



# MSD-5402SL

**■Description**

The IDK MSD-5402SL is 5 digital (HDMI) and 4 analog inputs Seamless 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-5402SL also has 5 digital and 9 analog audio inputs. Its switching is truly seamless, and there is no black frame between the video switching. Audio signals of IN1 to IN5 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-5402SL also has other features such as built-in scan converter, Truly Seamless Switching, and Aspect Ratio Control for complete AV switching and distribution.

**■Specification**

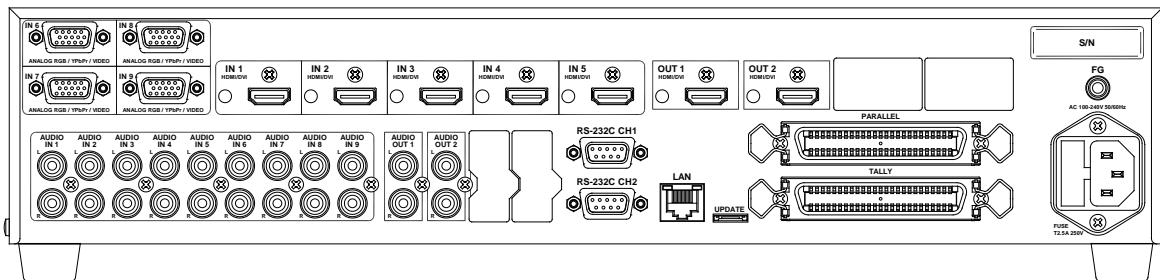
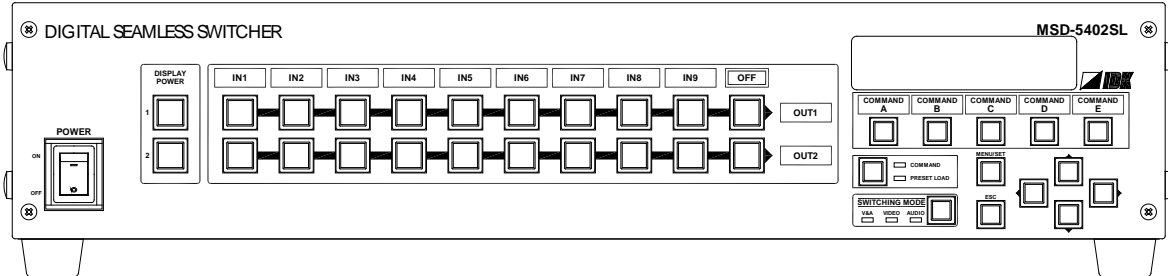
		Item		Description
Input	Video	HDMI / DVI	Number / Signal	5 inputs / HDMI Deep Color (*1) / DVI 1.0 / HDCP1.4 - TMDS single link - TMDS clock: 25 MHz to 225 MHz - Dot clock: 25 MHz to 165 MHz
			Connector	5 female HDMI Type A
			Others	Built-in Digital Cable EQ, EDID emulation
		Universal Analog	Number / Signal	4 inputs / Composite video, S-Video, Analog RGB/Analog YPbPr (auto-recognition) - Composite video (VBS Signal): 1.0 V [p-p] / 75 Ω - S-Video (Y/C Signal): 1.0 V [p-p] (Y) / 0.286 V [p-p] (C) / 75 Ω - 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 - Analog YPbPr: 1.0 V [p-p] (Y) / 0.7 V [p-p] (Pb/Pr) / 75 Ω
			Connector	4 female 15-pin HD,
			Others	EDID emulation
	Format		NTSC / PAL 480i / 480p / 576i / 576p / 720p / 1080i / 1080p VGA to QWXGA * WUXGA / QWXGA are supported only with Reduced Blanking	
	Audio	Digital	Number / Signal	5 inputs / Multi-channel linear PCM up to 8 channels - Sampling frequency: 32 kHz to 192 kHz - Sample size: 16 bit to 24 bit - Reference level: -20 dBFS - Max. input level: 0 dBFS * IN1 to IN5 are switch-selectable between digital and analog audio
			Connector	5 female HDMI Type A
		Analog	Number / Signal	9 inputs / Stereo LR unbalanced signal - Input impedance: 24 kΩ - Reference level: -10 dBu - Max input level: +10 dBu * IN1 to IN5 are switch-selectable between digital and analog audio
Connector			9 RCA pin jack	
Output	Video	HDMI / DVI	Number / Signal	2 outputs / HDMI Deep Color (*1) / DVI 1.0 / HDCP1.4 - TMDS single link - TMDS clock: 25 MHz to 225 MHz - Dot clock: 25 MHz to 165 MHz
			Connector	2 female HDMI Type A
			Others	Built-in Digital Cable EQ
	Format		480i / 480p / 576i / 576p / 720p / 1080i / 1080p 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 * VESA1080 / WUXGA / QWXGA are only output as Reduced Blanking	
	Audio	Digital	Number / Signal	2 outputs / Multi-channel linear PCM up to 8 channels - Sampling frequency: 32 kHz to 192 kHz - Sample size: 16 bit to 24 bit - Reference level: -20 dBFS - Max. output level: 0 dBFS
			Connector	2 female HDMI Type A,
		Analog	Number / Signal	2 outputs / Stereo LR unbalanced signal Output impedance: 75 Ω Reference level: -10 dBu Max. output level: +10 dBu
			Connector	1 RCA pin jack
		Lip Sync		Up to 8 frames * Adjusts 5 frames when output signal is 88.2 kHz / 96 kHz (4 frames only when output format is 576i / 576p / 720p @50 / 1080i @50 / 1080p @50), adjusts 2 frames when output is 192 kHz

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Item		Description
Functions	Digital Cable EQ	Input From 33 ft. / 10 m up to 99 ft. / 30 m (approx.) (*2) Output From 33 ft. / 10 m up to 165 ft. / 50 m (approx.) (*2)
	Analog video processing unit	3D Y/C separation
	Scan Converter	Aspect Ratio Control, Truly Seamless Switching, 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) Audio breakaway enables independent audio and video switching Cross-point memory (storage for 7 settings ) Preset memory (8 settings and startup settings) Last memory Anti-Snow (*3) Connection Reset (*4) External control commands (32 commands) Front panel security lockout Lip Sync
	External control	Serial control port Number / Signal 2 ports / RS-232C Connector 2 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 PARALLEL control port Number / Signal 1 port / Non-voltage contact (make contact) input Connector 1 female 50-pin Amphenol TALLY control port Number / Signal 1 port / Open collector outputs (*5) Connector 1 female 50-pin Amphenol Command outputs to external device RS-232C, LAN, CEC (controls power of display) (*6), PLink (class1)
Others	Power	100 - 240 VAC ± 10 %, 50 Hz / 60 Hz ± 3 Hz
	Power consumption	About 47 Watts
	Dimensions	16.93 x 3.46 x 13.78" (approx.) / 430 (W) x 88(H) x 350 (D) mm (EIA rack 2U, not including projections)
	Weight	12.13 lbs. approx. / 5.5 kg
	Temperature	Operating: 32 °F to 104 °F / 0 °C to +40 °C 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) 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.
- (\*3) 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.
- (\*4) 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.
- (\*5) Pin 2 ~ Pin 21 and Pin 27 ~ Pin 46 supports up to DC 48 V/50 mA. Pin 22 ~ Pin 24 supports up to DC 48 V/1 A.
- (\*6) Displays that are used with this product must support CEC. Some displays cannot be controlled by this product through CEC.

■ Front & Rear Panel

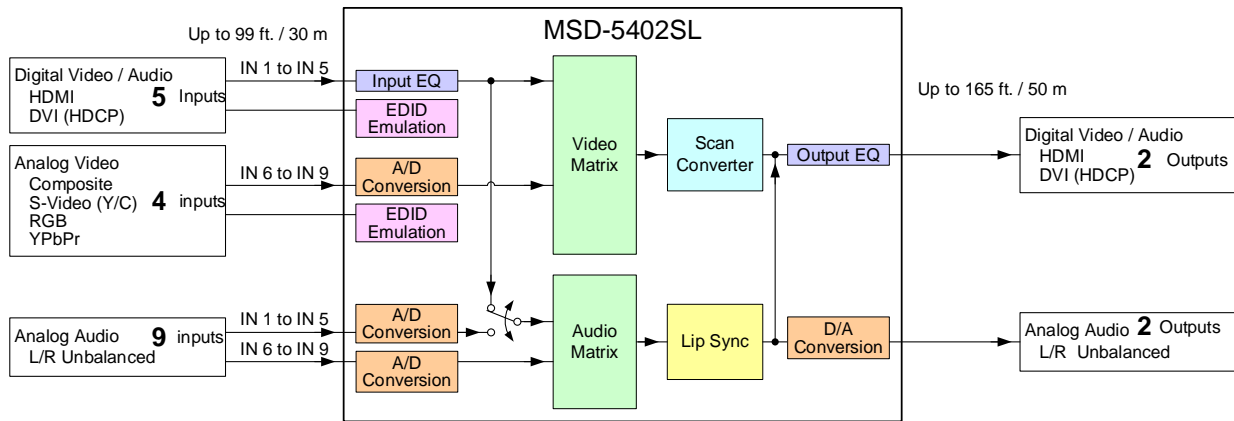


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# MSD-5402SL Diagram and Features

## ■ Diagram



## [Features]

### ■ Video

- Up to QW XGA (RB)<sup>\*1</sup> 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.)
- "Front Panel VFD Menu" for setup and signal status check
- Aspect Ratio Control
- Truly Seamless Switching
- Anti-Snow

### ■ Audio

- A/D, D/A conversion
- Volume adjustment
- Lip Sync

### ■ Control

- Input: RS-232C, LAN, PARALLEL
- Output: RS-232C, LAN, CEC, PJLink, TALLY

### ■ Others

- 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

\* 1. (RB) = Reduced Blanking