**Digital Multi Switcher**
# MSD-6206

The IDK MSD-6206 is a high-performance digital multi switcher with a scan converter and up to 8 inputs and 6 outputs.

For video input, 8 digital and 2 analog inputs are included and the following signals are supported: HDMI, DVI, HDBaseT, composite video, Y/C, analog RGB, and analog YPbPr signals. HDBaseT input supports Power over HDBaseT (PoH) that can power the connected devices. Input video signals are converted to HDMI/DVI or HDBaseT signals and output at a resolution up to 4K@30.

For audio input, 8 digital and 2 analog inputs are included. Selected audio signals are output to digital audio, and 1 of 8 digital audio outputs can be selected to be output as analog audio. 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-6206 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.

Dante output is available as an optional extra.
With the network audio, 64-channel at 48 kHz-sample frequency audio can be delivered over a LAN cable.

## ■ Specification

| Item | | | | Description |
|------|------|------|------|-------------|
| Input | Video | HDMI/DVI | | 1 input<br>HDMI Deep Color (*1)/DVI 1.0<br>TMDS single link, HDCP 1.4<br>TMDS clocks: 25 MHz to 300 MHz, TMDS data rate: 0.75 Gbps to 9 Gbps<br>Built-in cable EQ, EDID emulation, CEC<br>Connector: Female HDMI Type A (19-pin) |
| | | | | 5 inputs   DVI connectors: Switch-selectable between digital and analog<br>HDMI Deep Color (*1)/DVI 1.0<br>TMDS single link, HDCP 1.4<br>TMDS clocks: 25 MHz to 225 MHz, TMDS data rate: 0.75 Gbps to 6.75 Gbps<br>Built-in cable EQ, EDID emulation, CEC (HDMI connector only)<br>Connector: 3 female HDMI Type A (19-pin), 2 female DVI-I (29-pin) |
| | | HDBaseT | | 2 inputs<br>HDBaseT (*1)<br>HDCP 1.4 (*2)<br>EDID emulation, RS-232C, LAN, CEC,<br>PoH power supply (IEEE 802.3af) (*3)<br>Connector: RJ-45 (*4)<br>Cable: CAT.5E HDC, Cat5e UTP/STP, Cat6 UTP/STP (*5) |
| | | Universal Analog | | 2 inputs   Switch-selectable between digital and analog<br>Composite video/Y/C/Analog RGB/Analog YPbPr (auto-recognition)<br>Composite video (VBS Signal): 1.0 V[p-p]/75 Ω<br>Y/C: 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<br>            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<br>EDID emulation<br>Connector: Female DVI-I (29-pin) |
| | | Format | HDMI/DVI | 1 input<br>VGA to 4K (Dot clock: 25 MHz to 300 MHz)<br>480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (up to 4K@30) |
| | | | | 5 inputs<br>VGA to QWXGA (Dot clock: 25 MHz to 165 MHz)<br>  For WUXGA/QWXGA, only Reduced Blanking is supported.<br>480i / 480p / 576i / 576p / 720p / 1080i / 1080p |
| | | | HDBaseT | VGA to 4K (Dot clock: 25 MHz to 300 MHz)<br>480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (up to 4K@30) |
| | | | Universal Analog | VGA to QWXGA (Dot clock: 25 MHz to 165 MHz)<br>  For WUXGA/QWXGA, only Reduced Blanking is supported.<br>NTSC/PAL<br>480i / 480p / 576i / 576p / 720p / 1080i / 1080p |
| | Audio | Digital | | 8 inputs   Switch-selectable between analog audio<br>Multi-channel LPCM up to 8 channels<br>Sampling frequency: 32 kHz to 192 kHz, Sample size: 16 bit to 24 bit<br>Reference level: -20 dBFS, Max. input level: 0 dBFS<br>Connector: 4 female HDMI Type A (19-pin), 2 RJ-45 (*4), 2 female DVI-I (29-pin) |
| | | Analog | | 2 inputs   Switch-selectable between digital audio<br>Balanced/Unbalanced Stereo LR<br>Input impedance: 48k Ω balanced/24 kΩ unbalanced<br>Reference level: -10 dBu, Max. input level: +10 dBu<br>Connector: Terminal block (5-pin) |

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| Item | | | Description |
|---|---|---|---|
| Output | Video | HDMI/DVI | 6 outputs    The output video is switch-selectable between HDMI output and HDBaseT output.<br>HDMI Deep Color (*1)/DVI 1.0<br>TMDS single link, HDCP 1.4<br>TMDS clocks: 65 MHz to 297 MHz, TMDS data rate: 1.95 Gbps to 8.91 Gbps<br>Built-in cable EQ, CEC<br>Connector: Female HDMI Type A (19-pin) |
| | | HDBaseT | 6 outputs    The output video is switch-selectable between HDMI output and HDBaseT output.<br>HDBaseT (*1)<br>HDCP 1.4 (*2), RS-232C, LAN, CEC<br>Connector: RJ-45 (*4)<br>Cable: CAT.5E HDC, Cat5e UTP/STP, Cat6 UTP/STP (*5) |
| | | Format | VGA / WXGA (1280x768) / WXGA (1280x800) / Quad-VGA / SXGA / WXGA (1360x768) /<br>WXGA (1366x768) / SXGA+ / WXGA+ / WXGA++ / UXGA / WSXGA+ / VESAHD / WUXGA /<br>QWXGA<br>  For VESAHD/WUXGA/QWXGA, only Reduced Blanking is supported.<br>720p / 1080i / 1080p / 4K (3840 x 2160) (*6) / 4K (4096 x 2160) (*6) |
| | Audio | Digital | 6 outputs    The output audio is switch-selectable between HDMI output and HDBaseT output.<br>Multi-channel LPCM up to 8 channels<br>Sampling frequency: 32 kHz to 192 kHz, Sample size: 16 bit to 24 bit<br>Reference level: -20 dBFS, Max. output level: 0 dBFS<br>Connector: 6 female HDMI Type A (19-pin), 6 RJ-45 (*4) |
| | | Analog | 1 output    1 of 6 digital audio outputs can be selected to be output as analog audio.<br>Balanced/Unbalanced Stereo LR<br>Output impedance: 100 Ω balanced/50 Ω unbalanced<br>Reference level: -10 dBu, Max. output level: +10 dBu<br>Connector: Terminal block (5-pin) |
| | | Network audio (Option) | 1 output<br>Format: Dante protocol<br>Sampling frequency: 48 kHz, Sample size: 24 bit<br>The number of outputs: 64 channels<br>Connector: 2 RJ-45 (Primary/Secondary) (*7) |
| Maximum transmission distance | | Digital Input | HDMI/DVI : 98 ft. (30 m) (1080p@60), 66 ft. (20 m) (4K@30) (*8)<br>HDBaseT : 328 ft. (100 m), up to 492 ft. (150 m) (Long reach mode is used) (*9) |
| | | Digital output | HDMI/DVI : 131 ft. (40 m) (1080p@60), 98 ft. (30 m) (4K@30) (*8)<br>HDBaseT : 328 ft. (100 m), up to 492 ft. (150 m) (Long reach mode is used) (*9) |
| Functions | | Analog video processing unit | 3D Y/C separation |
| | | Scan Converter | Motion adaptive interlaced/progressive conversion, Aspect Ratio Control, Picture adjustment (brightness, contrast, display position, display size, etc.), Seamless Switching (*10) |
| | | Others | Multiview function (*11), Horizontal flip (*12), WEB browser control,<br>Input channel automatic switching, Volume adjustment (volumes of input and output ports can be set separately), Lip Sync (Max. 16 frames), Audio Downmix,<br>Audio breakaway for independent audio and video switching, Crosspoint memory (9 settings),<br>Preset memory (12 settings), Last memory, Anti-Snow (*13), Connection Reset (*14),<br>External control commands (32 commands), Button security lockout, Standby switch |
| Control | | RS-232C | 1 port/terminal block (3-pin) |
| | | LAN | 1 port/RJ-45 10Base-T/100Base-TX (Auto Negotiation), Auto MDI/MDI-X |
| | | Contact closure | 9 ports/terminal block (6-pin) Non-voltage contact input up to DC 24 V 500 mA |
| | | External control | RS-232C, LAN, contact closure, PJLink (class1), CEC (Power control of sink device) (*15) |
| General | | Power | 100 - 240 VAC ± 10%, 50 Hz/60 Hz ± 3 Hz |
| | | Power consumption | About 147 Watts<br>About 154 Watts with Dante (optional) |
| | | Dimensions | 16.9 (W) × 3.5 (H) × 15.7 (D)" (430 (W) × 88 (H) × 400 (D) mm)<br>(2U high) (Excluding connectors and the like) |
| | | Weight | 15.9 lbs. (7.2 kg)<br>16.5 lbs. (7.5 kg) with Dante (optional) |
| | | 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   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   HDBaseT input/output: DVI signals protected by HDCP are not supported. To transmit those signals, use an IDK's HDBaseT Products supporting DVI signals.
*3   For PoH power feeding, please use an HDBaseT transmitter supporting IEEE 802.3af. Use an 24 AWG category cable or thicker cable.
*4   RJ-45 (HDBaseT connector) is only for extending digital video and audio signals over a Cat5e/Cat6 cable. Use it with IDK's HDBaseT Products. 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: Up to 4K@30 is supported.
     If multiple sink devices are connected, the actual number of outputs becomes three: OUT1 and OUT2 (as one group), OUT3 and OUT4 (as another group), and OUT5 to OUT6 (as the other group).
*7   RJ-45 (Dante connector) is only for outputting audio at the Dante format.
*8   The maximum cable distance varies depending on the connected devices and was measured under following conditions:
     ・1080p@60 : When IDK's 24 AWG cable was used and signals of 1080p@60 24 bit/pixel (8 bit/component) was input or output.
     ・4K@30     : When IDK's 24 AWG cable was used and signals of 4K@30 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.
*9   The maximum transmission 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 transmission distance is the shorter distance of connected HDBaseT product or sink device's maximum transmission distance.
     Up to 492 ft. (150 m): 1080p (24 bit) in Long reach mode. For Long reach mode, use IDK's HDBaseT Products that supports 328 ft. (100 m) or longer.
*10  Seamless switching with a black frame.
*11  If multiple sink devices are connected, the actual number of outputs becomes two: OUT1 to OUT4 (as a group) and OUT5 to OUT6 (as another group).
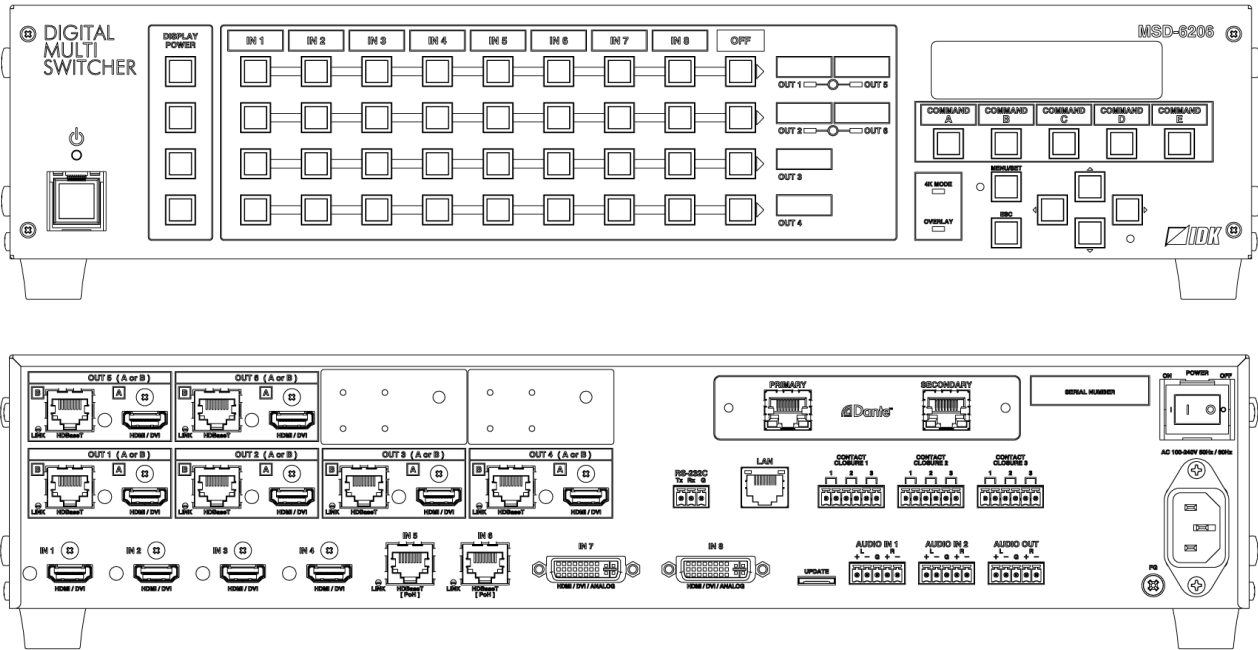*12  4K format is not supported.
*13  The anti-snow feature automatically fixes snow noise that is a specific symptom of HDCP-compliant signals and mainly occurs at start-up. This feature does not work when snow noise has already occurred during startup or when it occurs due to a bad condition of the transmission line.

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*14 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.

*15 The sink device must support CEC. Some sink devices cannot be controlled from the MSD through CEC.
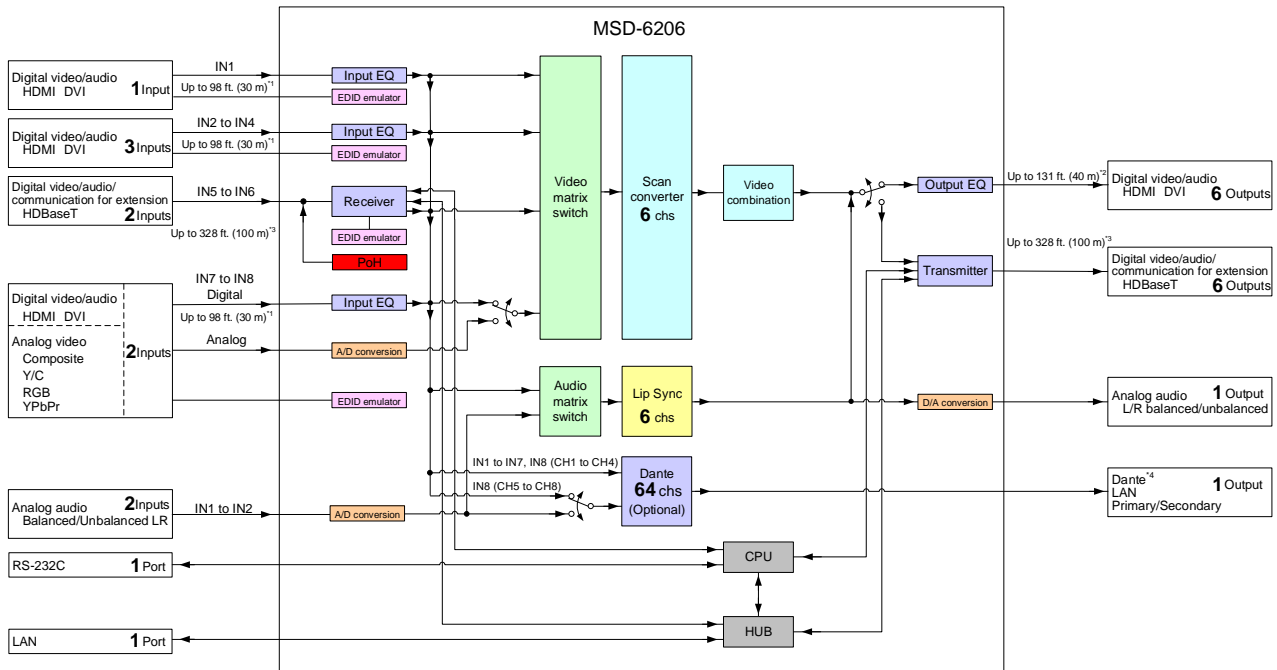
## ■ Front & Rear Panels

*Dante output is optional.

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**Digital Multi Switcher**
# MSD-6206 Diagram and Features

## ■ Diagram



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MSD-6206
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Digital video/audio HDMI DVI **1** Input — IN1 Up to 98 ft. (30 m) *1 → Input EQ / EDID emulator

Digital video/audio HDMI DVI **3** Inputs — IN2 to IN4 Up to 98 ft. (30 m) *1 → Input EQ / EDID emulator

Digital video/audio/ communication for extension HDBaseT **2** Inputs — IN5 to IN6 Up to 328 ft. (100 m) *3 → Receiver / EDID emulator / PoH

Digital video/audio HDMI DVI / Analog video Composite Y/C RGB YPbPr **2** Inputs — IN7 to IN8 Digital Up to 98 ft. (30 m) *1 → Input EQ ; Analog → A/D conversion ; EDID emulator

Analog audio Balanced/Unbalanced LR **2** Inputs — IN1 to IN2 → A/D conversion

RS-232C **1** Port

LAN **1** Port

Video matrix switch — Scan converter **6** chs — Video combination

Audio matrix switch — Lip Sync **6** chs

IN1 to IN7, IN8 (CH1 to CH4) / IN8 (CH5 to CH8) — Dante **64** chs (Optional)

CPU — HUB

Output EQ — Up to 131 ft. (40 m) *2 → Digital video/audio HDMI DVI **6** Outputs

Transmitter — Up to 328 ft. (100 m) *3 → Digital video/audio/ communication for extension HDBaseT **6** Outputs

D/A conversion → Analog audio L/R balanced/unbalanced **1** Output

Dante *4 LAN Primary/Secondary **1** Output

*1 Maximum transmission distances
    Up to 98 ft. (30 m) : 1080p@60
    Up to 66 ft. (20 m) : 4K@30 (IN1 only)
*2 Maximum transmission distances
    Up to 131 ft. (40 m) : 1080p@60
    Up to 98 ft. (30 m)  : 4K@30
*3 Maximum transmission distances
    Up to 328 ft. (100 m) : 4K@30
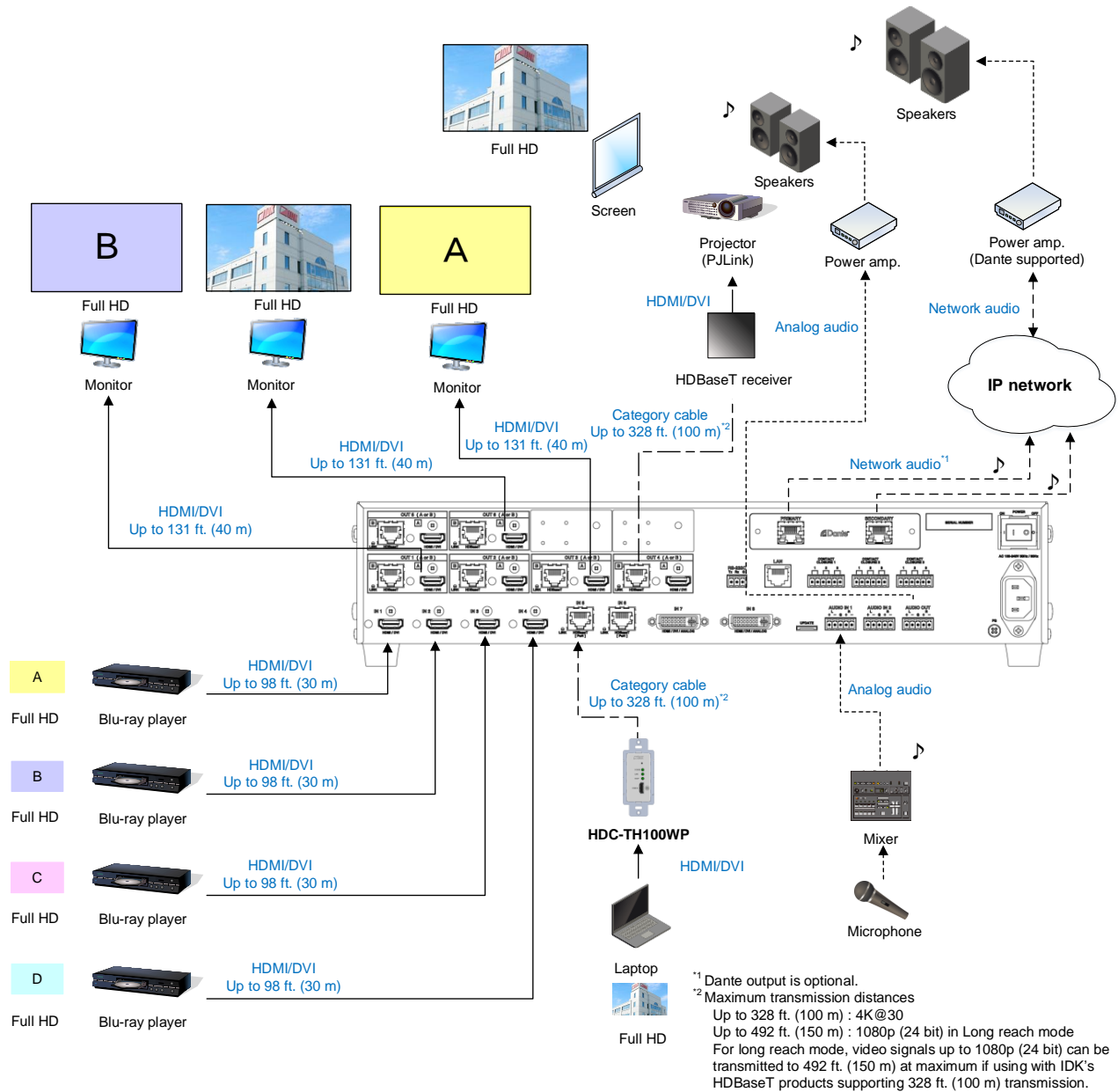    Up to 492 ft. (150 m) : 1080p (24 bit) in Long reach mode
    For long reach mode, video signals up to 1080p (24 bit) can be transmitted to 492 ft. (150 m) at maximum
    if using with IDK's HDBaseT products supporting 328 ft. (100 m) transmission.
*4 Dante output is optional.

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■ **Application Example**

**<Regular mode: Full HD Video>**

Full HD

Screen

Speakers

♪ Speakers

B
Full HD

Full HD

A
Full HD

Projector
(PJLink)

Power amp.

Power amp.
(Dante supported)

Monitor

Monitor

Monitor

HDMI/DVI

Analog audio

Network audio

HDBaseT receiver

IP network

HDMI/DVI
Up to 131 ft. (40 m)

HDMI/DVI
Up to 131 ft. (40 m)

Category cable
Up to 328 ft. (100 m)*2

Network audio*1 ♪

♪

HDMI/DVI
Up to 131 ft. (40 m)

A
Full HD    Blu-ray player

HDMI/DVI
Up to 98 ft. (30 m)

Category cable
Up to 328 ft. (100 m)*2

Analog audio

B
Full HD    Blu-ray player

HDMI/DVI
Up to 98 ft. (30 m)

♪

C
Full HD    Blu-ray player

HDMI/DVI
Up to 98 ft. (30 m)

**HDC-TH100WP**

Mixer

D
Full HD    Blu-ray player

HDMI/DVI
Up to 98 ft. (30 m)

HDMI/DVI

Microphone

Laptop

Full HD

*1 Dante output is optional.
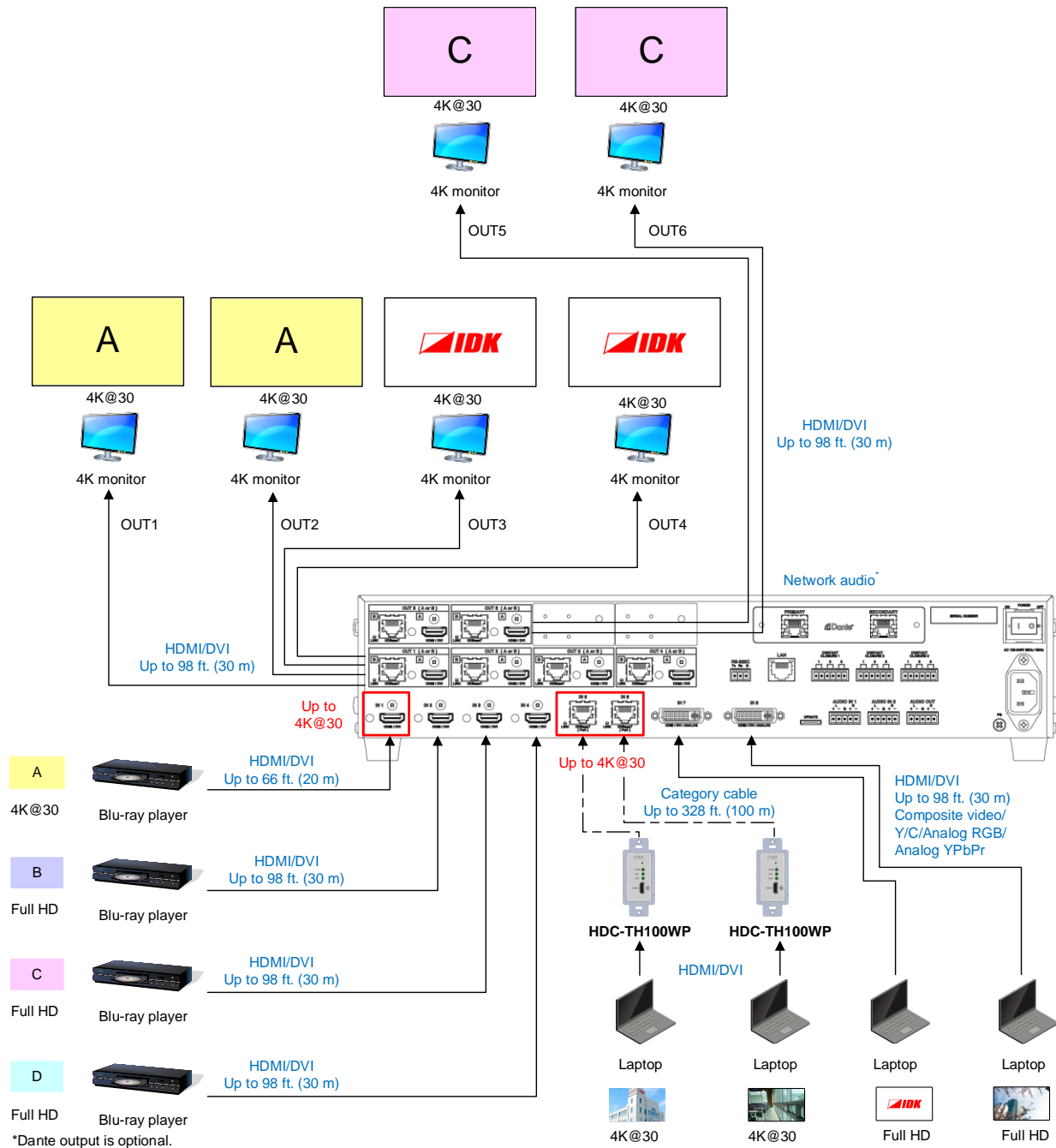*2 Maximum transmission distances
   Up to 328 ft. (100 m) : 4K@30
   Up to 492 ft. (150 m) : 1080p (24 bit) in Long reach mode
   For long reach mode, video signals up to 1080p (24 bit) can be
   transmitted to 492 ft. (150 m) at maximum if using with IDK's
   HDBaseT products supporting 328 ft. (100 m) transmission.

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**<Image combination mode: Full HD Video (Multiview)>**



Full HD

Full HD

Monitor

Monitor

OUT5

OUT6

| A | B |
| C | D |

Full HD

Monitor

OUT1

| A | B |
| C | D |

Full HD

Monitor

OUT2

| A | B |
| C | D |

Full HD

Monitor

OUT3

| A | B |
| C | D |

Full HD

Monitor

OUT4

HDMI/DVI
Up to 131 ft. (40 m)

HDMI/DVI
Up to 131 ft. (40 m)

Network audio[*1]

A
Full HD
Blu-ray player
HDMI/DVI
Up to 98 ft. (30 m)

B
Full HD
Blu-ray player
HDMI/DVI
Up to 98 ft. (30 m)

C
Full HD
Blu-ray player
HDMI/DVI
Up to 98 ft. (30 m)

D
Full HD
Blu-ray player
HDMI/DVI
Up to 98 ft. (30 m)

Category cable
Up to 328 ft. (100 m)[*2]

HDMI/DVI
Up to 98 ft. (30 m)
Composite video/
Y/C/Analog RGB/
Analog YPbPr

**HDC-TH100WP**          **HDC-TH100WP**

HDMI/DVI

Laptop          Laptop          Laptop          Laptop

Full HD          Full HD          Full HD          Full HD

[*1] Dante output is optional.
[*2] Maximum transmission distances
  Up to 328 ft. (100 m) : 4K@30
  Up to 492 ft. (150 m) : 1080p (24 bit) in Long reach mode
  For long reach mode, video signals up to 1080p (24 bit) can be transmitted to 492 ft. (150 m) at maximum
  if using with IDK's HDBaseT products supporting 328 ft. (100 m) transmission.

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**<4K mode: 4K Video>**



C
4K@30
4K monitor
OUT5

C
4K@30
4K monitor
OUT6

A
4K@30
4K monitor
OUT1

A
4K@30
4K monitor
OUT2

IDK
4K@30
4K monitor
OUT3

IDK
4K@30
4K monitor
OUT4

HDMI/DVI
Up to 98 ft. (30 m)

Network audio*

HDMI/DVI
Up to 98 ft. (30 m)

Up to
4K@30

Up to 4K@30

A
4K@30
Blu-ray player
HDMI/DVI
Up to 66 ft. (20 m)

B
Full HD
Blu-ray player
HDMI/DVI
Up to 98 ft. (30 m)

C
Full HD
Blu-ray player
HDMI/DVI
Up to 98 ft. (30 m)

D
Full HD
Blu-ray player
HDMI/DVI
Up to 98 ft. (30 m)

*Dante output is optional.

Category cable
Up to 328 ft. (100 m)

HDC-TH100WP     HDC-TH100WP

HDMI/DVI

HDMI/DVI
Up to 98 ft. (30 m)
Composite video/
Y/C/Analog RGB/
Analog YPbPr

Laptop          Laptop          Laptop          Laptop

4K@30          4K@30          Full HD          Full HD

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**[Features]**

**■ Video**
- Up to 4K@30
- Automatic input signal equalization
  - Input     Up to 98 ft. (30 m)   : 1080p@60, Up to 66 ft. (20 m) : 4K@30
  - Output   Up to 131 ft. (40 m) : 1080p@60, Up to 98 ft. (30 m) : 4K@30
- Motion adaptive interlaced/progressive conversion
- Scan conversion
- Aspect ratio control
- Horizontal flip[*1]
- Seamless switching with one black frame
- Analog/Digital conversion
- Anti-snow
- Up to 492 ft. (150 m) over a Cat6 cable in Long reach mode[*2]

**■ Audio**
- Embedding/De-embedding
- Volume adjustment (Input/Output)
- Lip Sync
- Audio Downmix
- Dante output (Optional)

**■ Video combination[*1]**
- Simultaneous display of up to 4 input images on a screen
- Window display priority setting
- Window displaying/hiding

**■ Control Input**
- RS-232C
- LAN

**■ Control output**
- Control command output (e.g. controlling projectors)
- PJLink
- CEC (Control sink device power)
- Contact closure

**■ Others**
- PoH (HDBaseT input)
- EDID emulation
- WEB browser control
- Input channel automatic switching
- Audio breakaway for independent audio and video switching
- Crosspoint memory
- Preset memory
- Last memory
- Connection Reset
- Button security lockout
- HDBaseT: RS-232C, LAN and CEC are supported
- Standby switch

[*1] 4K format is not supported.
[*2] For long reach mode, video signals up to 1080p (24 bit) can be transmitted to 492 ft. (150 m) at maximum
if using with IDK's HDBaseT products supporting 328 ft. (100 m) transmission.

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