



Hyperion 200L/200LV Laser Illuminator

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1 Introduction

The **Hyperion** 200L/200LV is a powerful small fiber light source for general scientific, medical, industrial, and machine lighting. It contains three high-power lasers (*Light Amplification by Stimulated Emission of Radiation*) which are directly coupled to a fiber optic light guide. A proprietary optical configuration is used to focus the light onto a small fiber in the form of white light.

The illumination is directed at the target via small fiber optic light guides. The light source can be used with fiber optic light guides in a variety of configurations. Contact the factory for customized units and light guides built specifically to suit your needs.

Additionally, the **Hyperion** 200LV model includes an integrated video system designed to interface with Awaiba NanEye 2D RGB camera devices.

2 Safety

The **Hyperion** 200L/200LV is a powerful laser rated as a Class 3R laser per IEC-60825-1 2007-03. This classification is based on using a 250µm plastic fiber of 3m in length. Use of alternate fibers may affect the final laser output and therefore classification. The wavelengths that are produced are 465nm, 525nm, and 638nm. Unit produces extremely bright light. Proper care must be taken during setup and operation to prevent injury to operators and other personnel, or damage to the unit.



The **Hyperion** intended use is to illuminate and/or capture images/video within a human body cavity and is for use by trained professionals only. All users are required to read the User Manual as proper training before use of this product. *Note: it is ultimately the responsibility of the Value Added Reseller (VAR) to determine the level of training required based on the intended application beyond reading this User Manual. It is also the responsibility of the VAR to determine the appropriate operator, patient, and other person positions near equipment for normal use conditions.*

The **Hyperion** is to be operated within a working channel or patient's body. Before each use, the outer surface of the portions of the videoscope which are intended to be inserted into a patient should be checked to ensure there are no rough surfaces, sharp edges or protrusions which may cause harm.











Avoid direct exposure to eye. If the accessory device is outside of working channel or patient body, do not look directly at light or point at other people. Per ANSI laser standard Z136.1.2007, no eye protection is necessary for Class 3R lasers due to "aversion response."



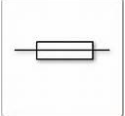



The unit is equipped with multiple safety features including interlock devices that will not permit laser emission through the respective location when an unsafe exposure condition may exist.

WARNING: No modification of this equipment is allowed.

<p>DANGER:</p> 	<p>The Hyperion 200 contains ultra-intense Laser emitters. DO NOT LOOK DIRECTLY AT THE LIGHT OR STARE AT THE LASER OUTPUT.</p>
<p>Caution:</p> 	<p>Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure</p>

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	<p>No modification of this equipment is allowed.</p>
	<p><i>Never open or remove the top cover. Qualified personnel must perform all maintenance, including dust removal.</i></p>
	<p><i>The Illuminator unit requires adequate airflow to maintain proper cooling. Ensure the ventilation holes and bottom of the unit are unobstructed and a minimum of 4" clearance is provided in front, rear, and sides of unit.</i></p>
	<p><i>If the Illuminator is used in a manner not specified within this manual, the protection provided by the equipment might be impaired. If safety guidelines are not followed the manufacturer is not responsible for injury to individuals or the unit.</i></p>
	<p><i>The Hyperion cannot be used near active high frequency surgical equipment and within radio frequency shielded rooms for magnetic resonance imaging, where the intensity of electromagnetic disturbances is high.</i></p>
	<p><i>Do not operate the unit near any flammable materials including flammable gases or liquids.</i></p>
	<p><i>Equipotential Ground</i></p>
	<p><i>Type BF Applied Part</i></p>
	<p><i>Refer to Instruction Manual</i></p>
	<p><i>WEEE Compliance Required</i></p>

<p>IP21</p>	<p><i>"Finger Safe" "Splash Proof"</i></p>
	<p><i>Manufacturer</i></p>
	<p><i>Date of Manufacture Symbol</i></p>
	<p><i>Fuse</i></p>
	<p><i>Laser Radiation; Avoid Direct Eye Exposure; Class 3R Laser Product</i></p>
	<p><i>Date of Manufacture</i></p>
	<p><i>Label, Tamper Evident</i></p>

An applied part, by definition, is any part that, in normal use, necessarily comes into physical contact with the patient. The **Hyperion** applied part is the distal end of the videoscope, PN 7200, or the distal end of any other approved videoscope or light guide. Sterilization of the videoscope, PN 7200, or any other approved videoscope or light guide is the responsibility end product manufacturer.

The temperature of the distal end of the videoscope may exceed 41°C normal operation due to intense illumination. Surface temperatures over 41°C may cause mucosal burns. Always maintain a suitable distance necessary for adequate viewing while using the minimum level of illumination for the minimum amount of time. Do not use close stationary viewing or leave the distal end of the videoscope close to the mucous membrane for a long time without necessity. It will be the responsibility of the end user to assess their application and determine the suitable distances, power levels, and time periods which provide safe operation within the intended use.

Whenever possible, do not leave the videoscope illuminated before and/or after an examination. Continued illumination will cause the distal end of the videoscope to become hot and could cause operator and/or patient burns.

The **Hyperion** USB interface is approved for connection to any master USB interface so long that the device it is an IEC approved device. The USB shielding conducts to the **Hyperion** protective earthing. If a connected device is floating, this may provide a direct path to ground, resulting in a hazardous situation if the floating property is relied upon as a means of electric shock safety. Additionally, it is not recommended to use the USB interface where the operator is not within reasonable control of the physical system. In the event of communication loss, the operator must be able to reach the system in a reasonable amount of time to prevent any hazardous light transmission.

The **Hyperion** video system display interface is approved for connection to any IEC approved display device.



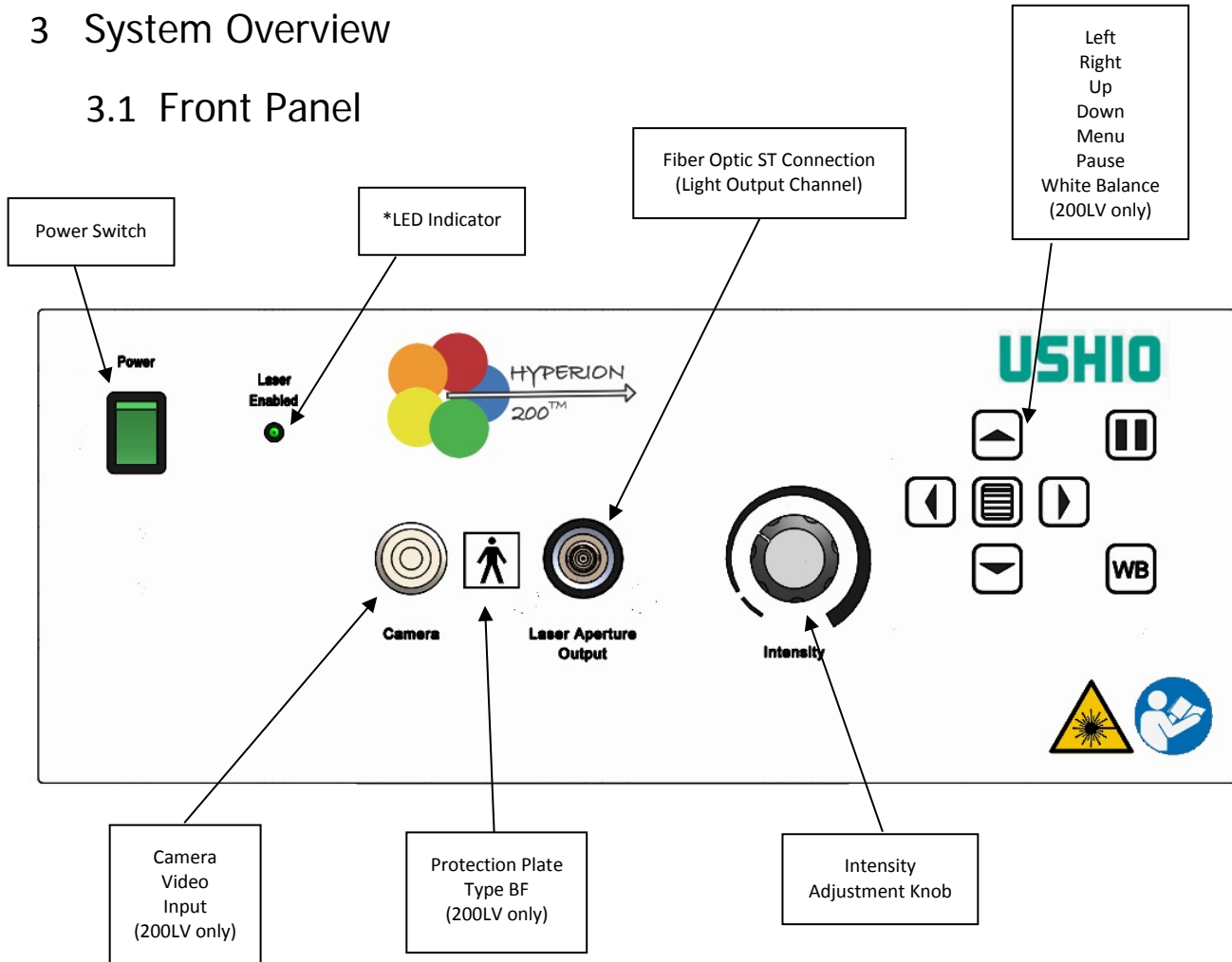
The **Hyperion** is designed for use with approved accessories only. It will be the responsibility of the Value Added Reseller to determine any risks that may arise from use with any other accessories, medical electronic equipment and/or non-medical electronic equipment.

Note that the use of non-approved videoscopes with the **Hyperion** 200LV may bypass the Type BF rating causing a potential shock hazard, particularly in environments where a Type BF device is required.

When this system is part of another Medical Equipment system, it is the responsibility of the value added reseller to ensure that the final ME system incorporating this product complies with IEC 60601-1 3rd Edition.

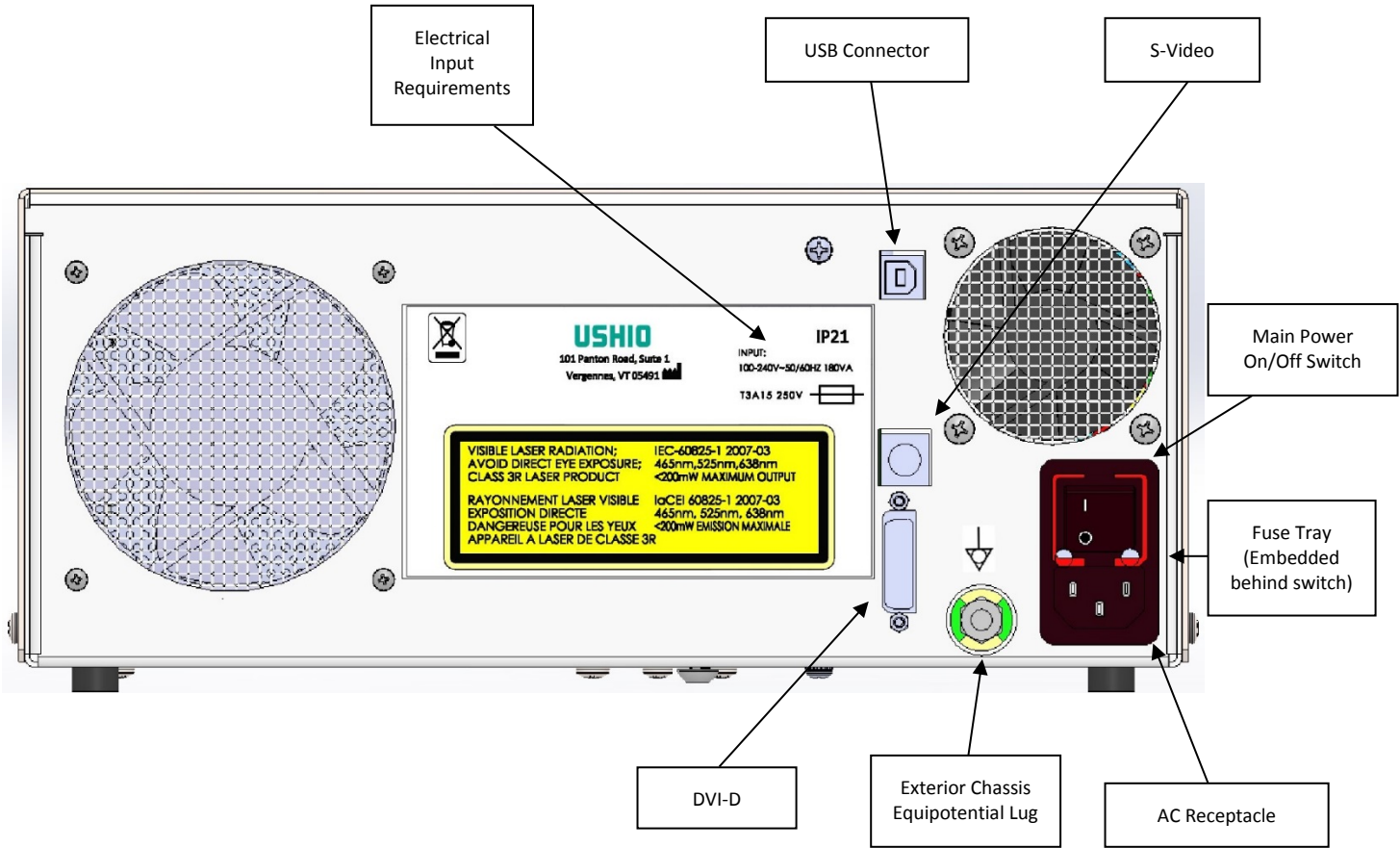
3 System Overview

3.1 Front Panel



***LED Indicator:** "Laser Enabled" (green) – On when all interlocks are in safe position (fiber connected)

3.2 Rear Panel





4 Setup

4.1 System Components

The **Hyperion** is comprised of:

- Light Source
- Integrated Video Processor (200LV only)
- Electrical Power Cord
- Fiber Optic Light Guide(s) with ST connector (sold separately)
- Micro Videoscope(s) containing Fiber Optic Light Guide and Camera Sensor (sold separately/200LV only)

List of cables and replacement information:

	Included with Hyperion	Maximum Length	Description	Replacement information
AC power cable	Yes	10 ft 2 in	Qualtek 233003-06 (Medically rated - 10A/125VAC up to 60°C)	Qualtek 233003-06 or equivalent
DVI	No, user supplied	3 meters	Shielded	Equivalent cable
S-Video	No, user supplied	3.3 meters	Shielded	Equivalent cable
USB (A/B)	No, user supplied	3 meters	Shielded	Equivalent cable

Carefully unpack all components, giving particular attention to the light guides and/or videoscopes, and taking care not to touch or contaminate the ends or to exceed its bend radius.



4.2 Choosing a Location

Set the **Hyperion 200** horizontally on its four neoprene feet on a flat surface in a place that allows for adequate air ventilation on all sides including the bottom. Do not place the **Hyperion** on top of paper or loose material that may be drawn into any ventilation port. Do not position the unit so that the back or sides of the unit are obstructed. Position the unit such that it is easy to reach and disconnect the AC Mains connection on the rear of the unit, as this connection is a means to isolate the unit from AC Mains. The **Hyperion** should only be transported in the horizontal position.

NOTE:	<i>For adequate ventilation, maintain at least 4" of clearance around all sides of the light source in an unenclosed space.</i>
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4.3 Connecting the Power Cord

Insert the power cord receptacle-end into the AC receptacle in the back of the unit. Insert the power cord plug into a standard AC outlet.

The unit must be powered with the supplied mains cable or an equivalent rated cable (10A/250V, Medically Rated).

The unit uses a universal input power supply and accepts 100-240V, 50/60 Hz, Full Range.

4.4 Equipotential Connection

The equipotential lug on the rear of the unit is intended to be used with external support equipment such as displays connected to the unit. This provides a good bond between the two devices to ensure they are operating at the same electric potential.

Use a Multi-Contact POAG style or equivalent connection for the post on the unit. Be sure the other end is properly terminated for the supporting device. The conductor shall be an approved green and yellow conductor, per IEC requirements.

Do not use the equipotential lug as a protective earth connection.

5 Operation

5.1 Turning the Unit "On"

1. If using the DVI video interface (200LV only), prior to power up, ensure that the DVI Video connection is in place and secured using the DVI Cable Locking Screws,. The S-video connection can be connected or disconnected at any point. Connected displays must be IEC approved devices to ensure safe operation. The USB connection can be connected or disconnected at any point.
2. Ensure that all interlocks are in "safe" condition by keeping top cover of unit closed and connecting either of the accessories below (Note: unit will not operate unless the light channel is connected to an accessory).
 - a. A fiber optic light guide connected to the output
 - b. A videoscope (includes ST connector for light output and one video connector for camera input to **Hyperion**); note, the camera is hot-plug capable; if the unit is started without the camera connection, the video output will be a generic test pattern (200LV only)
3. Turn the main power On/Off (1/0) switch, located on the back of the unit, to the on (1) position, if it is not already.
4. Turn the Front Panel Power On/Off (1/0) switch to the on (1) position. The switch should illuminate at this time.
5. *The fans will start.*
Green LED indicator (Laser Enabled) will turn on if all interlocks are safe.

6. Set Intensity Knob to 0%
The videoscope should be within the intended working channel or body cavity prior to enabling the laser output. See section 2 for safety concerns with the laser output.
7. Adjust Intensity Knob to desired setting (above approximately 5%). (Note: light will not emit if intensity is set to less than approximately 5%).

The lasers will engage and emit through the light guide.
8. The video processor functionality takes a minute or two to come online; once the system is completely up, the video processor controls will become available (200LV ONLY).
9. The green LED indicator will remain on continuously during operation.
10. The proper way to terminate the **Hyperion** during normal operation is to turn off power by using the switch on front panel labelled Power.

NOTE: (200LV only)	<i>Before each use or after a change in viewing modes/settings, the operator should check to ensure the view observed through the VIDEOSCOPE provides a live image (rather than a stored one) and has the correct image orientation. If the image changes as the scope is rotated the image is live. If it remains frozen it is paused. See Troubleshooting Section, section 13, for more information on how to resolve a frozen image.</i>
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5.2 Termination, Turning the Unit "Off"


The unplugging the unit or switching off the unit while it is running will cause no harm to the system, nor will it cause an unsafe condition.

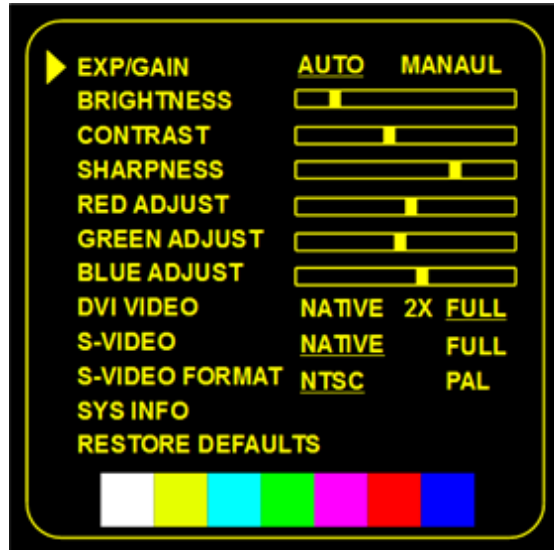
All of the following methods can be used to turn off the unit, safely:

- Front Panel Power Switch
- Rear AC Mains Power Switch
- Disconnecting Mains Power

5.3 Video (200LV only)










1. The  button, in the middle of the arrow buttons on the front panel, will toggle the menu.





Note that the menu is displayed differently on the USB Stream.



2. While the menu is displayed, the following button functions apply:



Button	Button Graphic	Functionality On Button Press
Menu		Exit Menu
Up		Move Indicator Arrow Up One Selection
Down		Move Indicator Arrow Down One Selection
Left		Decrement Current Setting (or move left on text based selections)
Right		Increment Current Setting (or move right on text based selections)
Pause		No Function
White Balance		No Function

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- a. The EXP/GAIN setting toggles between automatic adjustment (AUTO mode) of the exposure and gain and manual adjustment (MANUAL mode).

b. After exiting the menu, in AUTO mode, the  and  buttons can be used to raise and lower the AUTO set-point as displayed on screen.



c. After exiting the menu, in MANUAL mode, the  and  buttons can be used to adjust the camera exposure. The current set-point of exposure is indicated on the screen.



d. After exiting the menu, in MANUAL mode, the  and  buttons can be used to adjust the camera gain. The current set-point of gain is also indicated on the screen.


e. The menu options BRIGHTNESS, CONTRAST, SHARPNESS, RED ADJUST, GREEN ADJUST, and BLUE ADJUST are all post-processing adjustments to the video output.


f. The display output size can be adjusted with the DVI VIDEO option for DVI displays and with the S-VIDEO option for s-video displays.

g. The s-video output format can be toggled between NTSC and PAL with the S-VIDEO FORMAT option.

h. SYS INFO will output FW revision and Serial Number information. Press the  button to show this information. Press the  button to exit.

i. RESTORE DEFAULTS will reset all of the menu options. Press the  button to pull up the confirmation screen. Then, select YES and press the  button to confirm restoring the defaults.

j. With the menu closed, the  button will pause the camera video stream. Pressing it again will resume the video stream.

k. Pressing the  button will attempt to adjust the RED, GREEN and BLUE ADJUST options to make white. To use this feature, point the camera at a white surface and press the button. It is recommended that the unit be set to manual exposure and gain and turn the exposure up to a higher value. It is recommended to try to avoid saturation as well. This function changes the settings within the menu. If the changes are undesirable, they can be manually adjusted within the menu.



5.4 Serial Protocol

The **Hyperion** can be operated via serial interface using the USB connection on the rear of the unit. To use the connection, a PC with a USB port and compatible software (i.e. Hyperterminal, Putty, or equivalent) is required, as well as the virtual COM port driver to detect the interface. The driver is available at www.silabs.com. The required driver is the CP210x USB to UART Bridge VCP Driver.

Configure the terminal program (HyperTerminal, Putty, etc.) on the PC with the following settings:

Baud Rate: 38400 kbps
Data Bits: 8
Stop Bits: 1
Parity: None
Flow Control: XON/XOFF (Software)

1. As characters are entered, the entered character will be echoed back.
2. Once a command has been successfully entered, an output will immediately follow.
3. Some commands will act as a “get and set” command. In the case of these commands, upon entering, the get value will be displayed, followed by a “>” character. After the “>” has been output, a <CR> can be entered to prepare for the next command or a new set value can be entered, followed by the <CR>. Example: Typing ‘wli’ will return ‘wli 0.0% >’
4. Errors follow the format ERROR[#1][#2]:XXX<CR><LF> where:
 - a. #1 is the error number
 - b. #2 is the processor time in milliseconds
 - c. XXX is the human readable error message
 - d. <CR> is a carriage return character (ASCII 13)
 - e. <LF> is a line feed character (ASCII 10)
5. If an unrecognized command is entered, the unit will output <CR><LF> followed by the error message with error number 4 and message “Unknown command.”
6. Modes
 - a. White Light Mode – Output is white-balanced and controlled via Front Panel Knob or ‘wli’ serial command.
 - b. Raw Mode – Custom color output via control of individual Red/Green/Blue components. Controlled via ‘raw’ or ‘wmo’ commands (not by Front Panel Knob control).
 - c. RGB mode – allows for intensity knob and ‘wli’ command to control a custom color combination

The *hhh* command will display a complete list of available human readable commands.

Contact NECSEL IP for details on a packet based protocol.



5.5 Universal Serial Bus (USB) video stream (200LV only)

The **Hyperion** can output a USB video stream via serial interface using the USB connection on the rear of the unit. To use the connection, a PC is needed with a USB port and virtual COM port driver to detect the interface with the Hyperion. The USB video stream is compatible with the Direct Show API and can be viewed with a number of compatible software packages.

NOTE: (200LV only)	<i>When using the USB video stream, do not unplug the USB while in use. This may cause the video stream to not work properly. If this occurs, confirm a secure and proper USB connection and power cycle the unit.</i>
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6 Environmental Operating Conditions

1. The Hyperion can operate within temperatures ranging from 10°C to 35°C.
2. The Hyperion will be disabled if temperatures exceed recommended operating temperatures.
3. Do not use in the presence of flammable anesthetics.
4. Do not use in an oxygen rich environment.

The least favorable operating conditions are as follows:

Operation at 35°C – System cooling will be under the most stress under high temperatures.

Operation at 95% non-condensing humidity – increases the conductivity of air, reducing the dielectric breakdown of any insulation and isolation as well as creepage and clearance.

Under the above conditions, all IEC 60601-1 3rd Edition requirements are met.

7 Videoscope Proper Care and Handling

1. Remove Videoscope from sterile packaging and observe all labeling.
2. Observe date of manufacture and expiration date.
3. Note single use only “Do Not Reuse”.
4. Avoid touching camera face or fiber optic ends; if necessary, clean ends with Isopropyl Alcohol and apply dry compressed air.
5. Avoid kinking, stretching, or twisting in a tight coil.
6. Do not attempt to reuse the Videoscope. This is for a single use only and cannot be re-sterilized.
7. Follow surgical device manufacturers’ instructions for application protocol.
8. Do not look into the distal end of the Videoscope when the laser is enabled as this may result in temporary blindness.
9. After use, videoscopes shall be disposed of via local and applicable regulations based on the intended use.
Note: it is the responsibility of the VAR to determine and communicate appropriate disposal methods.

8 Hyperion Cleaning, Disinfection, and Disposal

1. Clean and disinfect the **Hyperion** with a commercially available surface disinfectant or mild detergent.
2. Wipe with Isopropyl Alcohol, Envirocide, or equivalent, do not spray.
3. Always comply with the instructions issued by the manufacturer for the disinfectant.
4. Never clean the **Hyperion** receptacles with liquid cleaners. Remove all dust, if necessary, with dry compressed air.
5. **Hyperion** units shall be disposed of via local and applicable regulations based on the intended use. *Note: it is the responsibility of the VAR to determine and communicate appropriate disposal methods.*



Warning: To avoid risk of electric shock, this equipment must only be connected to a supply mains with a protective earth.



9 Maintenance

The **Hyperion** is designed to operate for many years without any maintenance required. Instructions for replacing fuses are given below.



All maintenance (excluding fuse replacement) is to be performed by qualified personnel only. Do not attempt internal maintenance or repair. Consult the manufacturer for further instructions.

1. Use only rated fuses (Fuse: 3.15A 250V Slow Blow Time Lag 5x20mm)
2. Replace the main fuses as follows:
 - a. Unplug the device from the standard AC outlet and remove the power cord from the back of the unit.
 - b. Apply a flat screwdriver to the slot at the top of the fuse tray and gently pry it open.
 - c. Slide the fuse tray out as far as possible; the fuses will now be accessible.
 - d. Remove and replace the fuses.
 - e. Slide the fuse tray back in the plug housing.

Internal battery to be serviced by Manufacturer only.

10 Technical Data

Hyperion 200L/200LV

- Width: 32 cm (12.6 inches)
- Height: 13.5 cm (5.31 inches)
- Depth (frame): 24.1 cm (9.48 inches) w/o light guide adapter
- Depth (total): 27.4 cm (10.8 inches) w/o light guide adapter, with front/rear panel extrusions
- Weight: Approximately 6 kg (13.3 lbs)
- Operating mode: Continuous
- Main cable: 10 A/250 V
- Power supply: 100-240V, 50/60 Hz, 180VA
- Fuse: 3.15A 250V Slow Blow Time Lag 5x20mm
- Expected Service Life: 5 years
- Cleaning: Surface cleaning with mild detergent/disinfectant

Ambient conditions for operation

- Temperature: 10° to 35°C (50° to 95°F)
- Rel. humidity: 0% to 95% non-condensing
- Air pressure: 700 hPa to 1060 hPa

Ambient conditions for storage (in shipping packaging)

- Temperature: -20° to +50°C (-4° to 122°F)
- Rel. humidity: 0% to 100%, non-condensing



11 Electromagnetic Emissions and Immunity


The **Hyperion** System is intended for use in the electromagnetic environment specified, below. The customer or the user of the **Hyperion** System should assure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment – Guidance
RF Emissions CISPR 11	Group 1	The Hyperion System uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF Emissions CISPR 11	Class A	The Hyperion system is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment – Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % UT (>95 % dip in UT) for 0.5 cycle 40% UT (60 % dip in UT) for 5 cycles 70% UT (30 % dip in UT) for 25 cycles <5 % UT (>95 % dip in UT) for 5 sec	95% Reduction (10ms) 60% Reduction (100ms) 30% Reduction (500ms) 95% Reduction (5s)	Mains power quality should be that of a typical commercial or hospital environment. If the Hyperion System requires continued operation during power mains interruptions, it is recommended that the Hyperion System be powered from an uninterruptible power supply.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m @ 50 & 60 Hz	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Note: UT is the a.c. mains voltage prior to application of the test level.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment – Guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms 150 kHz to 80 MHz	Portable and mobile RF communications equipment should be used no closer to any part of the Hyperion System, including cables, than the recommended

<p>Radiated RF IEC 61000-4-3</p>	<p>3 V/m 80 MHz to 2.5 GHz</p>	<p>3 V/m 80 MHz to 2.5 GHz</p>	<p>separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> $d = 1.17 \sqrt{P}$ <p>150 kHz to 80 MHz</p> $d = 3.5 \sqrt{P}$ <p>80 MHz to 800 MHz*</p> $d = 7 \sqrt{P}$ <p>800 MHz to 2.5 GHz</p> <p>Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m)</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p>  <p><i>*Note: There are frequencies in this range that have shown video interruption at field strength levels of 1 V/m. Due to technological limitations with the videoscope these interruptions are inherent in the device and extra care should be taken to provide adequate distance when in use with equipment operating in the 80 MHz to 150 MHz range.</i></p>
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12 Product Ratings



For all CE compliance questions, EU customers may contact our EU representative:



MT Promedt Consulting GmbH,
Altenhofstrasse 80, 66386 St. Ingbert, Germany



13 Troubleshooting Section

1. Unit will not turn on
 - a. Check for a live power outlet
 - b. Check both front and rear power switches are set to on
 - c. Check for blown fuse and replace
2. Unit will not output light or too low of light
 - a. Check the intensity knob
 - b. With unit off, check the light output connection on front panel
 - c. With unit off, check unit and lightguide or videoscope for obstructions
 - d. Check that the unit is not in RGB mode with the serial commands or, if RGB mode is used, that the coefficients set should produce the expected level of light
3. Unit outputs unexpected color of light
 - a. With unit off, check unit and lightguide or videoscope for obstructions
 - b. With unit off, check the light output connection on front panel
 - c. Check that the unit is not in RGB mode with the serial commands or, if RGB mode is used, that the coefficients set should produce the expected color of light
4. Video image is not present (200LV only)
 - a. Check the videoscope connection on front panel
 - b. Check the DVI, S-Video or USB connection on the back panel
 - c. Check the DVI, S-Video or USB connection to the attached monitor or PC
 - d. With unit off, check videoscope for obstructions
 - e. Test unit with another videoscope
 - f. Restore the default settings, see section 5.3.2.i
 - g. Power cycle the unit
5. Video image is not bright enough (200LV only)
 - a. Check the light output, see troubleshooting section 2
 - b. With unit off, check videoscope for obstructions
 - c. Check the exposure and autogain settings on the front panel, see section 5.3.2.a through 5.3.2.e
 - d. Restore the default settings, see section 5.3.2.i
6. Video image color is unexpected (200LV only)
 - a. Use the white balance function, see section 5.3.2.k
 - b. Check the light output, see troubleshooting section 2
 - c. With unit off, check unit and videoscope for obstructions
 - d. Check the exposure and autogain settings on the front panel, see section 5.3.2.a through 5.3.2.e
 - e. Restore the default settings, see section 5.3.2.i
7. Video image is not moving or “frozen”
 - a. Push the pause button on the front panel, see section 5.3.2.j
 - b. If using a USB video stream, close the video stream, disconnect and reconnect the USB cable and reopen the video stream
 - c. Power cycle the unit

If none of these steps fixes the issue, please contact Ushio for a return merchandise authorization (RMA).



14 Contact Information

NECSEL IP, Inc., an Ushio Group company
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Vergennes, VT 05491
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