

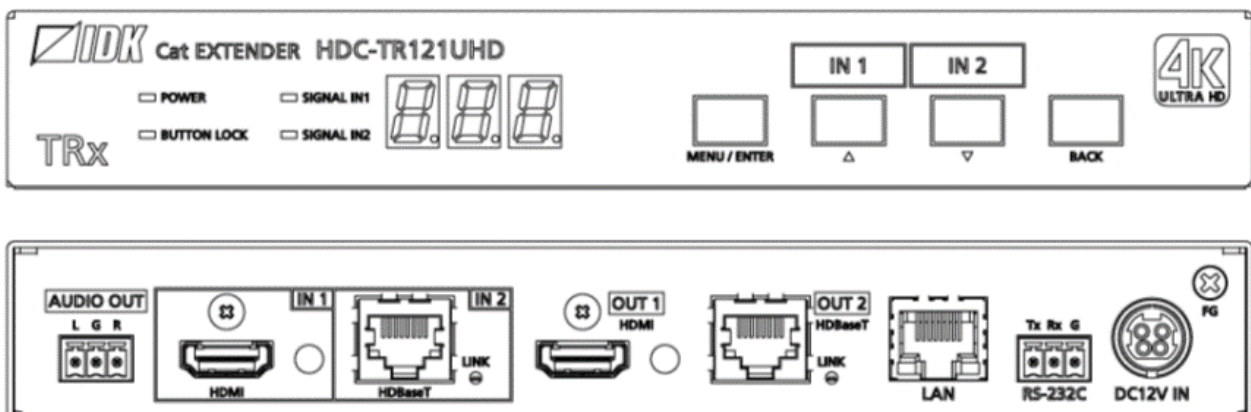
4K@60/HDCP 2.2 HDBaseT Extender with Distribution Amplifier

HDC-UHD Series

HDC-TR121UHD
 HDC-TH221UHD/HDC-TH421UHD
 HDC-RH221UHD/HDC-RH421UHD

<User Guide>

Ver.2.3.0



- Thank you for choosing our product.
- To ensure the best performance of this product, please read this user guide fully and carefully before using it and keep this manual together with the product for future reference as needed.

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Before reading this manual

- All rights reserved.
- Some information contained in this User guide such as exact product appearance, diagrams, menu operations, and so on may differ depending on the product version.
- This User guide is subject to change without notice. You can download the latest version from IDK's website at: www.idkav.com

The reference manual consists of the following two volumes:

- User guide (this document):
- Command guide: Please download the command guide from the website above.

FCC STATEMENT

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

(Class A)

**Supplier's Declaration of Conformity
47 CFR § 2.1077 Compliance Information**

Unique Identifier

Type of Equipment: Cat EXTENDER

Model Name: HDC-TR121UHD, HDC-TH221UHD, HDC-TH421UHD, HDC-RH221UHD, HDC-RH421UHD

Responsible Party – U.S. Contact Information

Company Name: IDK America Inc.

Address: 72 Grays Bridge Road Suite 1-C, Brookfield, CT 06804

Telephone number: +1-203-204-2445

URL: www.idkav.com

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

(FCC SDoC)

CE MARKING

This equipment complies with the essential requirements of the relevant European health, safety and environmental protection legislation.

WEEE MARKING



Waste Electrical and Electronic Equipment (WEEE), Directive 2002/96/EC
(This directive is only valid in the EU.)



This equipment complies with the WEEE Directive (2002/96/EC) marking requirement.







The left marking indicates that you must not discard this electrical/electronic equipment in domestic household waste.

Safety Instructions

Read all safety and operating instructions before using this product. Follow instructions and heed warnings/cautions.


Instructions and warnings/cautions for all products are provided. Some of them may not be applicable to your product.

	Warning	Indicates the presence of a hazard that may result in death or serious personal injury if the warning is ignored or the product is handled incorrectly.
	Caution	Indicates the presence of a hazard that may cause minor personal injury or property damage if the caution is ignored or the product is handled incorrectly.


Symbol	Description	Example
 Caution	This symbol is intended to alert the user. (Warning and caution)	 Hot surfaces Caution
 Prohibited	This symbol is intended to prohibit the user from specified actions.	 Do not disassemble
 Instruction	This symbol is intended to instruct the user.	 Unplug

Warning


For lifting heavy products:

 Instruction	<ul style="list-style-type: none"> • Lifting must be done by two or more personnel. <p>To avoid injury: When lifting the product, bend your knees, keep your back straight and get close to it with two or more persons.</p>
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For installing and connecting products:

 Prohibited	<ul style="list-style-type: none"> • Do not place the product in unstable place. <p>Install the product in a horizontal and stable place, as this may fall or tip over and cause injury.</p> <ul style="list-style-type: none"> • Secure the product if installing in the locations with vibration. <p>Vibration may move or tip over the product unexpectedly, resulting in injury.</p>
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Warning

 Instruction	<ul style="list-style-type: none"> ● Installation work must be performed by professionals. The product is intended to be installed by skilled technicians. For installation, please contact a system integrator or IDK. Improper installation may lead to the risk of fire, electric shock, injury, or property damage. ● Insert the power plug into an outlet that is unobstructed. Unobstructed access to the plug enables unplugging the product in case of any extraordinary failure, abnormal situation or for easy disconnection during extended periods of non-use. ● Insert the power plug into an appropriate outlet completely. If the plug is partially inserted, arcing may cause the connection to overheat, increasing the risk of electric shock or fire. Do not use a damaged plug or connect to a loose outlet. ● Unplug the product from an AC power source during installation or service. When connecting peripheral devices to this product, unplug all involved devices from outlets. Ground potential differences may cause fire or other difficulties. ● The product must be electrically earthed/grounded. To reduce the risk of electric shock, ensure the product is connected to a mains socket outlet with a protective earthing connection. ● For PoE/PoH, use category cables meeting IEEE802.3af/at. Otherwise, it may cause problems or a fire.
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For operating products:

 Prohibited	<ul style="list-style-type: none"> ● Keep out any foreign objects. To avoid fire or electric shock, do not permit foreign objects, such as metal and paper, to enter the product from vent holes or other apertures. ● For power cable/plug and Category cable, <ul style="list-style-type: none"> • Do not scratch, heat, or modify, including splicing or lengthening them. • Do not pull, place heavy objects on them, or pinch them. • Do not bend, twist, tie or clamp them together forcefully. <p>Misuse of the power cable and plug may cause fire or electric shock. If power cables/plugs become damaged, contact your IDK representative.</p>
 Do not disassemble	<ul style="list-style-type: none"> ● Do not repair, modify or disassemble. Since the product includes circuitry that uses potentially lethal, high voltage levels, disassembly by unauthorized personnel may lead to the risk of fire or electric shock. For internal inspection or repair, contact your IDK representative.
 Do not touch	<ul style="list-style-type: none"> ● Do not touch the product and connected cables during electric storms. Contact may cause electric shock.
 Instruction	<ul style="list-style-type: none"> ● Clean the power plug regularly. If the plug is covered in dust, it may increase the risk of fire.




If the following problem occurs:

 Unplug	<ul style="list-style-type: none"> ● Unplug immediately if the product smokes, makes unusual noise, or produces a burning odor. ● Unplug immediately if the product is damaged by falling or having been dropped. ● Unplug immediately if water or other objects are directed inside. <p>If you continue to use the product under these conditions, it may increase the risk of electric shock or fire. For maintenance and repair, contact your IDK representative.</p>
--	--



Caution

For installing and connecting products:

 <p>Prohibited</p>	<ul style="list-style-type: none"> ● Do not place the product in a location where it will be subjected to high temperatures. If the product is subjected to direct sunlight or high temperatures while under operation, it may affect the product's performance and reliability and may increase the risk of fire. ● Do not store or operate the product in dusty, oil smoke filled, or humid place. Placing the product in such environment may increase the risk of fire or electric shock. ● Do not block the vent holes. If ventilation slots are blocked, it may cause the product to overheat, affecting performance and reliability and may increase the risk of fire. ● Do not place or stack heavy items on the product. Failure to observe this precaution may result in damage to the product itself as well as other property and may lead to the risk of personal injury. ● Do not exceed ratings of outlet and wiring devices. Exceeding the rating of an outlet may increase the risk of fire and electric shock.
 <p>No wet hands</p>	<ul style="list-style-type: none"> ● Do not handle power plug with wet hands. Failure to observe this precaution may increase the risk of electric shock.
 <p>Instruction</p>	<ul style="list-style-type: none"> ● Use and store the product within the specified temperature/humidity range. If the product is used outside the specified range of temperature and humidity continuously, it may increase the risk of fire or electric shock. ● Do not place the product at elevations of 1.24 mi. (2,000 m) or higher above sea level. Failure to do so may shorten the life of the internal parts and result in malfunctions. ● When mounting the product into the rack, provide sufficient cooling space. Mount the product in a rack meeting EIA standards, and maintain spaces above and below for air circulation. For your safety as required, attach an L-shaped bracket in addition to the panel mount bracket kit to improve mechanical stability. ● Never insert screws without the rubber feet into the threaded holes on the bottom of the product. Never insert screws alone into the threaded holes on the bottom of the product. Doing so may lead to damage when the screws contact electric circuitry or components inside the product. Reinstall the originally supplied rubber feet using the originally supplied screws only.

For operating products:





 <p>Hot surfaces Caution</p>	<p>For products with the hot surfaces caution label only:</p> <ul style="list-style-type: none"> ● Do not touch the product's hot surface. <p>If the product is installed without enough space, it may cause malfunction of other products. If you touch product's hot surface, it may cause burns.</p>
 <p>Prohibited</p>	<ul style="list-style-type: none"> ● Use only the supplied power cable and AC adapter. ● Do not use the supplied power cable and AC adapter with other products. <p>If non-compliant adapter or power cables are used, it may increase the risk of fire or electric shock.</p>
 <p>Unplug</p>	<ul style="list-style-type: none"> ● If the product won't be used for an extended period of time, unplug it. <p>Failure to observe this precaution may increase the risk of fire.</p> <ul style="list-style-type: none"> ● Unplug the product before cleaning. <p>To prevent electric shock.</p>
 <p>Instruction</p>	<ul style="list-style-type: none"> ● Do not prevent heat release. <p>If cooling fan stops, power off the product and contact IDK. Failure to do so may raise internal temperature and increase the risk of malfunction, fire, or electric shock.</p> <ul style="list-style-type: none"> ● Keep vents clear of dust. <p>If the vent holes near the cooling fan or near the fan are covered with dust, internal temperatures increase and may increase the risk of malfunction. Clean the vent holes and near the fan as needed. If dust accumulates inside of the product, it may increase the risk of fire or electric shock. Periodic internal cleaning, especially before humid rainy season, is recommended. For internal cleaning, contact your IDK representative.</p>

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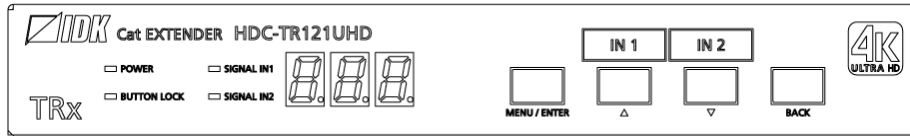
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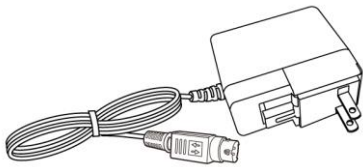
1 Included items

Ensure that all items illustrated below are included in the package.

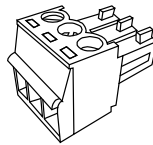
If any items are missing or damaged, please contact IDK.



One (1) main unit (Example: HDC-TR121UHD)



One (1) AC adapter (4 ft. (1.2 m))



Two (2) 3-pin captive screw connectors

[Fig. 1.1] Included items

2 Product outline

The HDC-UHD products are two-input extenders with EDID emulator for sending HDMI, DVI, and HDBaseT input signals at up to 4K@60 over a Category cable without compression or processing.

Input video signals are converted to HDBaseT format and can be transmitted up to 100 m (328 ft.); 1080p (24 bit) video signals can be sent up to 150 m (492 ft.) in Long reach mode.

2.1 HDC-TR121UHD

The HDC-TR121UHD is an HDBaseT extender with EDID emulator for sending HDMI, DVI, or HDBaseT input signals at up to 4K@60 over a Category cable without compression or processing.

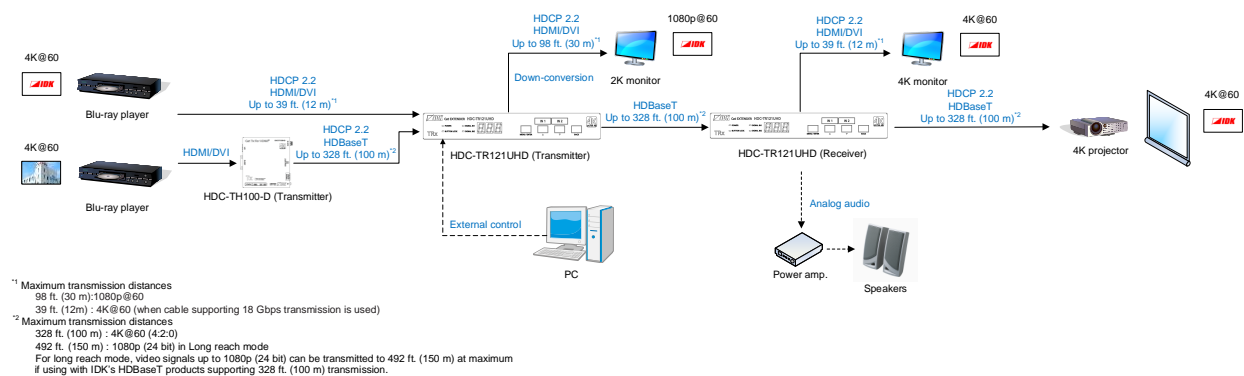
Input video signal is converted to HDMI and HDBaseT that can be transmitted up to 100 m (328 ft.); 1080p (24 bit) video signals can be sent up to 150 m (492 ft.) in Long reach mode.

The HDC-TR121UHD includes one HDMI output and one HDBaseT output. The HDMI OUT1 enables down conversion outputting 4K input video at 1080p automatically depending on sink device status. The two video inputs can be controlled by the front panel or an external controller.

For video signal that is distributed to an HDMI/DVI and HDBaseT simultaneously, video/audio can be off for each output.

The HDC-TR121UHD also features Daisy chain for extending and distributing video, audio, and control signals. In addition, digital audio signals can be de-embedded onto the analog output signals. It supports bidirectional RS-232C communication and LAN transmission.

Internal Web pages provide system status for troubleshooting and device monitoring using a browser.



[Fig. 2.1] Application example (HDC-TR121UHD)

2.2 HDC-TH221UHD/HDC-TH421UHD

The HDC-TH221UHD and HDC-TH421UHD are two-input transmitters with EDID emulator for sending HDMI, DVI, and HDBaseT input signals at up to 4K@60 over a Category cable without compression or processing.

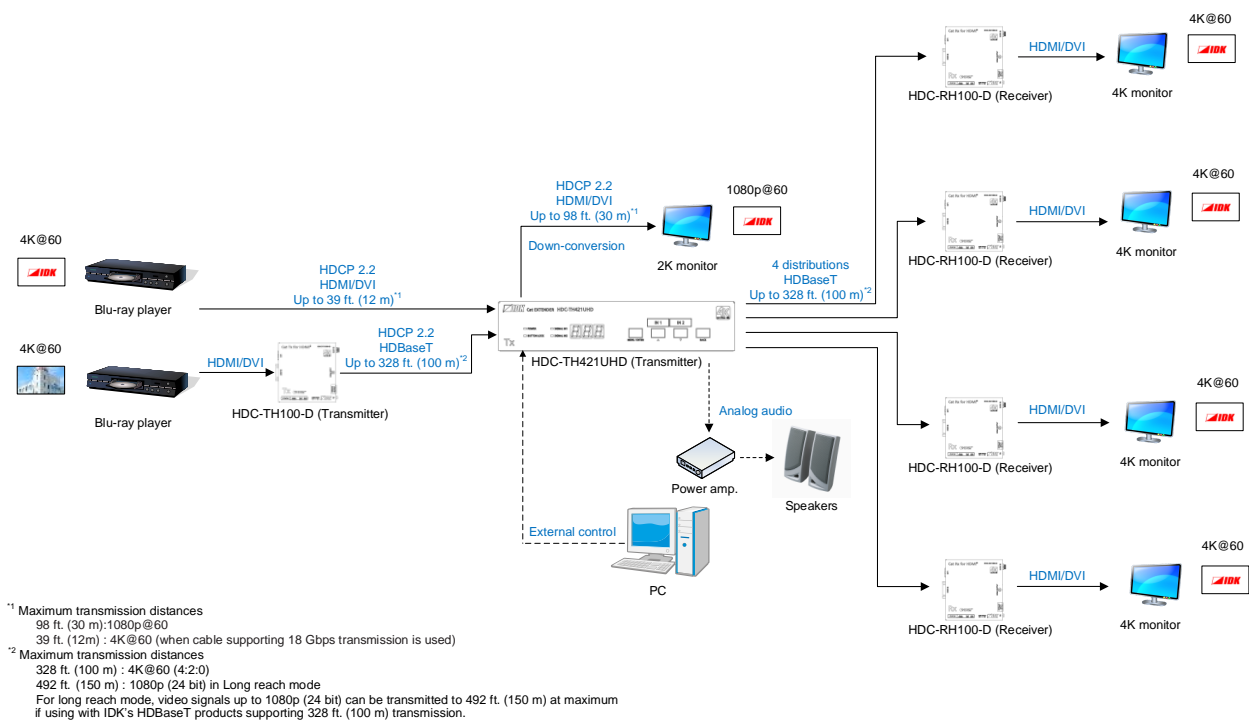
Input video signals are converted to HDBaseT format and can be transmitted up to 100 m (328 ft.); 1080p (24 bit) video signals can be sent up to 150 m (492 ft.) in Long reach mode.

The HDC-TH221UHD/HDC-TH421UHD includes one HDMI output and two/four HDBaseT outputs. The HDMI OUT1 enables down conversion outputting 4K input video at 1080p automatically depending on sink device status. The two video inputs can be controlled by the front panel or an external controller.

For video signal that is distributed to three or five channels simultaneously, video/audio can be off for each output.

The HDC-TH221UHD/HDC-TH421UHD also features Daisy chain for extending and distributing video, audio, and control signals. In addition, digital audio signals can be de-embedded onto the analog output signals. It supports bidirectional RS-232C communication and LAN transmission.

Internal Web pages provide system status for troubleshooting and device monitoring using a browser.



[Fig. 2.2] Application example (HDC-TH421UHD)

2.3 HDC-RH221UHD/HDC-RH421UHD

The HDC-RH221UHD and HDC-RH421UHD are two-input receivers with EDID emulator for sending HDMI, DVI, and HDBaseT input signals at up to 4K@60 over a Category cable without compression or processing.

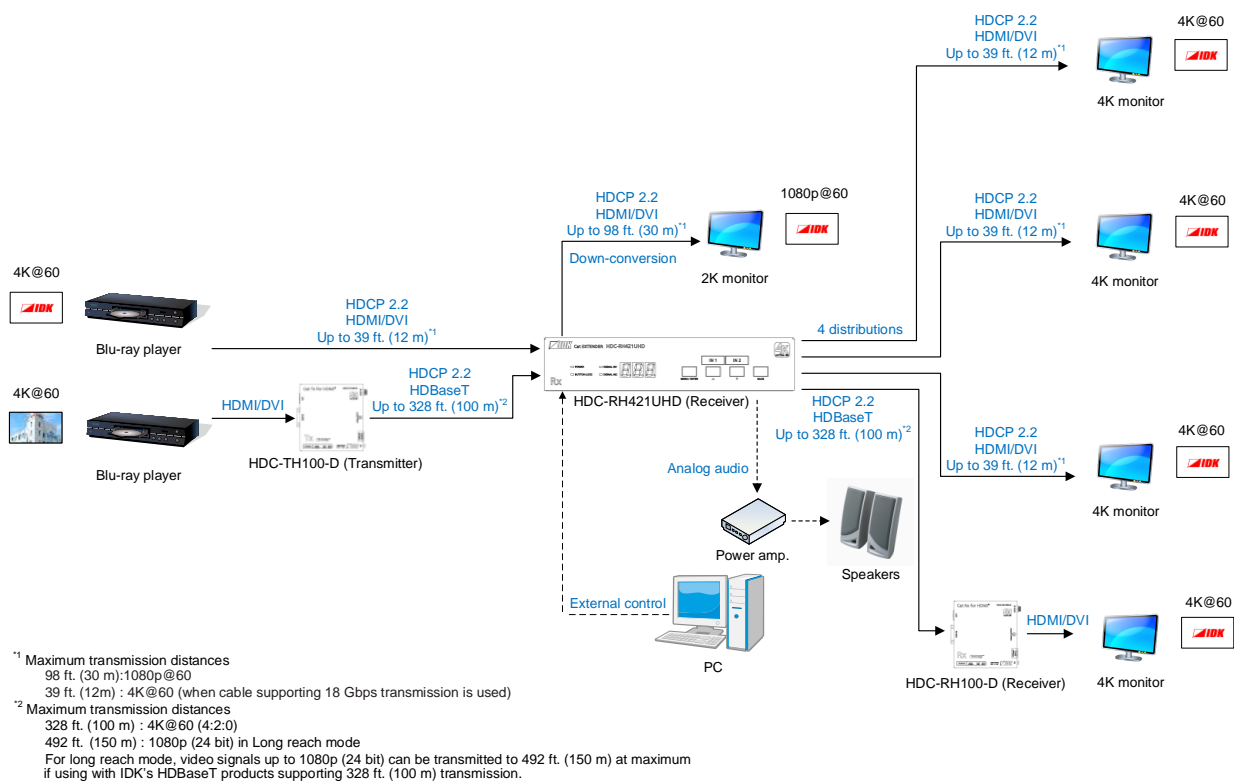
Input video signals are converted to HDBaseT format and can be transmitted up to 100 m (328 ft.); 1080p (24 bit) video signals can be sent up to 150 m (492 ft.) in Long reach mode.

The HDC-RH221UHD/HDC-RH421UHD includes two/four HDMI outputs and one HDBaseT output. The HDMI OUT1 enables down conversion outputting 4K input video at 1080p automatically or manually depending on sink device status. The two video inputs can be controlled by the front panel or an external controller.

For video signal that is distributed to three or five channels simultaneously, video/audio can be off for each output.

The HDC-RH221UHD/HDC-RH421UHD also features Daisy chain for extending and distributing video, audio, and control signals. In addition, digital audio signals can be de-embedded onto the analog output signals. It supports bidirectional RS-232C communication and LAN transmission.

Internal Web pages provide system status for troubleshooting and device monitoring using a browser.



[Fig. 2.3] Application example (HDC-RH421UHD)

3 Features

■ Video

- Up to 4K@60 (4: 4: 4)
- HDCP 1.4/2.2
- HDR
- 3D
- x.v.Color
- Up to 328 ft. (100 m) 4K@60 over CAT.5E HDC/Cat5e STP/Cat6 STP cable
- Transmission over Cat5e UTP cable^{*1}
- Up to 328 ft. (100 m) over Cat6 UTP cable^{*2}
- Up to 492 ft. (150 m) in Long reach mode (1080p 60 Hz 24 bit or less)^{*3}
- HDMI Transmission distances:
 - Up to 98 ft. (30 m) : 1080p@60
 - Up to 39 ft. (12 m) : 4K@60 (when cable supporting 18 Gbps transmission is used)
- No virtual delay (10 μ s or less/328 ft. (100 m))
- OUT1 supports down conversion (4K to 1080p)
- Each video output OFF
- Daisy chain connection
- Anti-snow

■ Audio

- De-embedding

■ Control input

- Point-to-point (bidirectional) and point-to-multipoint (unidirectional) RS-232C communication
- LAN
- HDBaseT: RS-232C and LAN are supported

■ Others

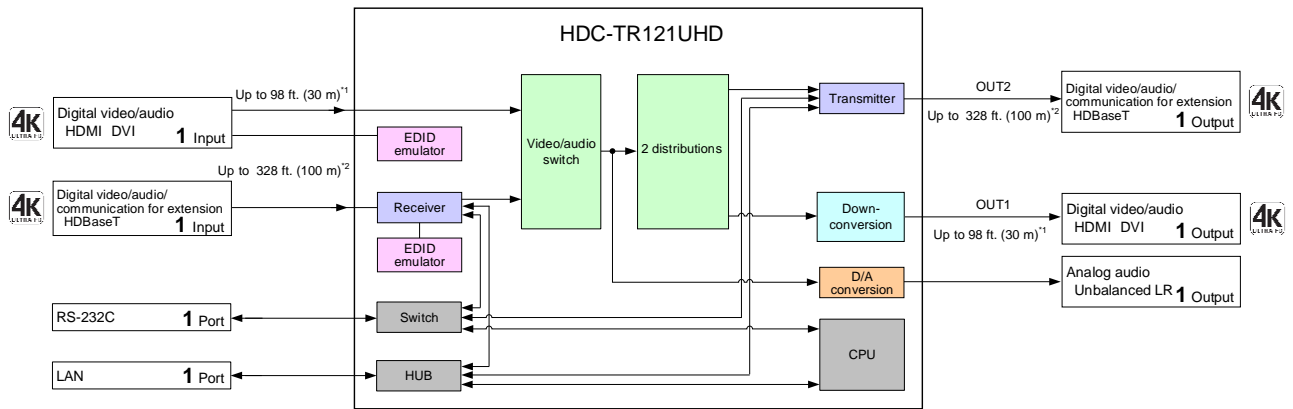
- WEB browser control
- Status notification
- HDBaseT status display
- I/O signal status display
- Automatic input channel switching
- EDID emulation
- CEC (Pass-through)
- Connection Reset
- Button security lockout
- AC adapter with locking mechanism

^{*1} If exceeding 164 ft. (50 m), CAT.5E HDC, Cat5e STP, and Cat6 UTP/STP cables are recommended.

^{*2} If the 4K format exceeds 230 ft. (70 m), CAT.5E HDC, Cat5e STP, and Cat6 STP cables are recommended.

^{*3} If exceeding 328 ft. (100 m) in Long reach mode, CAT.5E HDC, Cat5e STP, and Cat6 STP cables are recommended.

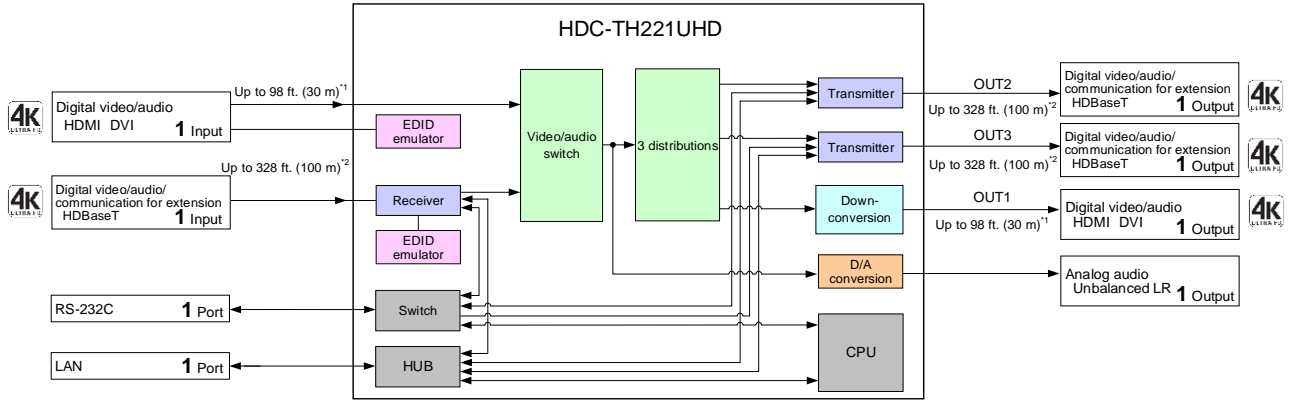
■ Diagrams



¹ Maximum transmission distances
 98 ft. (30 m): 1080p @ 60
 39 ft. (12m) : 4K@60 (when cable supporting 18 Gbps transmission is used)

² Maximum transmission distances
 328 ft. (100 m) : 4K@60 (4:2:0)
 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.

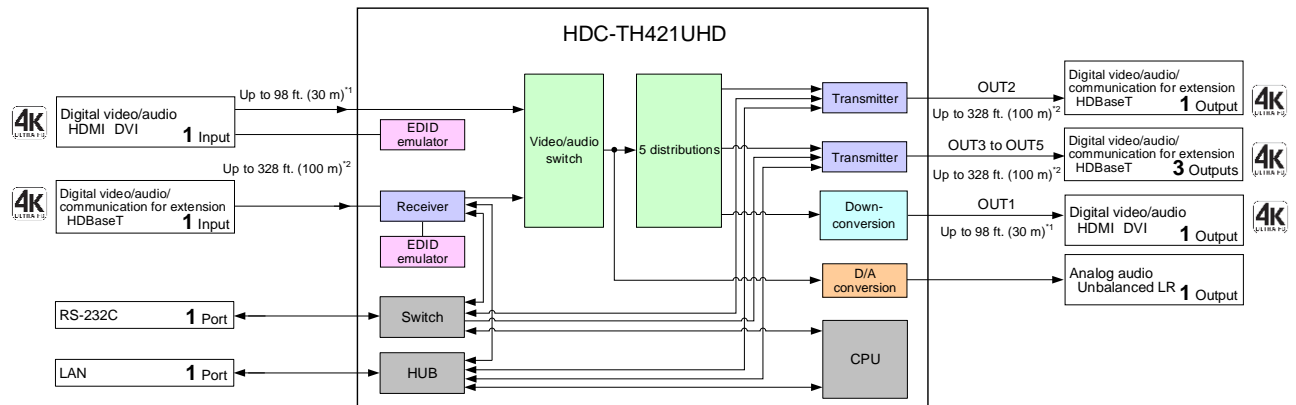
[Fig. 3.1] HDC-TR121UHD diagram



¹ Maximum transmission distances
 98 ft. (30 m):1080p@60
 39 ft. (12m) : 4K@60 (when cable supporting 18 Gbps transmission is used)

² Maximum transmission distances
 328 ft. (100 m) : 4K@60 (4:2:0)
 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.

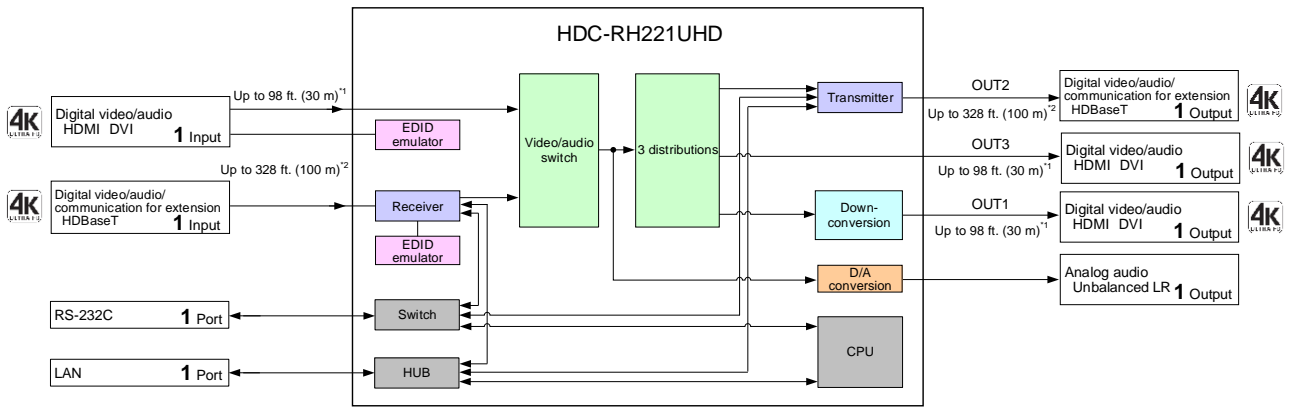
[Fig. 3.2] HDC-TH221UHD diagram



¹ Maximum transmission distances
 98 ft. (30 m):1080p@60
 39 ft. (12m) : 4K@60 (when cable supporting 18 Gbps transmission is used)

² Maximum transmission distances
 328 ft. (100 m) : 4K@60 (4:2:0)
 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.

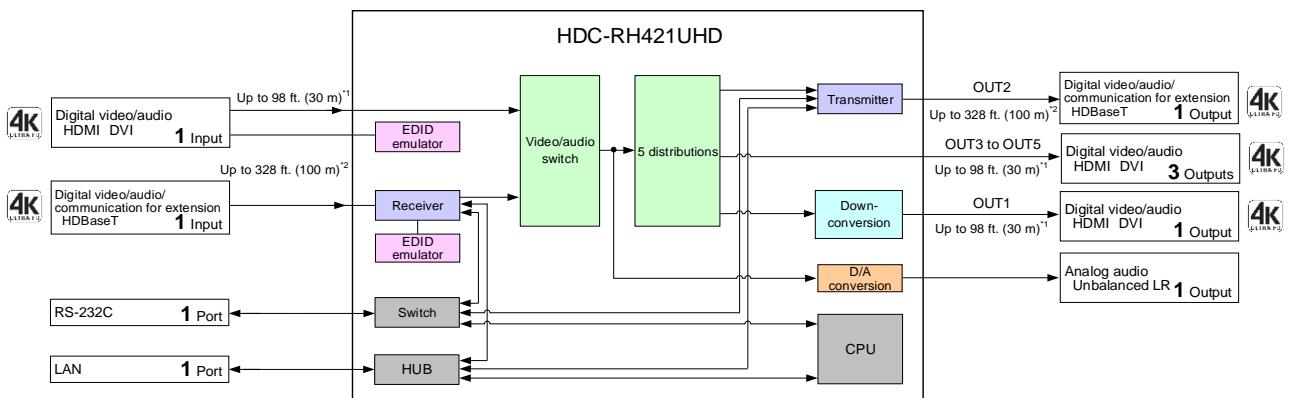
[Fig. 3.3] HDC-TH421UHD diagram



¹ Maximum transmission distances
 98 ft. (30 m): 1080p@60
 39 ft. (12m) : 4K@60 (when cable supporting 18 Gbps transmission is used)

² Maximum transmission distances
 328 ft. (100 m) : 4K@60 (4:2:0)
 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.

[Fig. 3.4] HDC-RH221UHD diagram



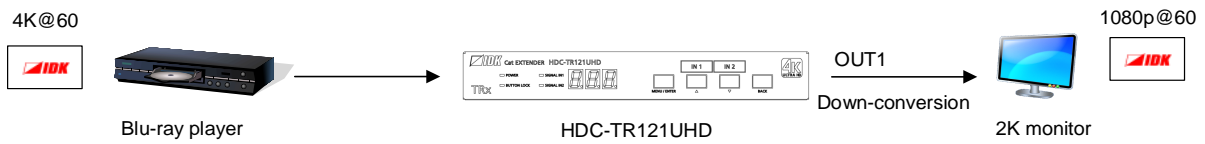
¹ Maximum transmission distances
 98 ft. (30 m): 1080p@60
 39 ft. (12m) : 4K@60 (when cable supporting 18 Gbps transmission is used)

² Maximum transmission distances
 328 ft. (100 m) : 4K@60 (4:2:0)
 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.

[Fig. 3.5] HDC-RH421UHD diagram

3.1 Downconversion

The HDC can downconvert 4K input video into 2K format and output through OUT1.
By default, the downconversion is set to “FOLLOW SINK EDID” that downconverts 4K signal into 2K automatically if the connected sink device support only up to 2K format.



[Fig. 3.6] Downconversion

【See: 8.8.4 Downconversion output】

Note:

Downconverted signal is output from OUT1 only.

3.2 Output mode for when signal is input

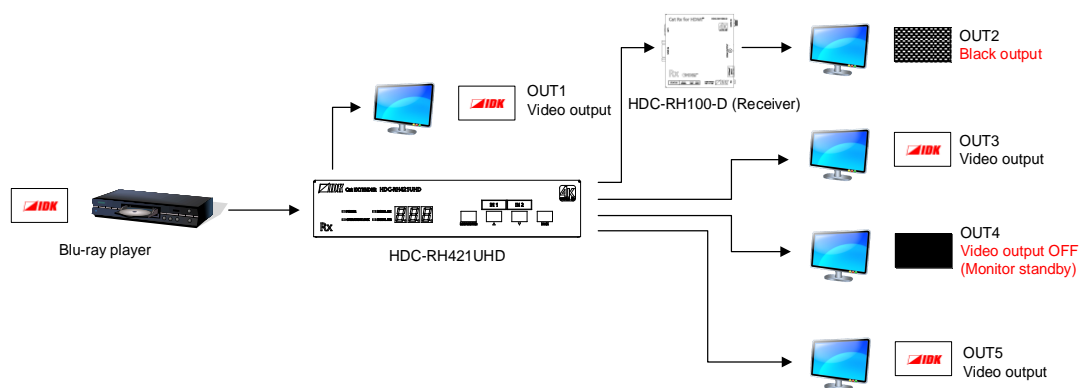
Video and audio can be off for each output channel separately.

Off : No signal is output from the HDC. The connected monitors can be standby mode and saves energy.

Black : A black screen is output from the HDC. Since the video is just hidden, the video can be displayed sooner after changing the mode.

The “BACK” button switches video output and audio output off/on.

In the top page, the output setting mode that is set in “**8.8.6 Presence of output signal for when signal is input**” will be applied by pressing the “BACK” button, and the button lights. Those settings will be released by pressing the “BACK” button again, the button does not light any more.



[Fig. 3.7] Video off (Example)

【See: 8.8.6 Presence of output signal for when signal is input】

Note:

The “Black” mode is available only if video signal is input.

3.3 Input channel automatic switching

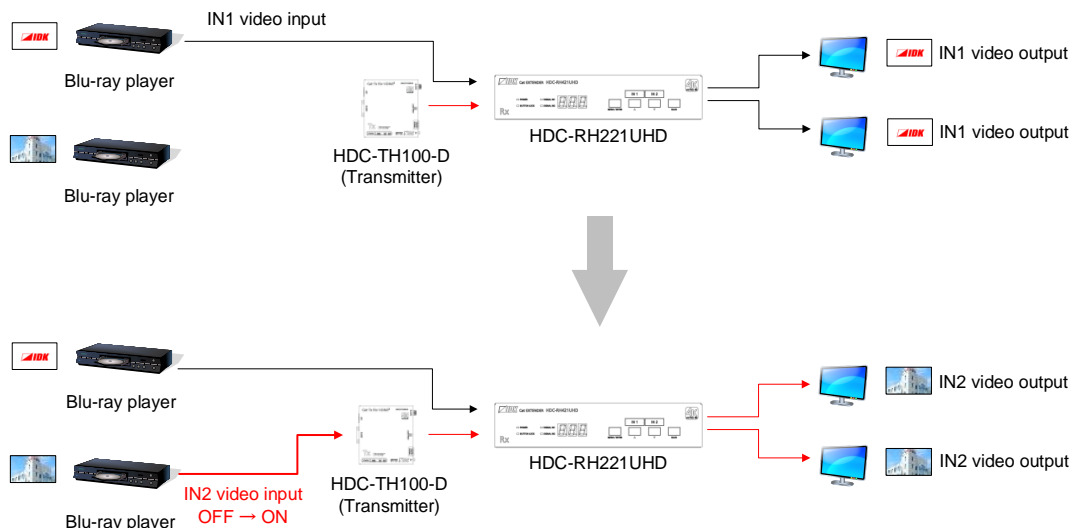
When signal input status changes by such as removing or inserting cables, the HDC can switch the input channel automatically. The switching priority can be set for each input.

【See: 8.3.1 Automatic input channel switching】

Example 1:

Video signal is being input to IN1 and IN1 is being assigned.

➔ If video signal is input to IN2, the output video is switched to IN2 automatically.

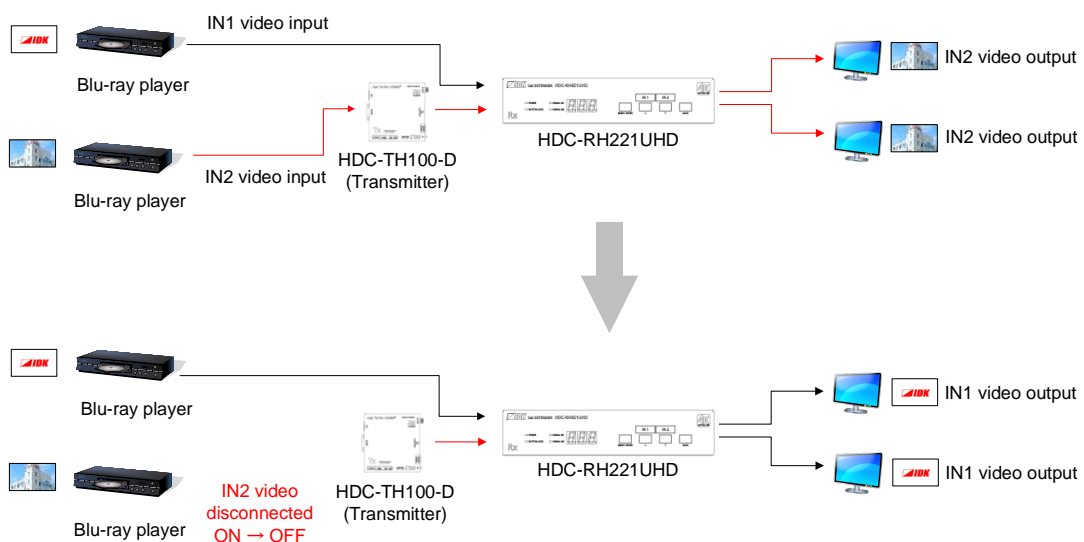


[Fig. 3.8] Automatic input channel switching (Video signal OFF → ON)

Example 2:

Video signals are being input to both IN1 and IN2, and IN2 is being assigned.

➔ If video input to IN2 is disconnected, the output video is switched to IN1 automatically.



[Fig. 3.9] Automatic input channel switching (Video signal ON → OFF)

Note:

This feature is set to be disabled by default. To enable it, change the setting of “8.3.1 Automatic input channel switch”.

3.4 LAN

The HDC can be accessed and controlled through LAN communication.

The HDC includes the same functionality as switching hub.

If multiple HDC-UHD products are connected through HDBaseT in a system, you can control and check the status of all connected HDC-UHD products remotely by connecting a PC to the LAN connector of one HDC-UHD product.

Note:

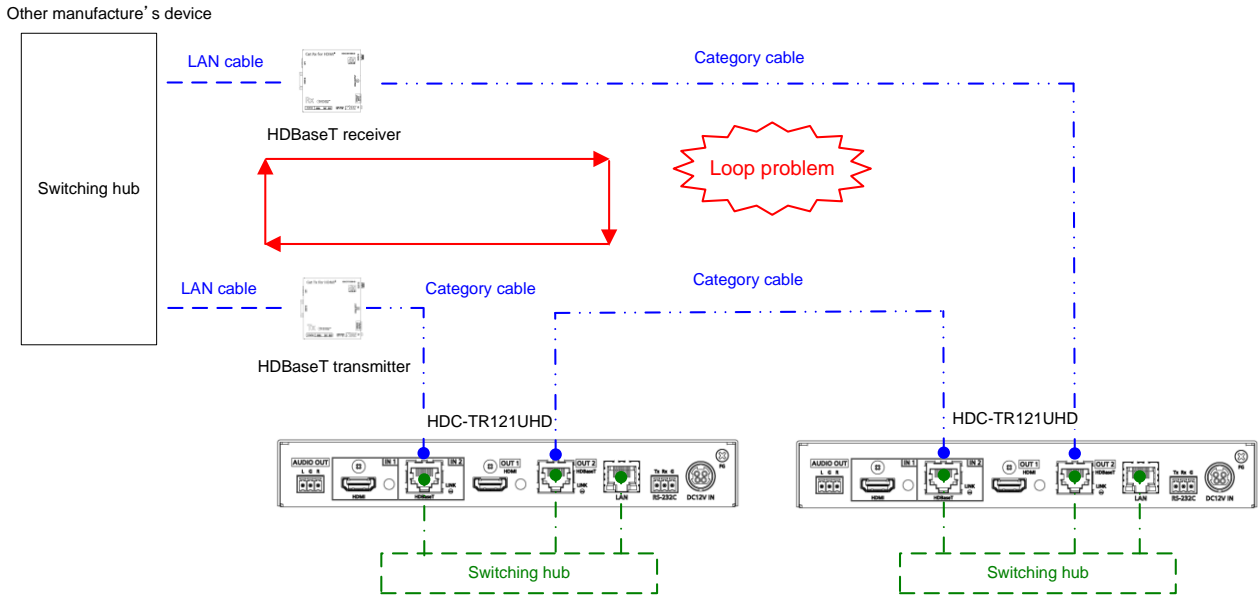
This feature is set to be disabled by default to avoid loop problems. To enable it, change the setting of “**8.10.5 Setting HDBaseT LAN**”.

【See: 8.10.5 Setting HDBaseT LAN】

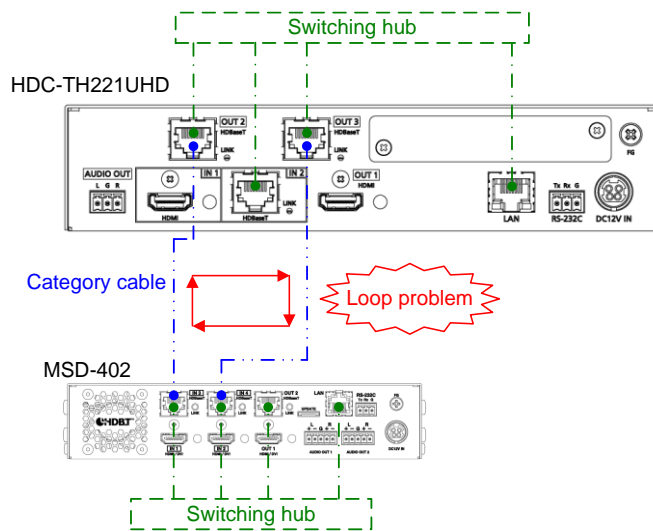
3.5 LAN loop problem through HDBaseT

The HDC includes the same functionality as switching hub. The network may be down due to loop problem caused by LAN communication of the HDC. Ensure that the LAN connection is not looped.

【See: 8.10.5 Setting HDBaseT LAN】



[Fig. 3.10] Loop problem with other manufacture's device



[Fig. 3.11] Loop problem with IDK's device

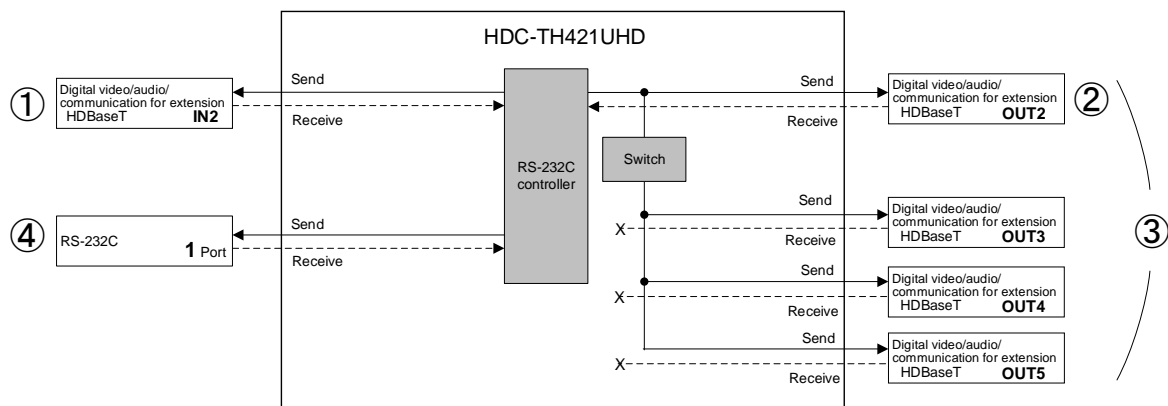
3.6 RS-232C transmission

Data can be transmitted bidirectionally between the RS-232C connector and HDBaseT input/output connectors.

The following four connectors can send or receive signals:

- ① HDBaseT input connector (IN2)
- ② HDBaseT output connector (OUT2 only)
- ③ HDBaseT output connector (All outputs) only for sending data
- ④ RS-232C connector

If RS-232C transmission is set to be enabled, ensure that data is not duplicated in order to specify that each data is received from which connector. In such case, echo back may not be sent.



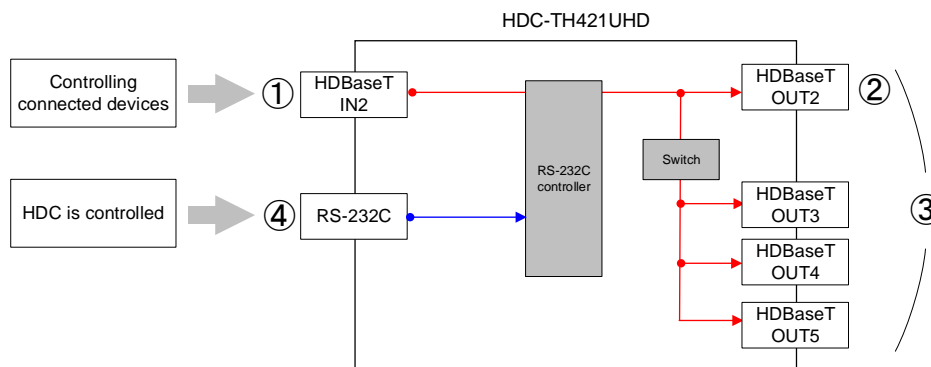
[Fig. 3.12] RS-232C transmission

【See: 8.9.3 RS-232C sending channel】
 【See: 8.9.4 RS-232C receiving channel】

The HDC can be controlled using communication commands through RS-232C. Make sure to use the RS-232C connector and set the RS-232C operation mode to “COMMAND MODE”.

In “COMMAND MODE”, the RS-232C communication between HDBaseT IN2 and HDBaseT OUT2/3/4/5 is still available.

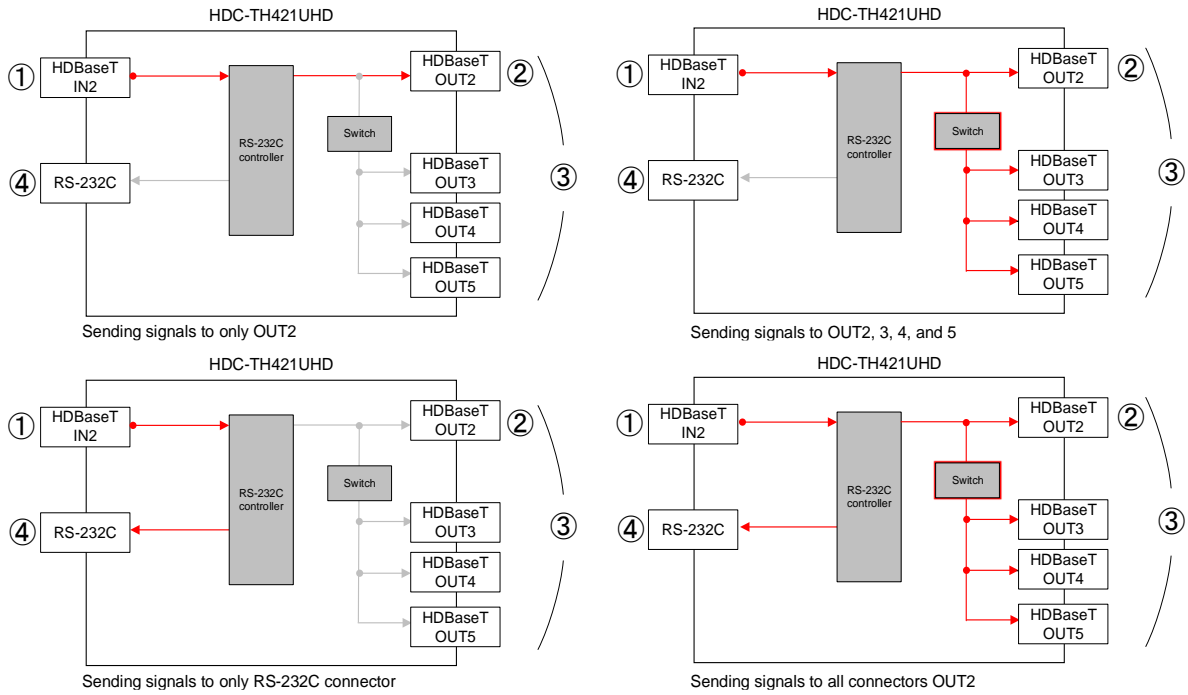
【See: 8.9.2 RS-232C operation mode】



[Fig. 3.13] RS-232C Setting mode

Example 1:

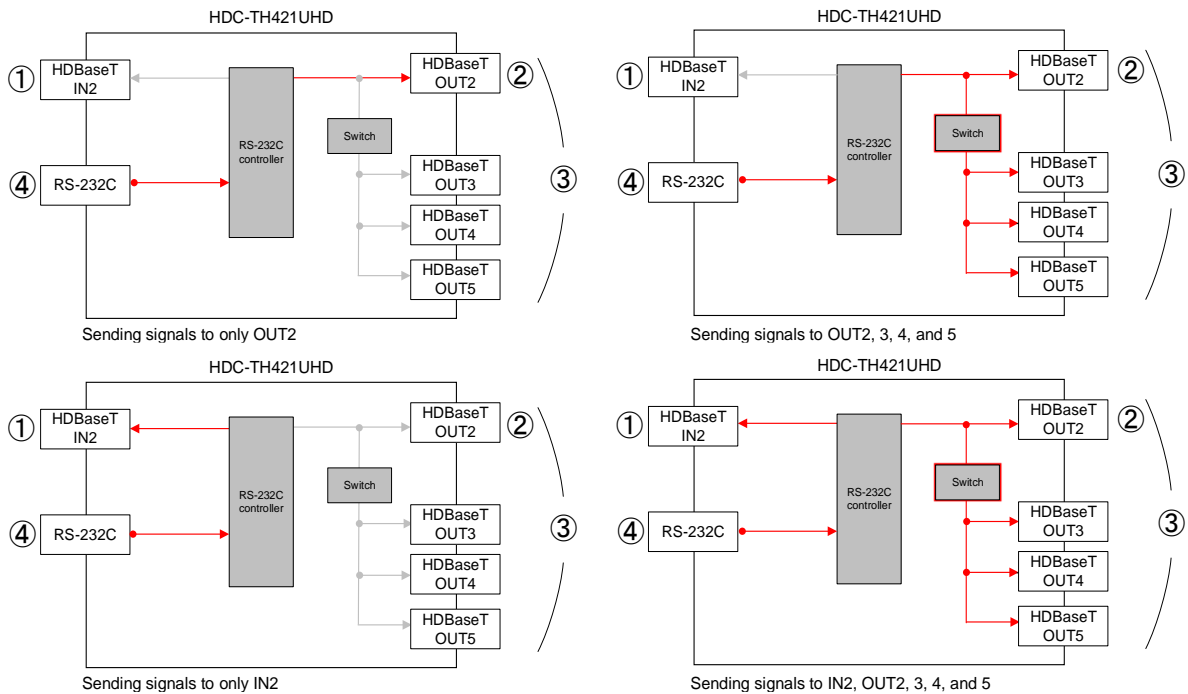
Sending control signals that is input from IN2 (HDBaseT) to specified connector(s)



[Fig. 3.14] From IN2 (HDBaseT) connector

Example 2:

Sending control signals that is input from RS-232C to specified connector(s)



[Fig. 3.15] From RS-232C connector

Notes:

- With RS-232C communication, a few bytes of unnecessary data may be output while the HDC is being powered off or connection is being established. Consider this possible problem when designing control program.
- Immediately after start-up, the communication command control function is disabled until the connection of the sink device is confirmed. Adding “Wait”, checking return value, or retry processing is recommended in the control program design phase.

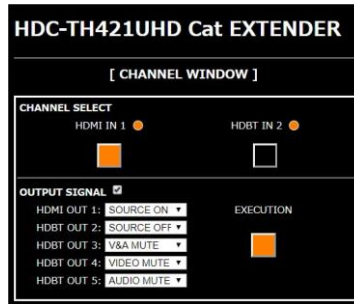
3.7 Control from Web browser

To open the Web menu window, enter the IP address + “/menu.html” into the address bar.

To open the [CHANNEL WINDOW] window for end users, click the [CHANNEL WINDOW] button from [CHANNEL SELECT] menu. Since this window is only for channel switching, it is minimized to prevent wrong operation. Creating a bookmark or shortcut of the window would save your time.

The WEB menu window cannot be jumped from the [CHANNEL WINDOW] window.

[See: 8.10.1 IP address]



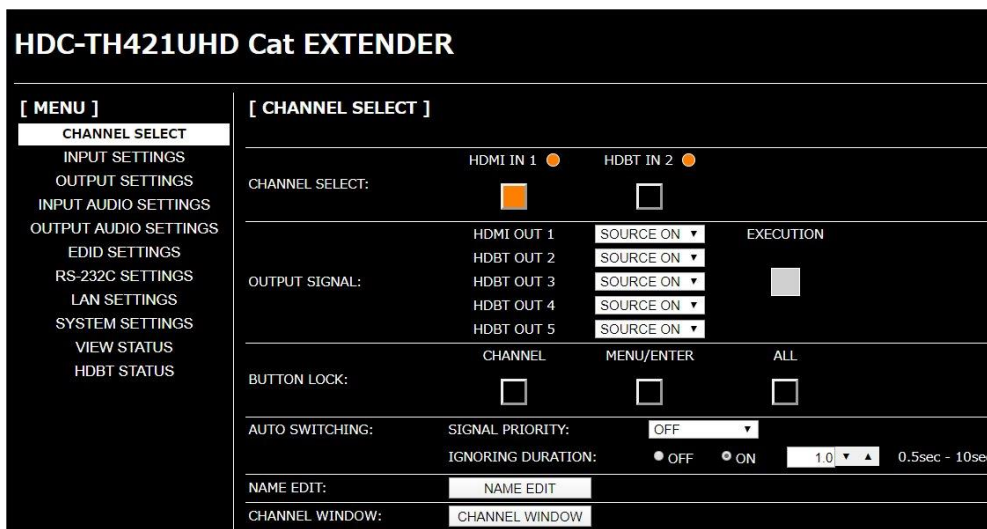
[Fig. 3.16] CHANNEL WINDOW

All settings can be set from the [MENU] windows.

[VIEW STATUS] : Shows information of I/O signal and connected devices.

[HDBT STATUS] : Shows a list of HDBaseT signal quality.

The HDC can be used as a switching hub. All connected HDC-UHD products statuses can be viewed via WEB browser from one PC by specifying IP address. This feature helps to solve problems.



[Fig. 3.17] WEB menu

To show information of signal and connected devices, select [VIEW STATUS].

HDC-TH421UHD Cat EXTENDER					
[MENU]	CHANNEL SELECT	[VIEW STATUS]			
	INPUT SETTINGS	[INPUT STATUS]	VIDEO STATUS	HDMI IN 1	HDMI IN 2
	OUTPUT SETTINGS	[HDMI IN 1]	VIDEO FORMAT	3840x2160@ 59.94Hz	UNSELECTED
	INPUT AUDIO SETTINGS	[HDMI IN 2]	INPUT MODE	HDMI MODE	
	EDID SETTINGS		HDCP	HDCP 2.2 Type0	
	OUTPUT AUDIO SETTINGS		COLOR SPACE	YCbCr 4:4:4 LIMITED RANGE YUV709	
	EDID SETTINGS		DEEP COLOR	24 BIT COLOR	
	RS-232C SETTINGS		SCRAMBLE	SCRAMBLE ON	
	LAN SETTINGS		AUDIO STATUS	HDMI IN 1	HDMI IN 2
	SYSTEM SETTINGS		AUDIO FORMAT	LINER PCM	UNSELECTED
		SAMPLING FREQUENCY	48 kHz		
		SPEAKER CONFIGURATION	2 CHANNEL		
		BIT LENGTH	24 BIT		
		[SINK DEVICE STATUS]	[HDMI OUT 1]	[HDMI OUT 2]	[HDMI OUT 3]
	[HDMI OUT 1]	HDCP AUTHENTICATION	HDCP 2.2 Type 0	HDCP CHECK NOW	HDCP CHECK NOW
	[HDMI OUT 2]	OUTPUT MODE	HDMI MODE	HDMI MODE	HDMI MODE
	[HDMI OUT 3]	COLOR SPACE	YCbCr 4:4:4	YCbCr 4:2:0	YCbCr 4:2:0
	[HDMI OUT 4]	COLOR RANGE	LIMITED RANGE	LIMITED RANGE	LIMITED RANGE
	[HDMI OUT 5]	DEEP COLOR	24 BIT COLOR	24 BIT COLOR	24 BIT COLOR
		SCRAMBLE	SCRAMBLE ON	SCRAMBLE OFF	SCRAMBLE OFF
	[SINK DEVICE EDID]	[HDMI OUT 1]	[HDMI OUT 2]	[HDMI OUT 3]	[HDMI OUT 4]
	[HDMI OUT 1]	MONITOR NAME	HDC-RH421UHD	HDC-RH421UHD	HDC-RH421UHD
	[HDMI OUT 2]	RESOLUTION	3840x2160 59.9400MHz	3840x2160 59.9400MHz	3840x2160 59.9400MHz
	[HDMI OUT 3]	HDMI MODE	HDMI MODE	HDMI MODE	HDMI MODE
	[HDMI OUT 4]	COLOR SPACE	RGB / YCbCr 4:2:2 / YCbCr 4:4:4 / YCbCr 4:2:0	RGB / YCbCr 4:2:2 / YCbCr 4:4:4 / YCbCr 4:2:0	RGB / YCbCr 4:2:2 / YCbCr 4:4:4 / YCbCr 4:2:0
	[HDMI OUT 5]	DEEP COLOR	24 BIT COLOR	24 BIT COLOR	24 BIT COLOR
		PCM FREQUENCY	32 / 44.1 / 48 kHz	32 / 44.1 / 48 kHz	32 / 44.1 / 48 kHz
		PCM BIT LENGTH	16 / 20 / 24 BIT	16 / 20 / 24 BIT	16 / 20 / 24 BIT
		PCM CHANNELS	2 CHANNEL	2 CHANNEL	2 CHANNEL
		COMPRESSED AUDIO	NOT SUPPORTED	NOT SUPPORTED	NOT SUPPORTED
		HDR	NOT SUPPORTED	NOT SUPPORTED	NOT SUPPORTED
		SEC	SUPPORTED	NOT SUPPORTED	NOT SUPPORTED
		3D	NOT SUPPORTED	NOT SUPPORTED	NOT SUPPORTED
	[SYSTEM STATUS]	TEMPERATURE STATUS	43.0 C	STATUS: OK	STATUS: OK
		POWER STATUS	12.156 V		
	[VERSION]	HDC-TH421UHD	1.0080 19/11/16		

[Fig. 3.18] VIEW STATUS

JavaScript is used for the HDC WEB browser. When you set the HDC from WEB browser menu, enable JavaScript before setting up. Refer to each browser's help menu if you do not know how to enable JavaScript.

Tip:

IDK tests the HDC under the following environment:

OS : Windows 7 Professional, Windows 10 Professional

WEB browser : Microsoft Internet Explorer 11, Google Chrome 77, Mozilla Firefox 69

3.8 Displaying HDBaseT information

HDBaseT status of connected multiple HDC-UHD products can be viewed from WEB browser or front display. This feature helps troubleshooting.

【See: 8.10.1 IP address】

For LAN communication of multiple HDC-UHD products via category cable from the HDBaseT connector, enable LAN for HDBaseT.

【See: 8.10.5 Setting HDBaseT LAN】

To ensure the best performance with category cables, ensure that proper pinning and pairing requirements are observed.

【See: 6.2.3 Category cable】

■ **To display HDBaseT information on WEB browser**

Make sure that video signal is transmitted. As resolution becomes higher, the signal loses its quality.

1. Set [SYSTEM SETTINGS] > [AUTO RELODE TIME] to “5sec”.
2. Open the [HDBT STATUS] window.
3. Click [RESET MAX VALUES].
4. All values are displayed when the window is updated automatically.
5. Ensure that [LINK STATUS] and [SINK STATUS] are [ON].
6. The measured values are classified into three levels.
7. [MAX VALUE] shows the maximum value.
8. Click [RESET MAX VALUES] to reset the maximum value every time changing resolution or category cable position.
9. Close the [HDBT STATUS] window.
Set [SYSTEM SETTINGS] > [AUTO RELODE TIME] to [OFF] as needed.

HDC-TH421UHD Cat EXTENDER																																																																																																																															
<p>[MENU]</p> <ul style="list-style-type: none"> CHANNEL SELECT INPUT SETTINGS OUTPUT SETTINGS INPUT AUDIO SETTINGS OUTPUT AUDIO SETTINGS EDID SETTINGS RS-232C SETTINGS LAN SETTINGS SYSTEM SETTINGS VIEW STATUS HDBT STATUS 	<p>[HDBT STATUS]</p> <table border="1"> <thead> <tr> <th>[SIGNAL STATUS]</th> <th>HDBT IN 2</th> <th>HDBT OUT 2</th> <th>HDBT OUT 3</th> <th>HDBT OUT 4</th> <th>HDBT OUT 5</th> </tr> </thead> <tbody> <tr> <td>VIDEO FORMAT</td> <td>: 1920x1080p 59.93Hz</td> <td>1920x1080p 59.93Hz</td> <td>1920x1080p 59.93Hz</td> <td>1920x1080p 59.93Hz</td> <td>1920x1080p 59.93Hz</td> </tr> <tr> <td>COLOR SPACE</td> <td>: YCbCr 4:4:4</td> <td>YCbCr 4:4:4</td> <td>YCbCr 4:4:4</td> <td>YCbCr 4:4:4</td> <td>YCbCr 4:4:4</td> </tr> <tr> <td>DEEP COLOR</td> <td>: 24 BIT COLOR</td> <td>24 BIT COLOR</td> <td>24 BIT COLOR</td> <td>24 BIT COLOR</td> <td>24 BIT COLOR</td> </tr> <tr> <td>LINK STATUS</td> <td>: ON</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> </tr> <tr> <td>SINK STATUS</td> <td>: ON</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>[DEVICE STATUS]</th> <th>HDBT IN 2</th> <th>HDBT OUT 2</th> <th>HDBT OUT 3</th> <th>HDBT OUT 4</th> <th>HDBT OUT 5</th> </tr> </thead> <tbody> <tr> <td>LOCAL DEV TYPE</td> <td>: VS100RX</td> <td>VS100TX</td> <td>VS100TX</td> <td>VS100TX</td> <td>VS100TX</td> </tr> <tr> <td>LOCAL VERSION ID</td> <td>: 13 07 21 00</td> <td>13 07 21 10</td> <td>13 07 21 10</td> <td>13 07 21 10</td> <td>13 07 21 10</td> </tr> <tr> <td>REMOTE DEV TYPE</td> <td>: VS100TX</td> <td>VS100RX</td> <td>VS100RX</td> <td>VS100RX</td> <td>VS100RX</td> </tr> <tr> <td>REMOTE VERSION ID</td> <td>: 13 07 21 10</td> <td>13 07 21 00</td> <td>13 07 21 00</td> <td>13 07 21 00</td> <td>13 07 21 00</td> </tr> <tr> <td>OPERATION MODE</td> <td>: HDBASET MODE</td> <td>LONG REACH MODE</td> <td>HDBASET MODE</td> <td>HDBASET MODE</td> <td>HDBASET MODE</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>[CABLE STATUS]</th> <th>HDBT IN 2</th> <th>HDBT OUT 2</th> <th>HDBT OUT 3</th> <th>HDBT OUT 4</th> <th>HDBT OUT 5</th> </tr> </thead> <tbody> <tr> <td>CABLE LENGTH</td> <td>: <20m</td> <td>100m<</td> <td>28m</td> <td>55m</td> <td>78m</td> </tr> <tr> <td>VIDEO BER</td> <td>: 10e-10</td> <td>10e-10</td> <td>10e-10</td> <td>10e-10</td> <td>10e-10</td> </tr> <tr> <td>FMSEERR (dB)</td> <td>: A B C D</td> <td>A B C D</td> <td>A B C D</td> <td>A B C D</td> <td>A B C D</td> </tr> <tr> <td>CURRENT VALUE</td> <td>: -22 -21 -22 -22</td> <td>-19 -18 -18 -19</td> <td>-20 -20 -21 -21</td> <td>-20 -18 -20 -19</td> <td>-18 -18 -18 -18</td> </tr> <tr> <td>MAX VALUE</td> <td>: -22 -21 -22 -22</td> <td>-19 -18 -18 -19</td> <td>-20 -20 -21 -21</td> <td>-19 -17 -19 -19</td> <td>-18 -17 -18 -18</td> </tr> <tr> <td>FMAXERR</td> <td>: A B C D</td> <td>A B C D</td> <td>A B C D</td> <td>A B C D</td> <td>A B C D</td> </tr> <tr> <td>CURRENT VALUE</td> <td>: 0.59 0.75 0.62 0.62</td> <td>1.00 0.78 0.81 0.87</td> <td>0.78 0.87 1.03 0.87</td> <td>1.15 1.25 1.03 1.00</td> <td>0.96 1.00 1.03 0.90</td> </tr> <tr> <td>MAX VALUE</td> <td>: 0.59 0.75 0.62 0.62</td> <td>1.00 0.78 0.81 0.87</td> <td>0.78 0.87 1.03 0.87</td> <td>1.15 1.25 1.03 1.00</td> <td>0.96 1.00 1.03 0.90</td> </tr> </tbody> </table> <p>■:NORMAL ■:CAUTION ■:WARNING</p> <p style="text-align: center;">[RESET MAX VALUES]</p>	[SIGNAL STATUS]	HDBT IN 2	HDBT OUT 2	HDBT OUT 3	HDBT OUT 4	HDBT OUT 5	VIDEO FORMAT	: 1920x1080p 59.93Hz	1920x1080p 59.93Hz	1920x1080p 59.93Hz	1920x1080p 59.93Hz	1920x1080p 59.93Hz	COLOR SPACE	: YCbCr 4:4:4	YCbCr 4:4:4	YCbCr 4:4:4	YCbCr 4:4:4	YCbCr 4:4:4	DEEP COLOR	: 24 BIT COLOR	24 BIT COLOR	24 BIT COLOR	24 BIT COLOR	24 BIT COLOR	LINK STATUS	: ON	ON	ON	ON	ON	SINK STATUS	: ON	ON	ON	ON	ON	[DEVICE STATUS]	HDBT IN 2	HDBT OUT 2	HDBT OUT 3	HDBT OUT 4	HDBT OUT 5	LOCAL DEV TYPE	: VS100RX	VS100TX	VS100TX	VS100TX	VS100TX	LOCAL VERSION ID	: 13 07 21 00	13 07 21 10	13 07 21 10	13 07 21 10	13 07 21 10	REMOTE DEV TYPE	: VS100TX	VS100RX	VS100RX	VS100RX	VS100RX	REMOTE VERSION ID	: 13 07 21 10	13 07 21 00	13 07 21 00	13 07 21 00	13 07 21 00	OPERATION MODE	: HDBASET MODE	LONG REACH MODE	HDBASET MODE	HDBASET MODE	HDBASET MODE	[CABLE STATUS]	HDBT IN 2	HDBT OUT 2	HDBT OUT 3	HDBT OUT 4	HDBT OUT 5	CABLE LENGTH	: <20m	100m<	28m	55m	78m	VIDEO BER	: 10e-10	10e-10	10e-10	10e-10	10e-10	FMSEERR (dB)	: A B C D	A B C D	A B C D	A B C D	A B C D	CURRENT VALUE	: -22 -21 -22 -22	-19 -18 -18 -19	-20 -20 -21 -21	-20 -18 -20 -19	-18 -18 -18 -18	MAX VALUE	: -22 -21 -22 -22	-19 -18 -18 -19	-20 -20 -21 -21	-19 -17 -19 -19	-18 -17 -18 -18	FMAXERR	: A B C D	A B C D	A B C D	A B C D	A B C D	CURRENT VALUE	: 0.59 0.75 0.62 0.62	1.00 0.78 0.81 0.87	0.78 0.87 1.03 0.87	1.15 1.25 1.03 1.00	0.96 1.00 1.03 0.90	MAX VALUE	: 0.59 0.75 0.62 0.62	1.00 0.78 0.81 0.87	0.78 0.87 1.03 0.87	1.15 1.25 1.03 1.00	0.96 1.00 1.03 0.90
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[Fig. 3.19] HDBT STATUS

■ Values to be displayed

Refer to “[Table 8.61] HDBaseT information (WEB browser)” for details of each status.

[SIGNAL STATUS]

- VIDEO FORMAT : Resolution of the transmitted video signal
- COLOR SPACE : Color space of the transmitted video signal
- DEEP COLOR : Deep color of the transmitted video signal
- LINK STATUS : “ON” when transmitter and receiver is connected
- SINK STATUS : “ON” when connected to sink device

[DEVICE STATUS]

- LOCAL DEV TYPE : Device type of the HDC
- LOCAL VERSION ID : Version ID of the HDC
- REMOTE DEV TYPE : Device type of connected device
- REMOTE VERSION ID : Version ID of connected device
- OPERATION MODE : Operation mode between transmitter and receiver

[CABLE STATUS]

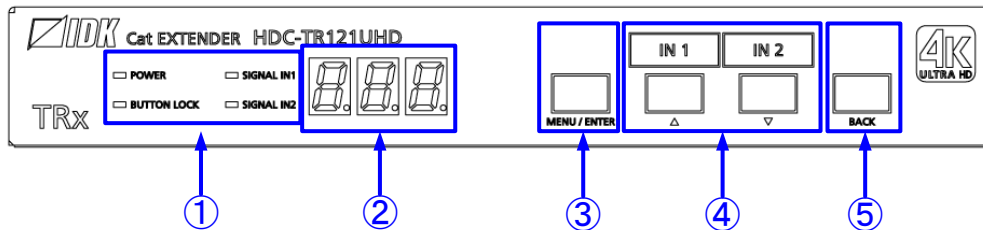
- CABLE LENGTH : Twisted pair cable length between the transmitter and receiver
66 ft. (20 m) to 328 ft. (100 m) $\pm 10\%$
- VIDEO BER : Bit error rate from transmitter to receiver
Green : $10e-7$ or less (Normal)
Yellow : $10e-6$ (Caution)
Red : $10e-5$ or more (Video may blink)
- FMSEERR (dB) : The mean square of the residual error
“A” for RJ-45 connector pin 1 and 2
“B” for RJ-45 connector pin 3 and 6
“C” for RJ-45 connector pin 4 and 5
“D” for RJ-45 connector pin 7 and 8
If the gap between “A” to “D” below is -4 dB or more,
it is displayed in yellow even for -12 dB or less.
Green : -12 dB or less (Normal)
Yellow : -11 dB to -9 dB (Caution)
Red : -8 dB or more (Video may blink)
- FMAXERR : The maximum recorded value of the residual error
“A” for RJ-45 connector pin 1 and 2
“B” for RJ-45 connector pin 3 and 6
“C” for RJ-45 connector pin 4 and 5
“D” for RJ-45 connector pin 7 and 8
Green : 1.3 or less (Normal)
Yellow : 1.4 (Caution)
Red : 1.5 or more (Video may blink)

Notes:

- These HDBaseT statuses may differ from the real values depending on installation environment.
- If “ON” is displayed for [LONG REACH MODE] even though setting [HDBT LONG REACH MODE] of [INPUT SETTINGS] or [OUTPUT SETTINGS] to “OFF”, the connected transmitter/receiver is set to Long reach mode.
- If the cable is 328 ft. (100 m) or longer, values cannot be measured even in Long reach mode.
- Bad cabling conditions may bring some problems, such as electrostatic noise and alien crosstalk. To prevent these problems, use STP cable, improve installation environment such as connecting to ground source, eliminate noise from other devices, and do not tie cable together.
- The CAT.5E HDC cable is a double-shielded category cable that optimizes video signal transmission. It supports 500 MHz bandwidth at distances up to 330 ft. (100 m). The double-shielded structure protects video signal from outside interference.

4 Panels

4.1 Front panel



[Fig. 4.1] Front panel drawings (HDC-TR121UHD)

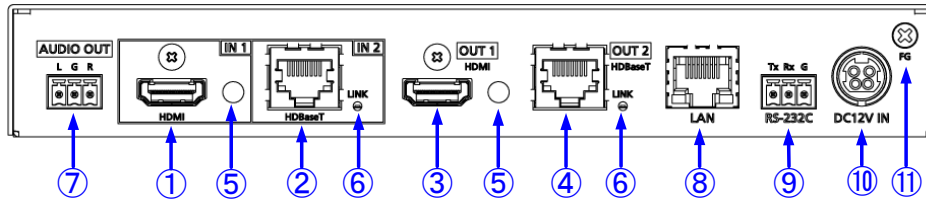
[Table 4.1] Front panel features

#	Feature	Description
①	LED indicators	<p>POWER : Lights when power is supplied from the AC adapter.</p> <p>BUTTON LOCK : Lights when the MENU/ENTER button is locked. 【See: 7.4 Front panel security lockout】</p> <p>SIGNAL IN1/IN2 : Lights when video signal is input. Does not light when no video signal is input.</p>
②	7-Segment display	<p>Top page : Displays the selected channel. After 30 seconds of menu operation buttons* inactivity, the 7-segment display is turned off.</p> <p>Menu page : Displays menu number, setting number, settings, or other values related to the menu. After 60 seconds of menu operation buttons* inactivity, it goes back to the top page.</p>
③	MENU/ENTER button	Enters menu and selects options.
④	Input channel selection buttons	<p>Top screen : Selects a channel. The button of the selected channel lights.</p> <p>Menu page : Selects a menu and setting.</p>
⑤	BACK button	<p>Available only in menu page. Goes back to the previous page.</p> <p>If “8.8.6 Presence of output signal for when signal is input” is set to off or mute this button can be used as on/off switching button. 【See: 3.2 Output mode for when signal is input】</p>

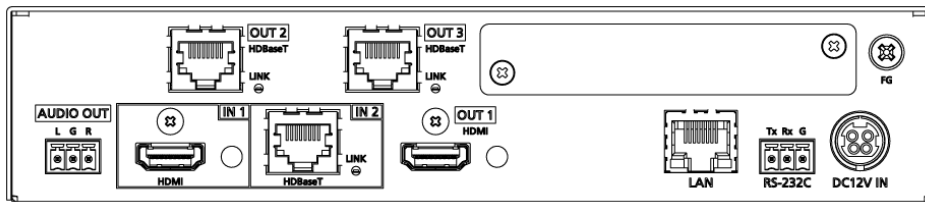
*Menu operation buttons: ③, ⑤, and ④ in the menu page.

4.2 Rear panel

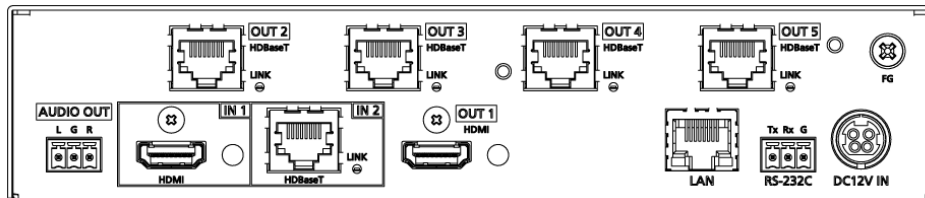
HDC-TR121UHD



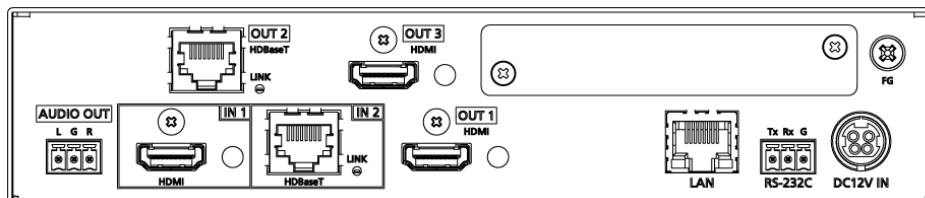
HDC-TH221UHD



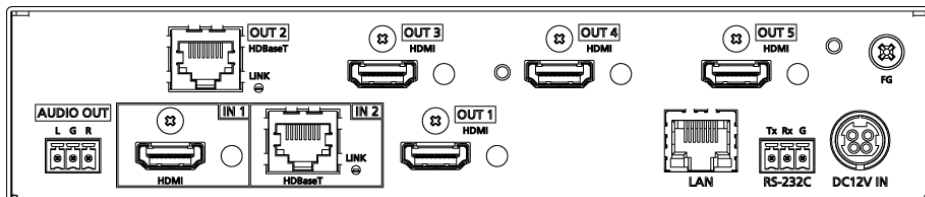
HDC-TH421UHD



HDC-RH221UHD



HDC-RH421UHD



[Fig. 4.2] Rear panel drawings

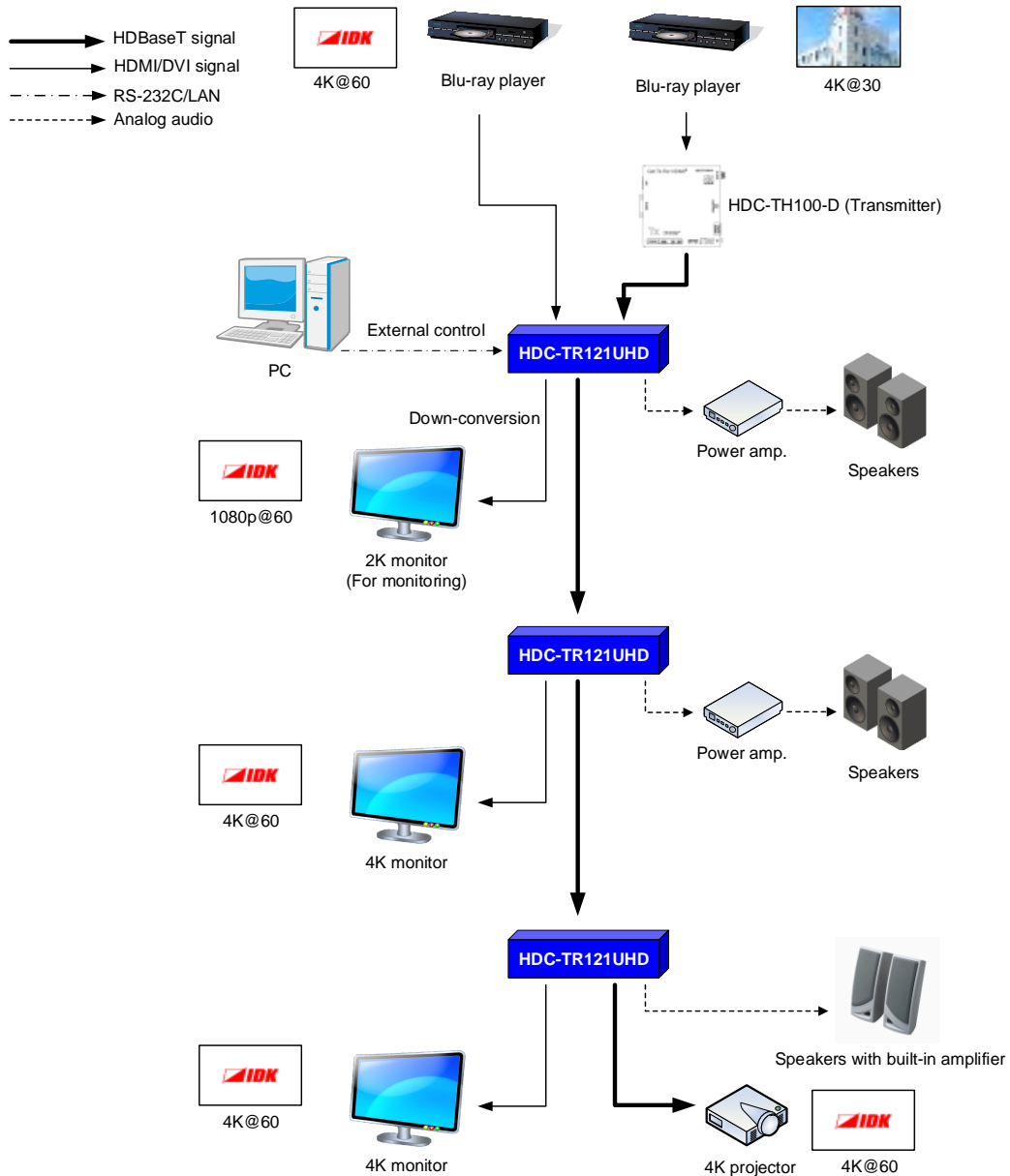
[Table 4.2] Rear panel features

#	Feature	Description
①	HDMI input connector	Input connector for HDMI and DVI signals to interface source devices, such as Blu-ray player and PC
②	HDBaseT input connector	Input connector for HDBaseT signal Connects to a transmitter over a category cable. 【See: 8.7.3 HDBaseT input long reach mode】
③	HDMI output connectors	Output connectors for HDMI and DVI signals, interfaces sink devices such as LC monitors and projectors
④	HDBaseT output connectors	Output connector for HDBaseT signal Connects to a receiver over a category cable. 【See: 8.8.5 HDBaseT output long reach mode】
⑤	HDMI cable fixing holes (Not used)	Not used.
⑥	HDBaseT LINK LED	Lights when an HDC-UHD or HDBaseT supported product is connected Blinks every 0.5 seconds when the connected device is in standby state. In standby state, LAN and RS-232C communication is still available. Does not light when no HDC-UHD or HDBaseT supported product is connected.
⑦	Analog audio output connectors	3-pin captive screw analog audio output connector interfaces amplifiers, speakers, and mixers 【See: 6.2.4 Connecting audio cable】
⑧	LAN connector	For external control by communication commands or web browsers 【See: 6.3 Connecting LAN cable】
⑨	RS-232C connector	3-pin captive screw connector for RS-232C serial control. 【See: 6.2.5 Connecting RS-232C cable】
⑩	Power supply connector	For use with supplied AC adapter
⑪	Frame ground	For bonding chassis to local ground HDC-TR121UHD: An M3 screw is used. HDC-TH221UHD, HDC-TH421UHD, HDC-RH221UHD, and HDC-RH421UHD: An M4 screw is used.

5 System Configuration Example

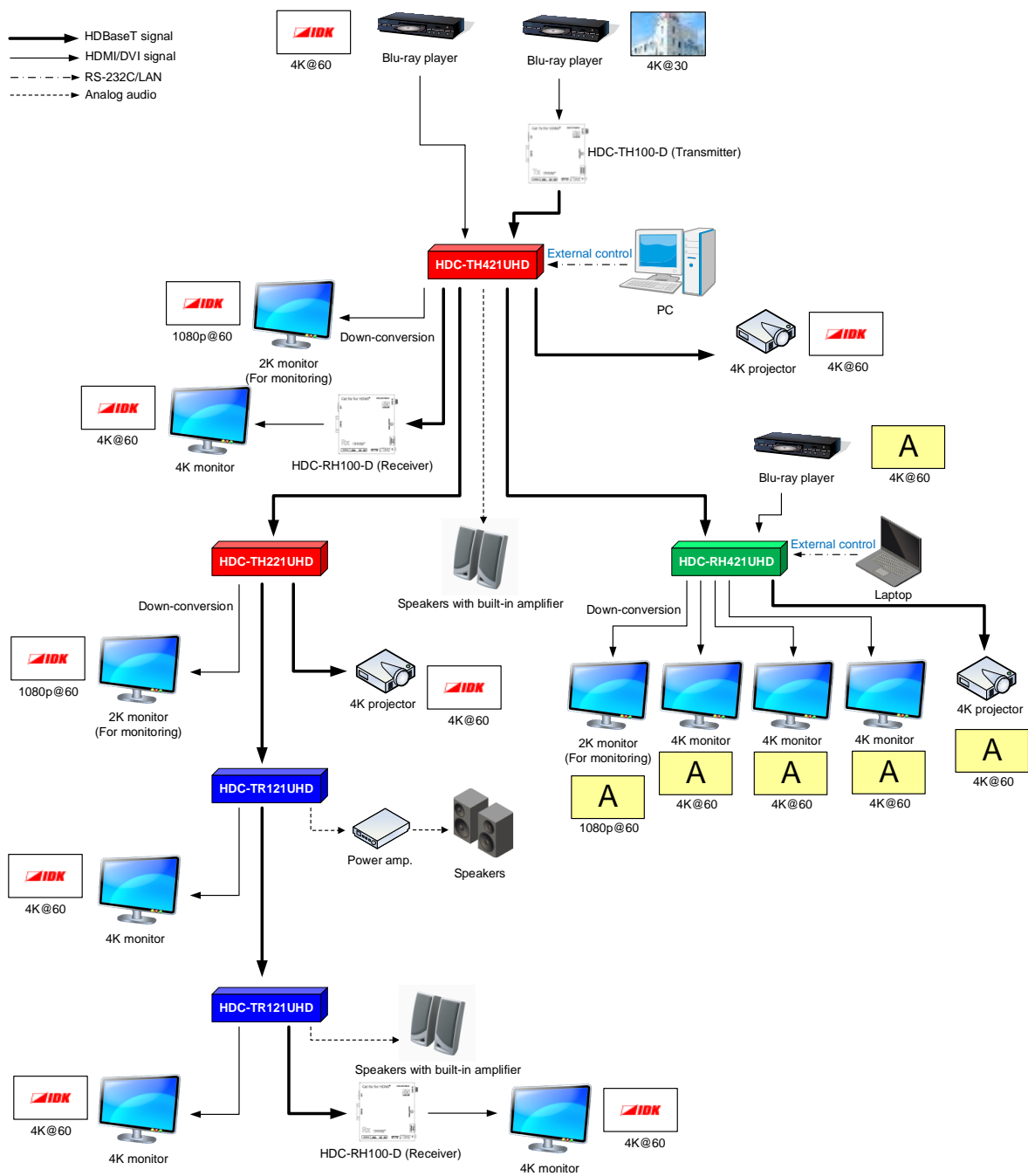
Application example: Source and sink devices are connected to the HDC.

■ Daisy Chain connection



[Fig. 5.1] Application example (HDC-TR121UHD)

■ Cascade connection



[Fig. 5.2] Application example

(using HDC-TH421UHD, HDC-RH421UHD, HDC-TH221UHD, and HDC-TR121UHD)

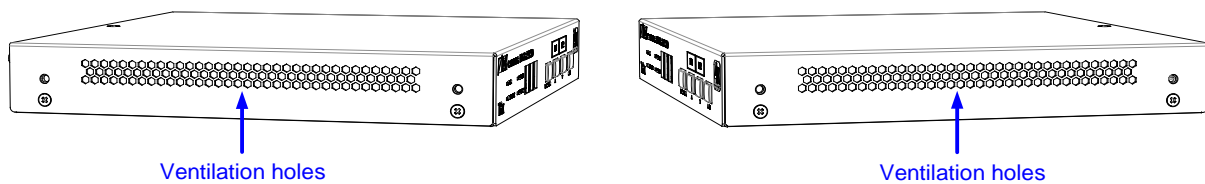
6 Precautions

Before connecting to external devices, follow the precautions below.

6.1 Installation

When installing the HDC, observe the following precautions; otherwise, the internal temperature increases and it may affect the product lifetime and operation.

- Do not stack or place one HDC directly on top of another HDC. The internal temperature increases when 4K signals are transmitted.
- Do not block vent holes.



[Fig. 6.1] Ventilation holes

- To provide adequate ventilation, maintain sufficient clearances around the HDC (1.2 in. (30 mm) or more).
- Consider installing the HDC in an environment compatible with the maximum temperature indicated in the specification sheet 32°F to 104°F (0°C to +40°C).

Tip:

For installing the HDC in an EIA rack, we offer optional rack mounting hardware. Please contact us as needed.

6.2 Connection details

When connecting the HDC to external devices, observe the following precautions.

- Read manuals for the external devices.
- Before connecting cables to the HDC or an external device, dissipate static electricity by touching grounded metal such as equipment racks before handling signal cables. Failure to observe this precaution may result in ESD (electrostatic discharge) damage.
- Power all units off before connecting cables.
- Be sure to fully seat all plugs and connections and dress cables to reduce stress on connectors.

6.2.1 Cables

Use the correct HDMI cable or HDMI-DVI conversion cable depending on the system configuration. For analog audio, select or fabricate cables to match the connectors as needed.

For 4K format video, the maximum TMDS data rate (transmission speed) is 18 Gbps. If a high-speed HDMI cable that supports up to 10.2 Gbps rate is used, video cannot be displayed stably. Select an appropriate 18 Gbps high-speed cable depending on the 4K format.

The maximum distance may change depending on cable type and characteristics of source and sink devices.

[Table 6.1] 18 Gbps high-speed cable for 4 K format

4K format	TMDS data rate (Gbps)								
	RGB, YCbCr 4:4:4			YCbCr 4:2:2			YCbCr 4:2:0		
	24 bit	30 bit	36 bit	24 bit	30 bit	36 bit	24 bit	30 bit	36 bit
3840x2160p (24/25/30)	10.2 Gbps	18 Gbps	18 Gbps	10.2 Gbps	10.2 Gbps	10.2 Gbps	N/A	N/A	N/A
4096x2160 (24/25/30)	10.2 Gbps	18 Gbps	18 Gbps	10.2 Gbps	10.2 Gbps	10.2 Gbps	N/A	N/A	N/A
3840x2160p (50/59.94/60)	18 Gbps	N/A	N/A	18 Gbps	18 Gbps	18 Gbps	10.2 Gbps	18 Gbps	18 Gbps
4096x2160 (50/59.94/60)	18 Gbps	N/A	N/A	18 Gbps	18 Gbps	18 Gbps	10.2 Gbps	18 Gbps	18 Gbps

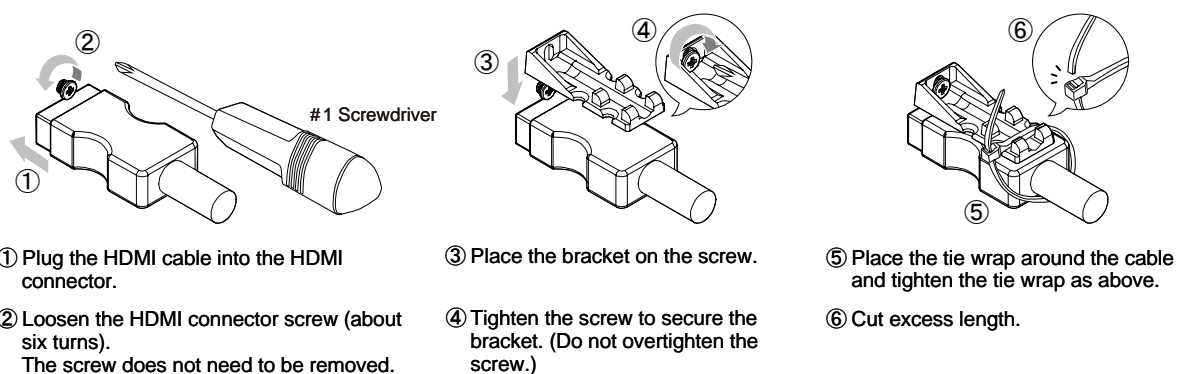
18 Gbps: 18 Gbps high-speed cable; 10.2 Gbps: 10.2 Gbps cable

Note:

If a cable is extended and a cable joint (JJ) is used, video may be interrupted or may not be output.

6.2.2 Cable Lacing Bracket

Use the cable lacing bracket to secure a standard HDMI cable as shown.



[Fig. 6.2] Cable Lacing Bracket (FB-01 For IDK products only)

6.2.3 Category cable

To ensure the best performance with category cables, select a high quality category cable type, ensuring that proper pinning and pairing requirements are observed.

- Cat5e UTP/STP and Cat6 UTP/STP can be used, but we recommend CAT.5E HDC cable* for optimal performance.
- If using STP cables, connect the FG connector to a local electrical ground bonding point. Without bonding FG to ground, the shielding feature may not effectively eliminate interference. If using UTP cables, it is still recommended that the FG connector be used.
- The STP cables are less affected by interference or external noise than UTP cables.
- Connectors for long-haul transmission are the same as that of eight-core modular connector used for Ethernet, but the transmission system is not the same so that it cannot be connected to Ethernet.
- The maximum transmission distance of a category cables is the shorter distance of the maximum transmission distances of transmitter/receiver/sink device connected to the HDC.
- Pin assignments: T568A or T568B straight
- Do not pull the cable using excessive force.
- Do not bend the cable at a sharp angle. Keep the bend radius four times of the cable diameter or larger.
- Do not clamp or tie the cable tightly; leave some space allowing the cable to move slightly.
- If you use multiple category cables, keep a distance between the cables or not to place the cables closely in parallel.
- Keep the category cable running as straight as possible. Looping or coiling the cable, causes it to be more easily affected by noise; especially when using longer cable run lengths.
- Do not place the cable in an electrically noisy environment, since high-speed impulsive noise may couple into the category cable. Use of a high-output radio transmission device near the HDC or remote receivers may interfere with or interrupt video and or audio signals.
- If the total transmission distance from the transmitter to receiver is 328 ft. (100 m) or less, up to two cable interconnection points can be used. Cable joint supporting Cat6A (10GBase-T) are recommended. For high resolution, such as 4K format, video transmission distance may be shortened by about 10%.
- The table below shows supported transmission distance for each category.
If signals are transmitted for a long haul or with noised from other devices, use a broadband cable or cable having high shielding performance.

Note that specified distances may shorten depending on the conditions within the actual environment.

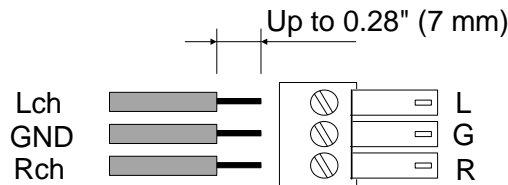
[Table 6.2] Transmission distance

Noise influence	Category		Transmission distance	TMD5 clock	Recommended cable
Easily affected	UTP	Cat5e	164 ft. (50 m)	\leq 225 MHz	For 164 ft. (50 m) or longer: CAT.5E HDC*, Cat5e STP, and Cat6 UTP/STP cables
		Cat6	328 ft. (100 m)		
				230 ft. (70 m)	
Less affected	STP	Cat5e*	328 ft. (100 m)	Long reach mode \leq 148 MHz (1080p (24 bit) or less)	For 4K format 230 ft. (70 m) or longer: CAT.5E HDC*, Cat5e STP, and Cat6 STP cables
		Cat6	492 ft. (150 m)		

* The CAT.5E HDC cable is a double-shielded category cable optimized for video signal transmission. The double-shielded structure protects the video signal from external interference. It supports 500 MHz bandwidth at distances up to 328 ft. (100 m).

6.2.4 Connecting audio cable

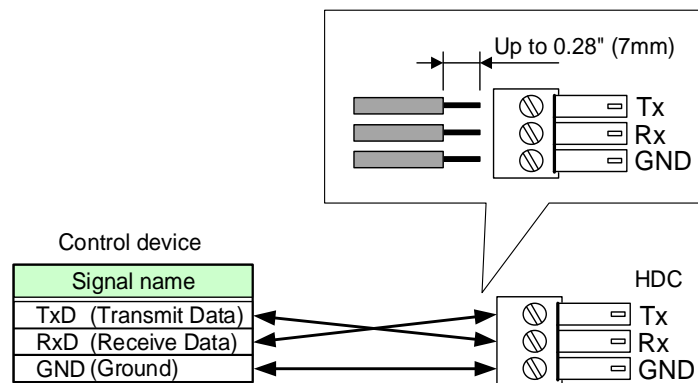
Connect audio cables to the 3-pin captive screw connectors. 28 AWG to 16 AWG conductor gauge and a strip length of 0.28 in. (7 mm) are recommended.



[Fig. 6.3] Connecting audio cable to 3-pin captive screw connector

6.2.5 Connecting RS-232C cable

The HDC's RS-232C connection is supported by a 3-pin captive screw connector. Insert and secure the wires from the RS-232C cable into the supplied 3-pin captive screw connector, and then insert the captive screw connector into the mating connector on the HDC. 28 AWG to 16 AWG conductor gauge is recommended. The recommended wire strip length is 0.28 in. (7 mm). Short RTS/CTS and DTR/DSR as needed.



[Fig. 6.4] Connecting RS-232C cable to 3-pin captive screw connector

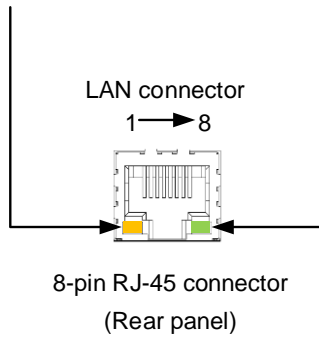
6.3 Connecting LAN cable

Pin assignment of the LAN connector is as follows.

Auto MDI/MDI-X that detecting and switching straight cable/cross cable is supported.

Light in orange if the send/receive rate is 100 Mbps.
Goes off if it is 10 Mbps.

Light in green while link is established.
Blinks in green while data is being sent/received.



Pin#	Signal Name	
	MDI	MDI-X
1	TX+ (Transmitted Data +)	RX+ (Received Data +)
2	TX- (Transmitted Data -)	RX- (Received Data -)
3	RX+ (Received Data +)	TX+ (Transmitted Data +)
4	N.C. (Not Connected)*	N.C. (Not Connected)*
5	N.C. (Not Connected)*	N.C. (Not Connected)*
6	RX- (Received Data -)	TX- (Transmitted Data -)
7	N.C. (Not Connected)*	N.C. (Not Connected)*
8	N.C. (Not Connected)*	N.C. (Not Connected)*

*Not used

[Fig. 6.5] LAN connector

Make sure not to form a loop by the HDC when connecting a LAN cable to the HDC.

The HDC constantly send broadcast packet in order to notify status.

If adding the LAN cable to the existing network, avoid problems, such as broadcast storm caused by broadcast traffic.

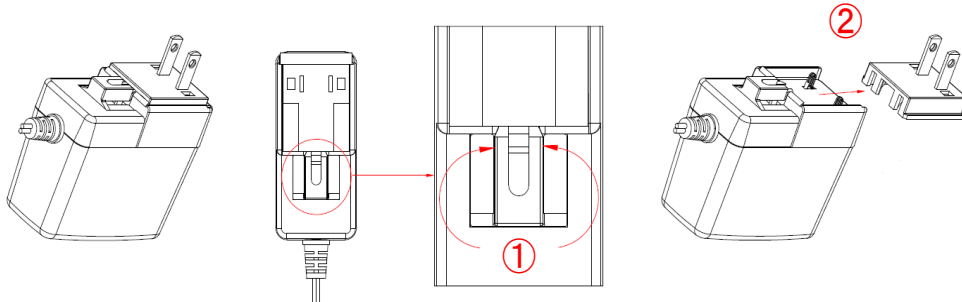
Broadcast storm: This problem occurs when a network system is overwhelmed by continuous broadcast traffic or the like.

6.4 DIN plug AC adapter with locking mechanism

The shapes of AC plugs with screw locking mechanism vary from country to country. The AC plug can be removed from the AC adapter.

Removing AC plug:

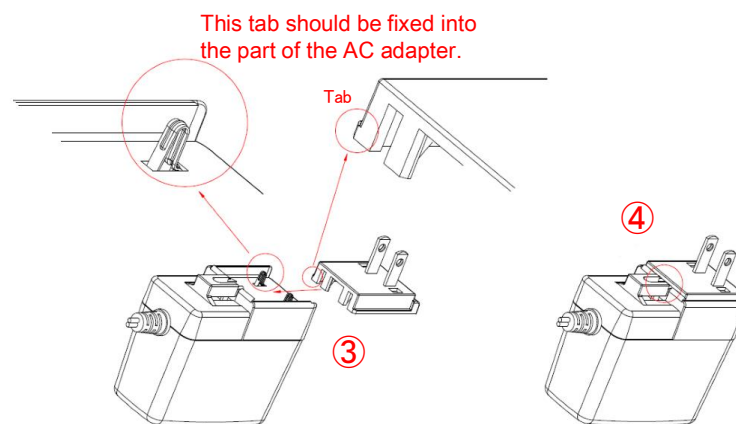
Slide the AC plug (②) from the AC adapter while holding down the portion mentioned below (①)



[Fig. 6.6] Removing AC plug (Example: Plug type A)

Attaching AC plug:

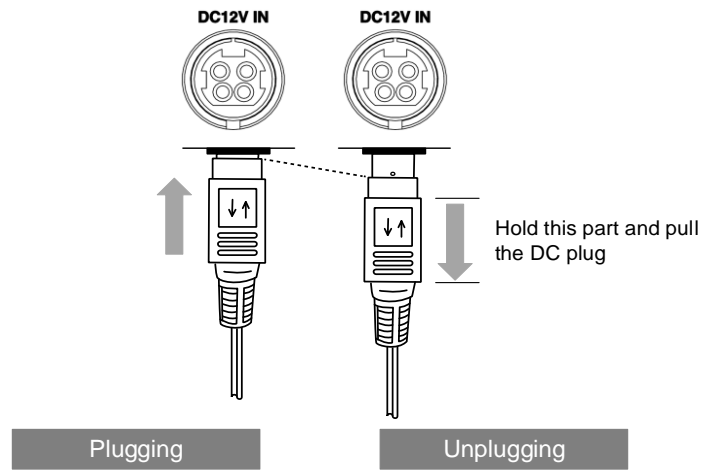
Gently slide the AC plug into the AC adapter (③) until it clicks (④)



[Fig. 6.7] Attaching AC plug (Example: Plug type A)

■ **Plugging and unplugging DC plug**

Plug the DC plug to the power supply connector of the unit until it clicks.
Hold the portion mentioned below when unplugging the DC plug.



[Fig. 6.8] Plugging and unplugging DC plug

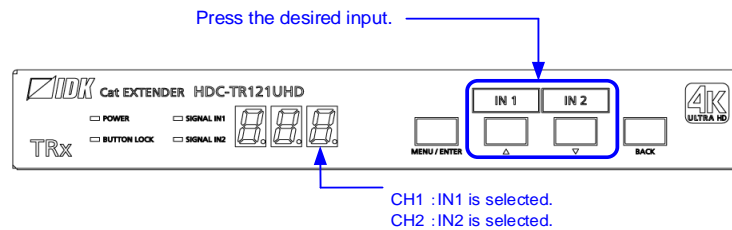
7 Basic Operation

7.1 Selecting input channels

You can switch input channel using input channel selection buttons (IN1 and IN2) in top screen.

The 7-segment LEDs show the selected input channel (“CH1” or “CH2”). The selected channel is displayed on the front panel.

Press the “BACK” button until an input channel selection button lights in order to go back to the top menu.



[Fig. 7.1] Selecting input channel

Tip:

Once input with HDCP is selected, the HDC keeps the output with HDCP. Switching time would be shorter because the HDCP is not needed to be re-authorized. When rebooting the HDC or unplugging and plugging the HDMI or HDBaseT cable of input side, the HDCP authentication will be reset.

7.2 Menu operation

Selecting menu

↓

Changing settings

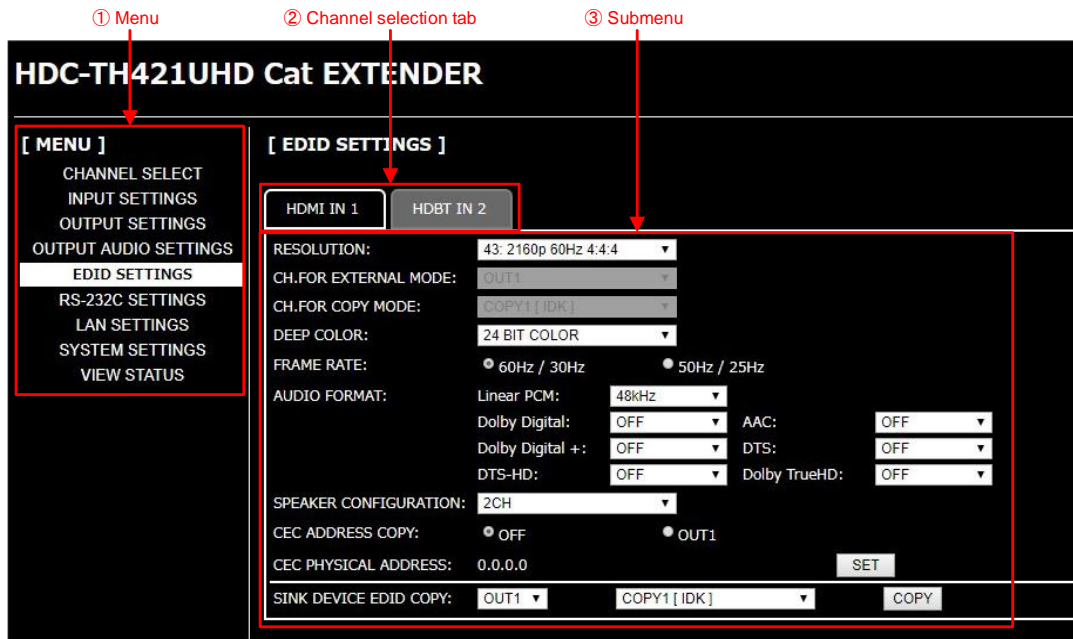
- 1** Press the “MENU/ENTER” button to display a menu number.
- 2** Use the “▲”/“▼” buttons to select the desired menu number. Press the “BACK” button to go back to the top page.
- 3** Press the “MENU/ENTER” button to display a setting value. Press the “BACK” button to go back to Step 2.
- 4** Use the “▲”/“▼” buttons to select the desired value for the menu.
- 5** Press the “MENU/ENTER” button to apply the setting. The menu number displays again. If you do not touch the button for 10 seconds, it goes back to Step 2. Press the “BACK” button to go back to the Step 2.

Note:

After 60 seconds of menu operation buttons* inactivity, the menu goes back to the top page.

[Fig. 7.2] Setting from front buttons

7.3 WEB browser



[Fig. 7.3] WEB menu

- ① Select the desired item from the menu to display setting items in the submenu.
- ② If there is a setting item that can be set for each channel, channel tab will be displayed.
- ③ Set items in the submenu by referring to the table below.

[Table 7.1] Form control

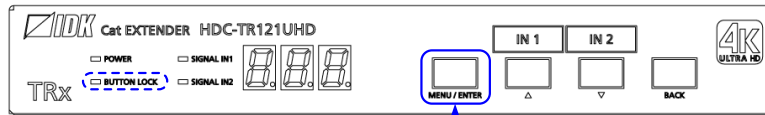
Form control	Example	Description
Set/execution button	<input type="button" value="SET"/>	Click the button to execute the desired operation.
Pull down list	<input type="text" value="OUT1"/>	Use the down button to select the desired value.
Arrow button	<input type="text" value="10"/> <input type="button" value="▼"/> <input type="button" value="▲"/>	Use the up/down buttons to set the desired value. You also can enter the value directly.
Check box	<input checked="" type="checkbox"/> MENU	Enables and disables by clicking or unclicking the box.
Radio button	<input type="radio"/> OFF <input type="radio"/> ON	Select [OFF] or [ON].

7.4 Front panel security lockout

Press and hold the “MENU/ENTER” button for three seconds or longer to set/cancel button lock.

If powering off the HDC with the buttons locked, the HDC starts up with the buttons locked next time.

【See: 8.6.1 Grouping front panel security lockout】



Press and hold MENU/ENTER button to enable/disable button security lockout.



[Fig. 7.4] Locking/unlocking (HDC-TR121UHD)

Tip:

If button security lockout is set to be enabled while menu is displayed, it will be back to the top page.

7.5 Unsolicited status notification

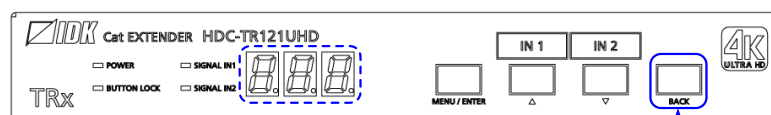
If status is changed or a problem is detected, the unsolicited status notice will be sent via RS-232C or LAN communication.

To enable this feature, execute the command by referring to the Command Guide.

7.6 Initialization

All user configurable settings can be reset to their respective factory default values by powering the HDC on while pressing and holding the “BACK” button.

Note that after returning to factory default, the previous setting values cannot be restored.



Power on HDC while depressing “BACK” button.



[Fig. 7.5] Initialization

8 Menu

You can set the HDC from the front buttons or Web browser.

[Table 8.1] Menu number and menu name

Front menu	WEB menu	Function	Page
F01 to F03	EDID SETTINGS → SINK DEVICE EDID COPY	Copying EDID	58
F10 to F11	EDID SETTINGS → RESOLUTION	Resolution	59
F12 to F13	EDID SETTINGS → CH.FOR EXTERNAL MODE	External EDID	62
F14 to F15	EDID SETTINGS → CH.FOR COPY MODE	Selecting copied EDID	63
F20 to F21	EDID SETTINGS → DEEP COLOR	Deep Color	64
F40 to F41	EDID SETTINGS → FRAME RATE	Frame rate	69
F22 to F35	EDID SETTINGS → AUDIO FORMAT	LPCM audio Dolby Digital audio AAC audio Dolby Digital Plus audio DTS audio DTS-HD audio Dolby TrueHD audio	64 to 67
F36 to F37	EDID SETTINGS → SPEAKER CONFIGURATION	Speaker configuration	68
F38 to F39	EDID SETTINGS → CEC ADDRESS COPY	Copying EDID's CEC physical address	69
F50	CHANNEL SELECT → AUTO SWITCHING	Automatic input channel switching	55
F70 to F74	OUTPUT AUDIO SETTINGS → OUTPUT SIGNAL	Outputting audio	70
F80	CHANNEL SELECT → BUTTON LOCK	Grouping front panel security lockout	71
F81	SYSTEM SETTINGS → POWER SAVE	Power saving mode	71
F90	SYSTEM SETTINGS → VERSION	Version	72
F99	–	Displaying/Hiding menu	72
C01 to C02	INPUT SETTINGS → HDCP INPUT MODE	HDCP input enabled/disabled	74
C03 to C04	INPUT SETTINGS → NO INPUT MONITORING	No-signal input monitoring	75
C05	INPUT SETTINGS → HDBT LONG REACH MODE	HDBaseT input long reach mode	76
C06 to C07	INPUT AUDIO SETTINGS → AUDIO STABLE WAIT SETTINGS	Audio waiting duration	70
C10 to C14	OUTPUT SETTINGS → HOTPLUG MASK	Hot plug ignoring duration	77
C20 to C24	OUTPUT SETTINGS → EDID ERR OUTPUT MODE	Sink device EDID check	78
C30 to C34	OUTPUT SETTINGS → SIGNAL FORMAT	Output format	79
C40	OUTPUT SETTINGS → DOWN CONVERSION	Downconversion output	80
C45 to C48	OUTPUT SETTINGS → HDBT LONG REACH MODE	HDBaseT output long reach mode	80
C50 to C54	OUTPUT SETTINGS → OUTPUT SIGNAL	Presence of output signal for when signal is input	81
C55 to C59	OUTPUT SETTINGS → NO SIGNAL MODE	Presence of output signal for when no signal is input	81
C60	CHANNEL SELECT → IGNORING DURATION	Ignoring duration after automatic switching	56
C70 to C73	RS-232C SETTINGS → PARAMETERS	RS-232C communication	82
C74	RS-232C SETTINGS → CONNECTION MODE	RS-232C operation mode	83
C75 to C78	RS-232C SETTINGS → TRANSMIT ENABLE	RS-232C sending channel	84
C79 to C7b	RS-232C SETTINGS → RECEIVED ENABLE	RS-232C receiving channel	85
C80 to C83	LAN SETTINGS → IP ADDRESS	IP address	86 to 89
C84	LAN SETTINGS → SUBNET MASK	Subnet mask	86 to 89
C85	LAN SETTINGS → PORT NUMBER	TCP port number	86 to 89
C86	LAN SETTINGS → MAC ADDRESS	MAC address	86 to 89
C87 to C89	LAN SETTINGS → HDBT CONNECTION	Setting HDBaseT LAN	89
C90	SYSTEM SETTINGS → ALARM	Alarm	73
L01 to L30	VIEW STATUS → INPUT STATUS	Viewing input information	90
L40 to LL4	VIEW STATUS → SINK DEVICE STATUS	Viewing output information	94
P01 to Pb4	HDBT STATUS	Viewing HDBaseT information	98
H00 to H02	SYSTEM STATUS	Viewing system status	102

8.1 Front menu

You can set the following three settings using front buttons:

- Setting video or audio signals (Setting menu)
- Checking operations (Maintenance menu)
- Displaying HDC's status (Status indication menu)

Menu number and target channels vary depending on your model (HDC-TR121UHD, HDC-TH221UHD/HDC-RH221UHD, and HDC-TH421UHD/HDC-RH421UHD). The maximum number of output is 5, and the lists below are based on the number, 5.

■ Setting menus

Set video and audio signals for normal use

[Table 8.2] Setting menu

Menu number	Function	Target channel	Page
F01 to F03	Copying EDID	—	58
F10 to F11	Resolution	IN1/IN2	59
F12 to F13	External EDID	IN1/IN2	62
F14 to F15	Selecting copied EDID	IN1/IN2	63
F20 to F21	Deep Color	IN1/IN2	64
F22 to F23	LPCM audio	IN1/IN2	64
F24 to F25	Dolby Digital audio	IN1/IN2	65
F26 to F27	AAC audio	IN1/IN2	65
F28 to F29	Dolby Digital Plus audio	IN1/IN2	66
F30 to F31	DTS audio	IN1/IN2	66
F32 to F33	DTS-HD audio	IN1/IN2	67
F34 to F35	Dolby TrueHD audio	IN1/IN2	67
F36 to F37	Speaker configuration	IN1/IN2	68
F38	Copying EDID's CEC physical address	IN1	69
F40 to F41	Frame rate	IN1/IN2	69
F50	Automatic input channel switching	—	55
F70 to F74	Outputting audio	OUT1 to OUT5	70
F80	Grouping front panel security lockout	—	71
F81	Power saving mode	—	71
F90	Version	—	72
F99	Displaying/Hiding menu	—	72

■ Maintenance menus

Set necessary items for checking operation.

The maintenance menus are not displayed by default. To display the menus, change the setting of “8.6.4 Displaying/Hiding menu”.

[Table 8.3] Maintenance menu

Menu number	Function	Target channel	Page
C01 to C02	HDCP input enabled/disabled	IN1/IN2	74
C03 to C04	No-signal input monitoring	IN1/IN2	75
C05	HDBaseT input long reach mode	IN2	76
C06 to C07	Audio waiting duration	IN1/IN2	70
C10 to C14	Hot plug ignoring duration	OUT1 to OUT5	77
C20 to C24	Sink device EDID check	OUT1 to OUT5	78
C30 to C34	Output format	OUT1 to OUT5	79
C40	Downconversion output	OUT1	80
C45 to C48	HDBaseT output long reach mode	OUT2 to OUT5	80
C50 to C54	Presence of output signal for when signal is input	OUT1 to OUT5	81
C55 to C59	Presence of output signal for when no signal is input	OUT1 to OUT5	81
C60	Ignoring duration after automatic switching	—	56
C70 to C73	RS-232C communication	—	82
C74	RS-232C operation mode	—	83
C75 to C78	RS-232C sending channel	—	84
C79 to C7b	RS-232C receiving channel	—	85
C80 to C83	IP address	—	86
C84	Subnet mask	—	87
C85	TCP port number	—	88
C86	MAC address	—	89
C87 to C89	Setting HDBaseT LAN	—	89
C90	Alarm	—	73

■ Status indication menus

Display input status, connection status of sink devices, and the HDC's status.

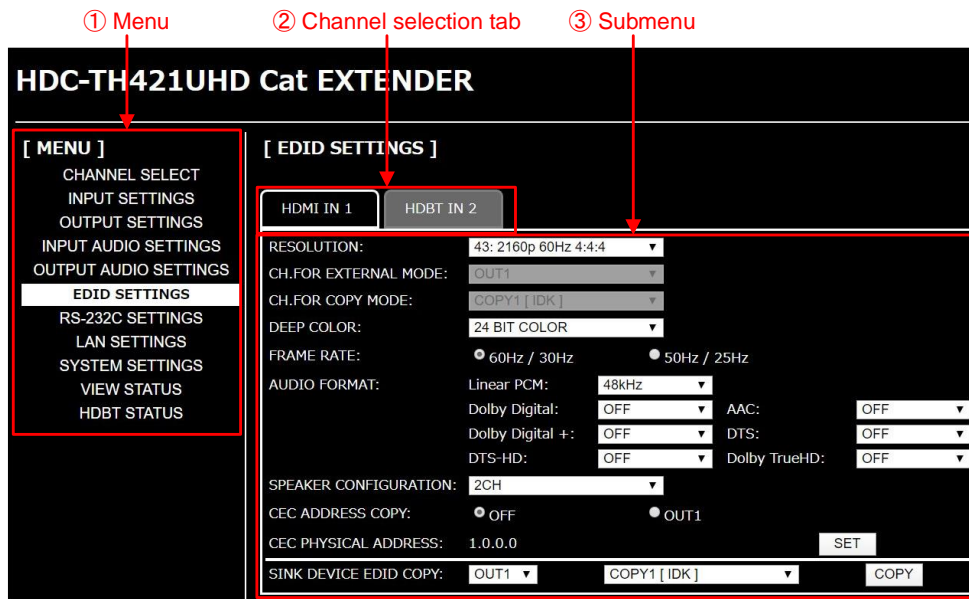
The Status indication menus are not displayed by default. To display the menus, change the setting of “8.6.4 Displaying/Hiding menu”.

[Table 8.4] Status indication menu

Menu number	Function	Page
L01 to L30	Viewing input information	90
L40 to LL4	Viewing output information	94
P01 to Pb4	Viewing HDBaseT information	98
H00 to H02	Viewing system status	102

8.2 WEB browser menu

The HDC can be controlled from a WEB browser through LAN.



[Fig. 8.1] WEB menu

[Table 8.5] Menu and submenu

Menu	Submenu	Function	Page
CHANNEL SELECT	CHANNEL SELECT	Selecting input channels	45
	OUTPUT SIGNAL	Presence of output signal for when signal is input	81
	BUTTON LOCK	Front panel security lockout	48
	SIGNAL PRIORITY	Automatic input channel switching	55
	IGNORING DURATION	Ignoring duration after automatic switching	56
	NAME EDIT	Editing channel name	103
	CHANNEL WINDOW	Selecting input channels	45
INPUT SETTINGS	NO INPUT MONITORING	No-signal input monitoring	75
	HDCP INPUT MODE	HDCP input enabled/disabled	74
	HDBT LONG REACH MODE	HDBaseT input long reach mode	76
OUTPUT SETTINGS	SIGNAL FORMAT	Output format	79
	EDID ERR OUTPUT MODE	Sink device EDID check	78
	HOTPLUG MASK	Hot plug ignoring duration	77
	DOWN CONVERSION	Downconversion output	80
	HDBT LONG REACH MODE	HDBaseT output long reach mode	80
	OUTPUT SIGNAL	Presence of output signal for when signal is input	81
	NO SIGNAL MODE	Presence of output signal for when no signal is input	81
INPUT AUDIO SETTINGS	AUDIO STABLE WAIT	Audio waiting duration	70
OUTPUT AUDIO SETTINGS	OUTPUT SIGNAL	Outputting audio	70
EDID SETTINGS	RESOLUTION	Resolution	59
	CH.FOR EXTERNAL MODE	External EDID	62
	CH.FOR COPY MODE	Selecting copied EDID	63
	DEEP COLOR	Deep Color	64
	FRAME RATE	Frame rate	69
	AUDIO FORMAT	LPCM audio	64
		Dolby Digital audio	65
		AAC audio	65
		Dolby Digital Plus audio	66
		DTS audio	66
		DTS-HD audio	67
		Dolby TrueHD audio	67
	SEPAKER CONFIGURATION	Speaker configuration	68
CEC ADDRESS COPY	Copying EDID's CEC physical address	69	
SINK DEVICE EDID COPY	Copying EDID	58	

[Table 8.6] Menu and submenu (Cont'd)

Menu	Submenu	Function	Page
RS-232C SETTINGS	PARAMETERS	RS-232C communication	82
	HDBT CONNECTION	RS-232C operation mode	83
	TRANSMIT ENABLE	RS-232C sending channel	84
	RECEIVED ENABLE	RS-232C receiving channel	85
LAN SETTINGS	PARAMETERS	IP address	86
		Subnet mask	87
		TCP port number	88
		MAC address	89
	HDBT COMMUNICATION	Setting HDBaseT LAN	89
SYSTEM SETTINGS	ALARM	Alarm	73
	POWER SAVE MODE	Power saving mode	71
	AUTO RELOAD TIME	Automatic updating time	103
	BACKUP/RESTORE	Saving/Restoring all settings	103
	INITIALIZE	Initialization	103
VIEW STUTAS	INPUT STATUS	Viewing input information	90
	SINK DEVICE STATUS	Viewing output information	94
	SINK DEVICE EDID	Viewing output information	94
	SYSTEM STATUS	Viewing system status	102
	VERSION	Version	72
HDBT STATUS	SIGNAL STATUS	Viewing HDBaseT information	98
	DEVICE STATUS	Viewing HDBaseT information	98
	CABLE STATUS	Viewing HDBaseT information	98

8.3 Setting input switching

8.3.1 Automatic input channel switching

The HDC detects video signals of each input and switches input automatically.

Menu F50

WEB menu CHANNEL SELECT → AUTO SWITCHING → SIGNAL PRIORITY

Setting value

[Table 8.7] Setting for automatic input channel switching

Description	Front	WEB browser
Disabling [Default]	oFF	OFF
Automatic	AU	AUTO
IN1 priority	1P	IN 1 priority
IN2 priority	2P	IN 2 priority
IN1 fixed	1F	IN1 Fixed
IN2 fixed	2F	IN2 Fixed

■ Disabling

Disables the automatic switching feature.

■ Automatic

- If new video signal is detected in IN1, IN1 signal will be output automatically.
- If new video signal is detected in IN2, IN2 signal will be output automatically.
- If no signal is detected in the currently selected channel and video is input to the other channel, the other channel's signal will be output automatically.

The last selected input channel has priority. If video signals are input to both IN1 and IN2 at the time of start up, the last selected input has priority.

■ IN1 priority

IN1 has priority. Only if no IN1 signal is detected and IN2 signal is detected, IN2 signal will be output.

■ IN2 priority

IN2 has priority. Only if no IN2 signal is detected and IN1 signal is detected, IN1 signal will be output.

■ IN1 fixed

IN1 signal is output at all times.

■ IN2 fixed

IN2 signal is output at all times.

8.3.2 Ignoring duration after automatic switching

You can set the time from when input channel is switched automatically until the next automatic switching is performed.

The automatic switching is not performed during the set time.

Menu C60

WEB menu CHANNEL SELECT → AUTO SWITCHING → IGNORING DURATION

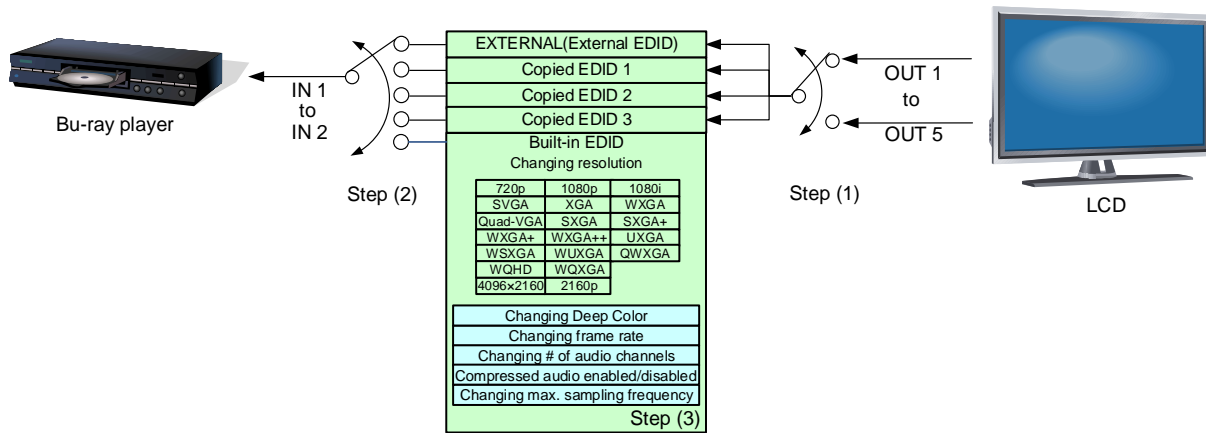
Setting value

[Table 8.8] Setting masking time

Description	Front	WEB browser
0.5 to 10 sec. (by 0.5 sec.) [Default] 1 sec.	0.5 to 10	0.5 to 10
No masking	oFF	oFF

8.4 EDID

You can set EDID to be sent to the source device and can edit parameters as needed.



[Fig. 8.2] Setting EDID

Step 1: Select the target sink device for external EDID/copy EDIDs.

Skip this step if the built-in EDID is used.

【See: 8.4.1 Copying EDID】

【See: 8.4.3 External EDID】

Step 2: Set the EDID that will be sent to the source device.

【See: 8.4.4 Selecting copied EDID】

【See: 8.4.2 Resolution】

Step 3: If you use built-in EDID, customize the data as required.

【See: 8.4.5 Deep Color】

【See: 8.4.6 LPCM audio】

【See: 8.4.7 Dolby Digital audio】

【See: 8.4.8 AAC audio】

【See: 8.4.9 Dolby Digital Plus audio】

【See: 8.4.10 DTS audio】

【See: 8.4.11 DTS-HD audio】

【See: 8.4.12 Dolby TrueHD audio】

【See: 8.4.13 Speaker configuration】

【See: 8.4.15 Frame rate】

8.4.1 Copying EDID

EDID of the sink device is loaded and registered to the HDC. The stored EDID can be treated as built-in EDID by registering the EDID.

- Menu F01 to F03: Copied data 1 to Copied 3
- WEB menu EDID SETTINGS → SINK DEVICE EDID COPY
- Setting value

[Table 8.9] Setting values for copying EDID

Description	Front	WEB browser
OUT1 [Default]	01	OUT1 COPY1 to 3
OUT2	02	OUT2 COPY1 to 3
OUT3	03	OUT3 COPY1 to 3
OUT4	04	OUT4 COPY1 to 3
OUT5	05	OUT5 COPY1 to 3

To copy EDID:

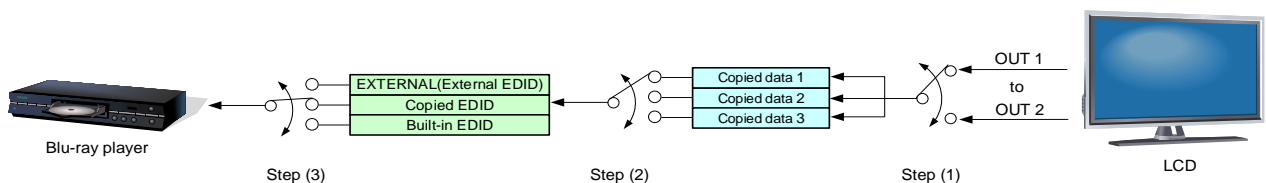
Step 1: Save the EDID of sink device to Copied data 1, 2, or 3. Menu number: [F01 to F03]

Step 2: Select the desired Copied data. Menu number: [F14 to F15]

【See: 8.4.4 Selecting copied EDID】

Step 3: Set EDID Resolution to “COPY (Copied EDID)”. Menu number: [F10 to F11]

【See: 8.4.2 Resolution】



[Fig. 8.3] Copying EDID (Example: HDC-TR121UHD)

Note:

For daisy chain connection, the source device reads EDID of the extender (A) that is directly connected to the source device. If multiple extenders are connected between source device and sink device, follow the procedure below to copy the EDID of sink device.

To read EDID in daisy chain connection:

Step 1: Copy the EDID of the sink device to the extender (B).

Set EDID to “COPY (Copied EDID)” or “EXTERNAL (External EDID)”

Step 2: Copy the EDID of the extender (B) to the extender (A).

Set EDID to “COPY (Copied EDID)” or “EXTERNAL (External EDID)”



[Fig. 8.4] Reading EDID in daisy chain connection

8.4.2 Resolution

You can set the EDID to be sent to the source device.

In order to use values “03 to 46” which are built-in EDID, set the “03 to 46 are the built-in EDID.

If using the internal EDID, specify the maximum supported resolution.

Menu	F10 to F11: IN1 to IN2
WEB menu	EDID SETTINGS → RESOLUTION
Setting value	[Table 8.10] Maximum resolution of EDID

HDR is supported if external EDID is selected while an HDR-supported sink device is connected for EDID setting or if copied EDID of an HDR-supported sink device is selected for EDID setting.

3D is supported if external EDID is selected while a 3D-supported sink device is connected for EDID setting or if copied EDID of 3D-supported sink device is selected for EDID setting.

【See: 8.4.3 External EDID】

【See: 8.4.4 Selecting copied EDID】

[Table 8.10] Maximum resolution of EDID

Setting value	Maximum resolution	Pixels	Standard	Remarks
01	EXTERNAL (External EDID)	—	—	If no sink device is connected, the last setting will be applied.
02	COPY (Copied EDID)	—	—	If no acquired data, “03” will be applied.
03	1080p (59.94/60)	1920×1080	HDTV	
04	720p	1280×720		
05	1080i	1920×1080		
06	SVGA	800×600	VESA	
07	XGA	1024×768		
08	VESA720p	1280×720		For DVI device input
09	WXGA	1280×768		
10	WXGA	1280×800		
11	Quad-VGA	1280×960		
12	SXGA	1280×1024		
13	WXGA	1360×768		
14	WXGA	1366×768		
15	SXGA+	1400×1050		
16	WXGA+	1440×900		
17	WXGA++	1600×900		(RB)
18	UXGA	1600×1200		
19	WSXGA+	1680×1050		
20	VESA1080p	1920×1080		(RB), for DVI device input

(RB): Reduced Blanking

[Table 8.11] Maximum resolution of EDID Cont'd)

Setting value	Maximum resolution	Pixels	Standard	Remarks
21	WUXGA	1920×1200	VESA	(RB)
22	QWXGA	2048×1152		(RB)
23	WQHD	2560×1440		(RB)
24	WQXGA	2560×1600		(RB)
41	2160p (24/25/30)	3840×2160	UHDTV	
42	2160p (50/59.94/60, 4:2:0)	3840×2160	UHDTV	[Default] (HDBaseT input connector) YCbCr 4:2:0 supported
43	2160p (50/59.94/60, 4:4:4)	3840×2160	UHDTV	[Default] (HDMI input connector) YCbCr 4:2:0, YCbCr 4:2:2, YCbCr 4:4:4 supported
44	4096x2160 (24/25/30)	4096×2160	DCI	
45	4096x2160 (50/59.94/60, 4:2:0)	4096×2160	DCI	YCbCr 4:2:0 supported
46	4096x2160 (50/59.94/60, 4:4:4)	4096×2160	DCI	YCbCr 4:2:0, YCbCr 4:2:2, YCbCr 4:4:4 supported

(RB): Reduced Blanking

Notes:

- For 4096x2160 (“44”, “45”, “46”)

The source device may select 3840x2160 (30p, YCbCr 4:4:4) depending on the EDID definition. First set built-in EDID and then select 4096x2160 in the source device side.
- For YCbCr 4:2:0 (“42”, “45”)

The source device may select 3840x2160 (30p, YCbCr 4:4:4) depending on the EDID definition. First set built-in EDID and then select YCbCr 4:2:0 in the source device side.
- If a source device that does not support 4K is connected to an input connector having 4K EDID, the source device may output DVI signal meaning audio is not output. To output HDMI signal, change the EDID setting to a format other than 4K.

[Table 8.12] Maximum resolution and supported pixels

Max. resolution	Pixels	Supported pixels																								
		640x480	800x600	1024x768	1280x720	1280x768	1280x800	1280x960	1280x1024	1360x768*	1366x768*	1400x1050	1440x900	1600x900	1600x1200	1680x1050	1920x1080	1920x1200	2048x1152	2560x1440	2560x1600	3840x2160 (30p)	4096x2160 (30p)	3840x2160 (60p)	4096x2160 (60p)	
01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
03	1080p (59.94/60)	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N
04	720p	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
05	1080i	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
06	800x600	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
07	1024x768	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
08	1280x720	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
09	1280x768	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
10	1280x800	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
11	1280x960	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
12	1280x1024	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
13	1360x768	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
14	1366x768	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
15	1400x1050	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
16	1440x900	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
17	1600x900	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N
18	1600x1200	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N
19	1680x1050	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N
20	1920x1080	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N
21	1920x1200	Y	Y	Y	N	N	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N
22	2048x1152	Y	Y	Y	N	N	N	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N
23	2560x1440	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N
24	2560x1600	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
41	2160p (24/25/30)	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N
42	2160p (50/59.94/60, 4:2:0)	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	P	N
43	2160p (50/59.94/60, 4:4:4)	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N
44	4096x2160 (24/25/30)	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N
45	4096x2160 (50/59.94/60, 4:2:0)	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	P	P
46	4096x2160 (50/59.94/60, 4:4:4)	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Y: Supported, P: Only YCbCr 4:2:0, N: Not supported, —: Not used

8.4.3 External EDID

You can set the output connector to be recalled when the EDID type is set to “EXTERNAL”.

Menu	F12 to F13: IN1 to IN2
WEB menu	EDID SETTINGS → CH.FOR EXTERNAL MODE
Setting value	

[Table 8.13] Setting values for External EDID

Description	Front	WEB browser
OUT1 [Default]	01	OUT1
OUT2	02	OUT2
OUT3	03	OUT3
OUT4	04	OUT4
OUT5	05	OUT5

To use external EDID:

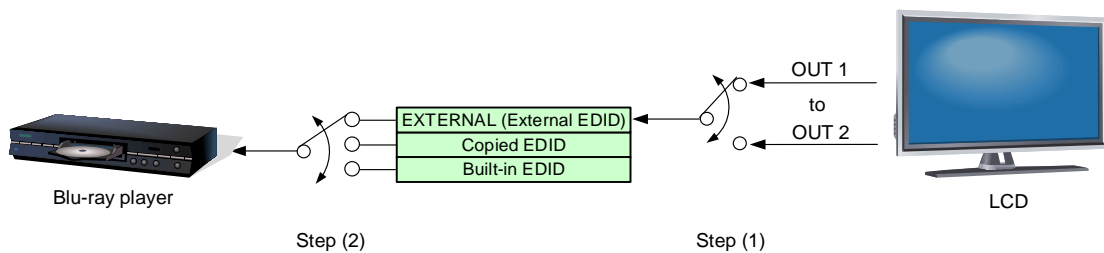
Step 1: Select the HDMI output connector to which the target sink device is connected.

Menu number [F12 to F13]

Step 2: Select “EXTERNAL (External EDID)”.

Menu number [F10 to F11]

【See: 8.4.2 Resolution】



[Fig. 8.5] Registering External EDID (Example: HDC-TR121UHD)

Notes:

- Before setting “Resolution” to “01” (EXTERNAL(External EDID)) in “8.4.2 Resolution”, set this menu first
- Set external EDID again in the following cases:
 - A sink device is replaced while the HDC powered on.
 - A setting of sink device is changed while the HDC powered on.

8.4.4 Selecting copied EDID

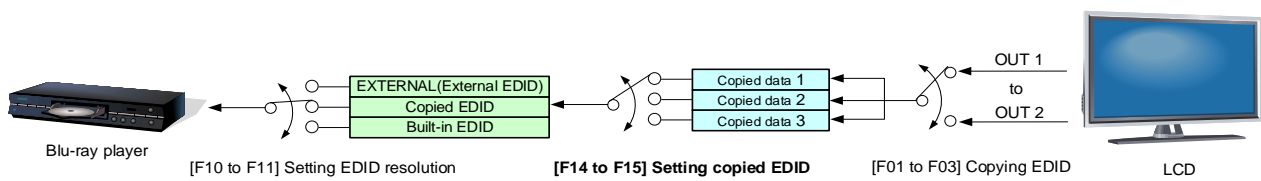
You can select a copied EDID.

【See: 8.4.1 Copying EDID】

Menu	F14 to F15: IN1 to IN2
WEB menu	EDID SETTINGS → CH.FOR COPY MODE
Setting value	

[Table 8.14] Selecting copied EDID

Description	Front	WEB browser
Copied data 1 [Default]	01	COPY1
Copied data 2	02	COPY2
Copied data 3	03	COPY3



[Fig. 8.6] Setting copied EDID (Example: HDC-TR121UHD)

Note:

Before setting “Resolution” to “01” (EXTERNAL (External EDID)) in “8.4.2 Resolution”, set this menu first.

8.4.5 Deep Color

You can set the color depth to be output from the source device.

Menu	F20 to F21: IN1 to IN2
WEB menu	EDID SETTINGS → DEEP COLOR
Setting value	

[Table 8.15] Deep Color

Description	Front	WEB browser
24 bit/pixel (8 bit/component) [Default]	24	24-BIT COLOR
30 bit/pixel (10 bit/component)	30	30-BIT COLOR
36 bit/pixel (12 bit/component)	36	36-BIT COLOR

The setting will be applied only if **8.4.2 Resolution** is set to one of “03” to “46”.

Note:

If you select “30 bit/pixel (10 bit/component)” or “36 bit/pixel (12 bit/component)”, compared to “24 bit/pixel (8 bit/component)”, “30 bit/pixel (10 bit/component)” or “36 bit/pixel (12 bit/component)” is transmitted using a higher clock frequency. The clock frequency may cause noise if a poor-quality or an excessively long cable is connected. In such a case, the noise may be removed by setting the color to “24 bit/pixel (8 bit/component)”.

For 4K@50/59.94/60 (YCbCr 4:4:4), “24 bit” is selected automatically.

8.4.6 LPCM audio

Menu	F22 to F23: IN1 to IN2
WEB menu	EDID SETTINGS → AUDIO FORMAT → Linear PCM
Setting value	

[Table 8.16] LPCM audio

Description	Front	WEB browser
32 kHz	32	32 kHz
44.1 kHz	44	44.1 kHz
48 kHz [Default]	48	48 kHz
88.2 kHz	88	88.2 kHz
96 kHz	96	96 kHz
176.4 kHz	176	176.4 kHz
192 kHz	192	192 kHz

The setting will be applied only if **“8.4.2 Resolution”** is set to one of “03” to “46”.

You can set the maximum sampling frequency of LPCM that is output from the source device.

Note:

LC monitors do not support some audio formats. Select an audio format and sampling frequency supported by the device.

8.4.7 Dolby Digital audio

You can set the Dolby Digital audio to be output from the source device.

Menu	F24 to F25: IN1 to IN2
WEB menu	EDID SETTINGS → AUDIO FORMAT → Dolby Digital
Setting value	

[Table 8.17] AC-3 Dolby Digital audio

Description	Front	WEB browser
OFF [Default]	oFF	OFF
32 kHz	32	32kHz
44.1 kHz	44	44.1kHz
48 kHz	48	48kHz

The setting will be applied only if “**8.4.2 Resolution**” is set to one of “03” to “46”.

Note:

LC monitors do not support some audio formats. Select an audio format and sampling frequency supported by the device.

8.4.8 AAC audio

You can set the AAC audio to be output from the source device.

Menu	F26 to F27: IN1 to IN2
WEB menu	EDID SETTINGS → AUDIO FORMAT → AAC
Setting value	

[Table 8.18] AAC audio

Description	Front	WEB browser
OFF [Default]	oFF	OFF
32 kHz	32	32kHz
44.1 kHz	44	44.1kHz
48 kHz	48	48kHz
88.2 kHz	88	88.2kHz
96 kHz	96	96kHz

The setting will be applied only if “**8.4.2 Resolution**” is set to one of “03” to “46”.

Note:

LC monitors do not support some audio formats. Select an audio format and sampling frequency supported by the device.

8.4.9 Dolby Digital Plus audio

You can set the Dolby Digital Plus audio to be output from the source device.

Menu	F28 to F29: IN1 to IN2
WEB menu	EDID SETTINGS → AUDIO FORMAT → Dolby Digital+
Setting value	

[Table 8.19] Dolby Digital Plus audio

Description	Front	WEB browser
OFF [Default]	oFF	OFF
32 kHz	32	32kHz
44.1 kHz	44	44.1kHz
48 kHz	48	48kHz

The setting will be applied only if “**8.4.2 Resolution**” is set to one of “03” to “46”.

Note:

LC monitors do not support some audio formats. Select an audio format and sampling frequency supported by the device.

8.4.10 DTS audio

You can set the DTS audio to be output from the source device.

Menu	F30 to F31: IN1 to IN2
WEB menu	EDID SETTINGS → AUDIO FORMAT → DTS
Setting value	

[Table 8.20] DTS audio

Description	Front	WEB browser
OFF [Default]	oFF	OFF
32 kHz	32	32kHz
44.1 kHz	44	44.1kHz
48 kHz	48	48kHz
96 kHz	96	96kHz

The setting will be applied only if “**8.4.2 Resolution**” is set to one of “03” to “46”.

You can set the DTS audio to be output from the source device.

Note:

LC monitors do not support some audio formats. Select an audio format and sampling frequency supported by the device.

8.4.11 DTS-HD audio

You can set the DTS-HD audio to be output from the source device.

Menu	F32 to F33: IN1 to IN2
WEB menu	EDID SETTINGS → AUDIO FORMAT → DTS-HD
Setting value	

[Table 8.21] DTS-HD audio

Description	Front	WEB browser
OFF [Default]	oFF	OFF
44.1 kHz	44	44.1kHz
48 kHz	48	48kHz
88.2 kHz	88	88.2kHz
96 kHz	96	96kHz
176.4 kHz	176	176.4kHz
192 kHz	192	192kHz

The setting will be applied only if “**8.4.2 Resolution**” is set to one of “03” to “46”.

Note:

LC monitors do not support some audio formats. Select an audio format and sampling frequency supported by the device.

8.4.12 Dolby TrueHD audio

You can set the Dolby TrueHD audio to be output from the source device.

Menu	F34 to F35: IN1 to IN2
WEB menu	EDID SETTINGS → AUDIO FORMAT → Dolby TrueHD
Setting value	

[Table 8.22] Dolby TrueHD audio

Description	Front	WEB browser
OFF [Default]	oFF	OFF
44.1 kHz	44	44.1kHz
48 kHz	48	48kHz
88.2 kHz	88	88.2kHz
96 kHz	96	96kHz
176.4 kHz	176	176.4kHz
192 kHz	192	192kHz

The setting will be applied only if “**8.4.2 Resolution**” is set to one of “03” to “46”.

Note:

LC monitors do not support some audio formats. Select an audio format and sampling frequency supported by the device.

8.4.13 Speaker configuration

You can set the number of multiple channels to be output from the source device.

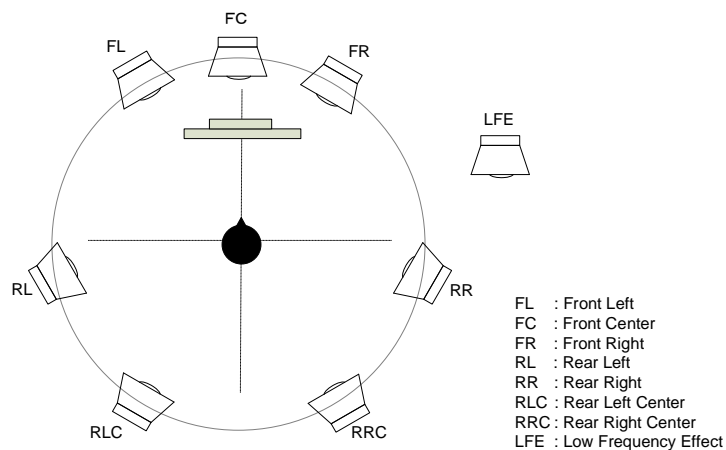
- Menu F36 to F37: IN1 to IN2
- WEB menu EDID SETTINGS → SPEAKER CONFIGURATION
- Setting value

[Table 8.23] Speaker configuration

Description	Front	WEB browser
LR [Default]	02	2CH
2.1 channel surround sound	03	2.1CH
5.1 channel surround sound	06	5.1CH
7.1 channel surround sound	08	7.1CH

The setting will be applied only if “8.4.2 Resolution” is set to one of “03” to “46”.

■ The number of channels and speaker configuration



Sound type (Number of speakers)	FL/FR	LFE	FC	RL/RR	RLC/RRC
LR (2)	ON	OFF	OFF	OFF	OFF
2.1 channel surround sound (3)	ON	ON	OFF	OFF	OFF
5.1 channel surround sound (6)	ON	ON	ON	ON	OFF
7.1 channel surround sound (8)	ON	ON	ON	ON	ON

[Fig. 8.7] The number of channels and speaker configuration

Note:

Some LC monitors do not support multi-channel audio.

8.4.14 Copying EDID's CEC physical address

You can copy CEC physical address of the sink device that is connected to OUT1 to the HDC EDID. CEC passes through between IN1 and OUT1.

Menu	F38: IN1
WEB menu	EDID SETTINGS → CEC ADDRESS COPY
Setting value	

[Table 8.24] CEC physical address

Description	Front	WEB browser
Not copying physical address [Default]	oFF	OFF
Copying physical address	on	OUT1

The setting will be applied only if CEC-supported source device and sink device is connected and "8.4.2 Resolution" is set to one of "03" to "46".

If the CEC physical address of the connected sink device and HDC's address are not the same, the CEC functions, such as input switching in the sink device at start-up, may not work correctly. The problem can be solved by using the CEC physical address that is copied in the HDC.

Note:

CEC system link functions supported by other manufacturers' are not guaranteed to work correctly by this setting. Check the actual configuration.

8.4.15 Frame rate

If selecting 2160p and 4096x2160 EDID resolutions, the frequency will be 30 Hz or 25 Hz. For other resolutions, the frequency will be 60 Hz or 50 Hz.

Menu	F40 to F41: IN1 to IN2
WEB menu	EDID SETTINGS → FRAME RATE
Setting value	

[Table 8.25] Frame rate

Description	Front	WEB browser
OFF [Default]	oFF	60Hz/30Hz
ON	on	50Hz/25Hz

You can set the video frequency that is output from source device.

The setting will be applied only if "8.4.2 Resolution" is set to one of "03" to "46".

8.5 Setting audio

8.5.1 Audio waiting duration

Menu	C06 to C07: IN1 to IN2
WEB menu	INPUT AUDIO SETTINGS → AUDIO STABLE WAIT
Setting value	

[Table 8.26] Waiting duration

Description	Front	WEB browser
No wait	oFF	OFF
Short	01	SHORT
Middle [Default]	02	MIDDLE
Long	03	LONG

This feature is for waiting until input audio becomes stable in order to avoid popping noise when audio source is turned on or the like.

If initial sound cannot be output, disable this feature. In such a case, however, unstable input signal may become noise.

8.5.2 Outputting audio

You can enable/disable digital audio that is output from each output channel.

Menu	F70 to F74: OUT1 to OUT5
WEB menu	OUTPUT AUDIO SETTINGS → OUTPUT SIGNAL
Setting value	

[Table 8.27] Outputting audio

Description	Front	WEB browser
Outputting audio [Default]	on	ON
Not outputting audio	oFF	OFF

8.6 Configuring HDC

8.6.1 Grouping front panel security lockout

You can set front panel security lockout that prevents accidental changes to the controller settings.

Menu F80
 WEB menu CHANNEL SELECT → BUTTON LOCK
 Setting value

[Table 8.28] Target buttons of security lockout

Description	Front*	WEB browser
All buttons [Default]	ALL	Click [ALL].
MENU/ENTER button	SE	Click [MENU/ENTER].
CHANNEL (▲▼)/BACK buttons	CH	Click [CHANNEL] and [BACK].

*To enable/disable the security lockout from the front, press and hold the “MENU/ENTER” button for three seconds.

【See: 7.4 Front panel security lockout】

8.6.2 Power saving mode

You can enable/disable the energy saving function. Lights of menu operation buttons are turned off automatically after 30 seconds of inactivity.

Menu F81
 WEB menu CHANNEL SELECT → POWER SAVE MODE
 Setting value

[Table 8.29] Energy saving

Description	Front	WEB browser
Always on [Default]	oFF	OFF
Automatically off after 30 seconds of inactivity	on	ON

Note:

LED indicator does not turn off (always lights).

8.6.3 Version

Menu F90
 WEB menu VIEW STATUS → VERSION

You can view the firmware version.

8.6.4 Displaying/Hiding menu

You can display/hiding maintenance menu and status indication menu.

Menu F99
 Setting value

[Table 8.30] Setting menu display

Description	Front
Hiding [Default]	oFF
Displaying (Hiding at next start-up)	on
Always displaying (Displaying at next start-up)	ALL

Setting value	Menu		
	Setting menu	Maintenance	Status indication
oFF	Displayed	Hidden	Hidden
on	Displayed	Hidden at next start-up	Hidden at next start-up
ALL	Displayed	Displayed	Displayed

Note:

This menu cannot be set from WEB browser.

8.6.5 Alarm

In case an abnormality is detected in power voltage (higher or lower than DC +12 V \pm 10%) or internal temperature, an alarm is output and “E” appears on the segment display.

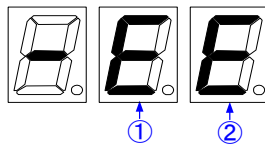
Menu C90

WEB menu SYSTEM SETTINGS → ALARM

Setting value

[Table 8.31] Alarm output

Description	Front	WEB browser
Enabling [Default]	on	ON
Disabling	oFF	OFF



[Fig. 8.8] How alarm is displayed

#	Description
①	Abnormality in internal temperature is detected.
②	Power voltage is higher or lower than DC +12 V \pm 10%.

Note:

In case an alarm is output, the HDC may have problems. Please contact us.

8.7 Setting input

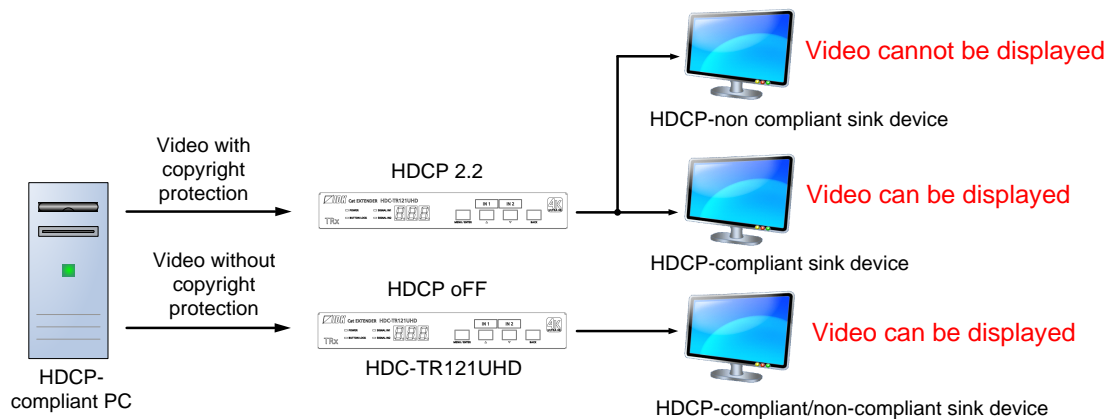
8.7.1 HDCP input enabled/disabled

Menu	C01 to C02: IN1 to IN2
WEB menu	INPUT SETTINGS → HDCP INPUT MODE
Setting value	

[Table 8.32] HDCP input

Description	Front	WEB browser
Enabling HDCP 2.2 [Default]	2.2	HDCP2.2
Enabling HDCP 1.4	1.4	HDCP1.4
Disabling HDCP	oFF	DISABLE

Some source devices negotiate with the connected device to determine if HDCP encryption is supported. After this negotiation, the source device determines whether HDCP signal encryption is enforced or not. This process takes place with some source device, even if the content being presented is not copyright protected. The HDC is HDCP compliant, if it is connected to a display device that does not support HDCP, even unprotected AV content may not be successfully displayed. Under these circumstances and if the content is indeed not protected, the problem can be solved by setting this menu to [DISABLE].



[Fig. 8.9] HDCP-compliant and HDCP non-compliant sink device

Notes:

Set this setting to HDCP 2.2 or HDCP 1.4 in order to display video with copyright protection.

- HDCP 2.2 (stream type 0) contents can be displayed on sink devices supporting HDCP 2.2/HDCP 1.4.
- HDCP 2.2 (stream type 1) contents can be displayed on sink devices supporting HDCP 2.2 but cannot be displayed on sink devices supporting HDCP 1.4.

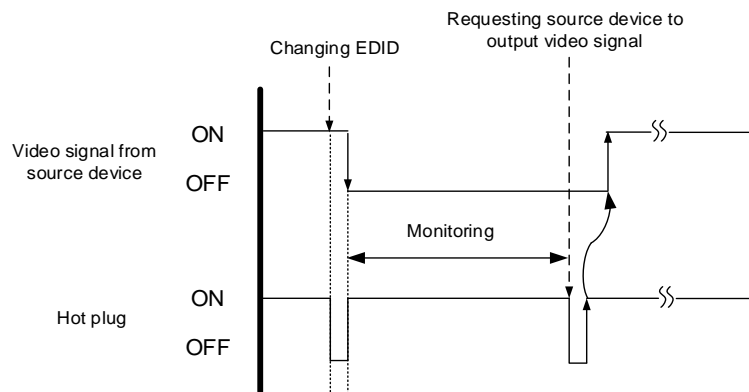
8.7.2 No-signal input monitoring

If you change the EDID settings of the HDC or power the HDC off/on, the source device may not output a video signal. Use this menu to set the monitoring time. This is the interval beginning when a source device is not outputting a signal; and ending at the point when the HDC requests an output from that source device.

Menu C03 to C04: IN1 to IN2
 WEB menu INPUT SETTINGS → NO INPUT MONITORING
 Setting value

[Table 8.33] No-signal input monitoring

Description	Front	WEB browser
2 sec. to 15 sec. [Default] 10 sec.	02 to 15	2 to 15
OFF	oFF	OFF

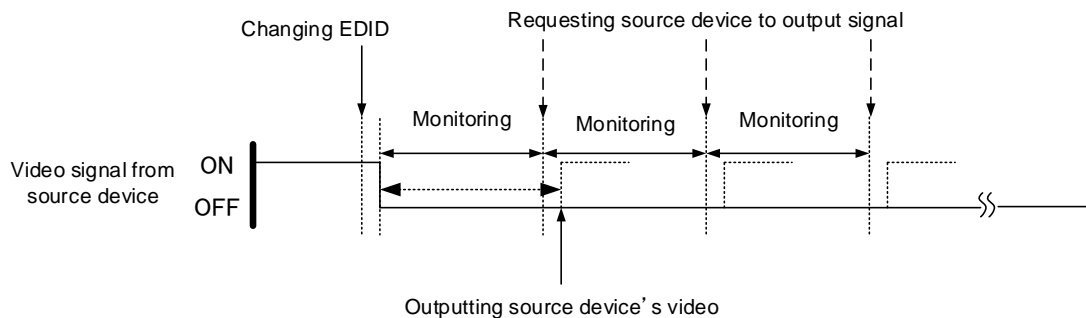


[Fig. 8.10] Monitoring absence of input

Notes:

If you are using the monitor power-saving or dual monitor features on your PC, set this feature to “OFF”. This will avoid potentially unpredictable operation.

When using this feature, ensure that the “monitoring time” is set for a value greater than the amount of time needed for the source to provide an output signal.



[Fig. 8.11] Repeating output reset

8.7.3 HDBaseT input long reach mode

You can enable/disable long reach mode for HDBaseT input.

Menu C05: IN2

WEB menu INPUT SETTINGS → HDBT LONG REACH MODE

Setting value

[Table 8.34] HDBaseT input long reach mode

Description		Front	WEB browser
Disabling	(Up to 328 ft. (100 m)) [Default]	oFF	OFF
Enabling	(Up to 492 ft. (150 m))	on	ON

With long reach mode, up to 1080p (24 bit)/dot clock 148 MHz is supported when using with IDK's HDBaseT product. Set the HDC's EDID to 1080p or less or set the connected device's output to a supported signal format.

8.8 Setting output

8.8.1 Hot plug ignoring duration

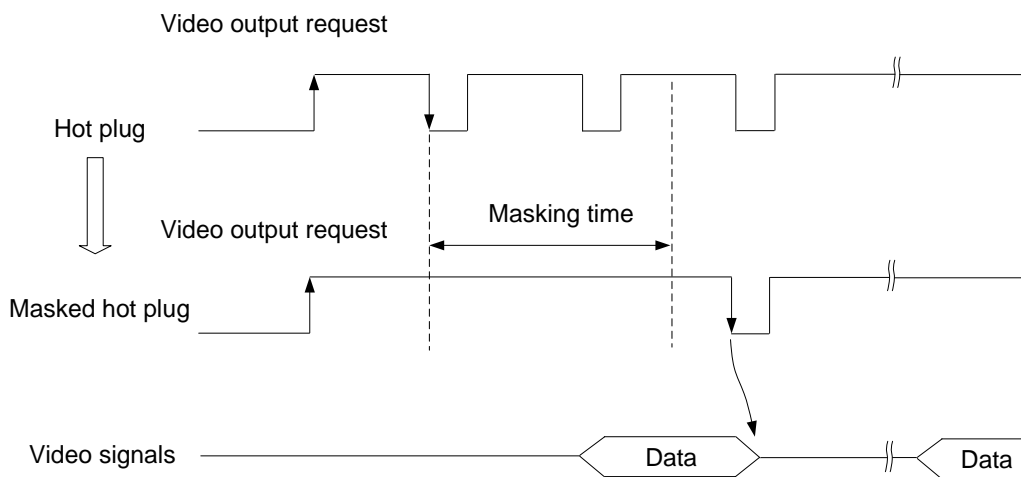
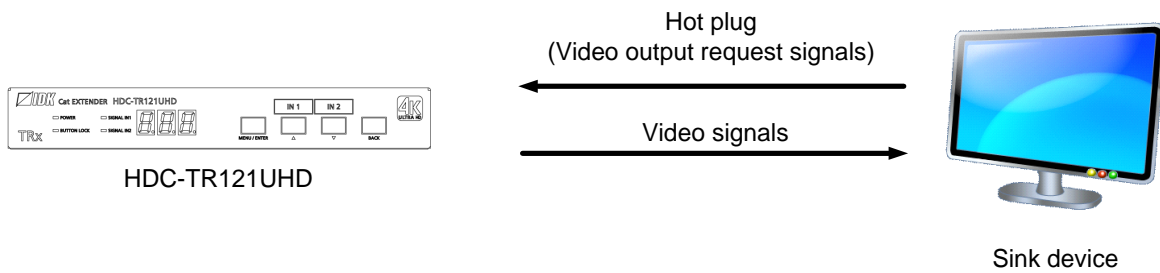
Time for ignoring the video output request signals sent from the sink device.

Menu C10 to C14: OUT1 to OUT5
 WEB menu OUTPUT SETTINGS → HOTPLUG MASK
 Setting value

[Table 8.35] Hot plug ignoring duration

Description	Front	WEB browser
Not ignoring request signals [Default]	oFF	OFF
2 to 15 [sec.]	02 to 15	2 to15

If the request signals are repeated in a short cycle, the HDC processes video output from the first cycle. As a result, video may not be output. This problem can be solved by setting the ignoring time.



[Fig. 8.12] Hot plug mask

8.8.2 Sink device EDID check

You can set the sink device's EDID checking mode.

Menu	C20 to C24: OUT1 to OUT5
WEB menu	OUTPUT SETTINGS → EDID ERR OUTPUT MODE
Setting value	

[Table 8.36] Sink device EDID check

Description	Front	WEB browser
In case of EDID load error, the sink device is treated as a DVI device [Default]	oFF	OFF
In case of EDID load error, the sink device is treated as a HDMI device without SCDC	Er1	ERROR1
Always treats sink device as a HDMI device without SCDC	AL1	ALWAYS1
In case of EDID load error, the sink device is treated as a HDMI device with SCDC	Er2	ERROR2
Always treats sink device as a HDMI device with SCDC	AL2	ALWAYS2

The HDC gets EDID from the sink device and determines if the sink device is an HDMI device or DVI device in order to output HDMI signals. However, if the HDC cannot get EDID for some reasons, problems such as no audio output and the like may occur. In these cases, HDC recognized the connected sink device is HDMI or DVI device and output signal as HDMI or DVI mode depending on its setting.

Notes:

- If setting this menu to a value other than the default (oFF, OFF), set “**8.4.2 Resolution**” to a supported resolution other than “01” (External EDID).
- This setting is applied when HDMI signal is input and “**8.8.3 Output format**” is set to a format other than DVI.

【See: 8.8.3 Output format】

8.8.3 Output format

You can set the color space to be sent to the sink device.

Menu	C30 to C34: OUT1 to OUT5
WEB menu	OUTPUT SETTINGS → SIGNAL FORMAT
Setting value	

[Table 8.37] Output format

Description	Front	WEB browser
AUTO [Default]	FoL	FOLLOW SINK DEVICE
RGB output	rgb	HDMI RGB MODE
YCbCr 4:2:2 output	422	HDMI YCbCr 4:2:2 MODE
YCbCr 4:4:4 output	444	HDMI YCbCr 4:4:4 MODE
DVI output	d	DVI MODE
YCbCr 4:2:0 output	420	HDMI YCbCr 4:2:0 MODE

You can select an output signal mode and color space of the output video.

The selected mode has priority and is output to the sink device with the optimal mode.

Notes:

- This setting is applied when HDMI signal is input.
- When 4K YCbCr 4:4:4 signal is input, the HDC outputs the signal at YCbCr 4:2:0 to the sink device supporting YCbCr 4:2:0 (not supporting YCbCr 4:4:4).
- YCbCr 4:2:0 output is available only for 4K@50/59.94/60 output, for other resolution the format is set to "AUTO".
- For HDBaseT output, if 4K YCbCr 4:4:4 signal is input, it is output at YCbCr 4:2:0 automatically.

8.8.4 Downconversion output

The HDC can downconvert 2160p into 1080p. Only OUT1 supports this feature.

Menu	C40: OUT1
WEB menu	OUTPUT SETTINGS → DOWN CONVERSION
Setting value	

[Table 8.38] Downconversion

Description	Front	WEB browser
Automatic* [Default]	FoL	FOLLOW SINK EDID
Disabling	oFF	OFF
Enabling	on	1080p

*Automatic: If the sink device supports only up to 2K, signals are downconverted automatically.

[Table 8.39] Downconverted resolution

Input resolution	Converted resolution
3840x2160p 24Hz	1920x1080p 24Hz
3840x2160p 25Hz	1920x1080p 25Hz
3840x2160p 30Hz	1920x1080p 30Hz
3840x2160p 50Hz	1920x1080p 50Hz
3840x2160p 60Hz	1920x1080p 60Hz

8.8.5 HDBaseT output long reach mode

You can enable/disable long reach mode for HDBaseT output.

Menu	C45 to C48: OUT2 to OUT5
WEB menu	OUTPUT SETTINGS → HDBT LONG REACH MODE
Setting value	

[Table 8.40] HDBaseT output long reach mode

Description	Front	WEB browser
Disabling (Up to 328 ft. (100 m)) [Default]	oFF	OFF
Enabling (Up to 492 ft. (150 m))	on	ON

With long reach mode, up to 1080p (24 bit)/dot clock 148 MHz is supported when using with IDK's HDBaseT product.

8.8.6 Presence of output signal for when signal is input

For video signal that is distributed to multiple channels simultaneously, video/audio can be off for each output.

Menu	C50 to C54: OUT1 to OUT5
WEB menu	OUTPUT SETTINGS → OUTPUT SIGNAL
Setting value	

[Table 8.41] Presence of input signal for when signal is input

Description		Front	WEB browser
Video output ON	Audio output ON [Default]	on	SOURCE ON
Video output OFF	Audio output OFF	oFF	SOURCE OFF
Black output ON	Audio output OFF	bL1	V&A MUTE
Black output ON	Audio output ON	bL2	VIDEO MUTE
Video output ON	Audio output OFF	bL3	AUDIO MUTE

OFF : Neither of video signal nor +5 V signal is output. The sink device can be in standby state.

VIDEO MUTE : Black video is output.

AUDIO MUTE : Audio is muted.

8.8.7 Presence of output signal for when no signal is input

You can enable/disable to output the +5 V signal when no signal is input.

Menu	C55 to C59: OUT1 to OUT5
WEB menu	OUTPUT SETTINGS → NO SIGNAL MODE
Setting value	

[Table 8.42] Presence of input signal for when no signal is input

Description		Front	WEB browser
Not sending the presence of input signal [Default] (+5 V signal ON)		oFF	OFF
Sending the presence of input signal (+5 V signal OFF)		on	ON

If setting to “ON”, the +5 V signal is output regardless of the presence of input signal, some sink devices are not in standby mode.

8.9 Setting RS-232C

8.9.1 RS-232C communication

You can set the RS-232C communication.

Menu C70: Baud rate
 C71: Data bit length
 C72: Parity check
 C73: Stop bit

WEB menu RS-232C SETTINGS → PARAMETERS → BAUD RATE
 RS-232C SETTINGS → PARAMETERS → DATA BIT LENGTH
 RS-232C SETTINGS → PARAMETERS → PARITY
 RS-232C SETTINGS → PARAMETERS → STOP BIT

Setting value

[Table 8.43] RS-232C communication

Item	Description	Front	WEB browser
Baud rate [bps]	4800 bps	48	4800bps
	9600 bps [Default]	96	9600bps
	14400 bps	144	14400bps
	19200 bps	192	19200bps
	38400 bps	384	38400bps
Data bit length [bit]	8 [Default]	8	8
	7	7	7
Parity check	NONE [Default]	non	NONE
	ODD	odd	ODD
	EVEN	En	EVEN
Stop bit [bit]	1 [Default]	1	1
	2	2	2

Note:

All RS-232C and HDBaseT connectors can be set simultaneously.

8.9.2 RS-232C operation mode

You can set the command mode and transmission mode for RS-232C communication.

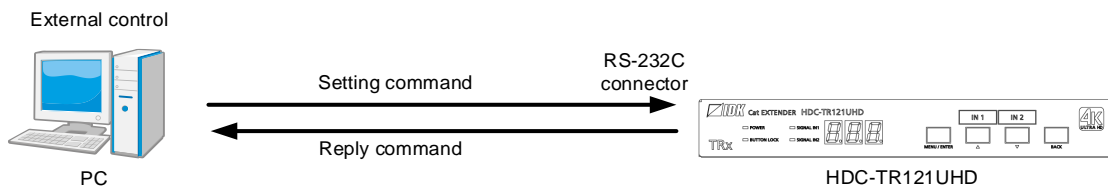
Menu	C74
WEB menu	RS-232C SETTINGS → HDBT CONNECTION
Setting value	

[Table 8.44] RS-232C operation mode

Description	Front	WEB browser
Command mode [Default]	00	COMMAND MODE
Transmission mode	01	TRANSMIT MODE

■ Command mode

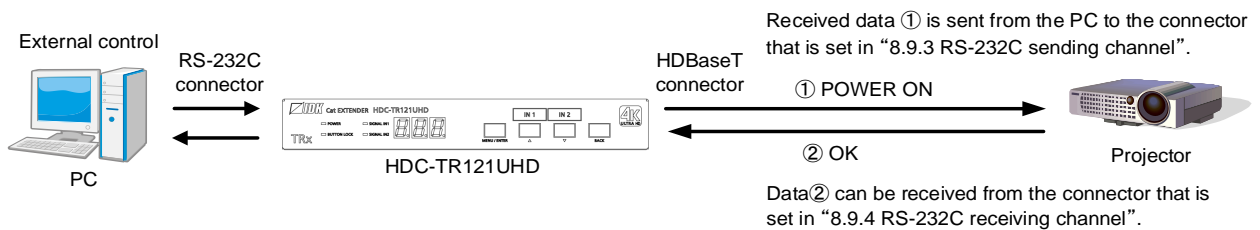
Controls the HDC using RS-232C communication commands from the RS-232C connector



[Fig. 8.13] Command mode (example)

■ Transmission mode

Controls devices that are connected through the HDBaseT connectors



[Fig. 8.14] Transmission mode (example)

【See: 8.9.3 RS-232C sending channel】

【See: 8.9.4 RS-232C receiving channel】

8.9.3 RS-232C sending channel

You can set the destination(s) of the sending data in transmission mode.

【See: 8.9.2 RS-232C operation mode】

- Menu**
- C75: IN2
 - C76: OUT2 only
 - C77: All outputs
 - C78: RS-232C

- WEB menu** RS-232C SETTINGS → HDBT CONNECTION → TRANSMIT ENABLE →
- RS-232C
 - HDBaseT IN2
 - HDBaseT OUT (OUT2, ALL)

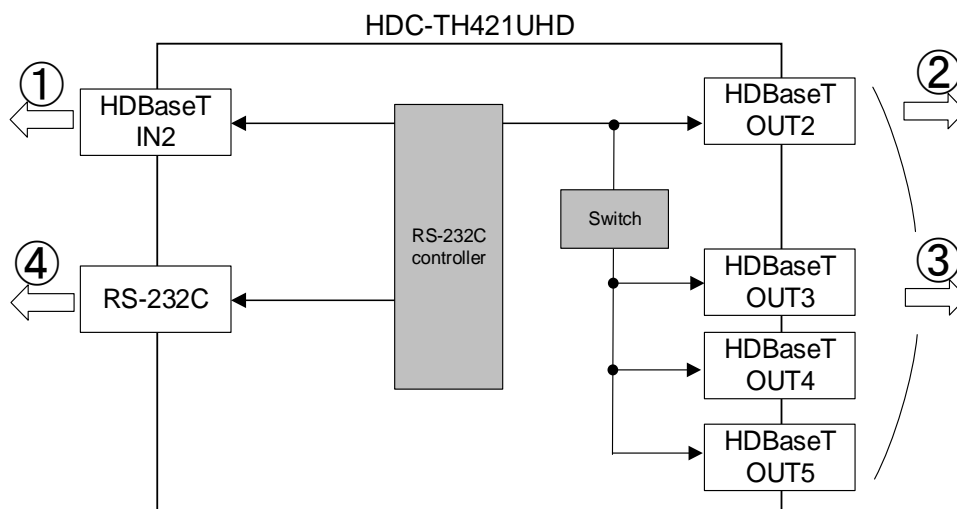
Setting value

[Table 8.45] RS-232C sending channel

Description	Front	WEB browser
Enabling RS-232C sending	on	Check box ON (RS-232C, HDBaseT IN2, HDBaseT OUT (OUT2, ALL))
Disabling RS-232C sending [Default]	oFF	Check box OFF (RS-232C, HDBaseT IN2, HDBaseT OUT (OUT2, ALL))

Select the connector(s) to be set from the following connectors:

- ① HDBaseT input connector (IN2)
- ② HDBaseT output connector (OUT2 only)
- ③ HDBaseT output connector (All outputs)
- ④ RS-232C connector



[Fig. 8.15] Receiving channel

Note:

Received data is not sent to the connector that receives the data.

8.9.4 RS-232C receiving channel

You can set the connector (s) that receives data in transmission mode.

【See: 8.9.2 RS-232C operation mode】

Menu	C79: IN2 C7A: OUT2 C7b: RS-232C
WEB menu	RS-232C SETTINGS → HDBT CONNECTION → RECEIVED ENABLE → → RS-232C → HDBaseT IN2 → HDBaseT OUT2
Setting value	

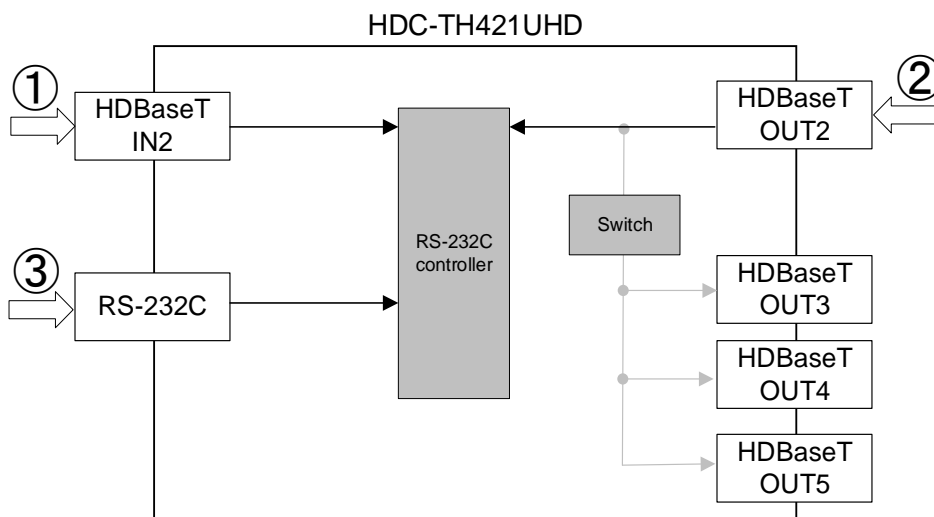
[Table 8.46] RS-232C receiving channel

Description	Front	WEB browser
Enabling RS-232C receiving	on	Check box ON (RS-232C, HDBaseT IN2, HDBaseT OUT2)
Disabling RS-232C receiving [Default]	oFF	Check box OFF (RS-232C, HDBaseT IN2, HDBaseT OUT2)

Select the connector(s) to be set from the following connectors:

- ① HDBaseT input connector (IN2)
- ② HDBaseT output connector (OUT2)
- ③ RS-232C connector

The received data will be sent to the channel that is selected in “8.9.3 RS-232C sending channel”.



[Fig. 8.16] Sending channel

Notes:

- If setting multiple channels to be received, ensure that data is not duplicated in order to specify that each data is received from which connector.
- RS-232C data cannot be received from HDBaseT OUT3, OUT4, or OUT5.

8.10 Setting LAN

The HDC can be accessed and controlled through LAN communication.

The HDC does not support automatic acquisition of IP address using DHCP (Dynamic Host Configuration Protocol). If you use the HDC in a network with DHCP, use a fixed IP address.

8.10.1 IP address

You can set the IP address.

Menu C80: ①

C81: ②

C82: ③

C83: ④

WEB menu LAN SETTINGS → PARAMETERS → IP ADDRESS

Setting value

[Table 8.47] IP address

Description		Front	WEB browser
000.000.000.000 to 255.255.255.255 : [Default] 192.168.1.199	①	000 to 255	0 to 255
	②	000 to 255	0 to 255
	③	000 to 255	0 to 255
	④	000 to 255	0 to 255

192 . 168 . 001 . 199
 ↑ ↑ ↑ ↑
 ① ② ③ ④

Note:

If the HDC is connected to multiple networks, the same IP address is assigned to multiple networks. In this case, an error may be reported.

8.10.2 Subnet mask

You can set the subnet mask.

Menu C84

WEB menu LAN SETTINGS → PARAMETERS → SUBNET MASK

Setting value

[Table 8.48] Subnet mask

Description	Front	Description	Front
0.0.0.0	1	255.255.0.0	17
128.0.0.0	2	255.255.128.0	18
192.0.0.0	3	255.255.192.0	19
224.0.0.0	4	255.255.224.0	20
240.0.0.0	5	255.255.240.0	21
248.0.0.0	6	255.255.248.0	22
252.0.0.0	7	255.255.252.0	23
254.0.0.0	8	255.255.254.0	24
255.0.0.0	9	255.255.255.0 [Default]	25
255.128.0.0	10	255.255.255.128	26
255.192.0.0	11	255.255.255.192	27
255.224.0.0	12	255.255.255.224	28
255.240.0.0	13	255.255.255.240	29
255.248.0.0	14	255.255.255.248	30
255.252.0.0	15	255.255.255.252	31
255.254.0.0	16	255.255.255.254	32

Description	WEB browser
000.000.000.000 to 255.255.255.254 : [Default] 255.255.255.0	000 to 255
	000 to 255
	000 to 255
	000 to 254

8.10.3 TCP port number

Menu	C85
WEB menu	LAN SETTINGS → PARAMETERS → PORT NUMBER
Setting value	

[Table 8.49] TCP port number

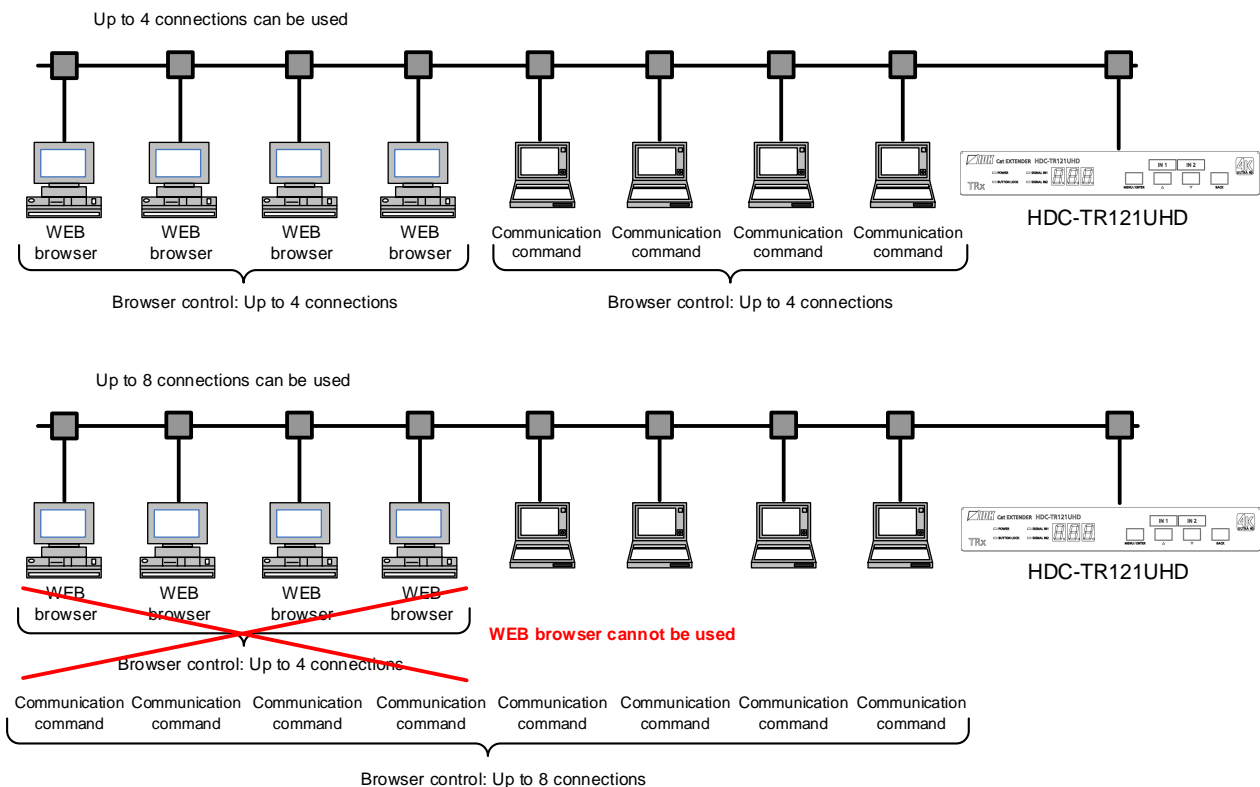
Description	Front	WEB browser
Up to 4 connections can be used [Default]	4	CONNECTION: 4
Up to 8 connections can be used	8	CONNECTION: 8

“Up to 4 connections can be used” : Connections will be divided into 4 for WEB browser control (HTTP port number is fixed 80) and 4 for communication command control at maximum.

“Up to 8 connections can be used” : Connections will be assigned to 8 communication command controls at maximum.

Notes:

- If setting this menu to “Up to 8 connections can be used”, WEB browser cannot be used any more.
- You can change the port number from communication command or WEB browser.
- For communication command control, set the port number to a value from “1100”, “6000” to “6999”.



[Fig. 8.17] 8 connection setting

8.10.4 MAC address

Menu C86
 WEB menu LAN SETTINGS → PARAMETERS → MAC ADDRESS

You can display the HDC's MAC address.

8.10.5 Setting HDBaseT LAN

You can enable/disable the LAN capabilities of each HDBaseT I/O connector.

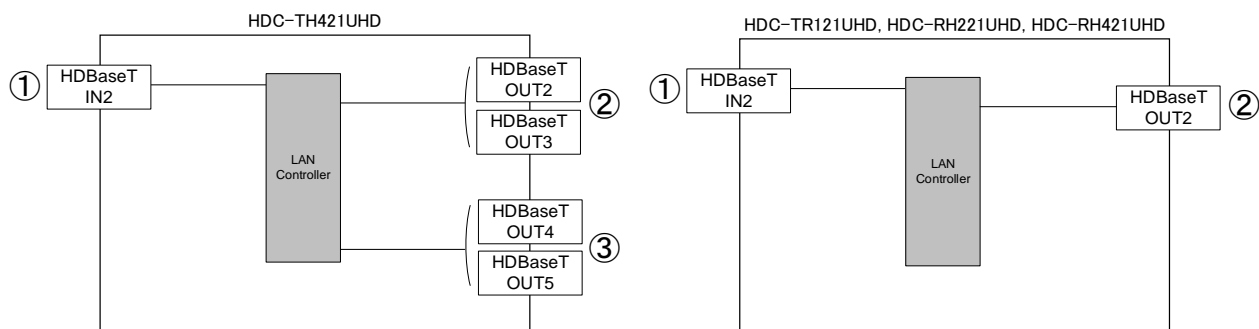
Menu C87 : ① HDBaseT IN2
 C88 : ② HDBaseT OUT2, HDBaseT OUT3
 C89 : ③ HDBaseT OUT4, HDBaseT OUT5
 WEB menu LAN SETTINGS → HDBT COMMUNICATION
 Setting value

[Table 8.50] HDBaseT LAN

Description	Front	WEB browser
Disabling LAN [Default]*	oFF	Check box OFF (HDBaseT IN2, HDBaseT OUT2,3, HDBaseT OUT4,5)
Enabling LAN	on	Check box ON (HDBaseT IN2, HDBaseT OUT2,3, HDBaseT OUT4,5)

*This feature is set to be disabled by default to avoid loop problems. Enable this menu for LAN communication from HDBaseT connector.

【See: 3.5 LAN loop problem through HDBaseT】



[Fig. 8.18] LAN functionality

Note:

The LAN functionality between HDBaseT OUT2 and HDBaseT OUT3 or between HDBaseT OUT4 and HDBaseT OUT5 cannot be set separately.

8.11 Status indication

8.11.1 Viewing input information

You can view the information for input.

Menu L01 to L30

WEB menu VIEW STATUS → INPUT STAUS

[Table 8.51] Input status

Menu number	Value to be displayed	Description
● HDMI/DVI mode and color depth of input video		
L01(IN1), L02(IN2)	H24	HDMI mode 24 bit/pixel (8bit/component)
	H30	HDMI mode 30 bit/pixel (10bit/component)
	H36	HDMI mode 36 bit/pixel (12bit/component)
	d24	DVI mode 24 bit/pixel (8bit/component)
	---	No signal is input.
● Presence of input HDCP		
L03(IN1), L04(IN2)	on	With HDCP
	oFF	Without HDCP
	---	No signal is input.
● Presence of input video HDCP encryption (Encryption from source device)		
L05(IN1), L06(IN2)	1.4	Encrypted (HDCP 1.4)
	2.2	Encrypted (HDCP 2.2)
	oFF	Not encrypted
	---	No signal is input.
● Color space of input video		
L07(IN1), L08(IN2)	rgb	RGB
	422	YCbCr 4:2:2
	420	YCbCr 4:2:0
	444	YCbCr 4:4:4
	---	Unknown, No signal is input.
● Input video frequency		
L09(IN1), L10(IN2)	59.9	Input vertical synchronous frequency (Example: 59.94 Hz)
	---	No signal is input.
● +5 V signal		
L11(IN1), L12(IN2)	on	+5 V signal is input
	oFF	No +5 V signal is input
● Input resolution		
L13(IN1), L14(IN2)	1920_1080P 60	Displaying (scroll) input resolution. (Example: 1920×1080p 60 Hz)
	---	No signal is input.

[Table 8.52] Input status (Cont'd)

Menu number	Value to be displayed	Description
<ul style="list-style-type: none"> • Audio input type and the number of channels n*: 1 = 2 channels, 2 = 2.1 channels, 5 = 5.1 channels, 7 = 7.1 channels		
L15(IN1), L16(IN2)	---	Unknown, No signal is input.
	00n*	Unknown
	01n	LINEAR PCM Audio
	02n	Dolby Digital Audio
	03n	MPEG-1 Audio
	04n	MP3 Audio
	05n	MPEG-2 Audio
	06n	AACLC Audio
	07n	DTS Audio
	08n	ATRAC Audio
	09n	DSD Audio
	10n	Dolby Digital Plus Audio
	11n	DTS-HD Audio
	12n	Dolby TrueHD Audio
	13n	DST Audio
14n	WMA Audio	
15n	HE-AAC/HE-AACv2/MPEG Surround Audio	
<ul style="list-style-type: none"> • Audio input sampling frequency 		
L17(IN1), L18(IN2)	22	22.05 kHz
	24	24 kHz
	32	32 kHz
	44	44.1 kHz
	48	48 kHz
	88	88.2 kHz
	96	96 kHz
	176	176.4 kHz
	192	192 kHz
	768	768 kHz
	_01	Unknown
	_05	
	_07	
	_11	
	_13	
_15		
---	No signal is input.	

[Table 8.53] Input status (Cont'd)

Menu number	Value to be displayed	Description
● The number of audio input bits, HBR mode (High Bit-Rate Audio)		
L19(IN1), L20(IN2)	H16	16 bit, HBR mode
	P16	16 bit, PCM mode
	_16	16 bit, compression audio other than HBR and PCM modes
	H20	20 bit, HBR mode
	P20	20 bit, PCM mode
	_20	20 bit, compression audio other than HBR and PCM modes
	H24	24 bit, HBR mode
	P24	24 bit, PCM mode
	_24	24 bit, compression audio other than HBR and PCM modes
---	No signal is input.	
● Audio input (Digital audio)		
L21(IN1), L22(IN2)	000	No audio is input.
	001	Input is being detected.
	002	Audio is input normally.
	---	No signal is input.
● Scrambling of input signal		
L25(IN1), L26(IN2)	on	Scrambled (4K format except for YCbCr 4:2:0)
	oFF	Not scrambled.
	---	No signal is input.
● TMDS clock ratio of input signal		
L27(IN1), L28(IN2)	1_1	1/1
	1_4	1/4 (4K format except for YCbCr 4:2:0)
	---	No signal is input.
● Input signal stream type (for HDCP 2.2)		
L29(IN1), L30(IN2)	000	Type 0
	001	Type 1
	non	HDCP 1.4 or no HDCP signal
	---	No signal is input.

[Table 8.54] Input status (WEB browser)

WEB browser menu	Value	Description
Video signal		
● Input signal resolution		
VIDEO FORMAT	1920x1080p 60.00Hz	Input resolution (example: 1920x1080p 60 Hz)
● HDMI/DVI mode of input signal		
INPUT MODE	HDMI MODE	HDMI mode
	DVI MODE	DVI mode
● Presence of input HDCP		
HDCP	HDCP2.2 Type1	HDCP2.2 stream Type1 signal
	HDCP2.2 Type0	HDCP2.2 stream Type0 signal
	HDCP1.4	HDCP1.4 signal
	NOT ENCRYPTED	No HDCP signal
● Color space of input signal		
COLOR SPACE	YCbCr 4:4:4	YCbCr 4:4:4
	YCbCr 4:2:2	YCbCr 4:2:2
	YCbCr 4:2:0	YCbCr 4:2:0
	RGB	RGB
● Color depth of input video		
DEEP COLOR	24-BIT COLOR	24 bit/pixel (8bit/component)
	30-BIT COLOR	30 bit/pixel (10bit/component)
	36-BIT COLOR	36 bit/pixel (12bit/component)
● Scrambling of input signal		
SCRAMBLE	ON	Scrambled (4K format except for YCbCr 4:2:0)
	OFF	Not scrambled.
Audio signal		
● Audio input format		
AUDIO FORMAT	LINEAR PCM	LPCM (for LPCM)
● Audio input sampling frequency		
SAMPLING FREQUENCY	48kHz	Sample frequency (for 48 kHz)
● The number of audio input channels		
SPEAKER CONFIGURATION	2 CHANNEL	The number of channels (for 2 channel)
● Audio input bit (High Bit-Rate Audio)		
BIT LENGH	24BIT	Sampling bit length (for 2 channel)

8.11.2 Viewing output information

You can view the information for output.

Menu L40 to LL4

WEB menu VIEW STATUS → SINK DEVICE STATUS / SINK DEVICE EDID

[Table 8.55] Sink device status

Menu number	Value to be displayed	Description
● Color depth (sink)		
L40(OUT1) to L44(OUT5)	24	24 bit/pixel (8 bit/component) supported
	30	30 bit/pixel (10 bit/component) supported
	36	36 bit/pixel (12 bit/component) supported
	---	Not connected
● Color space (sink)		
L50(OUT1) to L54(OUT5)	rgb	RGB supported
	422	YCbCr 4:2:2 supported
	444	YCbCr 4:4:4 supported
	444_420	Scroll display If sink device resolution is 4K@50/59.94/60, up to YCbCr 4:2:0.
	---	Not connected
● Color space (output)		
L60(OUT1) to L64(OUT5)	rgb	RGB output
	422	YCbCr 4:2:2 output
	420	YCbCr 4:2:0 output
	444	YCbCr 4:4:4 output
	---	Not connected
● Hot plug detection		
L70(OUT1) to L74(OUT5)	on	Hot plug is detected.
	oFF	No hot plug is detected.
● HDMI/DVI		
L80(OUT1) to L84(OUT5)	HC	HDMI mode (Compressed audio supported)
	HP	HDMI mode (PCM audio supported)
	d	DVI mode (Audio is not supported.)
	---	Not connected
● HDCP encryption		
L90(OUT1) to L94(OUT5)	000	None
	001	Being encrypted
	002	
	003	
	004	Encryption ends normally.
	005	Encryption ends abnormally.

[Table 8.56] Sink device status (Cont'd)

Menu number	Value to be displayed	Description
• HDCP		
LA0(OUT1) to LA4(OUT5)	1.4	HDCP 1.4 supported
	2.2	HDCP supported (HDCP 2.2)
	oFF	HDCP is not supported or no HDCP signal
	- - -	Not connected
• SCDC		
Lb0(OUT1) to Lb4(OUT5)	on	SCDC supported
	oFF	SCDC is not supported.
	- - -	Not connected
• Scrambling output		
Lc0(OUT1) to Lc4(OUT5)	on	Scrambled
	oFF	Not scrambled.
	- - -	Not connected
• HDR		
Ld0(OUT1) to Ld4(OUT5)	on	HDR supported
	oFF	HDR is not supported.
	- - -	Not connected
• 3D		
LE0(OUT1) to LE4(OUT5)	on	3D supported
	oFF	3D is not supported.
	- - -	Not connected
• HDCP output		
LF0(OUT1) to LF4(OUT5)	non	No HDCP output
	1.4	HDCP1.4 output
	h2.2	HDCP2.2 Type0 output
	H2.2	HDCP2.2 Type1 output
	- - -	Not connected
• HDMI/DVI output		
LH0(OUT1) to LH4(OUT5)	H	HDMI output
	d	DVI output
	- - -	Not connected
• Color range output		
LL0(OUT1) to LL4(OUT5)	L	Limited range output
	F	Full range output
	- - -	Not connected

[Table 8.57] Output status (WEB browser)

WEB browser menu	Value to be displayed	Description
Output signal		
● HDCP encryption		
HDCP AUTHENTICATION	HDCP2.2 SUPPORT	HDCP 2.2 encryption
	HDCP1.4 SUPPORT	HDCP 1.4 encryption
	HDCP CHECK NOW	Being encrypted
	HDCP NOT ENCRYPTED	HDCP is not supported.
	HDCP ERROR	Encryption ends abnormally
	HDCP NOT SUPPORT	Sink device supports HDCP.
● HDMI/DVI output		
OUTPUT MODE	HDMI MODE	HDMI output
	DVI MODE	DVI output
● Color space (output)		
COLOR SPACE	RGB	RGB output
	YCbCr4:2:2	YCbCr 4:2:2 output
	YCbCr4:4:4	YCbCr 4:4:4 output
	YCbCr4:2:0	YCbCr 4:2:0 output
● Color range output		
COLOR RANGE	LIMITED RANGE	Limited range output
	FULL RANGE	Full range output
● Color depth output		
DEEP COLOR	24-BIT COLOR	24 bit/pixel (8 bit/component) output
	30-BIT COLOR	30 bit/pixel (10 bit/component) output
	36-BIT COLOR	36 bit/pixel (12 bit/component) output
● Scrambling output		
SCRAMBLE	SCRAMBLE ON	With scramble
	SCRAMBLE OFF	No scramble
Sink device information		
● Name		
MONITOR NAME	Depending on connected device	Sink device's name
● Resolution		
RESOLUTION	Depending on connected device	Supported resolution
● HDMI/DVI		
HDMI/DVI	HDMI MODE	HDMI mode
	DVI MODE	DVI mode
● Color space		
COLOR SPACE	RGB	RGB supported
	YCbCr4:2:2	YCbCr 4:2:2 supported
	YCbCr4:4:4	YCbCr 4:4:4 supported
	YCbCr4:2:0	YCbCr 4:2:0 supported

[Table 8.58] Output status (WEB browser) (Cont'd)

WEB browser menu	Value to be displayed	Description
Sink device information		
● Color depth		
DEEP COLOR	24-BIT COLOR	24 bit/pixel (8 bit/component) supported
	30-BIT COLOR	30 bit/pixel (10 bit/component supported
	36-BIT COLOR	36 bit/pixel (12 bit/component) supported
● Audio sampling frequency		
PCM FREQUENCY	32kHz	32kHz supported
	44.1kHz	44.1kHz supported
	48kHz	48kHz supported
	88.2kHz	88.2kHz supported
	96kHz	96kHz supported
	176.4kHz	176.4kHz supported
	192kHz	192kHz supported
● Audio bit length		
PCM BIT LENGTH	16BIT	16BIT supported
	20BIT	20BIT supported
	24BIT	24BIT supported
● The number of audio channels		
PCM CHANNEL	2 CHANNEL	LR
	2.1 CHANNEL	2.1 channel surround sound
	5.1 CHANNEL	5.1 channel surround sound
	7.1 CHANNEL	7.1 channel surround sound
● Compressed audio		
COMPRESSED AUDIO	SUPPORTED	Compressed audio supported
	NOT SUPPORTED	Compression audio is not supported.
● HDR		
HDR	SUPPORTED	HDR supported
	NOT SUPPORTED	HDR is not supported.
● SCDC		
SCDC	SUPPORTED	SCDC supported
	NOT SUPPORTED	SCDC is not supported.
● 3D		
3D	SUPPORTED	3D supported
	NOT SUPPORTED	3D is not supported.

8.11.3 Viewing HDBaseT information

You can view HDBaseT information.

Menu P01 to Pb4

WEB menu HDBT STATUS

[Table 8.59] HDBaseT information (Front menu)

Menu number	Value to be displayed	Description
● Link status		
P01(IN2)	ON	Transmitter and receiver are connected.
P02(OUT2) to P05(OUT5)	OFF	Not connected
● Device type		
P10(IN2)	01	VS100RX
P11(OUT2) to P14(OUT5)	02	VS100TX
● Version ID		
P20(IN2)	13.07.21.00	Scroll display
P21(OUT2) to P24(OUT5)		Example:13.07.21.00
● Connected device type		
P30(IN2)	01	VS100RX
P31(OUT2) to P34(OUT5)	02	VS100TX
	03	VS010RX
	04	VS010TX
	---	Not connected
● Connected version ID		
P40(IN2)	13.07.21.10	Scroll display
P41(OUT2) to P44(OUT5)		Example: 13.07.21.10
	---	Not connected
● Operation mode		
P50(IN2)	Hdb	HDBaseT mode
P51(OUT2) to P54(OUT5)	Log	Long reach mode
	LP1	LPPF1 mode
	LP2	LPPF2 mode
	---	Not connected
● Category cable length		
P60(IN2)	85	Category cable length
P61(OUT2) to P64(OUT5)		Example: 279 ft. (85 m)
	_20	66 ft. (20 m) or shorter
	10_	328 ft. (100 m) or longer
	---	Not connected

[Table 8.60] HDBaseT information (Front menu) (Cont'd)

Menu number	Value to be displayed	Description
● Bit error rate		
P70(IN2) P71(OUT2) to P74(OUT5)	-11	Signal bit error rate Example: 10e-11
	- - -	Not connected, No input signal
● Video signal quality (FMSEERR CURRENT VALUE)		
P80(IN2) P81(OUT2) to P84(OUT5)	A-22b-20	Scroll display
	C-21d-22	Example: A-22dB, B-20dB, C-21dB, D-22dB
	- - -	Not connected
● Maximum video signal quality (FMSEERR MAX VALUE)		
P90(IN2) P91(OUT2) to P94(OUT5)	A-22b-20	Scroll display
	C-21d-22	Example: A-22dB, B-20dB, C-21dB, D-22dB
	- - -	Not connected
● Video signal residual gap (FMAXERR CURRENT VALUE)		
PA0(IN2) PA1(OUT2) to PA4(OUT5)	A0.34b0.35	Scroll display
	C0.32d0.33	Example: A0.34, B0.35, C0.32, D0.33
	- - -	Not connected
● Maximum video signal residual gap (FMAXERR MAX VALUE)		
Pb0(IN2) Pb1(OUT2) to Pb4(OUT5)	A0.34b0.35	Scroll display
	C0.32d0.33	Example: A0.34, B0.35, C0.32, D0.33
	- - -	Not connected

Notes:

- The displayed values may differ from real value depending on environment.
- To display those information as a list, use WEB browser.

【See: 3.8 Displaying HDBaseT information】

[Table 8.61] HDBaseT information (WEB browser)

WEB browser menu	Value to be displayed	Description
Video signal information		
● Resolution I/O status		
VIDEO FORMAT	1920x1080P60.00Hz	Video format Example: 1920x1080P 60 Hz
	NO SIGNAL	Not connected
● Color space I/O status		
COLOR SPACE	YCbCr4:2:0	YCbCr4:2:0
● Color depth I/O status		
DEEP COLOR	24 BIT COLOR	24 bit/pixel (8 bit/component)
● Link status		
LINK STATUS	ON	Transmitter and receiver are connected.
	OFF	Not connected
● Sink status		
SINK STATUS	ON	Connected to sink device
	OFF	Not connected
Device information		
● Device type		
LOCAL DEV TYPE	VS100RX	Device type Example: VS100RX
● Version ID		
LOCAL VERSION ID	13 07 21 00	Version ID Example: 13.07.21.00
● Connected device type		
REMOTE DEV TYPE	VS100TX	Connected device type Example: VS100TX
	UNCONNECTED	Not connected
● Connected version ID		
REMOTO VERSION ID	13 07 21 10	Connected version ID Example: 13.07.21.10
● Operation mode		
OPERATION MODE	HDBaseT MODE	HDBaseT mode
	LONG REACH MODE	Long reach mode
	LPPF1 MODE	LOW POWER mode 1
	LPPF2 MODE	LOW POWER mode 2

[Table 8.62] HDBaseT information (WEB browser) (Cont'd)

WEB browser menu	Value to be displayed	Description
Category cable		
● Category cable length		
CABLE LENGTH	85m	Category cable length Example: 279 ft. (85 m)
	<20m	66 ft. (20 m) or shorter
	100m<	328 ft. (100 m) or longer
	UNCONNECTED	Not connected
● Bit error rate		
VIDEO BER	10e-11	Signal bit error rate Example: 10e-11
	NO SIGNAL	No input signal
● Video signal quality		
FMSEERR (dB) CURRENT VALUE	A -22 B -20	Signal quality Example: A-22dB, B-20dB, C-21dB, D-22dB
	C -21 D -22	
	---	Not connected
● Maximum video signal quality		
FMSEERR (dB) MAX VALUE	A -22 B -20	Maximum signal quality Example: A-22dB, B-20dB, C-21dB, D-22dB
	C -21 D -22	
	---	Not connected, If RESET MAX VALUES is selected.
● Video signal residual gap		
FMAXERR CURRENT VALUE	A 0.34 B 0.35	Signal residual gap Example: A0.34, B0.35, C0.32, D0.33
	C 0.32 D 0.33	
	---	Not connected
● Maximum video signal residual gap		
FMAXERR MAX VALUE	A 0.34 B 0.35	Maximum signal residual gap Example: A0.34, B0.35, C0.32, D0.33
	C 0.32 D 0.33	
	---	Not connected, If RESET MAX VALUES is selected.

Note:

- The displayed values may differ from real value depending on environment.

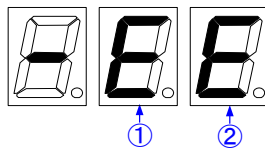
【See: 3.8 Displaying HDBaseT information】

8.11.4 Viewing system status

You can view status of power voltage (DC 12V IN) and internal temperature.

Menu H00 to H02
 WEB menu VIEW STATUS → SYSTEM STAUTS

[Table 8.63] System check



Menu number	Value (Example)	Description
● System status		
H00	-E-	① “E” is displayed in case power voltage is higher or lower than DC +12 V ±10%. ② “E” is displayed in case abnormality in internal temperature is detected. “-” is displayed when there is no problem in power voltage and internal temperature.
● Power voltage		
H01	12.0	Shows power voltage.
● Internal temperature		
H02	32.0	Shows internal temperature.

[Table 8.64] Values displayed on WEB browser

Menu number	Value (Example)	Description
● Power voltage		
POWER STATUS	12.0V STATUS: OK	Shows power voltage. [OK] : Normal [NG] : Abnormal
● Internal temperature		
TEMPERATURE STATUS	32.0C STATUS: OK	Shows internal temperature. [OK] : Normal [NG] : Abnormal

In case an abnormality is detected, [STATUS:NG] is displayed in red.

8.12 Operations only settable from WEB menu

You can operate following menus only from a WEB.

8.12.1 Editing channel name

Click the [NAME EDIT] button in [CHANNEL SELECT] menu to open the [NAME EDIT] window.

You can enter up to 10 one-byte characters.

The edited channel names are applied to the submenu tab and [STATUS] window.

8.12.2 Automatic updating time

SYSTEM SETTINGS > AUTO RELOAD TIME

You can set the automatic updating time of [CHANNEL WINDOW], [CHANNEL SELECT], [VIEW STATUS], and [HDBT STATUS] windows by selecting the desired value (5 to 60 seconds, 5-second interval) from

[AUTO RELOAD TIME] in the [SYSTEM SETTINGS] menu.

This menu is only for [CHANNEL WINDOW], [CHANNEL SELECT], [VIEW STATUS], and [HDBT STATUS] windows; other windows cannot be updated automatically even if you select the desired number.

If you select [OFF] (default), [CHANNEL WINDOW], [CHANNEL SELECT], [VIEW STATUS], and [HDBT STATUS] windows are not updated automatically.

8.12.3 Saving/Restoring all settings

SYSTEM SETTINGS > BACKUP/RESTORE

You can save all settings to your PC.

The saved file can be restored by setting item from the [RESTORE] button. Do not perform other WEB operations or power off the HDC during the operation.

If the backup file is not correct, a warning dialog box will appear during the operation.

8.12.4 Initialization

SYSTEM SETTINGS > INITIALIZATION

You can initialize settings other than LAN communication settings by clicking the [NORMAL INITIALIZATION] button.

If you want to initialize all settings including LAN communication settings, click the [ALL INITIALIZATION] button.

9 Product specification

9.1 HDC-TR121UHD

[1/2]

Item		Description
Input		2 inputs
Output		2 outputs
Input	HDMI/DVI	1 input HDMI (*1)/DVI 1.0 TMDS single link, HDCP 1.4/2.2 HDR (*2), 3D (*3), x.v.Color, CEC (Pass-through) EDID emulation Connector: Female HDMI Type A (19-pin)
	HDBaseT	1 input HDBaseT (*4) HDCP 1.4/2.2, HDR (*2), 3D (*3), x.v.Color EDID emulation, RS-232C, LAN Connector: RJ-45 (*5) Cable: CAT.5E HDC, Cat5e UTP/STP, Cat6 UTP/STP (T568A/T568B straight-through)
Output	HDMI/DVI	1 output Output video can be distributed to an HDMI/DVI and HDBaseT simultaneously. HDMI (*1)/DVI 1.0 TMDS single link, HDCP 1.4/2.2 HDCP 1.4/2.2, HDR (*2), 3D (*3), x.v.Color, CEC (Pass-through) Connector: Female HDMI Type A (19-pin)
	HDBaseT	1 output Output video can be distributed to an HDMI/DVI and HDBaseT simultaneously. HDBaseT (*4) HDCP 1.4/2.2, HDR (*2), 3D (*3), x.v.Color RS-232C, LAN Connector: RJ-45 (*5) Cable: CAT.5E HDC, Cat5e UTP/STP, Cat6 UTP/STP (T568A/T568B straight-through)
Format	HDMI/DVI (*6)	VGA to 4K 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (up to 4K@60 (4:4:4))
	HDBaseT (*7)	VGA to 4K For WQHD/WQXGA, only Reduced Blanking is supported. 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (up to 4K@60 (4:2:0))
Color depth	HDMI	24 bit, 30 bit, 36 bit Deep Color (*6)
	HDBaseT	24 bit, 30 bit, 36 bit Deep Color (*7)
Dot clock		25 MHz to 600 MHz
TMDS clock		25 MHz to 300 MHz
TMDS data rate		0.75 Gbps to 18 Gbps
Digital audio input		2 inputs 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: Female HDMI Type A (19-pin), RJ-45
Digital audio output		1 x 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: Female HDMI Type A (19-pin), RJ-45
Analog audio output		1 output Unbalanced Stereo LR Output impedance: 50 Ω, Reference level: -10 dBu, Max. output level: +10 dBu Connector: Captive screw (3-pin)
Maximum transmission distances	Digital input	HDMI/DVI : 98 ft. (30 m) (1080p@60), 39 ft. (12 m) (4K@60) (*8) HDBaseT : 328 ft. (100 m), 492 ft. (150 m) (Long reach mode is used) (*9)
	Digital output	HDMI/DVI : 98 ft. (30 m) (1080p@60), 39 ft. (12 m) (4K@60) (*8) HDBaseT : 328 ft. (100 m), 492 ft. (150 m) (Long reach mode is used) (*9)
Control	RS-232C	1 port/captive screw connector (3-pin), full duplex, up to 38.4 kbps
	LAN	1 port/RJ-45 10Base-T/100Base-TX (Auto Negotiation), Auto MDI/MDI-X
Functions		WEB browser control, Automatic input channel switching, Anti-snow, Connection Reset (*10), Button security lockout, OUT1 supports down conversion (4K to 1080p), Status notification, Each video output OFF, I/O signal status display, HDBaseT status display

Item	Description	
General	AC adapter	Input : 100 - 240 VAC \pm 10%, 50 Hz/60 Hz \pm 3 Hz Output : DC 12 V 3 A 36.0 W (A dedicated AC adapter is provided)
	Power consumption	About 15 W
	Dimensions	8.3 (W) \times 1.2 (H) \times 7.9 (D)" (210 (W) \times 30 (H) \times 200 (D) mm) (Half rack wide, thin type) (Excluding connectors and the like)
	Weight	2.9 lbs. (1.3 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 ARC and HEC are not supported.
- *2 HDR is supported if external EDID is selected while an HDR-supported sink device is connected for EDID setting or if copied EDID of an HDR-supported sink device is selected for EDID setting. Input HDR signal is output from all output connectors.
- *3 3D is supported if external EDID is selected while a 3D-supported sink device is connected for EDID setting or if copied EDID of 3D-supported sink device is selected for EDID setting. Input 3D signal is output from all output connectors.
- *4 ARC, HEC and CEC are not supported.
- *5 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.
- *6 For 4K format, the following color depths are supported.
- 24 Hz/25 Hz/30 Hz : 24 bit, 30 bit, 36 bit (RGB, YCbCr 4:4:4, YCbCr 4:2:2)
 - 50 Hz/59.94 Hz/60 Hz : 24 bit, 30 bit, 36 bit (YCbCr 4:2:2, YCbCr 4:2:0)
 - 24 bit (RGB, YCbCr 4:4:4)
- *7 For 4K format, the following color depths are supported.
- 24 Hz/25 Hz/30 Hz : 24 bit (RGB, YCbCr 4:4:4, YCbCr 4:2:2)
 - 50 Hz/59.94 Hz/60 Hz : only 24 bit (YCbCr 4:2:0) and CEA-861
- *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@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 manufacturers' 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.
- 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 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 HDC's output. If other devices are connected between the HDC's output and sink device, this feature may be invalid.

9.2 HDC-TH221UHD/HDC-TH421UHD

[1/2]

Item		Description	
		HDC-TH221UHD	HDC-TH421UHD
Input	HDMI/DVI	1 input HDMI (*1)/DVI 1.0 TMDS single link, HDCP 1.4/2.2 HDR (*2), 3D (*3), x.v.Color, CEC (Pass-through) EDID emulation Connector: Female HDMI Type A (19-pin)	
	HDBaseT	1 input HDBaseT (*4) HDCP 1.4/2.2, HDR (*2), 3D (*3), x.v.Color EDID emulation, RS-232C, LAN Connector: RJ-45 (*5) Cable: CAT.5E HDC, Cat5e UTP/STP, Cat6 UTP/STP (T568A/T568B straight-through)	
Output	HDMI/DVI	1 output Video can be distributed to an HDMI/DVI output and HDBaseT outputs simultaneously. HDMI (*1)/DVI 1.0 TMDS single link, HDCP 1.4/2.2 HDR (*2), 3D (*3), x.v.Color, CEC (Pass-through) Connector: Female HDMI Type A (19-pin)	
	HDBaseT	1 x 2 outputs Video can be distributed to an HDMI/DVI output and HDBaseT outputs simultaneously	1 x 4 outputs Video can be distributed to an HDMI/DVI output and HDBaseT outputs simultaneously.
Format	HDMI/DVI (*6)	VGA to 4K 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (up to 4K@60 (4:4:4))	
	HDBaseT (*7)	VGA to 4K For WQHD/WQXGA, only Reduced Blanking is supported. 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (up to 4K@60 (4:2:0))	
Color depth	HDMI	24 bit, 30 bit, 36 bit Deep Color (*6)	
	HDBaseT	24 bit, 30 bit, 36 bit Deep Color (*7)	
Dot clock	25 MHz to 600 MHz		
TMDS clock	25 MHz to 300 MHz		
TMDS data rate	0.75 Gbps to 18 Gbps		
Digital audio input	2 inputs 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: Female HDMI Type A (19-pin), RJ-45		
Digital audio output	1 x 3 outputs Audio can be distributed to an HDMI output and HDBaseT outputs simultaneously.		1 x 5 outputs Audio can be distributed to an HDMI output and HDBaseT outputs 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: Female HDMI Type A (19-pin), 2 RJ-45s Connector: Female HDMI Type A (19-pin), 4 RJ-45s		
Analog audio output	1 output Unbalanced Stereo LR Output impedance: 50 Ω, Reference level: -10 dBu, Max. output level: +10 dBu Connector: Captive screw (3-pin)		
Maximum transmission distances	Digital input	HDMI/DVI : 98 ft. (30 m) (1080p@60), 39 ft. (12 m) (4K@60) (*8) HDBaseT : 328 ft. (100 m), 492 ft. (150 m) (Long reach mode is used) (*9)	
	Digital output	HDMI/DVI : 98 ft. (30 m) (1080p@60), 39 ft. (12 m) (4K@60) (*8) HDBaseT : 328 ft. (100 m), 492 ft. (150 m) (Long reach mode is used) (*9)	
Control	RS-232C	1 port/captive screw connector (3-pin), full duplex, up to 38.4 kbps	
	LAN	1 port/RJ-45 10Base-T/100Base-TX (Auto Negotiation), Auto MDI/MDI-X	
Functions	WEB browser control, Automatic input channel switching, Anti-snow, Connection Reset (*10), Button security lockout, OUT1 supports down conversion (4K to 1080p), Status notification, Each video output OFF, I/O signal status display, HDBaseT status display		

Item	Description	
	HDC-TH221UHD	HDC-TH421UHD
General	AC adapter	Input : 100 - 240 VAC \pm 10%, 50 Hz/60 Hz \pm 3 Hz Output : DC 12 V 3 A 36.0 W (A dedicated AC adapter is provided)
	Power consumption	About 22 W
	Dimensions	8.3 (W) \times 1.7 (H) \times 7.9 (D)" (210 (W) \times 44 (H) \times 200 (D) mm) (Half rack wide, 1U high) (Excluding connectors and the like)
	Weight	3.5 lbs. (1.6 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 ARC and HEC are not supported.
- *2 HDR is supported if external EDID is selected while an HDR-supported sink device is connected for EDID setting or if copied EDID of an HDR-supported sink device is selected for EDID setting. Input HDR signal is output from all output connectors.
- *3 3D is supported if external EDID is selected while a 3D-supported sink device is connected for EDID setting or if copied EDID of 3D-supported sink device is selected for EDID setting. Input 3D signal is output from all output connectors.
- *4 ARC, HEC and CEC are not supported.
- *5 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.
- *6 For 4K format, the following color depths are supported.
- 24 Hz/25 Hz/30 Hz : 24 bit, 30 bit, 36 bit (RGB, YCbCr 4:4:4, YCbCr 4:2:2)
 - 50 Hz/59.94 Hz/60 Hz : 24 bit, 30 bit, 36 bit (YCbCr 4:2:2, YCbCr 4:2:0)
: 24 bit (RGB, YCbCr 4:4:4)
- *7 For 4K format, the following color depths are supported.
- 24 Hz/25 Hz/30 Hz : 24 bit (RGB, YCbCr 4:4:4, YCbCr 4:2:2)
 - 50 Hz/59.94 Hz/60 Hz : Only 24 bit (YCbCr 4:2:0) and CEA-861
- *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@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.
- *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.
- 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 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 HDC's output. If other devices are connected between the HDC's output and sink device, this feature may be invalid.

9.3 HDC-RH221UHD/HDC-RH421UHD

[1/2]

Item		Description	
		HDC-RH221UHD	HDC-RH421UHD
Input	HDMI/DVI	1 input HDMI (*1)/DVI 1.0 TMDS single link, HDCP 1.4/2.2 HDR (*2), 3D (*3), x.v.Color, CEC (Pass-through) EDID emulation Connector: Female HDMI Type A (19-pin)	
	HDBaseT	1 input HDBaseT (*4) HDCP 1.4/2.2, HDR (*2), 3D (*3), x.v.Color EDID emulation, RS-232C, LAN Connector: RJ-45 (*5) Cable: CAT.5E HDC, Cat5e UTP/STP, Cat6 UTP/STP (T568A/T568B straight-through)	
Output	HDMI/DVI	1 x 2 outputs Video can be distributed to HDMI/DVI outputs and an HDBaseT output simultaneously.	1 x 4 outputs Video can be distributed to HDMI/DVI outputs and an HDBaseT output simultaneously.
		HDMI (*1)/DVI 1.0 TMDS single link, HDCP 1.4/2.2 HDR (*2), 3D (*3), x.v.Color, Only OUT1 supports CEC (Pass-through) Connector: Female HDMI Type A (19-pin)	
	HDBaseT	1 output Video can be distributed to HDMI/DVI outputs and an HDBaseT output simultaneously. HDCP 1.4/2.2, HDR (*2), 3D (*3), x.v.Color RS-232C, LAN Connector: RJ-45 (*5) Cable: CAT.5E HDC, Cat5e UTP/STP, Cat6 UTP/STP (T568A/T568B straight-through)	
Format	HDMI/DVI (*6)	VGA to 4K 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (up to 4K@60 (4:4:4))	
	HDBaseT (*7)	VGA to 4K For WQHD/WQXGA, only Reduced Blanking is supported. 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (up to 4K@60 (4:2:0))	
Color depth	HDMI	24 bit, 30 bit, 36 bit Deep Color (*6)	
	HDBaseT	24 bit, 30 bit, 36 bit Deep Color (*7)	
Dot clock	25 MHz to 600 MHz		
TMDS clock	25 MHz to 300 MHz		
TMDS data rate	0.75 Gbps to 18 Gbps		
Digital audio input	2 inputs 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: Female HDMI Type A (19-pin), RJ-45		
Digital audio output	1 x 3 outputs Audio can be distributed to HDMI outputs and an HDBaseT output simultaneously.		1 x 5 outputs Audio can be distributed to HDMI outputs 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: Female HDMI Type A (19-pin), 2 RJ-45s Connector: Female HDMI Type A (19-pin), 4 RJ-45s		
Analog audio output	1 output Unbalanced Stereo LR Output impedance: 50 Ω, Reference level: -10 dBu, Max. output level: +10 dBu Connector: Captive screw (3-pin)		
Maximum transmission distances	Digital input	HDMI/DVI : 98 ft. (30 m) (1080p@60), 39 ft. (12 m) (4K@60) (*8) HDBaseT : 328 ft. (100 m), 492 ft. (150 m) (Long reach mode is used) (*9)	
	Digital output	HDMI/DVI : 98 ft. (30 m) (1080p@60), 39 ft. (12 m) (4K@60) (*8) HDBaseT : 328 ft. (100 m), 492 ft. (150 m) (Long reach mode is used) (*9)	
Control	RS-232C	1 port/captive screw connector (3-pin), full duplex, up to 38.4 kbps	
	LAN	1 port/RJ-45 10Base-T/100Base-TX (Auto Negotiation), Auto MDI/MDI-X	
Functions	WEB browser control, Automatic input channel switching, Anti-snow, Connection Reset (*10), Button security lockout, OUT1 supports down conversion (4K to 1080p), Status notification, Each video output OFF, I/O signal status display, HDBaseT status display		

Item	Description	
	HDC-RH221UHD	HDC-RH421UHD
General	AC adapter	Input : 100 - 240 VAC \pm 10%, 50 Hz/60 Hz \pm 3 Hz Output : DC 12 V 3 A 36.0 W (A dedicated AC adapter is provided)
	Power consumption	About 20 W
	Dimensions	8.3 (W) \times 1.7 (H) \times 7.9 (D)" (210 (W) \times 44 (H) \times 200 (D) mm) (Half rack wide, 1U high) (Excluding connectors and the like)
	Weight	3.5 lbs. (1.6 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 ARC and HEC are not supported.
- *2 HDR is supported if external EDID is selected while an HDR-supported sink device is connected for EDID setting or if copied EDID of an HDR-supported sink device is selected for EDID setting. Input HDR signal is output from all output connectors.
- *3 3D is supported if external EDID is selected while a 3D-supported sink device is connected for EDID setting or if copied EDID of 3D-supported sink device is selected for EDID setting. Input 3D signal is output from all output connectors.
- *4 ARC, HEC and CEC are not supported.
- *5 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.
- *6 For 4K format, the following color depths are supported.
 - 24 Hz/25 Hz/30 Hz : 24 bit, 30 bit, 36 bit (RGB, YCbCr 4:4:4, YCbCr 4:2:2)
 - 50 Hz/59.94 Hz/60 Hz : 24 bit, 30 bit, 36 bit (YCbCr 4:2:2, YCbCr 4:2:0)
 - : 24 bit (RGB, YCbCr 4:4:4)
- *7 For 4K format, the following color depths are supported.
 - 24 Hz/25 Hz/30 Hz : 24 bit (RGB, YCbCr 4:4:4, YCbCr 4:2:2)
 - 50 Hz/59.94 Hz/60 Hz : only 24 bit (YCbCr 4:2:0) and CEA-861
- *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@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.
- *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. 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 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 HDC's output. If other devices are connected between the HDC's output and sink device, this feature may be invalid.

10 Troubleshooting

This chapter provides recommendations in case difficulties are encountered during HDC setup and operation.

In case the HDC does not work correctly, please check the following items first.

- Are the HDC and all devices connected to power and indicating “powered on”?
- Are signal cables connected correctly?
- Are there any loose or partially mated connections?
- Are the interconnecting cables specified correctly to support adequate bandwidth?
- For 4K format, is an 18 Gbps high-speed cable used?
- Are specifications of connected devices matched to each other?
- Are configuration settings for the connected devices correct?
- Is there any nearby equipment that may cause electrical noise/RF interference?

If the problem persists, review the following section for guidelines and recommendations. Refer to the manuals of connected devices as well, since they may possibly be the cause of the problem.

Problem	Cause/Check item/Solution	Page
• Video output		
Video is not being output.	[1] Is the EDID resolution setting of this device set to the input resolution supported by the sink device? <ul style="list-style-type: none"> • EDID resolution is set to is set to 2160p 4:4:4 or 2160p 4:2:0 for HDMI input connector or HDBaseT connector, respectively, by factory default. Some TVs does not support the resolution. • If the EDID resolution is set to 1080i, the video may not be output to the sink device that does not support the interlaced signals. • PC output resolutions (VGA to WQXGA) may not be output to LCD TVs and plasma TVs. 	59 [F10, F11]
	[2] Does the [SIGNAL IN1] or [SIGNAL IN2] light? Yes : Check [3] to [8]. No : Check [9] to [12].	33
	[3] Check the presence of HDCP? 1.4 : Signal protected by HDCP 1.4. 2.2 : Signal protected by HDCP 2.2. oFF: The signal is not protected.	90 [L05, L06]
	[4] Does the sink device support HDCP? If HDCP protected signal is input [3], video is not displayed on the sink device that does not support HDCP. [oFF] or [- -]: Sink device’s resolution may not be supported. Check the specification of the sink device. Some HDMI/DVI devices check if the connected device is HDCP compliant and determines whether to output HDCP signal or not. Since the HDC is HDCP compliant, the HDC may not output video if connected to a sink device that does not support HDCP. In such a case, disable the HDCP input from the source device.	95 [LA0 to LA4] 74 [C01, C02]

Problem	Cause/Check item/Solution	Page
● Video output (Cont'd)		
Video is not being output.	[5] If HDCP 2.2 signal is input, check whether the sink device supports HDCP 2.2. Step 1: Check input signal stream type. <ul style="list-style-type: none"> ▪ 000 : Video is displayed to all HDCP 1.4/HDCP 2.2-compliant devices. ▪ 001 : Video is displayed only to HDCP 2.2-compliant devices. Step 2: Check if HDCP is supported.	92 [L29, L30] 95 [LA0 to LA4]
	[6] Is the resolution supported by the sink device? Check the resolution and video frequency. Sink device's resolution may not be supported. Check the specification of the sink device.	90 [L13, L14]
	[7] Does the sink device support SCDC? ① Check TMDS clock ratio of input signal. <ul style="list-style-type: none"> ▪ 1_4 : SCDC signal ▪ 1_1 : Not SCDC signal. ② Check if the sink device supports SCDC. <ul style="list-style-type: none"> ▪ on : SCDC supported. ▪ oFF: SCDC is not supported; vide is not displayed. 	92 [L27, L28] 95 [Lb0 to Lb4]
	[8] Change the setting of Hot plug ignoring duration.	77 [C10 to C14]
	[9] If a long cable is connected for HDMI input or HDMI output, replace it with a 16 ft. (5 m) or shorter cable. Even though a 16 ft. (5 m) or longer cable can be connected for HDMI I/O of the HDC, HDCP authorization or EDID acquisition may fail depending on the cable quality and the connected device. For 4K format, check " 5 System Configuration Example ".	—
	[10] The time setting for monitoring no-signal input may be too short.	75 [C03, C04]
	[11] Check the video output setting of the source device.	—
	[12] If HDBaseT long reach mode is set to enabled, only up to 1080p (24 bit) or 148 MHz can be transmitted.	76 [C05] 80 [C45 to C48]

Problem	Cause/Check item/Solution	Page
● Video output (Cont'd)		
Video is intermittent, or presents noise.	If using a long cable for HDMI input or HDMI output, replace it with a 16.4 ft. (5 m) or shorter cable. Since the HDC has automatic cable length equalization, long cables can be successfully used, but the HDC's full performance may not be realized if the cable or connected peripheral devices are of inferior quality. If the error is solved by replacing the cable, the signal may have been degraded due to excessive attenuation or crosstalk. IDK offers high-quality cables, cable boosters and extenders. Please contact us as needed. For 4K format, check " 5 System Configuration Example ".	—
	The transmission clock of Deep Color signal is faster than that of normal signal. If lo-quality or long cable is used, noise may appear. You can control Deep Color of input signal by setting EDID.	64 [F20, F21]
Video flickers	If an interlace signal is input to a sink device that does not support interlace inputs, the video may flicker. Check the format settings for the HDC's output port driving the sink device.	59 [F10, F11]
The left, right, top and bottom sides are cut off.	Some sink devices overscan input video, and the video may be cut out. Check the display setting of the sink device.	—
Video is reduced vertically or horizontally.	Some sink devices display input video with full screen mode, and the aspect ratio cannot be kept. Check the display setting of the sink device. With some resolutions, full-screen display cannot be avoided. In that case, change the output resolution of the source device.	—
Black is displayed at top, bottom, right and left on PC video or only part of the PC video is displayed, and the rest can be revealed by scrolling with the mouse.	If the PC has the Panel Fit function, select [Scale Full Screen]. If the resolution that is set for the PC and the resolution that is actually output from the PC are not matched, those problems may occur. Check the resolution of the PC and the EDID resolution setting.	59 [F10, F11]
PC's dual monitor cannot be set or the setting is canceled.	If the monitoring function for no-signal input is enabled, the dual monitor function of your PC may not work correctly. In this case, disable the monitoring function.	75 [C03, C04]

Problem	Cause/Check item/Solution	Page
● Video output (Cont'd)		
Downconverted signal is not output.	Does the input resolution support downconversion? Check the input resolution. For HDC, only OUT1 supports downconversion.	80 [C40]
When video is muted, black is not output.	Is video signal input? Black is output only if video signal is input.	90 [L13, L14]
● Audio output		
Video is displayed, but audio is not output.	Ensure that audio output is turned on.	70 [F70 to F74]
	If there are multiple output connectors in the source device, check the audio output setting of the source device.	—
	Ensure that the input audio format is supported by the connected sink device. Typically, LCD monitors may not output 88.2 kHz or higher sampling frequency of LPCM and compressed audio (such as Dolby Digital, DTS, and other format). In order to play a Blu-ray disc having compressed audio, check the audio output setting of the source device. The source device's audio signal characteristics can be managed by the HDC's EDID configuration settings.	64 [F22] to 67 [F35]
	Ensure that DVI signal is not being output from the source device.	—
Even though multi-channel audio is played, only 2-channel audio is output	For multi-channel, change the EDID setting which is set to 2-channel audio by default.	68 [F36, F37]
Audio is output from HDMI outputs but not from analog audio outputs.	If compressed audio (such as Dolby Digital, DTS, and other formats) is applied to the input, analog audio is not provided at output. Only 2-channel LPCM is supported.	64 [F22] to 67 [F35]
Audio is output from analog audio outputs but not from HDMI outputs.	Is audio output enabled?	70 [F70 to F74]
	Is the selected resolution supported by the connected sink device? If a PC output resolution (XGA to WQXGA) is selected, some sink devices cannot output audio.	59 [F10, F11]
	Is the selected sampling frequency supported by the connected sink device? Some LCD monitors may not output audio if the sampling frequency is high (typically 88.2 kHz or higher). Audio signal that is output from the source device can be controlled by changing EDID setting.	64 [F22] to 67 [F35]

Problem	Cause/Check item/Solution	Page
● Audio output (Cont'd)		
Compressed audio (such as Dolby Digital, DTS) is not output from the source device.	Compressed audio input is set to OFF (EDID settings) by factory default. If using compressed audio, change the EDID setting.	64 [F22] to 67 [F35]
	Check the audio output settings of the source device.	—
● Communication command, WEB browser control		
Control commands and WEB browser cannot be issued from PC to the HDC.	Are IP address and subnet mask set correctly? For using WEB browser, check if the setting for TCP port connection is enabled for WEB browser.	86 [C80 to C83], 87 [C84], 88 [C85]
● Others		
Devices cannot be controlled through CEC.	To use CEC, enable the HDMI link control of the connected devices (such as LCD TVs, Blu-ray recorder, and other formats). CEC is supported only between IN1 and OUT1.	—

If additional assistance is required, please perform the following tests and then contact us.

No.	Checking items	Result
1	The problem occurs at all connectors?	Yes or No
2	Connect the devices using genuine cables without connecting the HDC. The problem still cannot be solved? Please contact us for assistance.	Yes or No

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