SIERRA-OLYMPIA
TECHNOLOGIES INC.

USER GUIDE, WIND VIEWER

Rev 3.1

1 SAFETY CONDITIONS

Read all instructions prior to use.

The software is provided without warrant of use beyond engineering/development purposes.

Repairs and service are to be completed only by Sierra-Olympia Technologies Inc.

2 EXPORT NOTICE

This document does not contain export-controlled technology.

3 INTRODUCTION

WIND Viewer is a standalone application that is a basic demonstration of WIND/FIP protocol functionality. It is also useful as a quick benchtop camera control/viewing/recording application.

WIND Viewer may be accessed from the USB Delivery Disk in a folder named "Wind Viewer [Version]" and is packaged with an installer to manage software dependencies and installation.

This User Guide will explain basic functions and behavior of the application. WIND Viewer is compatible with many Sierra-Olympia Technologies Inc. (SOTI) products; its user interface is dynamic, dependent on the type of camera connected. When applicable, this guide will call out such exceptions to behavior.

> **NOTE: Adjustments to camera settings made with WIND Viewer will be lost when the camera is power cycled.**
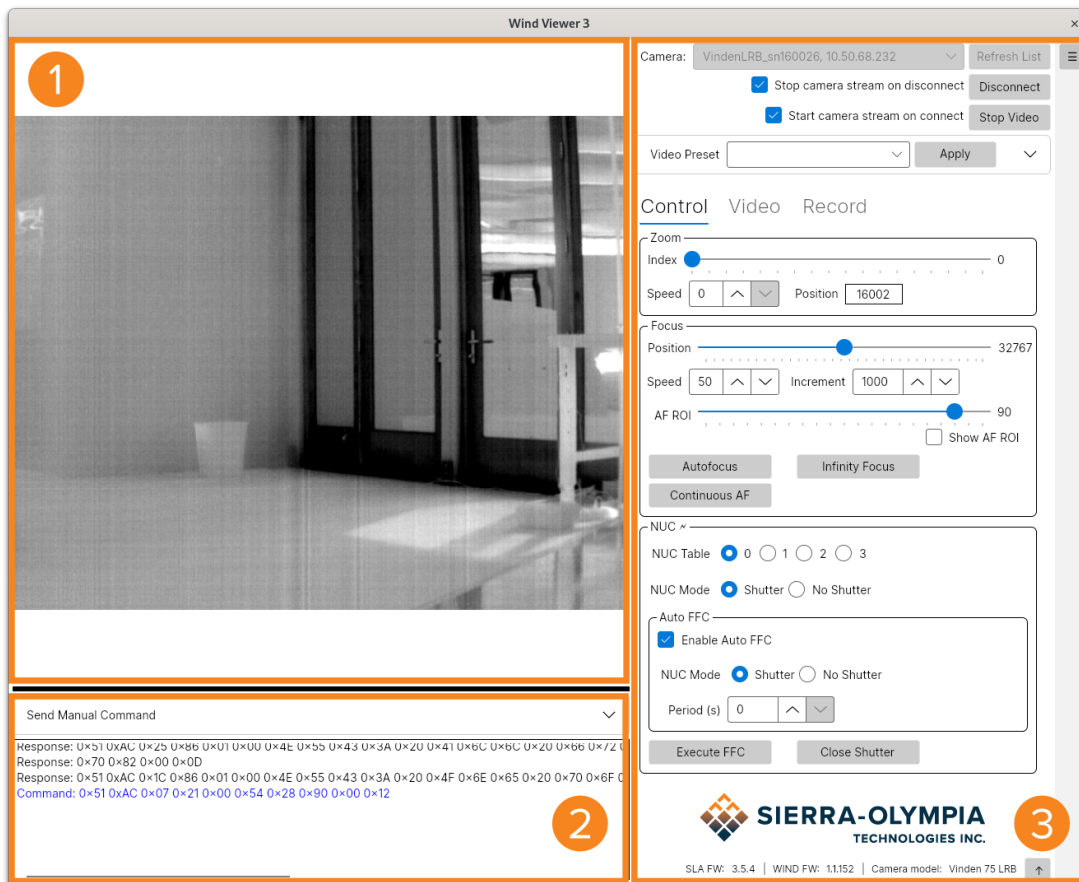
4 OPERATION

Figure 1: WIND Viewer Interface

The WIND Viewer interface is divided into three sections: 1) video monitor, 2) command monitor, 3) controls. The video monitor displays the live UDP video stream. The command monitor displays any sent or received commands from the WIND firmware and sends manual commands – useful for debugging or development reference; the controls manipulate functions of the firmware.

4.1 Connection

All available SOTI cameras on the network will appear in this list, identified by IP address and serial number. If your camera does not appear in the list, click **Refresh List** when you are sure the camera has finished initialization (maximum 1 minute). Otherwise, ensure that your computer is on the same subnet as the camera.

Connect to the camera by selecting it from the drop-down and clicking Connect. When the **Connect** button changes to **Disconnect**, you have successfully established a connection.

If **Start camera stream on connect** is deselected the video stream can be started manually by clicking the **Start Video** button. Not starting the stream on connection may be useful if your video feed is being sent to a different endpoint that you do not want to interrupt. If **Stop camera stream on disconnect** is deselected, the camera will continue to stream video even after Wind Viewer is disconnected or closed.

4.2 Controls

4.2.1 Presets

Control configurations can be saved as presets above the camera controls pane. The presets are stored for later use and can be updated or deleted. Control groups that are included in stored presets are marked with the ✗ symbol.
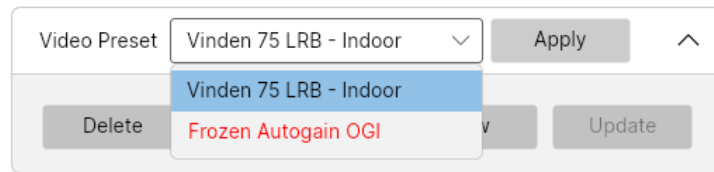

Figure 2: Presets Control

Presets that match the camera type currently connected to Wind Viewer are shown in black. Presets that do not match are shown in red. Applying an unmatched preset may lead to undefined behavior.

4.2.2 Lens Control

Lens zoom and focus are controlled in this pane. **Zoom Speed** (range: 0-100, default=0) sets the rate of zoom motor actuation. Higher zoom speeds may require slightly higher power draw. **Zoom Index** displays calibrated repeatable zoom steps that may be thought of as field-of-view (FOV) indices. The **Zoom Slider** may be used to manipulate zoom at a rate defined by Zoom Speed; this may be controlled by mouse or arrow keys.
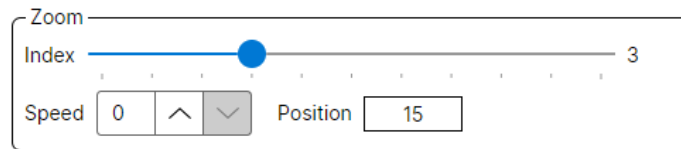

Figure 3: Zoom Control

Focus Speed similarly controls rate of focus motor actuation (range: 0-100, default=0). Higher focus speeds may provide less accurate autofocus and slightly higher power draw. The **Infinity Focus** button is a one-touch control that moves the lens to the infinity focus position.

The **Autofocus** button is a one-touch control that initiates autofocus. A green box is drawn in the image frame indicating autofocus region-of-interest (ROI). The ROI size may be controlled by the **AF Region** slider. Only information within this region is analyzed for focus. Autofocus performs best on high contrast scenes with high spatial frequency. Autofocus may be aborted by clicking the **Abort Autofocus** button.

> **Note: Initiating autofocus interrupts all other FIP/WIND functions; during autofocus, no feedback is provided, nor commands accepted.**

The **Continuous AF** button operates in the same manner as the **Autofocus** button but continues to operate without stopping until the user clicks the **Abort CAF** button.

The **Focus Slider** may be used to manipulate focus at an increment defined by **Slider Increment**; this may be controlled by mouse or arrow keys.
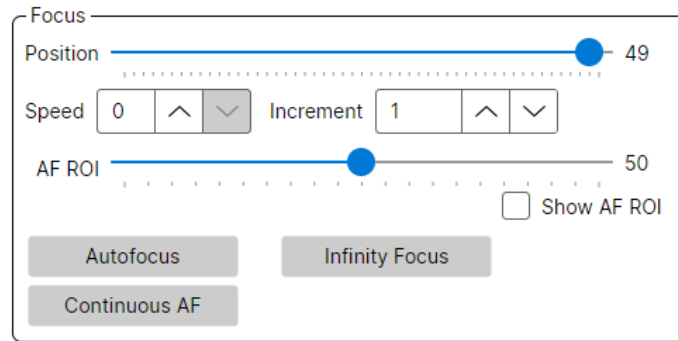
Figure 4: Focus Control

Zoom Motor Position and **Focus Motor Position** are provided as reference. These are mostly useful as motor status indicators – motor positions are not indexed to zoom position (FOV) or focus position (distance) from camera to camera.

4.2.3 Sensor Control

These controls provide access to the calibration functions of the sensor. Distinct functions are available for cooled and uncooled cameras, see the camera's User Guide for more information specific to a camera's calibration behavior.

The camera may be configured to automatically and periodically perform a Flat Field Correction. The time between automatic corrections may be changed in the FFC Period field. The Enable Auto FFC checkbox enables and disables this feature.

FFC may be performed manually by clicking Execute FFC. NUC Mode selects whether the shutter is used for a manual FFC. The shutter may also be manually actuated by clicking Close/Open Shutter.
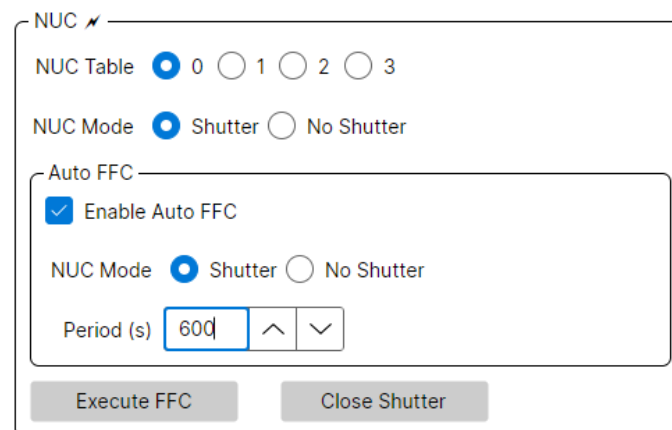

Figure 5: NUC Control

4.2.4 Video

Native Resolution and **Fit to Screen** respectively control the WIND Viewer video monitor scaling. This has no effect on the video stream itself, analog output, or snapshot recording.

Output **Encoding** can be set to either H.264 or H.265. H.264 is supported by more decoders and requires less processing, while H.265 is supported by fewer decoders and requires more processing to decode. H.265 can perform more advanced compression, meaning that for a given

bitrate more details will be retained. Alternately, bitrate can be reduced (compared to H.264) and performance will be similar. Your scene content and system may lead to one being better than the other. If your system allows, we suggest using H.265, particularly with sensors over 640x512 resolution.

The video processor performs constant and real time automatic gain correction (AGC) by default. The AGC scheme may be thought of as a continuous rescaling of the full 14/16-bit image histogram, remapped to an 8-bit video range. The AGC tries to discard upper and lower portions of the histogram that contain little information. The **AGC ROI** slider selects which part of the image the AGC pulls a histogram from, and the **AGC Min** and **AGC Max** sliders set these clip points. When **Freeze Autogain** is unchecked, the AGC is operating in an automatic feedback loop and these sliders are disabled. If **Freeze Autogain** is checked, the continuous feedback loop is stopped – AGC is effectively off. You may now manually set histogram clip points with the sliders.
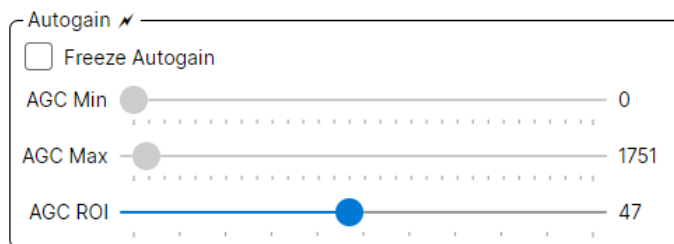

Figure 6: Autogain Control

Brightness/Contrast controls can be used to adjust the image levels. Increasing the **Brightness** slider will increase the overall brightness of the entire image. Increasing the **Contrast** slider will exaggerate the variations in brightness by making light areas lighter and dark areas darker. **Digital zoom** scales the acquired image.

Stabilization controls electronic image stabilization. **Roll Compensation** enables additional stabilization for movement in roll.
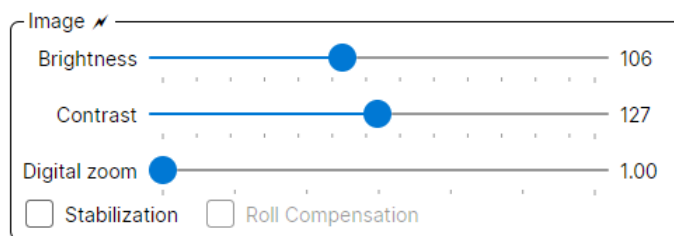

Figure 7: Brightness/Contrast Control

The **Enhancement** group controls adaptive contrast enhancements, spatial/temporal enhancements, and color palette LUTs. **Sharpen** uses edge contrast techniques to increase apparent spatial sharpness. **Denoise** uses temporal filtering to reduce temporal noise. The **Strength** and **Blend** sliders control application of the adaptive enhancement selected in the **Mode** pulldown. The **Color** pulldown controls the color scheme applied to the video. Color schemes can be inverted with the Inverted checkbox. For more information on image enhancement, please refer to the SightLine Applications Panel Plus User Guide.
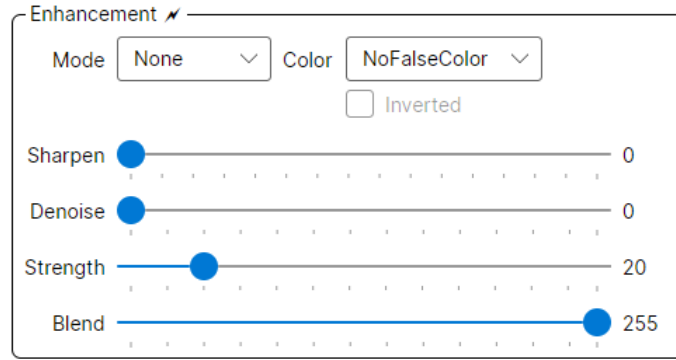

Figure 8: Enhancement Control

The **Gas Enhancement Mode** (GEM) group is visible when connected to applicable cameras. When enabled the video stream color will be switched to NoFalseColor, and motion that is detected in the video will be highlighted with the color specified in the **Color** pulldown. **Sensitivity** controls the gas detection sensitivity, and **Blend** controls the visual strength of the colored gas overlay in the video.
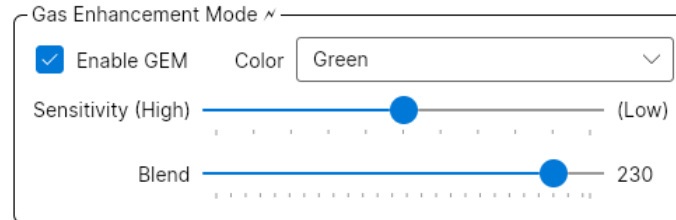

Figure 9: Gas Enhancement Mode Control

4.2.5   Recording

The encoder typically ships with a 32 GB µSD card onboard (which can be replaced or upgraded as required). The Recording functions store videos and images to the µSD card. Enter a file prefix in **File Name**; a numeric suffix is automatically appended and incremented with each new video/image recording. If you specify a numeral as the last character of File Name, a suffix is not automatically appended. In this case, a warning will appear if a file with the same name already exists.

Clicking **Record Video** initiates video recording (H.264 or H.265 encoded as specified by the output encoding setting) which will persist until the button is clicked again to **Stop Recording**. The recording persists even if you close WIND Viewer or disconnect from the camera. To maintain file integrity, do not power down the camera while recording.

Take Snapshot records a full resolution PNG of the displayed image and may be performed during video recording. The **Snapshot mode** can be set to **Captured** to save 16-bit pre-AGC images or **Displayed** to save 8-bit post-AGC images.
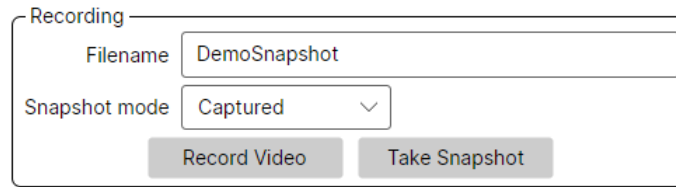
Figure 10: Record Control

The **Files** list shows all images and videos currently stored on camera's SD card. The Download button copies the selected file to the host computer. The Delete button removes the selected file from the camera. The Open FTP button opens a Windows Explorer window which allows you to drag and drop files from the camera via FTP.
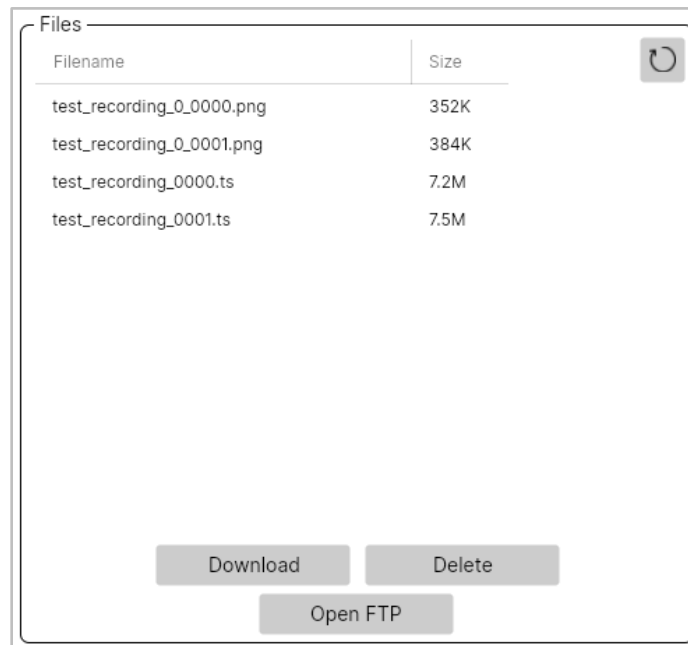

Figure 11: File Storage

4.2.6 Ventus HD6 Cameras

The Sensor tab is visible when connected to cameras with a Ventus HD6 camera which utilizes the HexaBlu sensor. This tab provides additional sensor information and calibration. Clicking the NUC button will provide step-by-step guidance for calibrating the user NUC table. On Ventus HD6 cameras the user NUC table is Wind Viewer table number 3 in the NUC group of the Control tab. Note that this corresponds to the HexaBlu NUC table 7.

Figure 12: Ventus HD6 Sensor Control

4.2.7   Camera Details

Software versions for the currently connected camera are displayed in the status bar, along with the current camera's serial number. Lens and Sensor software versions are factory-set. Clicking the up-arrow button displays additional information about the connected camera.

4.2.8   Manual Commands

Camera commands may be sent manually using the Send Manual Command control in the command monitor shown below. The command ID and payload data is entered as bytes in hexadecimal notation. The payload data is parsed to ensure only valid characters are sent, and the corrected values are shown in the "Parsed Payload" field. Both WIND (Sierra-Olympia) and SLA (SightLine) commands may be sent.

Figure 13: Send Manual Command Control

When sending an SLA command, the header, length, and checksum are automatically calculated from the user provided Message ID and Payload. An SLA message setting the video enhancement parameters is shown in the table below. The shaded cells represent values calculated from the user provided values in the light cells.

Header		Length	Message ID	Payload					Checksum
0x51	0xAC	0x07	0x21	0x01	0x54	0x28	0x90	0x00	0xDF

WIND commands are sent as payloads in SLA messages that are passed on to the Camera Controller. The header, length, and checksum are calculated automatically from the user provided Message ID and Payload. A WIND command setting the zoom index is given as an example in the table below. The shaded cells represent values calculated from the user provided values in the light cells.

Header		Length	Message ID	Payload							Checksum
0x51	0xAC	0x09	0x3D	0x0C	0x70	0x45	0x02	0x01	0x00	0x47	0x0C
				Header	ID		Length	Payload		Checksum	

Detailed descriptions of the available commands and their payloads are provided in the WIND Firmware API and the SightLine Protocol IDD.

5 REVISION HISTORY

Revision	Date	Description	ECO
A	2022/10/17	Initial release. Replaces version 3.0 dated 2019-06-17. Applicable to WIND Viewer version 2.5.x.	1332
B	2023/11/30	Updated for use with WIND Viewer 3.	N/A
3.1	2024/03/18	Added manual commands description.	N/A