



**SIERRA-OLYMPIA**  
TECHNOLOGIES INC.



## **VENTUS HD6 USER GUIDE**

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Product Export Classification Control Number (ECCN): 6A003.b.4.a. This document is provided for operation purposes only and does not contain export-controlled technology

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## 1 SAFETY CONDITIONS

Read all instructions prior to use.

Observe electrostatic discharge (ESD) precautions when handling.

The camera requires reasonable thermal sinking when operating. Use stirred air and conduction to outside environment when installed in an enclosure.

The camera must be operated within its environmental limits.

Repairs and service are to be completed only by Sierra Olympia Technologies. Please refer any technical issues to support@sierraolympia.com.

## 2 EXPORT NOTICE

Product Export Classification Control Number (ECCN): 6A003.b.4.a. This document does not contain export-controlled technology.

## 3 REFERENCE DOCUMENTS

| Document Number | Document Title  |
|-----------------|---|
| 20-70004        | Mechanical ICD, Ventus HD6, 30mm  |
| 20-70007        | Mechanical ICD, Ventus HD6, No Lens   |
| S-D03-10409     | WIND Firmware API   |
| S-D07-10496     | WIND Viewer User Guide  |
| 20-70005        | Electrical ICD, Ventus HD6  |
| 1043862         | Customer Electrical Interface Control Document (ICD) For the HexaBlu Baseline OEM Camera Core |

## 4 INTRODUCTION

The Ventus HD6 is ready to operate out of the box. This guide will provide a walkthrough of the minimum setup to begin imaging.

This document applies to WIND Viewer Version 3.x. More detailed information on WIND Viewer is available in the WIND Viewer User Guide.

The Ventus HD6 is an MWIR imager designed to be integrated into end-user products by integrators and OEMs. This user guide will cover basic usage and limits of the product. More detailed technical information (including software protocol, connector locations and pinouts, etc.) may be found in the referenced ICDs (interface control documents).

The main elements of the Ventus HD6 camera are the DRS HexaBlu sensor, calibration shutter, lens, chassis, and a video processing engine. The video processing engine is a SightLine processor (SLA). The SLA serves as the central processor for the camera and performs video

render/processing, IP encoding, and control of the sensor subsystem. Control commands are sent to the SLA and may be passed through to subsystems in a fashion further described the WIND Firmware API.

**WARNING! Do not update Sightline firmware without consulting Sierra-Olympia Technical Support. Updating with an unqualified firmware version can disrupt camera functionality.**

A sample user interface (WIND Viewer) is included on the delivery disk to demonstrate functionality of video encoding and control command structure. This quick start guide will describe camera operation using WIND Viewer.

The Ventus HD6 may be installed in an enclosure that protects the camera from the elements and provides field-friendly connectors using patch cables to the camera's interfaces as defined by the electrical ICD. The command interface and protocol are sufficient to build camera functionality into end-user applications, the Ventus HD 6 may also be operated as delivered using WIND Viewer.

## 5 INCLUDED ITEMS

The packaging contains:

- Ventus HD6 camera
- Cable kit (if ordered)
- USB Delivery drive
  - WIND Viewer
  - ICDs and documentation

### 5.1 Recommended Equipment

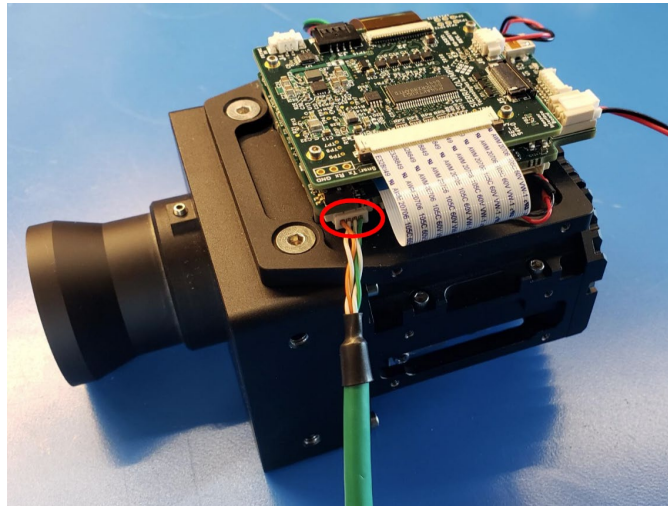
Optional cables are available. See 20-70005 Electrical ICD, Ventus HD6 for additional connection information.

| Item Name                             | SOTI PN                    | Manufacturer PN           |
|---------------------------------------|----------------------------|---------------------------|
| Input Power Cable                     | S-A07-10237 or S-A07-10497 | NA                        |
| Serial camera control                 | S-A07-10236                | NA                        |
| Ethernet                              | S-A07-10240                | NA                        |
| HDMI                                  | S-C11372                   | Tripp-Lite P142-06N-Micro |
| Camera Link Adapter Kit               | S-A07-10251                | NA                        |
| HD-SDI Assembly, SLA 4000, Ventus HD6 | 60-40058                   | NA                        |

## 6 QUICK START GUIDE

### 6.1 Connect the Ethernet cable.

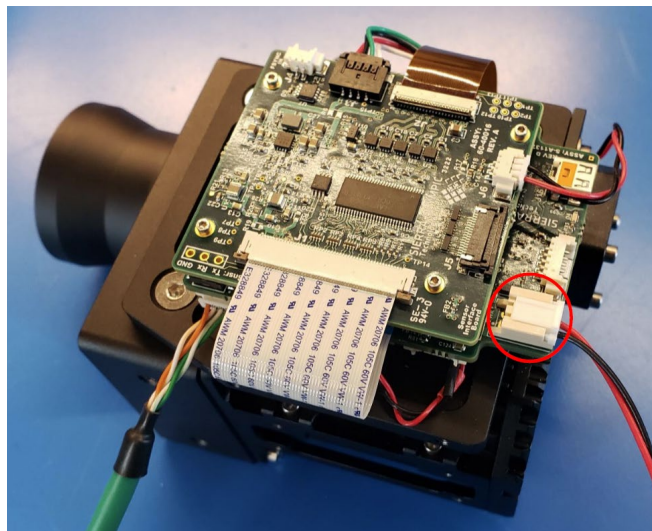
- 6.1.1 Connect the provided Picoblade-terminated Ethernet cable to J11. The camera can be connected to a managed network, a switch or directly to a computer. The ethernet interface is preconfigured for DHCP.



*Figure 1: Ethernet Connection*

### 6.2 Connect power cable.

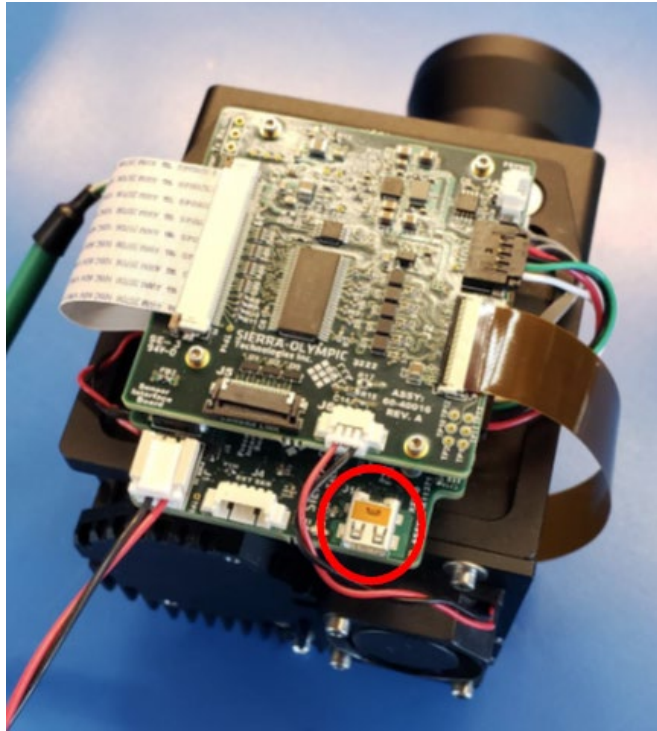
- 6.2.1 Connect the provided Sherlock-terminated power cable to J1 as shown in Figure 2. The nominal input voltage is 12VDC (max 14V) with a minimum 1.5A supply.



*Figure 2: Power Connection*

## 6.3 Optional HDMI Connection

- 6.3.1 Connect a type D Micro-HDMI cable to J16. The Type D Micro-HDMI may be connected to an HDMI monitor or capture card.

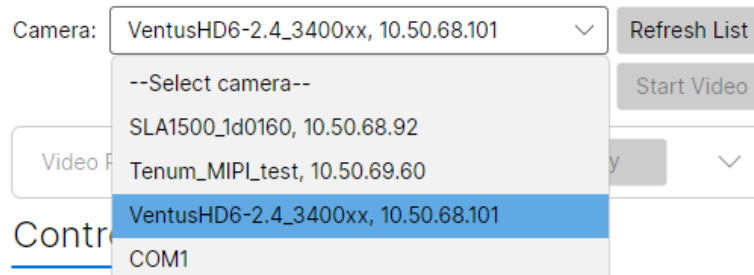


*Figure 3: HDMI Connection*

## 6.4 WIND Viewer – Connection Procedure

### 6.4.1 Establish IP Connection

- 6.4.1.1 Install WIND Viewer from the USB delivery drive.
- 6.4.1.2 Launch WIND Viewer.
- 6.4.1.3 All available SLA-equipped cameras on the network will appear in the Camera dropdown list, identified by IP address and serial number. The camera has been preconfigured to obtain an IP address automatically from a DHCP server or from link-local addressing. If the camera is not on the same subnet as the computer, it will appear on the list with parentheses.



*Figure 4: Connection Dropdown*

6.4.1.4 If the camera does not appear in the list, do the following:

- Verify the camera has had enough time to initialize. The cooling fan will start after initialization (approximately 1 minute after power on)
- Click **Refresh**.
- Make sure that your computer is on the same subnet as the camera.
- Verify ethernet cable was connected to both the camera and the network/computer prior to power being applied.

6.4.1.5 Select the camera from the drop-down and click **Connect**.

6.4.1.6 When the Connect button changes to Disconnect, you have successfully established connection.

## 6.4.2 Stream Video

The Ventus HD6 utilizes H.265 encoding by default, which is more processor intensive than H.264 encoding. This can be modified on the SLA if your decoder struggles with the H.265 data stream

6.4.2.1 H.264 video will begin streaming to the local computer's IP address on port 15004.

6.4.2.2 A cooldown screen with FPA temperature and progress bar will be displayed while the camera is initializing. Once initialization completes, the display will switch to live video. Video streaming may be more intricately configured through the full communication protocol.

6.4.2.3 Explore camera functions in WIND Viewer.

6.4.2.4 There is nothing in this application that can damage the camera or is irreversible.

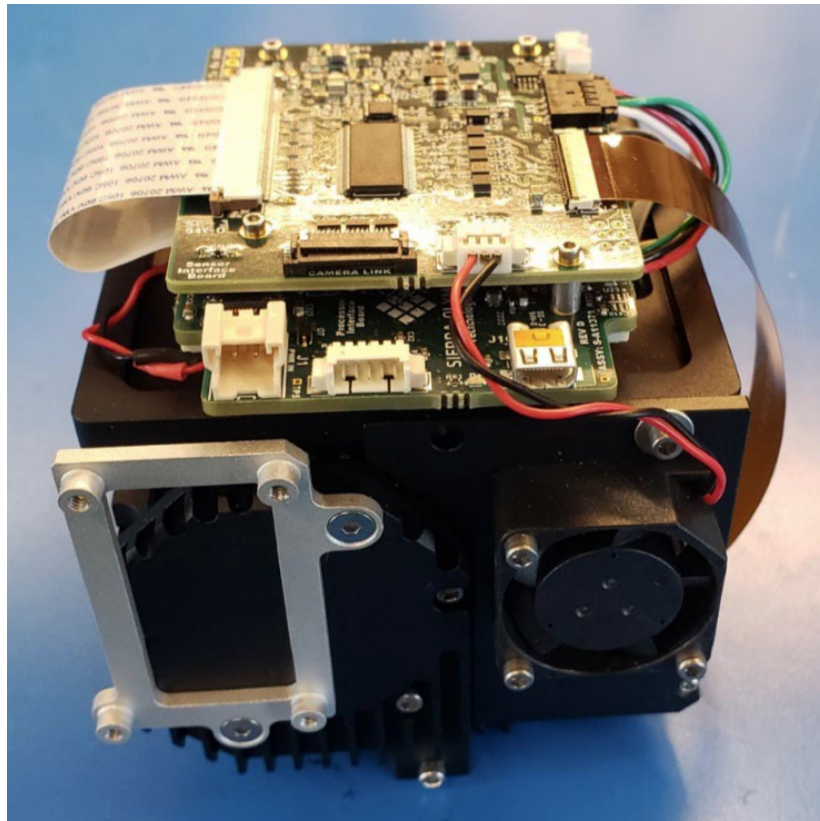
6.4.2.5 This document applies to WIND Viewer Version 3.x. More detailed information on WIND Viewer is available in the User Guide, WIND Viewer, accessible from WIND Viewer about menu in the upper right corner.

## 7 3G/HD-SDI ACCESSORY INSTALLATION

A kit is available for separate purchase to enable Standard Display Interface (SDI) output (configured by the Sightline). The kit contains electronics, mounting equipment, and cables. The following instructions are provided to mount the kit on the chassis; the kit may also be remote mounted.

HDMI and SDI can not be operated simultaneously. The camera is configured to operate HDMI by default.

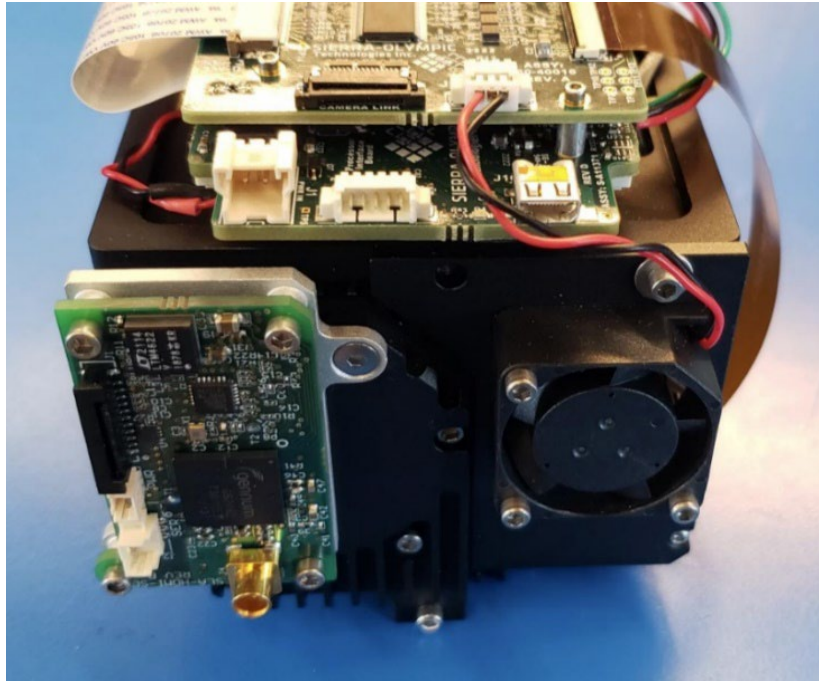
7.1.1 Install the SDI bracket with two M2.5 x 4mm FHS.



*Figure 5 SDI Bracket*

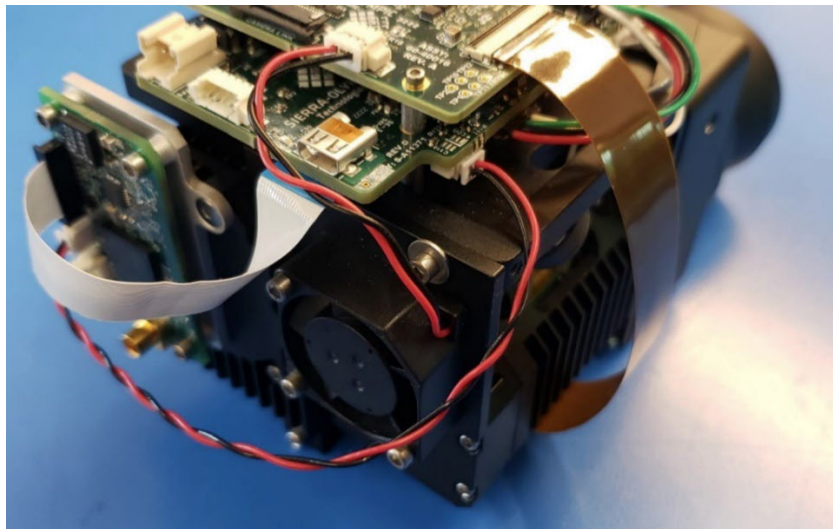


### 7.1.2 Install the SDI board with four 2-56 x 1/4in SHCS



*Figure 6 Install SDI board.*

### 7.1.3 Install the FFC and power cables



*Figure 7 FCC and Power Cable Installation*

### 7.1.4 Once the SDI accessory kit is installed power the camera, use any 75-ohm MCX cable to the SDI connection. (see electrical ICD 20-70005 for more detail)

## 8 FOCUS

If the Ventus HD 6 comes with a fixed focus lens:

The Ventus HD 6 cameras are pre-focused at the Sierra Olympia factory at infinity which is suitable for most applications. The camera may be manually refocused by loosening the set screw and rotating the lens until the desired focus is achieved, then tightening the set screw.

## 9 NONUNIFORMITY CORRECTION

### 9.1 NUC

The Ventus HD 6 is calibrated with a through-lens NUC at the integration times listed below. It is recommended to change modes based on scene temperature.

Calibration temperatures were determined from room temperature radiometry data. The image will have the least residual-spatial non-uniformity imaging scenes within and near these calibration temperature ranges.

The scene temperature ranges that look best for each Mode will vary depending on weather (rain, humidity etc.) and range (atmospheric attenuation and turbulence). Wetter weather and increasing range tends to attenuate the signal. This can be compensated for by switching to a larger integration time (ie 32ms), to collect more light per frame.

| NUC Table   | Integration Time | Frame Rate | Calibration Temperature |
|-------------|------------------|------------|-------------------------|
| 0 (default) | 10ms             | 60Hz       | 50 to 90C               |
| 1           | 16ms             | 60Hz       | 30 to 70C               |
| 2           | 32ms             | 30Hz       | 10 to 40C               |

### 9.2 FFC

The Ventus HD6 is equipped with a shutter to perform Flat Field Corrections (FFCs). A FFC can be used to correct changes in the nonuniformity over time. By default, the camera will automatically perform an FFC 20 seconds after the sensor finishes initializing, and 1 second after the camera is commanded to switch NUC tables. The automatic FFCs can be configured or disabled by editing the SotiParams.xml file stored on the camera's filesystem, located in the /home/slroot/soti directory.

The StartupFFCDelay param sets the delay of the post initialization FFC in seconds, if it is set to 0 this feature will be disabled.

The TableSwitchFFCDelay param sets the delay of the automatic FFC after commanding a new NUC table in seconds, if it is set to 0 the feature will be disabled.

Values for both params are limited to integers between 0 and 4,000,000.

FFCs may be commanded manually with the **Execute FFC** button in Wind Viewer, or via the Do Flat Field Correction (0x82) command in the Wind API.

## 10 INTEGRATION CONSIDERATIONS

- The Ventus HD6 dissipates ~11W of heat, please see the corresponding mechanical ICD for heatsinking surfaces. When enclosed, stirred air is recommended, the volume wall should promote conduction to ambient air.
- The lens mount has a ¼-20 tripod mount for convenience of demonstration. In integration it is recommended to use the M4 tapped holes on the lens mount
- The DRS HexaBlu sensor may be accessed using 'pass-through' commands in the WIND protocol. Please reference the WIND Firmware API (S-D03-10409) and DRS ICD (1043862) documents for additional information

## 11 REVISION HISTORY

| Revision | Date       | Description                                     | ECO  |
|----------|------------|---|------|
| Rev A    | 2023-06-06 | Initial Release                                 | 1308 |
| Rev B    | 2024-01-25 | Update included items and recommended equipment | 1688 |
| Rev C    | 2024-07-11 | Update section 9.1 added section 9.2            | 1773 |