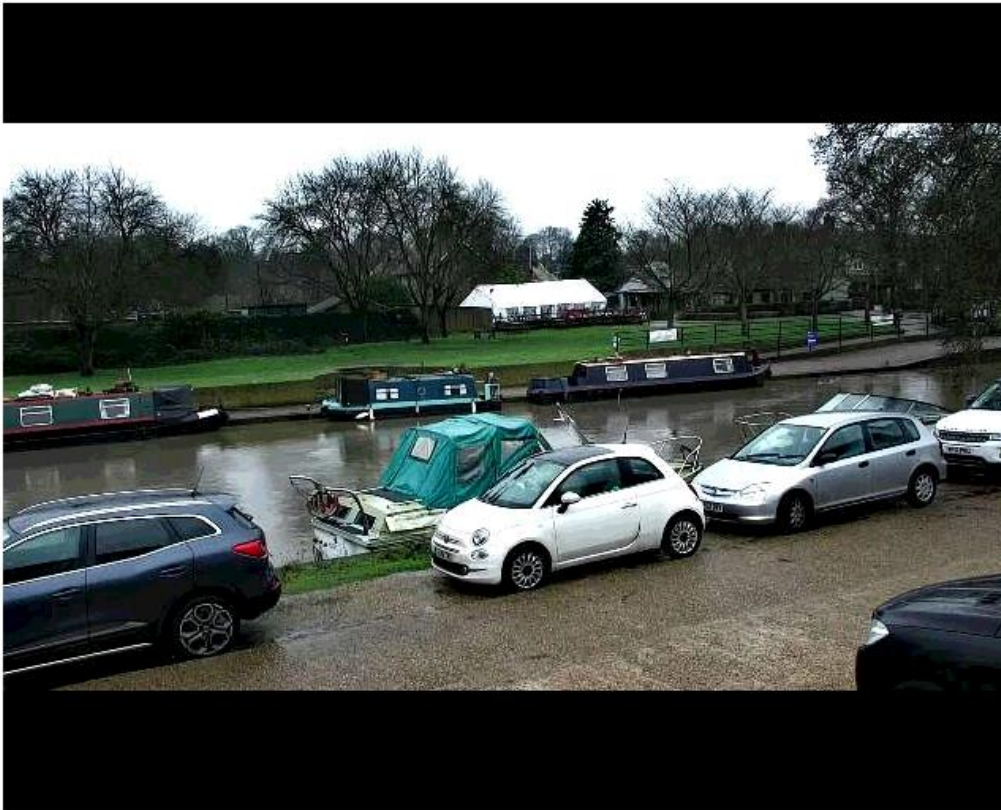
Figure 32 – An enabled Info Panel above video player 1.

Enabling an Info Panel Instructions

Step	Comment
1.	Connect to a camera using the IP Control section of the Control Panel on the left of the Dual Mode window. When the checkmark is green, the camera has successfully been connected to.
2.	Connect to the same camera's RTSP stream on the chosen video player.
3.	If the camera passes a check, the Enable Camera Stats checkbox will appear above the Play button. *Note: If the Enable Camera Stats checkbox does not appear when it should, make sure the camera is connected to and select the Play button again.*
4.	Toggle on Enable Camera Stats and the video player will move itself down and display values provided by the camera depending on its configuration.