3G/HD Portable Video Switcher
HVS-190S/190I “HANABI”

NDI®

NDI® is a registered trademark of Vizrt Group.

Preliminary
1 M/E video switcher with NDI® connectivity; feature-rich yet compact and cost-effective

Introducing the HVS-190S/190I, a portable 1 M/E video switcher that builds on the features of the capable and popular HVS-490. Take advantage of remote control for off-site event management, and add an HVS-NIF card for NDI® connectivity in a highly reliable mixed SDI/IP system. Includes frame synchronization, resizing, 2.5D wipes and other DVEs, chroma keying, FLEXaKEY™, and more.

The HVS-190S and HVS-190I also have a built-in Web server that lets you change settings from a PC or a tablet. A clip memory feature has been added to the still store to support playback of video or animations and enhances productions through the use of CG wipes, while the multi-viewer meets a diverse range of monitoring needs. The equipment can be used in all types of locations, including live events, sports, news studios, OB vans, editorial offices and presentation venues, making it the ideal tool for shaping the imaginative your ideas.

Product Lineup

HVS-190S

Separated Main Unit/Control Panel Type

8 inputs/5 outputs*1 standard. Expandable up to 20 inputs/11 outputs*1(optional)*2.

The control panel has been laid out specifically with professionals in mind with a design that leverages the knowledge of expert operators. It includes dedicated bus buttons, AUX buttons, a fader controller and direct user buttons for various functions. The main unit offers exceptional expandability to facilitate the addition of a redundant power source unit and various input/output cards.

HVS-190I

Integrated Main Unit/Control Panel Type

8 inputs/5 outputs*1 standard. Expandable up to 16 inputs/9 outputs*1(optional)*2.

Similar to the HVS-190S in use, this compact video switcher is designed for portability. The inclusion of ample video input and output functionality makes it ideal for use in small broadcast vans and helicopters.

Like HVS-190S, it can be used with an optional redundant PSU and a range of I/O cards.

*1 Includes 1 HDMI output. *2 Maximum varies depending on the options configured.
Appearance subject to change.
HVS-NIF for NDI® Connectivity

HVS-NIF interface cards provide NDI® connectivity for high-quality, low-latency video transmission and NDI®|HX for low bit rate transmission. The cards make it easy to build a mixed baseband/IP system you can use to exchange video and audio over a network with other NDI® equipment. This is extremely effective for live video production - whether you are shooting remotely or enjoying easy streaming from computers connected via NDI®.

**HVS-NIF Features**

- Supports High bandwidth NDI®* and NDI®|HX input and output.
- Supports 3G/HD-SDI format, with 4 IP inputs/2 IP outputs per card.
- Add up to 3 cards to HVS-190S, 2 to HVS-190I or 2 to HVS-490*.
- Frame sync for all inputs.
- Proc amp functionality: adjust source video luminance, saturation or hue.
- Remote camera operation.
- Dual Gigabit Ethernet ports.
- Hardware-based codec processing for peace of mind when building IP systems.

*1 To be supported. *2 HVS-490 is 2M/E switcher. For details, visit FOR-A website.

**Live Solutions with NDI® and IP streaming**

FOR-A Products

**HVS series**
- HVS-190S
- HVS-190I
- HVS-490

+ HVS-NIF

**Control Panels for HVS-490**
- HVS-491OU / HVS-492OU
- HVS-492WOU / HVS-492ROU

Remote control

*(Available for HVS-190S/190I control)*

**Insight**

Video, audio, still image

**Network Switch**

- Video/Audio/ Still image
- CG/VR
- Web camera
- Smartphone
- PTZ camera
  - Video
  - Control
- Transmission
  - Wi-Fi
- Streaming
  - Cloud system
- Converter

To main line

LAN (NDI)
LAN
Other

NDI® is a registered trademark of Vizrt Group.
HVS-NIF for NDI® Connectivity

■ Remote Control
Set up HVS-190S/190I* at venues to manage events remotely from a control panel at your base of operations.
* HVS-190S is shown in the following example.

■ Support to Build SDI/NDI® Mixed System
Easily add devices or computer content compatible with NDI® output (such as videos, videoconferencing streams, presentations, or computer graphics) to SDI systems. Reliable baseband switchers can also be added to your NDI® system.

■ 2-way Transfer of Many Signals Using only LAN Cable
Two-way transfer with multiple video, audio, control, or tally systems using only one LAN cable.

■ PTZ Camera Control
Control multiple PTZ cameras—pan, tilt, or zoom, activate tally lights, set or apply presets, or use stored macros for video switching coordinated by bus buttons. Connect to up to 16 cameras.

■ SDI/IP Conversion and Routing
Add PTZ camera output, computer content, or other sources to SDI equipment, and freely convert between SDI and IP while routing video/audio from a single switcher to multiple devices. SDI/IP sources and output can be arranged side by side with the built-in multi viewer for monitoring over IP.

■ Excels in Many Applications
Beneficial for broadcasting, live production, corporate events, or other applications, regardless of the market.

Examples of Application

Mixed SDI/NDI® Production
Video feeds with both on-site and remote performers can be sent to the switcher along with computer content. In addition to the PGM bus, provides an ample selection of Aux buses (12) that can be used to send any video back to remote talent.

SDI/IP Simulcasts
Simultaneously with SDI playout, connect to streaming sites via an IP stream, enabling mixed or coordinated broadcasts of both sources.
Features

■ Input/Output

**HVS-190S: Separated Main Unit/Control Panel Type**
- 8 inputs/5 outputs standard*. Expandable up to 20 inputs/11 outputs**(optional)**.
- Equipped with 3 video I/O expansion slots, 1 audio I/O expansion slot.

*1 Includes 1 HDMI output. *2 Maximum varies depending on the options configured.

**HVS-190I: Integrated Main Unit/Control Panel Type**
- 8 inputs/5 outputs standard*. Expandable up to 16 inputs/9 outputs**(optional)**.
- Equipped with 2 video I/O expansion slots, 1 audio I/O expansion slot.

**Input/Output Card Configuration**

The following outlines combinations of input/output cards that can be used in the HVS-190S/190I slots. Refer to p.10 “Options” for details of cards.

![Input/Output Card Configuration Table]

■ Frame Synchronizer

Every input is fitted with frame synchronizers that enable switching of synchronous and asynchronous video signals. Installation of optional expansion cards supports asynchronous picture input from PCs, etc. Each input is also equipped with a process amplifier capable of adjusting the video level and chroma level, etc. of the input signal. Each output is equipped with a safety marker function*.

* HVS-NIF output doesn’t support safety marker.

■ HDMI Output

4K resolution is supported in HDMI 2.0 Level-B output. Can be used to monitor 4 images on 1 screen.

■ Audio Playback Support

Play back clips with audio. Sound effects can be mixed on switched videos using CG-Wipe effects. To utilize this function, download the audio data to the HVS-190S/190I in advance.

■ Digital Audio Interface*

Add the HVS-490AES Digital Audio I/O Card for 4 AES inputs and 4 outputs. Mux audio to PGM output, or demux audio from any input.

* To be supported.

■ Keyer, FLEXaKEY™

Includes 2 keyers and 4 FLEXaKEYs, enabling linear/luminance-based keying. Keyer gain, clip level, and transparency adjustment is supported, with edge* and mask functions also provided.

FLEXaKEY can be assigned to either the M/E PGM, M/E PST or an AUX output. As we also include the ability to mix on an Aux crosspoint selection, the Aux outputs can effectively and creatively be used to do away with the need for multiple M/Es, when creating different outputs for different screens or feeds at a live venue.

* Keyer only.

FLEXaKEY:
A simple keyer that can be freely assigned to M/E or Aux. Used in conjunction with regular keys. FLEXaKEY provides even more keyers.
Features

- **Advance Chroma Key**
  
  An advanced, high-quality 1 chroma keyer that can be assigned to any keyer or FLEXaKEY™. Enables full-featured compositing without stand-alone units. Use fill/key signal output or images combined with your choice of input as an input source. Composite images can also be created without using keyers or FLEXaKEY functionality.

- **DVE**
  
  Provides 4 freely assignable 2.5D DVEs.* Configure enlargement, reduction, rotation, borders, and other settings for each channel composited. Also available for background transitions.

  * Up to 2 DVEs when using 3G-SDI.

- **Abundant Transitions and DVEs**
  
  Transitions include wipe, mix, cut, full/non-additive mix, and others. Features 100 wipe patterns as well as 2.5D DVE wipes such as rotate and reposition. Used with clip memory, this enables wipe transitions created on a computer to be used without relying on a keyer. 2 sub-effects* can also be applied, such as negative, mosaic, defocus, mono, freeze, or paint.

  * Up to 1 DVE when using 3G-SDI.

- **AUX Transition**
  
  Choose from cut, mix, or wipe transitions when switching video among all Aux outputs.

- **Macro**
  
  A macro function enables you to store and register a series of operations and then perform complicated operations with one push of a button. Up to 100 patterns can be stored.

- **Direct Pattern**
  
  Assign up to 20 patterns and modification details with pattern numbers.

- **2 Still/Clip Stores**
  
  Provides 2 sets of still stores and clip memories for use as source material. Supply stills in jpeg, targa, bitmap, or png format from a computer via LAN or from a USB flash drive. Internal memory can hold 930 frames, with instant switching between image files during playback.
  
  Clip memory also enables use of wipes created on a computer. Other features include process amplifier functionality for adjustment of video gain, offset, or hue. As recording media, use devices (including SD cards) connected by USB or order the switcher with an optional SSD. Stills can be saved on the switcher using backup functionality for access even after it has been restarted.

- **Event Memory**
  
  Store up to 100 patterns consisting of BKGD, KEYER, FLEXaKEY, AUX, MV, and other elements. Even the startup status is available as an event memory option. Switch panel settings all at once with the press of a button. Seamless execution of complex video switching from a single button, with your choice of event-switching effects and switching times. Ideal for live applications.

- **GUI Control Function via Web Browser**
  
  An in-built Web server enables the settings of the HVS-190S and HVS-190I to be changed from a PC via a network. Mobile and tablet terminals can also be used through a wireless access point.
  
  The browser-based GUI of HVS-490 has been refined for greater convenience and significantly better usability. Operations such as applying event memory or macros or selecting patterns are possible from the upper right of the screen.

- **External Interfaces**
  
  External interfaces include GPI port supporting up to 24 inputs/outputs and two RS-422 ports as standard. An Ethernet port is used during PC control.

- **39 Kinds of Multi Viewer Split Patterns Able to Be Selected as Standard**
  
  1 built-in multi viewer output can display up to 16 windows, and optionally, an identically specced multi viewer output can be added. Layout patterns without borders can also be selected.
  
  Display channels can be freely assigned, allowing assignment of not only input source but also PGM output.
  
  Display options include title, frame tally, audio level meter, and clock (analog/digital).
Control Panel

Control Panel for HVS-190

Both the separate control panel for the HVS-190S (HVS-190OU) and the integrated control panel for the HVS-190I provide exceptional convenience and control consistent with HVS-190 specifications. 12 Aux buttons are available, as well as 4 FLEXaKEY™s, LINE DVE PGM/PST operations, and more. Available operations enable settings configuration, switching between Keyer, FLEXaKEY, and Aux, and applying event memory. Use PGM/PST bus buttons for Aux transitions, and freely assign user buttons to a variety of functions.

HVS-190OU/190I 1 M/E (12 buttons) Control Panel

Ample control panel connectivity is provided. HVS-190S users can connect HVS-190OU and up to 2 HVS-490 control panels. HVS-190I supports up to 2 HVS-490 control panels. HVS-490 control panels also enable remote control over LAN.

Advantages include enhanced usability and accurate control through customizable RGB button lights assigned to specific video material or button functions, an OLED display for material, a 7-inch touch panel, source and macro name display, and more. Direct input via a three-axis (XYZ) joystick, menu control knobs, and a keypad. A range of functions can also be assigned to user buttons in convenient locations on the control panel. Use an SD card to load or save configuration files and stills.

HVS-491OU 1 M/E (12 buttons) Control Panel

Control Panels for HVS-490
Control Panel

**HVS-492ROU** 2 M/E (12 buttons) Control Panel

- LAN port (connects to main unit)
- Menu control knobs
- M/E OUT / LINE select buttons
- KEY/AUX bus buttons
- Source name display
- KEY/FLEXaKEY bus buttons
- PGM/PST buttons
- DIRECT PATT/MACRO/EVENT/SEQUENCE button
- NEXT TRANSITION buttons
- KEY/FLEXaKEY buttons
- Fader lever
- GPI IN/TALLY OUT port
- SD CARD slot
- Touch panel
- User buttons

**HVS-492OU** 2 M/E (18 buttons) Control Panel

- LAN port (connects to main unit)
- Menu control knobs
- M/E OUT / LINE select buttons
- KEY/AUX bus buttons
- Source name display
- KEY/FLEXaKEY bus buttons
- KEY/FLEXaKEY/MACRO bus buttons
- PGM/PST buttons
- DIRECT PATT/MACRO/EVENT/SEQUENCE button
- NEXT TRANSITION buttons
- KEY/FLEXaKEY buttons
- Fader lever
- GPI IN/TALLY OUT port
- SD CARD slot
- Touch panel
- XYZ joystick
- User buttons

**HVS-492WOU** 1 M/E (18 buttons) Control Panel

- LAN port (connects to main unit)
- Menu control knobs
- M/E OUT / LINE select buttons
- KEY/AUX bus buttons
- Source name display
- KEY/FLEXaKEY/MACRO bus buttons
- PGM/PST buttons
- DIRECT PATT/MACRO/EVENT/SEQUENCE button
- NEXT TRANSITION buttons
- KEY/FLEXaKEY buttons
- Fader lever
- GPI IN/TALLY OUT port
- SD CARD slot
- Touch panel
- XYZ joystick
- User buttons
Rear Panel

HVS-190OU Rear

DC 12V IN (redundant power supplies)
TO MU port

HVS-190I Rear

DC 12V IN (redundant power supplies)
Audio IN/OUT expansion slots
RS-422 ports
GENLOCK REF IN/OUT ports
GPI IN/TALLY OUT port
LAN port

HVS-190S Front

POWER/ALARM indicators
USB port for a USB flash drive

HVS-190S Rear

Audio IN/OUT expansion slots
RS-422 ports
GENLOCK REF IN/OUT ports
GPI IN/TALLY OUT port
To OU/LAN ports
Options

Expansion Card

HVS-190S Rear
Equipped with 3 video I/O expansion slots, 1 audio I/O expansion slot.
Add HVS-100DI-A, HVS-100DO, or HVS-NIF to the video slots.

HVS-190I Rear
Equipped with 2 video I/O expansion slots, 1 audio I/O expansion slot.
Add HVS-100DI-A, HVS-100DO, or HVS-NIF to the video slots.

Audio expansion slots

Video expansion slots

HVS-100DI-A
4 Channel Digital Input Card
4 channels of 3G/HD-SDI input are possible with a single card. A frame synchronizer function for all inputs and re-size (expansion) function for 2 inputs are provided. SD images can be processed internally as HD images.

HVS-100DO
2 Channel Digital Output Card
2 channels of 3G/HD-SDI output are possible with a single card. As down-converters are provided for all outputs, HD and SD images can simultaneously be output.

HVS-NIF
NDI® I/F Card
Optional card for NDI® connectivity. Supports High bandwidth NDI® and NDI®|HX input and output, with 4 inputs/2 outputs per card. Proc amp, tally light control, remote camera operations (PTZ), and other functionality included.

HVS-49AES*
Digital Audio Input/Output Card
Supports 4 lines of input and output (8 channels) of balanced or unbalanced audio input and output. Use an internal sampling rate converter to sync audio input to the system. Output AES audio from SDI embedded audio, and mux source AES audio on SDI signals in Aux output.

* To be supported.
Options

Software

HVS-190ED
Editor Control Software
Add support for protocols used for editing on other video systems (BVS/DVS, GV).

HVS-190MV
Multi Viewer Expansion
An additional multi viewer output, enabling up to 16 split display. Choose a layout from 39 patterns. Free assignment of the channels enables video output and input source display. Display options include title, frame tally, audio level meter, and clock (analog/digital).

Others

HVS-AUX16A/16C/32A/64A
AUX Bus Control Box (ethernet connection)
AUX bus control boxes with either 16, 32 or 64 buttons. The 16-button control boxes and the 32-button control box are 1RU in size and the 64-button control box is 2RU in size. 9 AUX bus control boxes can be daisy-chained via Ethernet.

HVS-AUX16B/16D
AUX Bus Control Box (ethernet connection)
Desktop type of AUX bus control boxes with 16 buttons.

HVS-TALR32
HVS-TALOC32
Tally Control Unit (via RS-422)
Open collector type HVS-TALOC32 or relay type HVS-TALR32 can be connected. They are both half-rack size, and up to 5 units can be connected to the HVS-190S or HVS-190I.
- HVS-TALOC32: open collector type with 32 terminals.
- HVS-TALR32: relay type with 32 terminals.

HVS-190SPSM/190PSO
Redundant Power Supply Unit
- HVS-190SPSM: For the HVS-190S
- HVS-190PSO: For the HVS-190OU Control Panel

HVS-49PSO
Redundant Power Supply Unit
- For HVS-491OU/492OU/492WOU/492ROU (HVS-490 Control Panels)

HVS-190IPSM
Redundant Power Supply Unit
- For the HVS-190S

HVS-190SSD
SSD Expansion
SSD for still and clip storage.
HVS-190S / 190OU / 190I Datasheet

1. Specifications

<table>
<thead>
<tr>
<th>HVS-190S Basic specifications</th>
<th></th>
</tr>
</thead>
</table>
| Temperature                           | 0℃ to 40℃  
  (If 3 cards of HVS-100DI-A installed: 0℃ to 35℃) |
| Humidity                              | 10% to 90%  (no condensation) |
| Power                                 | AC 100 V to 240 V ±10% 50/60 Hz |
| Consumption                           | Standard: 66 W (at AC 100-120 V)  
  W/ full options: 184 W (at AC 100-120 V)  
  68 W (at AC 220-240 V)  
  178 W (at AC 220-240 V) |
| Dimensions                            | 430 (W) x 245 (D) x 88 (H) mm  
  480 (W) (Including rack mount brackets) |
| Weight                                | 5.85 kg (Standard),  7.7 kg (W/ full options) |
| Consumables                           | Power unit: Recommended replacement period: 5 years  
  Cooling fan: Recommended replacement period: 4 years |

<table>
<thead>
<tr>
<th>HVS-190S Technical specifications</th>
<th></th>
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</thead>
</table>
| Video format                          | 1080p/59.94, 50(Level-A)  
  1080i/59.94, 50  
  1080p/23.98, 24, 25, 29.97  
  1080PsF/23.98, 24, 25, 29.97  
  720p/59.94, 50 |
| Color sampling                        | YCbCr: 4:2:2 10bit |
| Number of video inputs                | Std: 8  
  SDI x 8 |
| Max: 20                               | Up to 3 cards |
| Video input                           | HD-SDI or 3G-SDI  75Ω BNC x 8  
  (W/ frame synchronizer for all inputs) |
| Video input (option)                  | Up to 3 input cards (in 3 optional I/O card slots) |
| HVS-100DI-A                           | HD-SDI or 3G-SDI  75Ω BNC x 4  
  (W/ frame synchronizer for all inputs)  
  1080p/59.94, 50(Level-B) support  
  SD-SDI acceptable to Input 1 and 2 (Up-resized to HD after input, Unavailable in 1080p) |
| HVS-NIF                               | NDI (High Bandwidth) or NDI|HX  4 inputs  
  1000BASE-T RJ-45 x 2 |
| Number of video outputs               | Std: 5  
  SDI x 4, HDMI x1 |
| Max: 11                               | Up to 3 cards |
| Video output                          | HD-SDI or 3G-SDI  75Ω BNC x 4  
  HDMI 2.0 Level-B (Type-A) x 1 (AUDIO support) |
<p>| Video output (option)                 | Up to 3 input cards (in 3 optional I/O card slots) |
| HVS-100DO                             | HD-SDI or 3G-SDI  75Ω BNC x 2 |</p>
<table>
<thead>
<tr>
<th><strong>HVS-NIF</strong></th>
<th>NDI (High Bandwidth) or NDI/HX 2 outputs 1000BASE-T RJ-45 x 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Genlock input</strong></td>
<td>BB (NTSC/PAL) or Tri-level sync 75Ω BNC x 1 Loop-through or 75Ω terminated</td>
</tr>
<tr>
<td><strong>Genlock adjustment range</strong></td>
<td>Horizontal timing: ±1H</td>
</tr>
<tr>
<td><strong>Genlock output</strong></td>
<td>BB (NTSC/PAL) or Tri-level Sync 75Ω BNC x 1</td>
</tr>
<tr>
<td><strong>FS / Proc Amp</strong></td>
<td>W/ frame synchronizer and Proc Amp for all inputs</td>
</tr>
<tr>
<td><strong>Effects</strong></td>
<td>For BKGD and KEY</td>
</tr>
<tr>
<td></td>
<td>WIPE 100 patterns, w/ border and softness</td>
</tr>
<tr>
<td></td>
<td>2D DVE 58 patterns</td>
</tr>
<tr>
<td><strong>Sub effect channel</strong></td>
<td>2 channels (1 channel in 1080p/59.94, 50) (MOSAIC, PAINT, DEFOCUS, NEGA, MONO, STROBE, FREEZE)</td>
</tr>
<tr>
<td><strong>Transition</strong></td>
<td>Operation: Fader, AUTO button or CUT button Type: MIX, WIPE (DVEも含む)</td>
</tr>
<tr>
<td><strong>Still/Clip memory</strong></td>
<td>Still: 2 memories Clip: 2 memories.  Recording time: 937 frames (approx. 31 seconds for 1080/59.94i) * Backup data with HVS-190SSD (option)</td>
</tr>
<tr>
<td><strong>Key</strong></td>
<td>KEY1 KEY2 Bus key, Luminance key and Full key Edge/shadow available</td>
</tr>
<tr>
<td></td>
<td>FLEXaKEY 1-4 Bus key, Luminance key and Full key Insertion to M/E or AUX videos</td>
</tr>
<tr>
<td><strong>Chromakey</strong></td>
<td>1 channel</td>
</tr>
<tr>
<td><strong>DVE channel</strong></td>
<td>4 channels (2 channels in 1080p/59.94, 50) (For BKGD, KEY1-2 and FLEXaKEY1-4)</td>
</tr>
<tr>
<td><strong>Multi-viewer</strong></td>
<td>Std: 1 channel Max: 2 channels (2-16 windows, 39 layout patterns) Features: Title, Tally, Audio meter, Safety area and Border Delay: 1 frame referring to PGM output.</td>
</tr>
<tr>
<td><strong>Event memory</strong></td>
<td>100 events: Settings for BKGD, KEY1-2, FLEXaKEY1-4, AUX, MV, CK, SUBEFF, STILL.</td>
</tr>
<tr>
<td><strong>Input adjustment range</strong></td>
<td>±0.5 H (-0.3 H to +0.7H for 1080/50p Level-B)</td>
</tr>
<tr>
<td><strong>I/O delay</strong></td>
<td>Minimum delay 1H</td>
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<tr>
<td></td>
<td>W/ FS 0-1 F + minimum delay</td>
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<tr>
<td></td>
<td>W/ up-resizing 1-2 F + minimum delay</td>
</tr>
<tr>
<td></td>
<td>W/ FS + DVE 1-2 F + minimum delay</td>
</tr>
<tr>
<td></td>
<td>W/ FS + rezising output + DVE 2-3 F + minimum delay</td>
</tr>
<tr>
<td><strong>Audio input/output (option)</strong></td>
<td>Digital audio input (AES/EBU): 4 stereo-pairs 32/44.1/48kHz 16-24bit Balanced 110Ω 25-pin D-sub (female) x 1 (inch screws) (for both in /out) Or unbalanced 75Ω BNC x 4</td>
</tr>
<tr>
<td><strong>HVS-49AES (Support planned)</strong></td>
<td>Digital audio output (AES/EBU): 4 stereo-pairs 48kHz 24bit Balanced 110Ω 25-pin D-sub (female) x 1 (inch screws) (for both in /out) Or unbalanced 75Ω BNC x 4</td>
</tr>
</tbody>
</table>
## Interfaces

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<tr>
<th>TO OU</th>
<th>For HVS-190OU connection</th>
<th>RJ-45 x 1</th>
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<td>100BASE-TX/1000BASE-T</td>
<td>RJ-45 x 1</td>
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<tr>
<td>EXT-LAN</td>
<td>100BASE-TX/1000BASE-T</td>
<td>RJ-45 x 1</td>
</tr>
<tr>
<td>GPI IN/TALLY OUT</td>
<td>25-pin D-sub (female) x 1 (inch screws)</td>
<td></td>
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<tr>
<td></td>
<td>24-input/output: GPI in/out, tally output (program output available)</td>
<td></td>
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<tr>
<td></td>
<td>Open collector or relay contact input</td>
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<tr>
<td></td>
<td>Open collector output</td>
<td></td>
</tr>
<tr>
<td>RS-422</td>
<td>9-pin D-sub (female) x 2 (inch screws)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For video recorder/player, router, tally unit and editor connection</td>
<td></td>
</tr>
<tr>
<td>USB</td>
<td>USB2.0 (Type-A) x 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For USB stick connection</td>
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## HVS-190S Options

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<th>HVS-190ED</th>
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<td>Multi-view channel expansion</td>
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<td>HVS-190SSD</td>
<td>SSD expansion</td>
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<tr>
<td>HVS-190SPSM</td>
<td>Redundant power unit supply for HVS-190S</td>
</tr>
<tr>
<td>HVS-100DI-A</td>
<td>4-channel digital input card</td>
</tr>
<tr>
<td>HVS-100DO</td>
<td>2-channel digital output card</td>
</tr>
<tr>
<td>HVS-NIF</td>
<td>NDI I/F card</td>
</tr>
<tr>
<td>HVS-49AES</td>
<td>Digital audio input/output card</td>
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</tbody>
</table>

## HVS-190S Accessories

AC adapter, Power cord, and Quick setup guide
### HVS-190OU Basic specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>0°C to 40°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>10% to 90% (no condensation)</td>
</tr>
<tr>
<td>Power</td>
<td>AC 100 V to 240 V ±10% 50/60 Hz DC12V (supplied with the AC adapter)</td>
</tr>
<tr>
<td>Consumption</td>
<td>15 W (at AC100-120V), 15 W (at AC220-240V)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>420 (W) x 246 (D) x 87.2 (H) mm</td>
</tr>
<tr>
<td>Weight</td>
<td>3.0 kg (Standard, w/ AC adapter) 3.4 kg (w/ HVS190IPSO)</td>
</tr>
<tr>
<td>Consumables</td>
<td>Power unit: Recommended replacement period: 5 years</td>
</tr>
</tbody>
</table>

### HVS-190OU Technical specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface</td>
<td>TO OU For HVS-190S connection RJ-45 x 1</td>
</tr>
</tbody>
</table>

### HVS-190OU options

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVS-190PSO</td>
<td>HVS-190OU redundant power supply unit</td>
</tr>
<tr>
<td>EIA rack mount brackets</td>
<td></td>
</tr>
</tbody>
</table>

### HVS-190OU Accessories

MU/OU connection cable, AC adaptor and Power cord
### HVS-190I Basic specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature</strong></td>
<td>0°C to 40°C</td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>10% to 90% (no condensation)</td>
</tr>
</tbody>
</table>
| **Power**           | AC 100 V to 240 V ±10% 50/60 Hz  
DC12V / 16A (supplied with the AC adapter)                                                                                   |
| **Consumption**     | Standard: 78 W (at AC 100-120V)  
W/ full options: 155 W (at AC 100-120V)  
74 W (at AC 220-240V)  
153 W (at AC 220-240V)                                                                                                      |
| **Dimensions**      | 420 (W) x 246 (D) x 136 (H) mm                                                                                                           |
| **Weight**          | 6 kg (Standard, including AC adapter)  
7.8 kg (W/ full options)                                                                                                          |
| **Consumables**     | Power unit: Recommended replacement period: 5 years  
Cooling fan: Recommended replacement period: 4 years                                                                               |

### HVS-190I Technical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
</table>
| **Video format**    | 1080p/59.94, 50 (Level-A)  
1080i/59.94, 50  
1080p/23.98, 24, 25, 29.97  
1080PsF/23.98, 24, 25, 29.97  
720p/59.94, 50                                                                                                      |
| **Color sampling**  | YCbCr: 4:2:2 10bit                                                                                                                      |
| **Number of video inputs** | Std: 8  
SDI x 8  
Max: 16  
Up to 2 cards                                                                                          |
| **Video input**     | HD-SDI or 3G-SDI 75Ω BNC x 8  
(W/ frame synchronizer for all inputs)                                                                                      |
| **Video input (option)** | Up to 2 input cards (in 2 optional I/O card slots)                                                                                      |
| **HVS-100DI-A**     | HD-SDI or 3G-SDI 75Ω BNC x 4 (W/ frame synchronizer for all inputs)  
1080p/59.94, 50 (Level-B) support  
SD-SDI acceptable to Input 1 and 2 (Up-resized to HD after input, Unavailable in 1080p)                              |
| **HVS-NIF**         | NDI (High Bandwidth) or NDI|HX 4 inputs  
1000BASE-T RJ-45 x 2                                                                                                        |
| **Number of video outputs** | Std: 5  
SDI x 4, HDMI x1  
Max: 9  
Up to 2 cards                                                                                          |
| **Video output**    | HD-SDI or 3G-SDI 75Ω BNC x 4  
HDMI 2.0 Level-B (Type-A) x 1 (AUDIO support)                                                                                   |
| **Video output (option)** | Up to 2 input cards (in 2 optional I/O card slots)                                                                                      |
| **HVS-100DO**       | HD-SDI or 3G-SDI 75Ω BNC x 2                                                                                                           |
| **HVS-NIF**         | NDI (High Bandwidth) or NDI|HX 2 outputs  
1000BASE-T RJ-45 x 2                                                                                                        |
| **Genlock input**   | BB (NTSC/PAL) or Tri-level sync 75Ω BNC x 1  
Loop-through or 75Ω terminated                                                                                               |
<p>| <strong>Genlock adjustment range</strong> | Horizontal timing: ±1H                                                                                                                 |
| <strong>Genlock output</strong>  | BB (NTSC/PAL) or Tri-level Sync 75Ω BNC x 1                                                                                              |</p>
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS / Proc Amp</td>
<td>W/ frame synchronizer and Proc Amp for all inputs</td>
</tr>
<tr>
<td>Effects</td>
<td>For BKGD and KEY</td>
</tr>
<tr>
<td>Pattern</td>
<td>WIPE 100 patterns, w/ border and softness</td>
</tr>
<tr>
<td>Sub effect channel</td>
<td>2 channels (1 channel in 1080p/59.94, 50) (MOSAIC, PAINT, DEFOCUS, NEGA, MONO, STROBE, FREEZE)</td>
</tr>
<tr>
<td>Transition</td>
<td>Operation: Fader, AUTO button or CUT button</td>
</tr>
<tr>
<td></td>
<td>Type: MIX, WIPE (DVE も含む)</td>
</tr>
<tr>
<td>Still/Clip memory</td>
<td>Still: 2 memories</td>
</tr>
<tr>
<td></td>
<td>Clip: 2 memories, Recording time: 937 frames (approx. 31 seconds for 1080/59.94i)</td>
</tr>
<tr>
<td>Key</td>
<td>KEY1 KEY2</td>
</tr>
<tr>
<td></td>
<td>Bus key, Luminance key and Full key Edge/shadow available</td>
</tr>
<tr>
<td>FLEXaKEY 1-4</td>
<td>Bus key, Luminance key and Full key Insertion to M/E or AUX videos</td>
</tr>
<tr>
<td>Chromakey</td>
<td>1 channel</td>
</tr>
<tr>
<td>DVE channel</td>
<td>4 channels (2 channels in 1080p/59.94, 50) (For BKGD, KEY1-2 and FLEXaKEY1-4)</td>
</tr>
<tr>
<td>Multi-viewer</td>
<td>Std: 1 channel  Max: 2 channels (2-16 windows, 39 layout patterns) Features: Title, Tally, Audio meter, Safety area and Border</td>
</tr>
<tr>
<td></td>
<td>Delay: 1 frame referring to PGM output.</td>
</tr>
<tr>
<td>Event memory</td>
<td>100 events: Settings for BKGD, KEY1-2, FLEXaKEY1-4, AUX, MV, CK Cross fade switching available at event recall</td>
</tr>
<tr>
<td>Input adjustment range</td>
<td>±0.5 H ( -0.3 H to +0.7H for 1080/50p Level-B)</td>
</tr>
<tr>
<td>I/O delay</td>
<td>Minimum delay 1H</td>
</tr>
<tr>
<td></td>
<td>W/ FS 0-1 F + minimum delay</td>
</tr>
<tr>
<td></td>
<td>W/ up-resizing 1-2 F + minimum delay</td>
</tr>
<tr>
<td></td>
<td>W/ FS + DVE 1-2 F + minimum delay</td>
</tr>
<tr>
<td></td>
<td>W/ FS + resizing output + DVE 2-3 F + minimum delay</td>
</tr>
<tr>
<td>Audio input/output</td>
<td>Digital audio input (AES/EBU): 4 stereo-pairs 32/44.1/48kHz 16-24bit Balanced 110Ω 25-pin D-sub (female) x 1 (inch screws) (for both in/out) Or unbalanced 75Ω BNC x 4</td>
</tr>
<tr>
<td>(option)</td>
<td>Digital audio output (AES/EBU): 4 stereo-pairs 48kHz 24bit Balanced 110Ω 25-pin D-sub (female) x 1 (inch screws) (for both in/out) Or unbalanced 75Ω BNC x 4</td>
</tr>
<tr>
<td>HVS-49AES (Support planned)</td>
<td></td>
</tr>
<tr>
<td>Interfaces</td>
<td>HVS-LAN 100BASE-TX/1000BASE-T RJ-45 x 1</td>
</tr>
<tr>
<td></td>
<td>EXT-LAN 100BASE-TX/1000BASE-T RJ-45 x 1</td>
</tr>
<tr>
<td>GPI IN/TALLY OUT</td>
<td>25-pin D-sub (female) x 1 (inch screws) 24-input/output: GPI in/out, tally output (program output available)</td>
</tr>
<tr>
<td></td>
<td>Open collector or relay contact input  Open collector output</td>
</tr>
</tbody>
</table>
### HVS-190I Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVS-190ED</td>
<td>Editor control software</td>
</tr>
<tr>
<td>HVS-190MV</td>
<td>Multi-view channel expansion</td>
</tr>
<tr>
<td>HVS-190SSD</td>
<td>SSD expansion</td>
</tr>
<tr>
<td>HVS-190IPSM</td>
<td>Redundant power unit supply for HVS-190S</td>
</tr>
<tr>
<td>HVS-100DI-A</td>
<td>4-channel digital input card</td>
</tr>
<tr>
<td>HVS-100DO</td>
<td>2-channel digital output card</td>
</tr>
<tr>
<td>HVS-NIF</td>
<td>NDI I/F card</td>
</tr>
<tr>
<td>HVS-49AES</td>
<td>Digital audio input/output card</td>
</tr>
</tbody>
</table>

### HVS-190I Accessories

AC adaptor, Power cord, and Quick setup guide
2. External Dimensions

HVS-190S

(All dimensions in mm.)

HVS-190OU

(All dimensions in mm.)
(All dimensions in mm.)