4K@60 and HDCP 2.2 supported Digital Multi Switcher (built-in scan converter & scalar)
MSD-7202UHDTB

The IDK MSD-7202UHDTB is a high-performance digital multi switcher with a scan converter and up to 9 inputs and 2 outputs.
For video input, 9 digital and 2 analog inputs are included and the following signals are supported: HDMI, DVI, composite video, Y/C, analog RGB, and analog YPbPr signals. Input video signals are converted to HDMI signals and output at a resolution up to 4K@60.
For audio input, 9 digital and 9 analog inputs are included. Selected audio signals are output to digital audio and analog audio. Audio level of each input can be set individually. The lip sync function corrects the gap between the video and audio.
This switcher also has RS-232C 2 ports and LAN to enable you to set menus remotely. You can also control external devices that are connected to the MSD-7201UHDTB over RS-232C, LAN, CEC, or contact closure by registering external control commands. The waiting function helps you to send external commands after cooling time passes as power supply control of projectors or the like. External control commands can be executed from front keys, RS-232C, or LAN; they can be executed at operating input channel selection keys or start-up.

■**Specification**

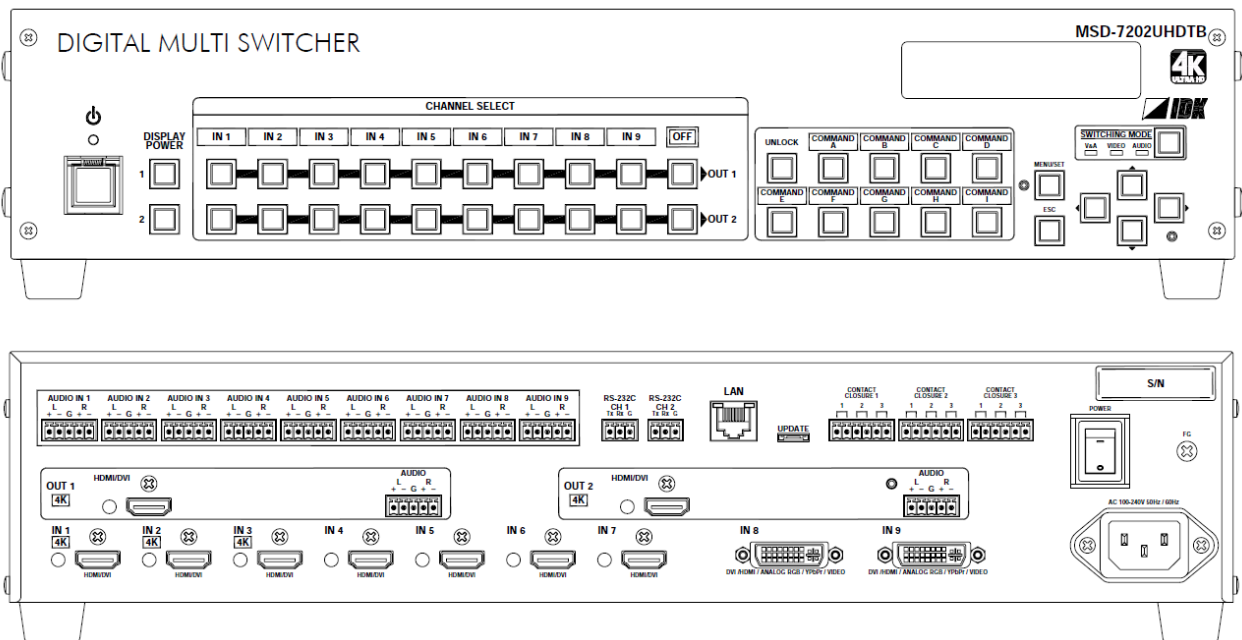| Item				Description
Input	Video	HDMI / DVI	Number / Signal	3 inputs / HDMI Deep Color (*1) / DVI 1.0 (HDCP 1.4 / 2.2) - TMDS single link - TMDS clocks: 25 MHz to 300 MHz - TMDS data rate: 0.75 Gbps to 18 Gbps
			Connector	3 female HDMI Type A
			Number / Signal	4 inputs / HDMI Deep Color (*1) / DVI 1.0 (HDCP 1.4) - TMDS single link - TMDS clock: 25 MHz to 300 MHz - TMDS data rate: 0.75 Gbps to 9 Gbps
			Connector	4 female HDMI Type A
			Number / Signal	2 inputs / HDMI Deep Color (*1) / DVI 1.0 (HDCP 1.4) - TMDS single link, - TMDS clock: 25 MHz to 225 MHz - TMDS data rate: 0.75 Gbps to 6.75 Gbps * Switch-selectable between digital and analog
			Connector	2 female 29-pin DVI-I
			Others	EDID emulation
		Universal Analog	Number / Signal	2 inputs / Composite video, Y/C, Analog RGB/Analog YPbPr (auto-recognition) - Composite video (VBS Signal): 1.0 V[p-p] / 75 Ω - Y/C: 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 * Switch-selectable between digital and analog
			Connector	2 female 29-pin DVI-I,
			Others	EDID emulation
		Format	HDMI / DVI (IN1 to IN3)	Dot clock 25 MHz to 600 MHz 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (up to 4K@60 4:4:4) VGA to 4K
			HDMI / DVI (IN4 to IN7)	Dot clock 25 MHz to 300 MHz 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (up to 4K@30) VGA to 4K
			HDMI / DVI (IN8 to IN9)	Dot clock 25 MHz to 165 MHz 480i / 480p / 576i / 576p / 720p / 1080i / 1080p VGA to QWXGA * WUXGA / QWXGA are only supported Reduced Blanking
			Universal Analog (IN8 to IN9)	Dot clock 25 MHz to 165 MHz NTSC/PAL 480i / 480p / 576i / 576p / 720p / 1080i / 1080p VGA to QWXGA * WUXGA / QWXGA are only supported Reduced Blanking
	Audio	Digital	Number / Signal	9 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 * Switch-selectable between digital and analog audio
			Connector	7 female HDMI Type A, 2 female DVI-I (29-pin)

		Analog	Number / Signal	9 inputs / Stereo LR balanced/unbalanced signal
				- Balanced signal - Unbalanced signal
				  Input impedance: 48k Ω Input impedance: 24kΩ
				  Reference level: -10 dBu Reference level: -10 dBu
				  Max. output level: +10 dBu Max. output level: +10 dBu
				* Switch-selectable between digital and analog audio

			Connector	9 terminal blocks 5-pin
Output	Video	HDMI / DVI	Number / Signal	2 outputs / HDMI Deep Color (*1) / DVI 1.0 (HDCP 1.4 / 2.2) - TMDS single link - TMDS clocks: 25 MHz to 300 MHz
			Connector	2 female HDMI Type A
		Format		Dot clocks: 25 MHz to 600 MHz 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (3840 x 2160) / 4K (4096 x 2160) VGA / SVGA / XGA / WXGA (1280x768) / WXGA (1280x800) / Quad-VGA / SXGA / WXGA (1360x768) / WXGA (1366x768) / SXGA+ / WXGA+ / WXGA++ / UXGA / WSXGA+ / VESAHD / WUXGA / QWXGA / WQHD / WQXGA * VESAHD / WUXGA / QWXGA / WQHD / WQXGA 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 balanced/unbalanced signal - Balanced signal - Unbalanced signal Output impedance: 100 Ω Output impedance: 50 Ω

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			Reference level: -10 dBu Max. output level: +10 dBu	Reference level: -10 dBu Max. output level: +10 dB
		Connector	2 terminal blocks 5-pin	
Maximum cable distance		Digital Input	1080p@60: up to 99 ft. approx. / 30 m, 4K@60: up to 39.37 ft. approx. / 12 m (*2)	
		Digital output	1080p@60: up to 99 ft. approx. / 30 m, 4K@60: up to 39.37 ft. approx. / 12 m (*2)	
Functions	Analog video processing unit		3D Y/C separation	
	Scan Converter		Aspect Ratio Control, Seamless Switching (*3), Picture adjustment (brightness, contrast, display position, display size), I/P conversion	
	External control		RS-232C, LAN, contact closure, CEC (controls power of display) (*6), PJLink (class1)	
	Others		All function setting through browser Auto input detection and switching Volume adjustment (volume of input and output ports can be set separately) Lip Sync (Max. 16 frames) Audio breakaway enables independent audio and video switching Cross-point memory (storage for 9 settings) Preset memory (8 settings and startup settings) Last memory Anti-Snow (*4) Connection Reset (*5) External control commands (32 commands) Operation lock	
External control	Serial control port	Number / Signal	2 ports / RS-232C	
		Connector	2 terminal blocks 3-pin	
	LAN control port	Number / Signal	1 port / 10Base-T (Auto Negotiation), 100Base-TX (Auto Negotiation), Auto MDI/MDI-X	
		Connector	1 RJ-45	
	Contact closure port	Number / Signal	9 ports / Non-voltage contact input up to 24 VDC 500 mA	
		Connector	3 terminal blocks 6-pin	
Others	Power		100 - 240 VAC ± 10 %, 50 Hz / 60 Hz ± 3 Hz	
	Power consumption		About 87 Watts	
	Dimensions		16.93(W) × 3.46(H) × 13.78(D)"/430(W) × 88 (H) × 350(D) mm (EIA 2U, not including projections)	
	Weight		14.55 lbs. / 6.6 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   30 bit/pixel (10 bit/component) Deep Color is supported while xvYCC, Lip Sync, 3D, ARC and HEC are not supported. 4K@60 Deep Color: 24 bit / pixel (8 bit / component) is supported.
*2   The maximum cable distance is measured under following conditions:
   ・1080p@60: when IDK's AWG24 cable was used and signals of 1080p@60 24 bit / pixel (8 bit / component) was input or output.
   ・4K@60 : when IDK's 18 Gbps supported cable was used and signals of 4K@60 24 bit / pixel (8 bit / component) was input or output.
   The maximum cable distance depends on the connected I/O devices. With some I/O combinations, and if you use cables of other manufacturer, video may be disturbed or may not be output even if signals are within the range mentioned above.
*3   Seamless switching with a black frame.
*4   The anti-snow feature automatically fixes snow noise that is a specific symptom of HDCP-compliant signals and mainly occurs at start-up. This feature does not work when snow noise has already occurred during startup or when it occurs due to a bad condition of the transmission line.
*5   For digital systems, some problems, such as an HDCP authentication error, can often be recovered by physically disconnecting and reconnecting the digital cables. However, the Connection Reset feature will fix these problems automatically without the need to physically plug and unplug the cables. It creates the same condition as if the cable were physically disconnected and reconnected. This feature only works for the MSD's output. If other devices are connected between the MSD's output and sink device, this feature may be invalid.
*6   The sink device must support CEC. Come sink devices cannot be controlled from the MSD using CEC
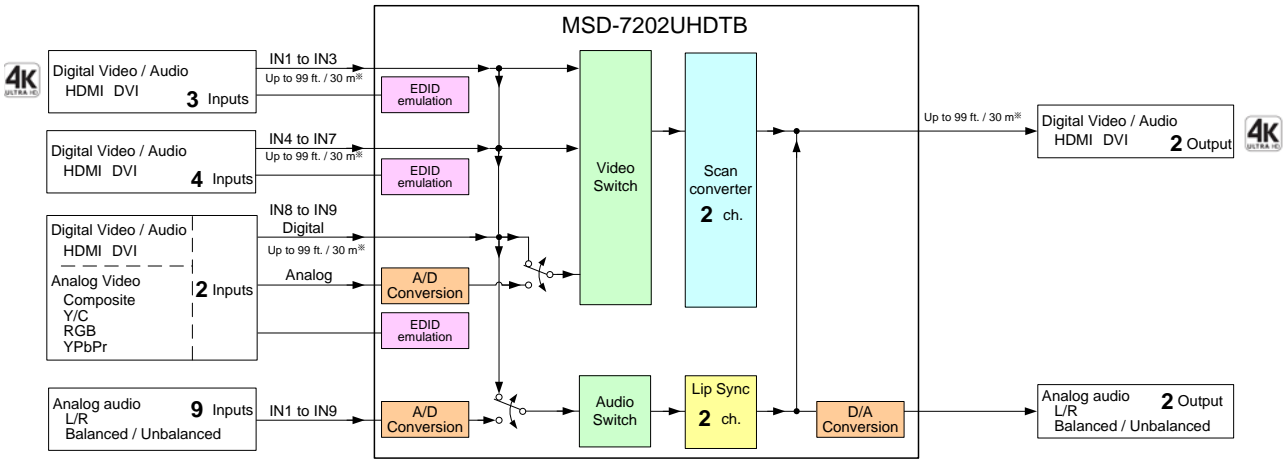
■ **Front & Rear Panel**

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MSD-7202UHDTB Diagram and Features

RoHS

■ Diagram

MSD-7202UHDTB

4K ULTRA HD

Digital Video / Audio
HDMI DVI **3** Inputs

IN1 to IN3
Up to 99 ft. / 30 m※

EDID emulation

Digital Video / Audio
HDMI DVI **4** Inputs

IN4 to IN7
Up to 99 ft. / 30 m※

EDID emulation

Digital Video / Audio
HDMI DVI

Analog Video
Composite
Y/C
RGB
YPbPr
2 Inputs

IN8 to IN9
Digital
Up to 99 ft. / 30 m※

Analog

A/D Conversion

EDID emulation

Video Switch

Scan converter
2 ch.

Up to 99 ft. / 30 m※

Digital Video / Audio
HDMI DVI **2** Output

4K ULTRA HD

Analog audio
L/R
Balanced / Unbalanced **9** Inputs

IN1 to IN9

A/D Conversion

Audio Switch

Lip Sync
2 ch.

D/A Conversion

Analog audio
L/R
Balanced / Unbalanced **2** Output

※ Maximum cable distance
1080p@60: up to 99 ft. approx. / 30 m, 4K@60: up to 39.37 ft. approx. / 12 m (when IDK's 18 Gbps supported cable was used)

■ Sample connection diagram
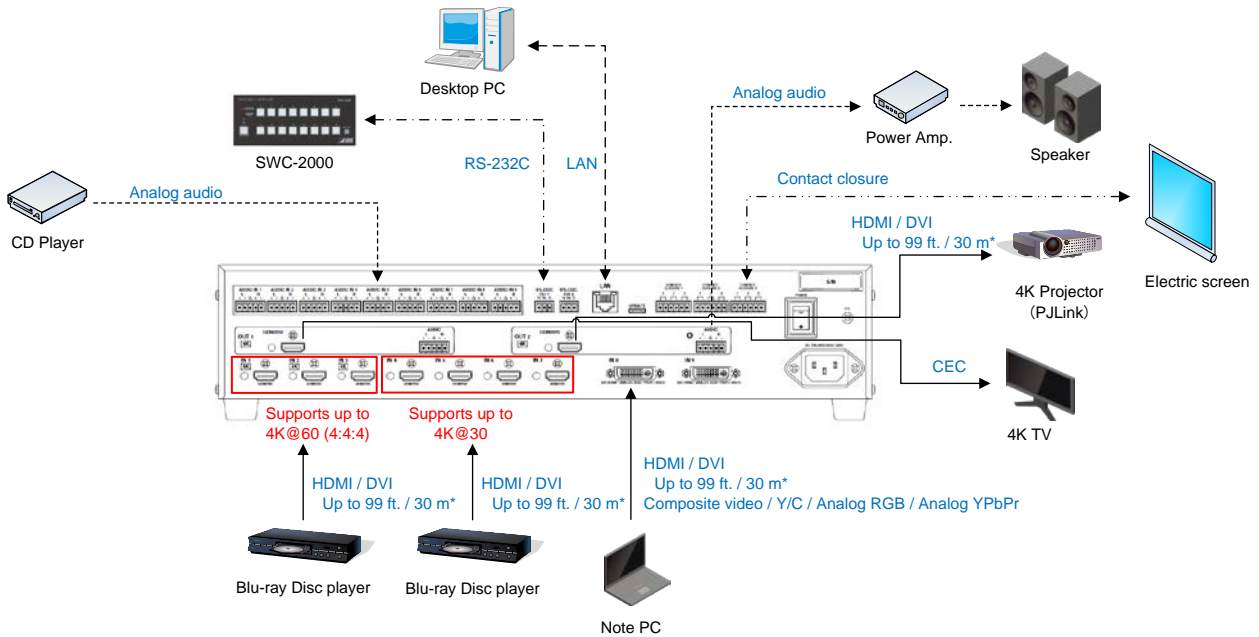
Desktop PC

SWC-2000

RS-232C   LAN

Analog audio

Power Amp.

Speaker

CD Player

Analog audio

Contact closure

HDMI / DVI
Up to 99 ft. / 30 m*

4K Projector
（PJLink）

Electric screen

CEC

4K TV

Supports up to
4K@60 (4:4:4)

Supports up to
4K@30

HDMI / DVI
Up to 99 ft. / 30 m*

HDMI / DVI
Up to 99 ft. / 30 m*

HDMI / DVI
Up to 99 ft. / 30 m*
Composite video / Y/C / Analog RGB / Analog YPbPr

Blu-ray Disc player   Blu-ray Disc player   Note PC

※ Maximum cable distance
1080p@60: up to 99 ft. approx. / 30 m, 4K@60: up to 39.37 ft. approx. / 12 m (when IDK's 18 Gbps supported cable was used) only IN1~IN3

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[Features]

■ **Video**
・Up to 4K@60 (4:4:4)
・HDCP 1.4/2.2
・Scan converter
・Aspect ratio control
・Seamless switching[*1]
・A/D conversion
・Anti-snow

■ **Audio**
・A/D, D/A conversion
・Volume adjustment
・Lip sync

■ **Control**
・Input: RS-232C, LAN
・Output: RS-232C, LAN, contact closure, CEC, PJLink

■ **Others**
・EDID emulation
・All functions setting through browser
・Auto input detection and switching
・Audio breakaway enables independent audio and video switching
・Cross point memory
・Preset memory
・Last memory
・Connection reset
・Operation lock

* 1. Seamless switching with a black frame

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