**Presentation Switcher (built-in scan converter & scalar / HDBaseT output)**
# MSD-501

The IDK MSD-501 is simple-to-use, 3 digital (HDMI) and 2 analog inputs Presentation Switchers. Video signals HDMI, DVI, Composite Video, S-Video, Analog RGB, and Analog YPbPr can be input and converted up to QWXGA or 1080p. The MSD-501 includes an HDMI output and an HDBaseT output that can output simultaneously. The MSD-501 also has 3 digital and 5 analog audio inputs. Audio signals of IN1 to IN3 are switch-selectable between digital audio (HDMI) and analog audio (RCA), and audio output is simultaneous output both digital and analog output. Sound level of input and output can be set respectively. Gaps between video and audio can be compensated by Lip Sync. Front Panel VFD Menu is a useful for checking input and output signal status on the switcher and set or changes the settings of the switcher to support AV systems in a field. The MSD-501 also has other features such as built-in scan converter, Seamless Switching, and Aspect Ratio Control for complete AV switching and distribution.
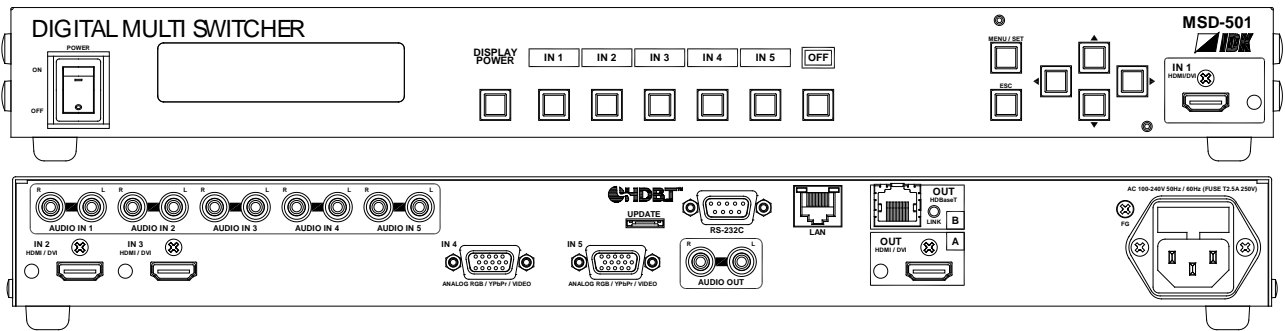
■**Specification**

| Item | | | | Description |
|---|---|---|---|---|
| Input | Video | HDMI / DVI | Number / Signal | 3 inputs / HDMI Deep Color (*1) / DVI 1.0 / HDCP1.4<br>- TMDS single link<br>- TMDS clock: 25 MHz to 225 MHz<br>- Dot clock: 25 MHz to 165 MHz |
| | | | Connector | 3 female HDMI Type A |
| | | | Others | Built-in Digital Cable EQ, EDID emulation |
| | | Universal Analog | Number / Signal | 2 inputs / Composite video, S-Video, Analog RGB / Analog YPbPr (auto-recognition)<br>- Composite video (VBS Signal): 1.0 V[p-p]/75 Ω<br>- S-Video (Y/C Signal): 1.0 V [p-p] (Y) /0.286 V [p-p] (C) /75 Ω<br>- Analog RGB: 0.7 V [p-p] (1.0 V [p-p] Sync on Green) /75 Ω HS/VS TTL level, CS TTL level, Sync on Green<br>- Analog YPbPr: 1.0 V [p-p] (Y) / 0.7 V [p-p] (Pb/Pr) / 75 Ω |
| | | | Connector | 2 female 15-pin HD |
| | | | Others | EDID emulation |
| | | Format | | NTSC / PAL<br>480i / 480p / 576i / 576p / 720p / 1080i / 1080p<br>VGA to QWXGA<br>  * WUXGA / QWXGA are supported only with Reduced Blanking |
| | Audio | Digital | Number / Signal | 3 inputs / Multi-channel linear PCM up to 8 channels<br>- Sampling frequency: 32 kHz to 192 kHz<br>- Sample size: 16 bit to 24 bit<br>- Reference level:-20 dBFS<br>- Max. input level: 0 dBFS<br>  * IN1 to IN3 are switch-selectable between digital and analog audio |
| | | | Connector | 3 female HDMI Type A |
| | | Analog | Number / Signal | 5 inputs / Stereo LR unbalanced signal<br>- Input impedance: 24 kΩ<br>- Reference level: -10 dBu<br>- Max input level: +10 dBu<br>  * IN1 to IN3 are switch-selectable between digital and analog audio |
| | | | Connector | 5 RCA pin jack |
| Output | Video | HDMI / DVI | Number / Signal | 1 output / HDMI Deep Color (*1) / DVI 1.0 / HDCP1.4<br>- TMDS single link<br>- TMDS clock: 25 MHz to 225 MHz<br>- Dot clock: 25 MHz to 165 MHz<br>  * The switcher can output both an HDMI output and an HDBaseT output simultaneously |
| | | | Connector | 1 female HDMI Type A |
| | | | Others | Built-in Digital Cable EQ |
| | | HDBaseT | Number / Signal | 1 output (*2) / HDMI Deep Color (*1) / DVI 1.0 / HDCP1.4<br>- TMDS single link<br>- TMDS clock: 25 MHz to 225 MHz<br>- Dot clock: 25 MHz to 165 MHz<br>  * The switcher can output both an HDMI output and an HDBaseT output simultaneously |
| | | | Connector | 1 RJ-45 (*3) / Cable: Cat5e / Cat6 (STP / UTP straight cable) (*4) |
| | | Format | | 480i / 480p / 576i / 576p / 720p / 1080i / 1080p<br>VGA / SVGA / XGA / WXGA (1280 x 768) / WXGA (1280 x 800) / Quad-VGA / SXGA / WXGA (1360 x 768) / WXGA (1366 x 768) / SXGA+ / WXGA+ / WXGA++ / UXGA / WSXGA+ / VESA1080 / WUXGA / QWXGA<br>  * VESA1080 / WUXGA / QWXGA are only output as Reduced Blanking |
| | Audio | Digital | Number / Signal | 1 output / Multi-channel linear PCM up to 8 channels<br>- Sampling frequency: 32 kHz to 192 kHz<br>- Sample size: 16 bit to 24 bit<br>- Reference level: -20 dBFS<br>- Max. output level: 0 dBFS<br>  *The switcher can output both an HDMI output and an HDBaseT output simultaneously |
| | | | Connector | 1 female HDMI Type A,<br>1 RJ-45 |
| | | Analog | Number / Signal | 1 output / Stereo LR unbalanced signal<br>Output impedance: 75 Ω<br>Reference level: -10 dBu<br>Max. output level: +10 dBu |
| | | | Connector | 1 RCA pin jack |
| | | Lip Sync | | Up to 16 frames |

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| Item | | | Description |
|---|---|---|---|
| **Functions** | Digital Cable EQ | Input | From 33 ft. / 10 m up to 99 ft. / 30 m (approx.) (*5) |
| | | Output | HDMI / DVI: From 33 ft. / 10 m up to 165 ft. / 50 m (approx.) (*5)<br>HDBaseT: Up to 330 ft. / 100 m (approx.) (*6) |
| | Analog video processing unit | | 3D Y/C separation |
| | Scan Converter | | Aspect Ratio Control, Seamless Switching (*7), Picture adjustment (brightness, contrast, display position, display size), Motion adaptive I/P conversion |
| | Others | | Volume adjustment (volume of input and output ports can be set separately)<br>Audio breakaway enables independent audio and video switching<br>Cross-point memory   (storage for 7 settings )<br>Preset memory (8 settings and startup settings)<br>Last memory<br>Anti-Snow (*8)<br>Connection Reset (*9)<br>External control commands (32 commands)<br>Front panel security lockout<br>Lip Sync<br>Auto input detection and switching |
| **External control** | Serial control port | Number / Signal | 1 port / RS-232C |
| | | Connector | 1 male 9-pin D-Sub |
| | LAN control port | Number / Signal | 1 port / 10Base-T (Auto Negotiation), 100Base-TX (Auto Negotiation), Auto MDI/MDI-X |
| | | Connector | 1 RJ-45 |
| | Command outputs to external device | | RS-232C, LAN, CEC (controls power of display)(*10), PJLink (class1) |
| **Others** | Power | | 100 - 240 VAC ± 10%, 50 Hz/60 Hz ± 3 Hz |
| | Power consumption | | About 35 Watts |
| | Dimensions | | 16.93 x 1.73 x 13.78" (approx.) / 430 (W) x 44(H) x 350 (D) mm<br>(EIA rack 1U, not including projections) |
| | Weight | | 9.26 lbs. approx. / 4.2 kg |
| | Temperature | | Operating: 32 °F to 104 °F / 0 °C to +40 °C<br>Storage: -4 °F to +176 °F / -20 °C to +80 °C |
| | Humidity | | Operating/ Storage: 20 % to 90 % (Non Condensing) |

(*1)    This product supports 30 bits/pixel Deep color (10 bit/component). It does not support xvYCC, Automatic Lip Sync, 3D, ARC, HEC. (Lip sync can be adjusted manually.)
(*2)    Digital twisted pair output does not support DVI signals with HDCP. If you need to extend DVI signals with HDCP, please use The IDK HDC-RD100 as a receiver.
(*3)    Digital twisted pair output is only for extending video, audio, power for a receiver, control signals using a Cat5e/Cat6 twisted pair cable. IDK receivers are required.
       Please do not connect LAN devices to this connector.
(*4)    Wiring is straight T568A or T568B. If exceeding 50 m, it is recommended to use a Cat6 cable.
(*5)    Transmission distance depends on connected equipment. The information above is maximum transmission distance when a cable made by IDK (AWG24) is used and signals
       (1080p 60 Hz 24bit/pixel (8bit/component)) are transmitted (both inputs and outputs of this product). When connected equipment is not matched to this product or other
       makers' cables are used, video signal can be unstable or video signals cannot be output, even though transmission distance is within the information above.
(*6)    Since some LCD monitors do not stabilize during operation, please have an evaluation before using or ask IDK for advices.
(*7)    Seamless Switching has one black frames or back color.
(*8)    The Anti-Snow function can automatically recover from snow-noise that is a specific symptom of digital signals having HDCP. Mainly, this snow-noise occurs during system
       startup. Therefore, this function does not work in case of snow-noise has already occurred before input the signal to IDK switchers or bad quality signal transmission.
(*9)    The Connection Reset function can fix these problems without physical cable manipulations. This function can work only in this product's output port, which sometimes will not
       take effect if another device is between output of this product and display device.
(*10)   Displays that are used with this product must support CEC. Some displays cannot be controlled by this product through CEC.
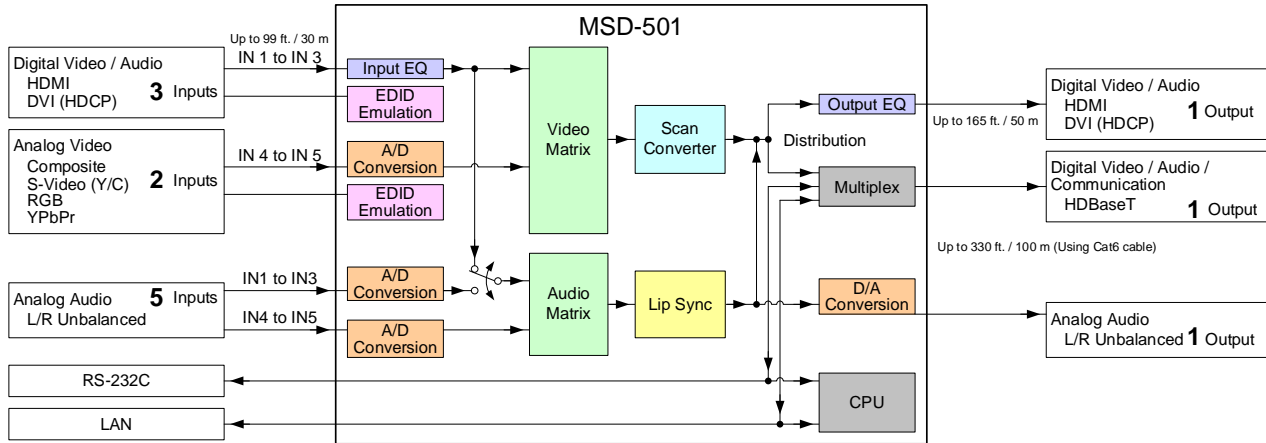
**■ Front & Rear Panel**

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# MSD-501 Diagram and Features

■**Diagram**



[Features]

■Video
- Up to QWXGA (RB) [*1] or 1080p
- Built-in Digital Cable EQ
  Input: From 33 ft. / 10 m up to 99 ft. / 30 m (approx.)
  Output: From 33 ft. / 10 m up to 165 ft. / 50 m (approx.)
- Extends output signal up to 330 ft. (approx.) / 100 m using a Cat6 twisted pair cable
- "Front Panel VFD Menu" for setup and signal status check
- Simultaneous output from an HDMI output and an HDBaseT output
- Aspect Ratio Control
- Seamless Switching [*2]
- Anti-Snow

■ **Audio**
- A/D, D/A conversion
- Volume adjustment
- Lip Sync

■ Control
- Input: RS-232C, LAN
- Output: RS-232C, LAN, CEC, PJLink

■ Others
- Front panel HDMI input
- Connection reset
- EDID emulation
- Audio breakaway enables independent audio and video switching
- Preset memory, Last memory, and Cross-point memory
- Front panel security lockout
- Internal test patterns for calibration and setup
- Auto input detection and switching

* 1. (RB) = Reduced Blanking
* 2. Seamless switching with a black frame.

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