



MSD-702UHD

The IDK MSD-702UHD is a high-performance digital multi switcher with a scan converter and up to 7 inputs and 2 outputs.

For video input, 7 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 and HDBaseT signals (2 outputs) simultaneously, and output at a resolution up to 4K@60.

For audio input, 7 digital and 3 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 and LAN ports as communication ports for control to enable you to set menus remotely. You can also control external devices that are connected to the MSD-802UHD 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 also be executed when input channel selection keys or power supply key is operated.

■ Specification

		Item	Description	
Input	Video	HDMI / DVI	2 inputs HDMI Deep Color (*1) / DVI 1.0 TMDS single link, HDCP 1.4 / 2.2 TMDS clocks: 25 MHz to 300 MHz, TMDS data rate: 0.75 Gbps to 18 Gbps EDID emulation Connector: Female HDMI Type A (19-pin)	
			5 inputs *DVI connectors: Switch-selectable between digital and analog HDMI Deep Color (*1) / DVI 1.0 TMDS single link, HDCP 1.4 TMDS clocks: 25 MHz to 225 MHz, TMDS data rate: 0.75 Gbps to 6.75 Gbps EDID emulation Connector: 3 female HDMI Type A (19-pin), 2 female DVI-I (29-pin)	
		Universal Analog	2 inputs *Switch-selectable between digital and analog 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 EDID emulation Connector: Female DVI-I (29-pin)	
		Format	HDMI / DVI	2 inputs VGA to WQXGA (Dot clock: 25 MHz to 300 MHz) 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (up to 4K@60 (4:4:4)) (*2)
	5 inputs VGA to QWXGA (Dot clock: 25 MHz to 165 MHz) * For WUXGA / QWXGA, only Reduced Blanking is supported. 480i / 480p / 576i / 576p / 720p / 1080i / 1080p			
			Universal Analog	VGA to QWXGA (Dot clock: 25 MHz to 165 MHz) * For WUXGA / QWXGA, only Reduced Blanking is supported. NTSC / PAL 480i / 480p / 576i / 576p / 720p / 1080i / 1080p
	Audio	Digital	7 inputs *Switch-selectable between analog audio Multi-channel LPCM 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 Connector: 5 female HDMI Type A (19-pin), 2 female DVI-I (29-pin)	
		Analog	3 inputs *Switch-selectable between digital audio Stereo L/R balanced / unbalanced Input impedance: 48k Ω Balanced / 24 kΩ Unbalanced Reference level: -10 dBu, Max. input level: +10 dBu Connector: 5-pin terminal block	

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Item		Description
Output	Video	HDMI / DVI 2 outputs Output video can be distributed to an HDMI / DVI and HDBaseT simultaneously. HDMI Deep Color (*1) / DVI 1.0 TMDS single link, HDCP 1.4 / 2.2 TMDS clocks: 25.175 MHz to 297 MHz, TMDS data rate: 0.755 Gbps to 17.82 Gbps Connector: Female HDMI Type A (19-pin)
		HDBaseT 2 outputs Output video can be distributed to an HDMI / DVI and HDBaseT simultaneously. HDBaseT (*1) HDCP 1.4 / 2.2 (*3) Connector: RJ-45 (*4) Cable: CAT.5E HDC, Cat5e UTP / STP, Cat6 UTP / STP (*5)
		Format VGA / SVGA / XGA / WXGA (1280x768) / WXGA (1280x800) / Quad-VGA / SXGA / WXGA (1360x768) / WXGA (1366x768) / SXGA+ / WXGA+ / WXGA++ / UXGA / WSXGA+ / VESAHD / WUXGA / QWXGA / WQHD / WQXGA * For VESAHD / WUXGA / QWXGA / WQHD / WQXGA, only Reduced Blanking is supported. 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (3840 x 2160) (*6) / 4K (4096 x 2160) (*6)
	Audio	Digital 2 outputs Audio can be distributed to an HDMI output and an HDBaseT output simultaneously. Multi-channel LPCM 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 (19-pin), 2 RJ-45
		Analog 2 outputs Stereo L/R balanced / unbalanced Output impedance: 100 Ω balanced / 50 Ω unbalanced Reference level: -10 dBu, Max. output level: +10 dBu Connector: 5-pin terminal block
Maximum extension distance	Digital Input	HDMI / DVI: up to 98 ft. (30m) (1080p@60), up to 39 ft. (12 m) (4K@60) (*7)
	Digital output	HDMI / DVI: up to 98 ft. (30m) (1080p@60), up to 39 ft. (12 m) (4K@60) (*7) HDBaseT: up to 328 ft. (100 m), up to 492 ft. (150 m) (Long Reach Mode) (*8)
Functions	Analog video processing unit	3D Y/C separation
	Scan Converter	Motion adaptive I/P conversion, Aspect Ratio Control, Picture adjustment (brightness, contrast, display position, display size, etc.), Seamless Switching (*9)
	Others	All function setting through browser, Automatic input detection and switching, Volume adjustment (volumes 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 (9 settings), Preset memory (8 settings), Last memory, Anti-Snow (*10), Connection Reset (*11), External control commands (32 commands), Security lock
External control	RS-232C	1 port / 3-pin terminal block
	LAN	1 port / RJ-45 10Base-T / 100Base-TX (Auto Negotiation), Auto MDI / MDI-X
	Contact closure	3 ports / 6-pin terminal block Non-voltage contact input up to DC 24 V 500 mA
	Command control	3 ports / 7-pin terminal block Controlling keys and LED
	External control	RS-232C, LAN, contact closure, PJLink (class1), CEC (power control of sink device) (*12)
General	Power	100 - 240 VAC ± 10%, 50 Hz / 60 Hz ± 3 Hz
	Power consumption	About 66 Watts
	Dimensions	16.9 (W) × 1.7 (H) × 13.8 (D)" (430 (W) × 44 (H) × 350 (D) mm) (EIA 1U high, full rack wide) (Excluding connectors and the like)
	Weight	10.8 lbs. (4.9 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 x.v.Color, 3D, ARC and HEC are not supported.

WQHD, WQXGA, and 4K format: 24 bit / pixel (8 bit / component) is supported.

*2 4K format: Only CEA-861 timing is supported.

*3 HDBaseT input/output: DVI signals protected by HDCP are not supported. To transmit those signals, use an IDK's twisted pair cable extender supporting DVI signals.

*4 RJ-45 (HDBaseT connector) is only for extending digital video and audio signals over a Cat5e / Cat6 twisted pair cable. Use it with IDK's twisted pair cable receiver. Do not use for LAN devices.

*5 T568A or T568B straight. The CAT.5E HDC cable is developed by IDK and recommended by HDBaseT alliance.

*6 4K format of HDBaseT output: Up to 4K@30 is supported.

*7 The maximum cable distance varies depending on the connected devices and was measured under following conditions:

• 1080p@60: when IDK's AWG 24 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 devices. The distance may not be extended with some device combinations, cabling method, or other manufacturer's cable. Video may be disturbed or may not be output even if signals are within the range mentioned above.

*8 The maximum extension distance was obtained when IDK's CAT.5E HDC cable was used. The distance may not be extended with some device combinations, cabling method, or other manufacturer's cable. Video may be disturbed or may not be output even if signals are within the range mentioned above. Operations may not be stable with some LCD devices; please check the operation beforehand or contact us.

The maximum extension distance is the shorter distance of connected HDBaseT product or sink device's maximum extension distance.

Up to 492 ft. (150 m): 1080p (24 bit) in Long reach mode. For Long reach mode, use IDK's twisted pair cable products that supports 328 ft. (100 m) or longer.

*9 Seamless switching with a black frame.

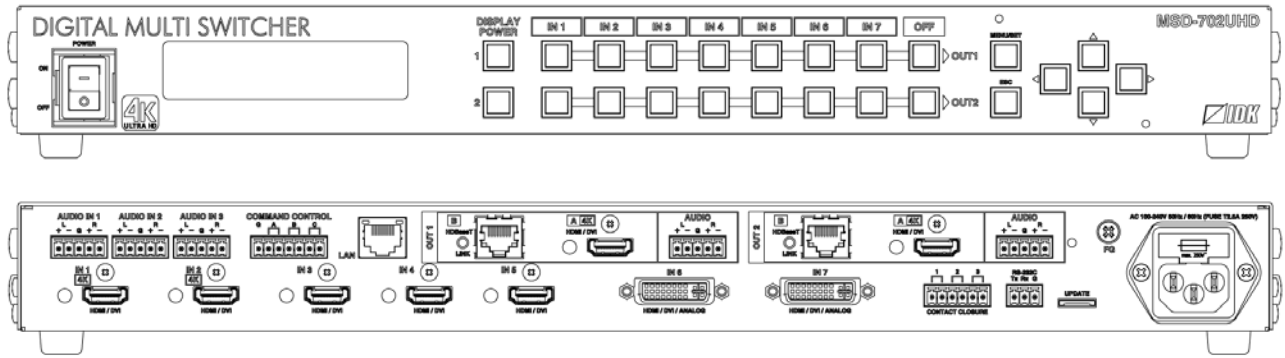
*10 The anti-snow feature automatically fixes snow noise that is a specific symptom of HDCP-compliant signals and mainly occurs at start-up. This feature does not work when snow noise has already occurred during startup or when it occurs due to a bad condition of the transmission line.

*11 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.

*12 The sink device must support CEC. Some sink devices cannot be controlled from the MSD through CEC.

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■ Front & Rear Panels

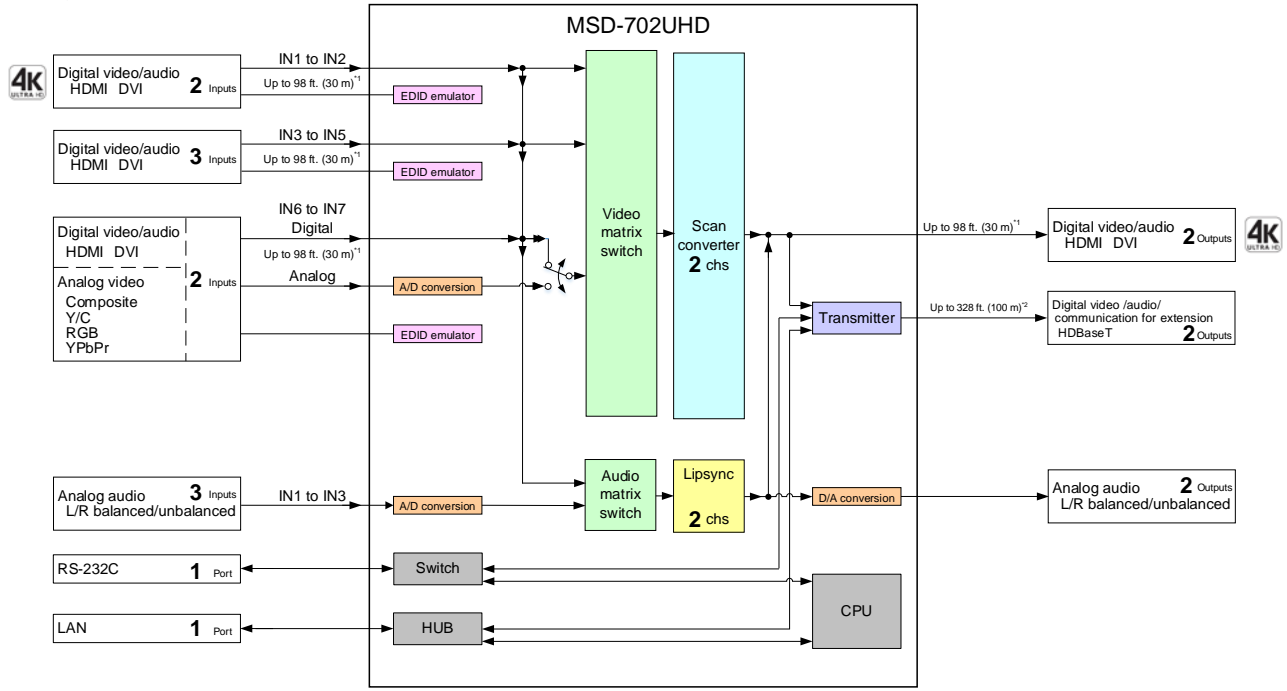


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4K@60 and HDCP 2.2 supported Digital Multi Switcher MSD-702UHD Diagram and Features

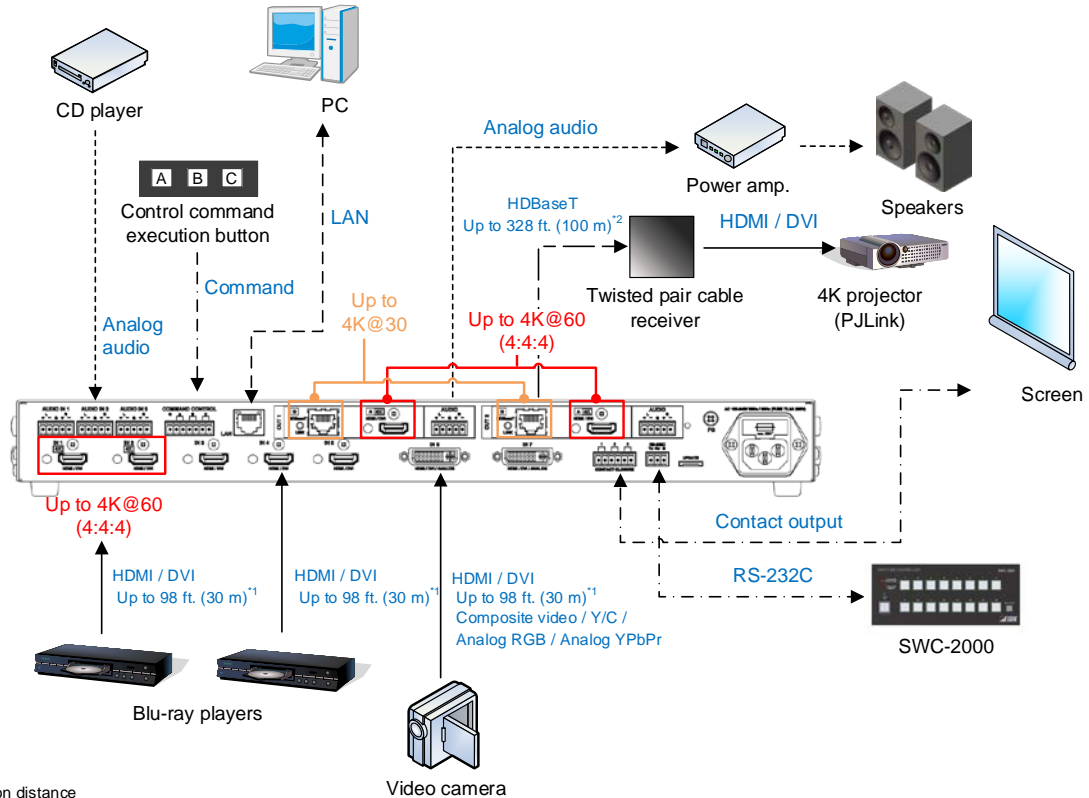
■ Diagram



¹ Maximum extension distance
Up to 98 ft. (30 m): 1080p@60
Up to 39 ft. (12 m): 4K@60 (when 18 Gbps high-speed cable is used) (IN1, IN2, OUT1 and OUT2 only)

² Maximum extension distance
Up to 328 ft. (100 m): Output/4K@30
Up to 492 ft. (150 m): 1080p (24 bit) in Long reach mode. For Long reach mode, use IDK's twisted pair cable products that supports 328 ft. (100 m) or longer.

■ Application Example



¹ Maximum extension distance
Up to 98 ft. (30 m): 1080p@60
Up to 39 ft. (12 m): 4K@60 (when 18 Gbps high-speed cable is used) (IN1, IN2, OUT1 and OUT2 only)

² Maximum extension distance
Up to 328 ft. (100 m): Output/4K@30
Up to 492 ft. (150 m): 1080p (24 bit) in Long reach mode. For Long reach mode, use IDK's twisted pair cable products that supports 328 ft. (100 m) or longer.

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[Features]**■ Video**

- Up to 4K@60 (4:4:4)
- HDCP 1.4 / 2.2
- Motion adaptive I/P conversion
- Scan conversion
- Aspect ratio control
- Seamless switching^{*1}
- A/D conversion
- Anti-snow
- Up to 492 ft. (150 m) over a Cat6 cable^{*2}

■ Audio

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

■ Control Input

- RS-232C
- LAN
- Command control

■ Control output

- Control command output (controlling projector, etc.)
- PLink
- Power control of sink device over CEC
- Contact closure

■ Others

- EDID emulation
- All functions setting through browser
- Automatic input detection and switching
- Audio breakaway enables independent audio and video switching
- Cross point memory
- Preset memory
- Last memory
- Connection Reset
- Security lock

^{*1} Seamless switching with a black frame.

^{*2} For Long reach mode, up to 1080p (24 bit) resolutions are supported.