



# V-160HD

Streaming Video Switcher

HANDLER FINDEN

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## VIDEO

Video Processing	4:2:2 (Y/Pb/Pr), 8-bit
Number of Video Channels	16 channels
Video Input Formats	HDMI IN 1-4, SDI IN 1-8 720/59.94p *1, *3 720/50p *1, *4 1080/59.94, 1080/59.94p, 1080/60p, 1080/29.97p, 1080/30p *2, *3 1080/50i, 1080/50p, 1080/25p *2, *4 1080/23.98p, 1080/24p *2 * The input interlaced video signal is converted to progressive video signal by internal processing. *1 OUTPUT FORMAT = 720p *2 OUTPUT FORMAT = 1080i or 1080p *3 FRAME RATE = 59.94 Hz, 60 Hz *4 FRAME RATE = 50 Hz  HDMI IN 5-8 480/59.94, 480/59.94p, 720/59.94p, 1080/59.94, 1080/59.94p, 1080/50p, 1080/29.97p, 1080/30p *1 576/50i, 576/50p, 720/50p, 1080/50i, 1080/50p, 1080/25p *2 1080/23.98p, 1080/24p VGA (640 x 480/60 Hz), SVGA (800 x 600/60 Hz), XGA (1024 x 768/60 Hz) WXGA (1280 x 800/60 Hz), SXGA (1280 x 1024/60 Hz) FWXGA (1366 x 768/60 Hz), SXGA+ (1400 x 1050/60 Hz) UXGA (1600 x 1200/60 Hz), WUXGA (1920 x 1200/60 Hz) * The refresh rate is the maximum value of each resolution. * Conforms to CEA-861-E/VESA DMT Version 1.0 Revision 11. * 1920 x 1200/60 Hz: Reduced blanking * The input interlaced video signal is converted to progressive video signal by internal processing. *1 FRAME RATE = 59.94 Hz, 60 Hz *2 FRAME RATE = 50 Hz
Video Output Formats	HDMI OUT 1-2, SDI OUT 1-3: 720/59.94p *1, *4 720/60p *1, *5 720/50p *1, *8 1080/59.94 *2, *4 1080/60i *2, *5 1080/50i *2, *8 1080/59.94p *3, *4 1080/60p *3, *5 1080/29.97p *3, *6 1080/30p *3, *7 1080/50p *3, *8 1080/25p *3, *9 1080/23.98p *3, *10 1080/24p *3, *11 *1 OUTPUT FORMAT = 720p *2 OUTPUT FORMAT = 1080i *3 OUTPUT FORMAT = 1080p *4 FRAME RATE = 59.94 Hz *5 FRAME RATE = 60 Hz *6 FRAME RATE = 29.97 Hz *7 FRAME RATE = 30 Hz *8 FRAME RATE = 50 Hz *9 FRAME RATE = 25 Hz *10 FRAME RATE = 23.98 Hz *11 FRAME RATE = 24 Hz  HDMI OUT 3: 1080/59.94p *1 1080/60p *2 1080/29.97p *3 1080/30p *4 1080/50p *5 1080/25p *6 1080/23.98p *7 1080/24p *8 *1 FRAME RATE = 59.94 Hz *2 FRAME RATE = 60 Hz *3 FRAME RATE = 29.97 Hz *4 FRAME RATE = 30 Hz *5 FRAME RATE = 50 Hz *6 FRAME RATE = 25 Hz *7 FRAME RATE = 23.98 Hz *8 FRAME RATE = 24 Hz  USB STREAM: 1080/59.94p, 720/59.94p, 640 x 480/59.94p *1 1080/60p, 720/60p, 640 x 480/60p *2 1080/29.97p, 720/29.97p, 640 x 480/29.97p *3 1080/30p, 720/30p, 640 x 480/30p *4 1080/50p, 720/50p, 640 x 480/50p *5 1080/25p, 720/25p, 640 x 480/25p *6 1080/23.98p, 720/23.98p, 640 x 480/23.98p *7 1080/24p, 720/24p, 640 x 480/24p *8 *Uncompressed format (YUY2) and Compressed format (Motion JPEG) supported. *1 FRAME RATE(USB OUT) = 59.94 Hz *2 FRAME RATE(USB OUT) = 60 Hz *3 FRAME RATE(USB OUT) = 29.97 Hz *4 FRAME RATE(USB OUT) = 30 Hz *5 FRAME RATE(USB OUT) = 50 Hz *6 FRAME RATE(USB OUT) = 25 Hz *7 FRAME RATE(USB OUT) = 23.98 Hz *8 FRAME RATE(USB OUT) = 24 Hz
Still Image:	Bitmap File (.bmp) Maximum 1920 x 1080 pixels, 24-bit color, uncompressed. PNG File (.png) Maximum 1920 x 1080 pixels, 24-bit color JPEG File (.jpg, .jpeg) Maximum 1920 x 1080 pixels, 24-bit color * It can be stored up to 16 files in the internal memory. * It can be exported in the USB flash drive. * PNG alpha channel supported.
Video Effects	Transition: CUT, MIX (DISSOLVE/FAM/NAM), WIPE (8 types), SPLIT (2 types) Composition: PinP x 4 (SQUARE, CIRCLE, DIAMOND), Keyer x 4 (Luminance Key, Chroma Key, DSK x 2 (Luminance Key, Chroma Key, Alpha Key, External Key)) Others: Multi-View(3 types), Flip horizontal, Flip vertical, Still Image Capture, Still Image Playback, Output fade (Audio, Video: WHITE or BLACK), Test pattern output

## AUDIO

Audio Processing	Sample rate: 24 bits, 48 kHz
Number of Audio Channels	40 channels
Audio Formats	USB STREAM (input/output): Linear PCM, 24 bits, 48 kHz, 2 ch Bluetooth (input): Linear PCM, 24 bits, 48 kHz, 2 ch HDMI IN: Linear PCM, 24 bits, 48 kHz, 2 ch HDMI OUT: Linear PCM, 24 bits, 48 kHz, 8 ch SDI IN: Linear PCM, 24 bits, 48 kHz, 2 ch (Conforms to SMPTE 299M) SDI OUT: Linear PCM, 24 bits, 48 kHz, 8 ch (Conforms to SMPTE 299M)
Audio Effects	Channel Effects: High pass filter, Echo canceller, Anti-feedback, Noise gate, De-esser, Compressor, 3-Band equalizer, Voice changer, Delay, Auto mixing Master Effects: Reverb, 3-Band equalizer, Delay, Multi-band compressor, Limiter Others: Output fade, Test tone output

## COMMON SECTION

Other Functions	Preset Memory (30 types) Macro Control (100 types) Sequencer Control (1,000 steps) Panel lock function EDID Emulator Auto Switching Auto Input Detect Smart Tally Remote Camera Control (Up to 16 units) External Rec Control
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## CONNECTORS

Video Input Connectors	HDMI IN 1-4: HDMI type A x 4 * HDCP Supported  HDMI IN 5-8: HDMI type A x 4 * HDCP Supported * Multi-format Supported  SDI IN 1-8: BNC type x 8 * Conforms to SMPTE 424M (SMPTE 425M-AB), 292M
Video Output Connectors	HDMI OUT 1-3: HDMI type A x 3 * HDCP Supported  SDI OUT 1-3: BNC type x 3 * Conforms to SMPTE 424M (SMPTE 425M-AB), 292M  USB STREAM: USB Type-C (TM)
Audio Input Connectors	Analog: AUDIO IN 1-2: Combo type (XLR, 1/4-inch TRS phone), phantom power DC 48 V (unloaded maximum), 14 mA (maximum load) AUDIO IN 3(L, 4/R): RCA phono type  Digital: USB STREAM: USB Type-C (TM) Bluetooth HDMI IN 1-8: HDMI type A x 8 SDI IN 1-8: BNC type x 8
Audio Output Connectors	Analog: AUDIO OUT: XLR type AUDIO OUT: RCA phono type PHONES: Stereo 1/4-inch phone type  Digital: USB STREAM: USB Type-C (TM) HDMI OUT 1-3: HDMI type A x 3 SDI OUT 1-3: BNC type x 3
Other Connectors	USB MEMORY: USB A type (for USB flash drive, for remote control from USB Numeric Keypad) USB STREAM: USB Type-C (TM) (for remote control from PC and iPad) Bluetooth: for remote control from iPad CTL/EXP: 1/4-inch TRS phone type (for remote control from foot switch and expression pedal) TALLY/GPIO: DB-25 type (Female)(Tally/GPIO, 16, GPI, 8) RS-232: DB-9 type (Male) (for Remote Control) LAN CONTROL: RJ45 100BASE-TX (for Remote Control) Reference IN/THRU: BNC type * Black Burst (Sync to frames), Bi-Level, Tri-Level

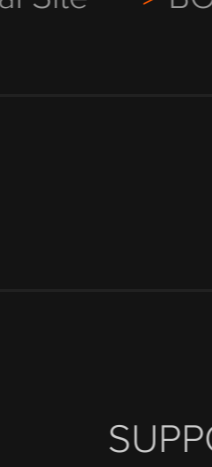
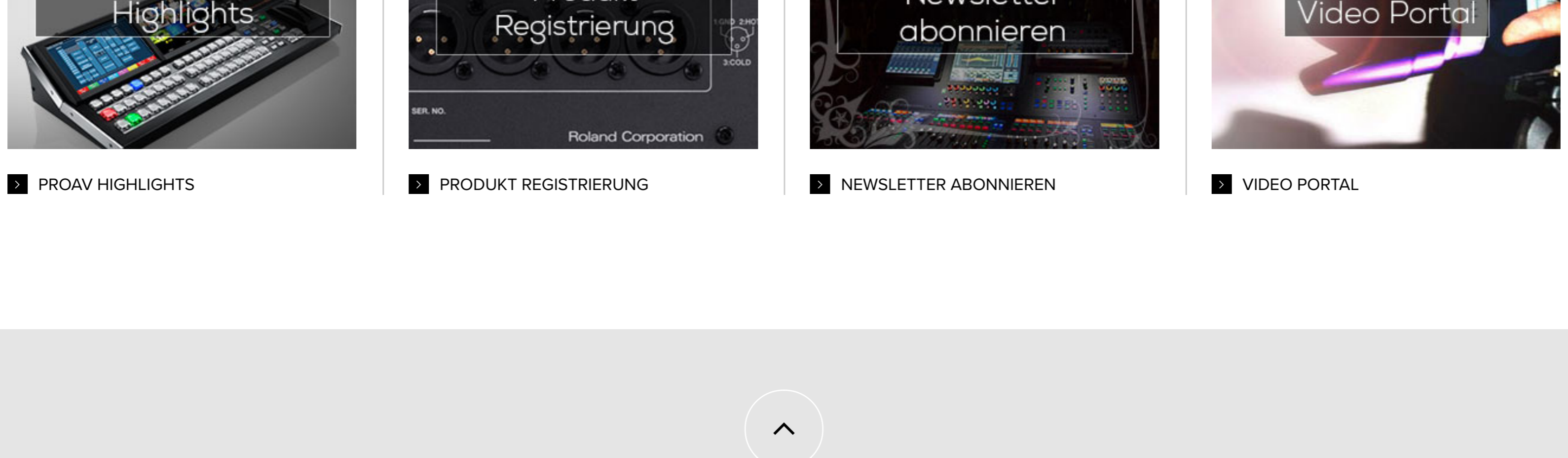
## AUDIO INPUT/OUTPUT CHARACTERISTICS

Input Level	AUDIO IN 1, 2: -60~+4 dBu (Maximum: +24 dBu) AUDIO IN 3(L, 4/R): -10 dBu (Maximum: +10 dBu)
Input Impedance	AUDIO IN 1, 2: 9.4 k ohms (ANALOG GAIN 0~24 dBu), 74.4 k ohms (ANALOG GAIN ≠ 24dBu) AUDIO IN 3(L, 4/R): 47 k ohms
Output Level	AUDIO OUT (XLR): +4 dBu (Maximum: +24 dBu) AUDIO OUT (RCA): -10 dBu (Maximum: +10 dBu) PHONES: 92 mW + 92 mW (32 ohms)
Output Impedance	AUDIO OUT (XLR): 600 ohms AUDIO OUT (RCA): 1 k ohm PHONES: 10 ohms

## OTHERS

Bluetooth	Ver 4.2 Profile Support: A2DP (Audio), GATT (MIDI over Bluetooth Low Energy) Codec: SBC (Support to the content protection of the SCMS-T method)
Display	4.3 inches TFT Color LCD: 480 x 272 dots
Power Supply	AC Adaptor
Current Draw	2.5 A
Power Consumption	55 W
Operation Temperature	+0 to +40 degrees Celsius +32 to +104 degrees Fahrenheit
Dimensions	437 (W) x 253 (D) x 103 (H) mm 17-1/4 (W) x 10 (D) x 4-1/16 (H) inches  480 (W) x 253 (D) x 103 (H) mm 18-15/16 (W) x 10 (D) x 4-1/16 (H) inches * When rack mount angles are fitted.
Weight (excluding AC adaptor)	3.9 kg 8 lbs 10 oz
Accessories	Startup Guide Leaflet "USING THE UNIT SAFELY" AC adaptor Power cord Rack-mount angle x 2 Rack-mount angle mounting screw x 6
Options (sold separately)	Footswitch: BOSS FS-5U, FS-6, FS-7 Expression Pedal: EV-5, EV-30, BOSS FV-500L, FV-500H

\* 0 dBu = 0.775 Vrms  
\* This product is a Class A digital device under FCC part 15.  
All specifications and appearances are subject to change.



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