



4K@60 Input / USB 5Gbps HDMI to USB Converter

# NP-CPHD2

User guide

Ver.1.2.1



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.

- All rights reserved.
- Some information contained in this guide such as exact product appearance, communication commands, and so on may differ depending on the product version.
- This guide is subject to change without notice. You can download the latest version from IDK's sales at: [www.idkav.comwww.arvanics.com](http://www.idkav.comwww.arvanics.com)



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# 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.

 <b>Warning</b>	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.
 <b>Caution</b>	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"> <li>• <b>Lifting must be done by two or more personnel.</b></li> </ul> <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"> <li>• <b>Do not place the product in unstable place.</b></li> </ul> <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"> <li>• <b>Secure the product if installing in the locations with vibration.</b></li> </ul> <p>Vibration may move or tip over the product unexpectedly, resulting in injury.</p>
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# Warning

 <b>Instruction</b>	<ul style="list-style-type: none"> <li>● <b>Installation work must be performed by professionals.</b> 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.</li> <li>● <b>Insert the power plug into an outlet that is unobstructed.</b> 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.</li> <li>● <b>Insert the power plug into an appropriate outlet completely.</b> 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.</li> <li>● <b>Unplug the product from an AC power source during installation or service.</b> When connecting peripheral devices to this product, unplug all involved devices from outlets. Ground potential differences may cause fire or other difficulties.</li> <li>● <b>The product must be electrically earthed/grounded.</b> To reduce the risk of electric shock, ensure the product is connected to a mains socket outlet with a protective earthing connection.</li> <li>● <b>For PoE/PoH, use category cables meeting IEEE802.3af/at.</b> Otherwise, it may cause problems or a fire.</li> </ul>
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**For operating products:**

 <b>Prohibited</b>	<ul style="list-style-type: none"> <li>● <b>Keep out any foreign objects.</b> 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.</li> <li>● <b>For power cable/plug and Category cable,</b> <ul style="list-style-type: none"> <li>• Do not scratch, heat, or modify, including splicing or lengthening them.</li> <li>• Do not pull, place heavy objects on them, or pinch them.</li> <li>• Do not bend, twist, tie or clamp them together forcefully.</li> </ul> </li> </ul> <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>
 <b>Do not disassemble</b>	<ul style="list-style-type: none"> <li>● <b>Do not repair, modify or disassemble.</b> 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.</li> </ul>
 <b>Do not touch</b>	<ul style="list-style-type: none"> <li>● <b>Do not touch the product and connected cables during electric storms.</b> Contact may cause electric shock.</li> </ul>
 <b>Instruction</b>	<ul style="list-style-type: none"> <li>● <b>Clean the power plug regularly.</b> If the plug is covered in dust, it may increase the risk of fire.</li> </ul>




**If the following problem occurs:**

 <b>Unplug</b>	<ul style="list-style-type: none"> <li>● <b>Unplug immediately if the product smokes, makes unusual noise, or produces a burning odor.</b></li> <li>● <b>Unplug immediately if the product is damaged by falling or having been dropped.</b></li> <li>● <b>Unplug immediately if water or other objects are directed inside.</b></li> </ul> <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>
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# Caution

## For installing and connecting products:

 <p><b>Prohibited</b></p>	<ul style="list-style-type: none"> <li>● <b>Do not place the product in a location where it will be subjected to high temperatures.</b> 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.</li> <li>● <b>Do not store or operate the product in dusty, oil smoke filled, or humid place.</b> Placing the product in such environment may increase the risk of fire or electric shock.</li> <li>● <b>Do not block the vent holes.</b> If ventilation slots are blocked, it may cause the product to overheat, affecting performance and reliability and may increase the risk of fire.</li> <li>● <b>Do not place or stack heavy items on the product.</b> 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.</li> <li>● <b>Do not exceed ratings of outlet and wiring devices.</b> Exceeding the rating of an outlet may increase the risk of fire and electric shock.</li> </ul>
 <p><b>No wet hands</b></p>	<ul style="list-style-type: none"> <li>● <b>Do not handle power plug with wet hands.</b> Failure to observe this precaution may increase the risk of electric shock.</li> </ul>
 <p><b>Instruction</b></p>	<ul style="list-style-type: none"> <li>● <b>Use and store the product within the specified temperature/humidity range.</b> If the product is used outside the specified range of temperature and humidity continuously, it may increase the risk of fire or electric shock.</li> <li>● <b>Do not place the product at elevations of 1.24 mi. (2,000 m) or higher above sea level.</b> Failure to do so may shorten the life of the internal parts and result in malfunctions.</li> <li>● <b>When mounting the product into the rack, provide sufficient cooling space.</b> 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.</li> <li>● <b>Never insert screws without the rubber feet into the threaded holes on the bottom of the product.</b> 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.</li> </ul>

**For operating products:**

 <p><b>Hot surfaces Caution</b></p>	<p><b>For products with the hot surfaces caution label only:</b></p> <ul style="list-style-type: none"> <li>● <b>Do not touch the product's hot surface.</b></li> </ul> <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><b>Prohibited</b></p>	<ul style="list-style-type: none"> <li>● <b>Use only the supplied power cable and AC adapter.</b></li> <li>● <b>Do not use the supplied power cable and AC adapter with other products.</b></li> </ul> <p>If non-compliant adapter or power cables are used, it may increase the risk of fire or electric shock.</p>
 <p><b>Unplug</b></p>	<ul style="list-style-type: none"> <li>● <b>If the product won't be used for an extended period of time, unplug it.</b></li> </ul> <p>Failure to observe this precaution may increase the risk of fire.</p> <ul style="list-style-type: none"> <li>● <b>Unplug the product before cleaning.</b></li> </ul> <p>To prevent electric shock.</p>
 <p><b>Instruction</b></p>	<ul style="list-style-type: none"> <li>● <b>Do not prevent heat release.</b></li> </ul> <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"> <li>● <b>Keep vents clear of dust.</b></li> </ul> <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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## About this Product

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NP-CPHD2 is a high-quality capture device which is designed for HDMI video capture applications. It supports up to 1 channel of Ultra high definition, 4K@60 video from HDMI source and selectable 3.5mm audio source. There is no need to install a special driver to PC and external power is unnecessary by USB bus power.

## Accessories

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Please ensure that all the accessories below are included.

- |  |         |
|--|---------|
| • NP-CPHD2                                 | 1 unit  |
| • USB Cable (Type-A·male- Type-C·male) 2 m | 1 piece |
| • Analog Audio Cable 10cm                  | 1 piece |

## Product Introduction



①	<b>3.5 mm Stereo Audio Jack</b>
②	<b>Status LED</b> Lights up when the host device is connected to this unit and provides 5V power supply. OFF : No host device is connected Red : Host device is connected, but no HDMI signal from the source device. Green : Host device is connected, and HDMI signal from the source device is detected.
③	<b>HDMI Input port</b>
④	<b>USB Type-C port</b> ※Neither USB Alternate Mode nor Power Delivery are supported.

## Connection Details

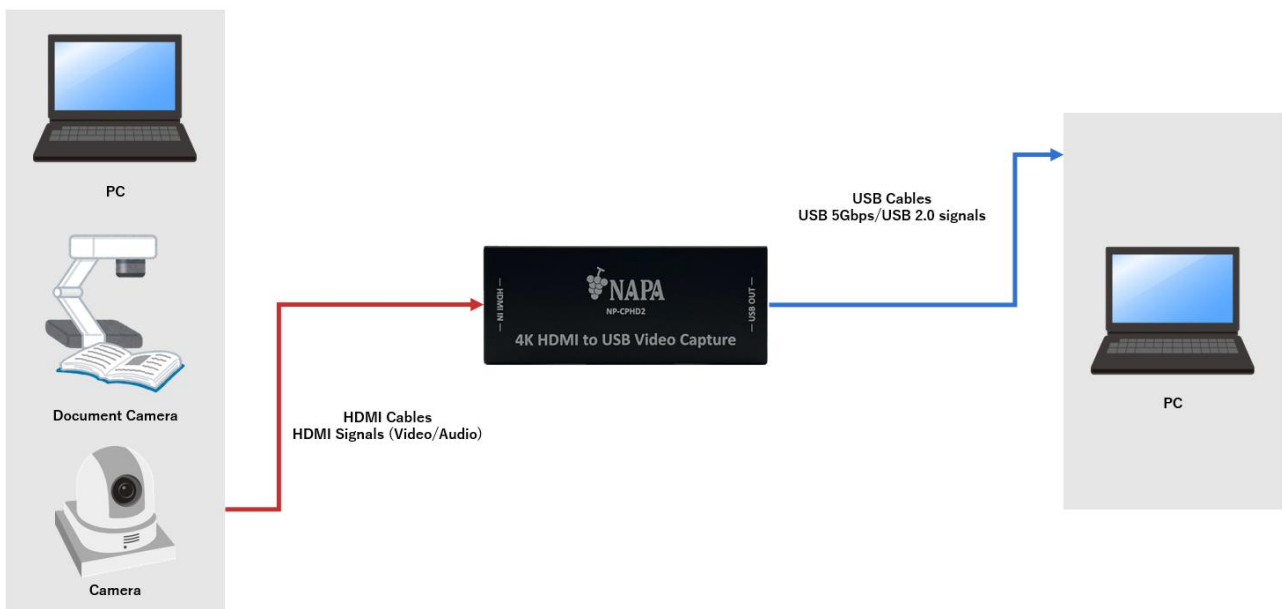
When connecting the NP-CPHD2 to external devices, observe the following precautions.

### Notes

- Before connecting cables to the NP-CPHD2 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 off or disconnect all related devices before connecting cables.
- Be sure to fully seat all plugs and connections and dress cables to reduce stress on connectors.

## Connecting devices

Connect the NP-CPHD2 to HDMI devices / USB host devices using HDMI / USB cables.



- Video may be interrupted or may not be output depending on cable type, cable quality, cabling condition, connected device type, and installation environment.
- A problem may occur if a cable joint is used for HDMI / USB cable extension.

# Product Specification

NP-CPHD2		
Video/Audio Input	HDMI	1 input HDMI/DVI 1.0 TMDS single link TMDS clock: Up to 300 MHz, TMDS data rate: Up to 18 Gbps Deep Color *HDCP is not supported 640x480@60 to 2560x1600@60 Reduced Blanking 480i, 576i to 3840x2160@ 24/25/30/50/59.94/60 (4:4:4), 3840x2160@ 50/59.94/60 (4:2:0) Color Depth: 24/30/36 bits *For all supported video signals, see the table below. LPCM: Up to 2 channels Sampling frequency: 32/44.1/48 kHz Reference level: -20 dBFS, Max. input level: 0 dBFS Connector: HDMI Type A (19-pin) Maximum distance: 5 m <sup>*1</sup>
	Analog audio	1 input Stereo L/R Input impedance: 10 kΩ unbalanced Reference level: -10 dBu, Max. input level: +10 dBu Connector: 3.5 mm Stereo Audio jack
Video/Audio Output	USB	1 output USB 3.2 Gen1x1 / USB 2.0  Transfer data rate: 5 Gbps [USB 3.2 Gen1x1] 640×480p@25/30/50/60, 720×480p@25/30/50/60, 720×576p@25/30/50/60, 1280×720p@25/30/50/60, 1920×1080p@25/30/50/60/100/120, 2560×1440p@25/30/50/60, 3840x2160p@25/30  [USB 2.0] 640×480p@60, 720×480p@60, 720×576p@50, 1280x720p@30  *For all supported video signals, see the table below. USB Video Class USB Audio Class Stereo / 16 bit / 48 kHz Available Video format: YUY2、NV12、P010、RGB24 (USB 3.2 Gen1x1) YUY2、NV12 (USB 2.0) Connector: USB Type-C (24 pin) <sup>*2</sup> Maximum distance: 2 m <sup>*1</sup>
	General	OS Windows 10 / Windows 11, macOS <sup>*3</sup> Power Supply 5V from connected Host devices Power consumption 1.7 W Dimensions 36.3 (W) × 17.1 (H) × 87.3 (D) mm Weight 91 g Temperature Operating: 0°C ~ +40°C、Storage: -20°C ~ +60°C Humidity 20% ~ 90%
Accessories		USB 3.2 Gen1x1 Cable (Type-A·Male - Type-C·Male) 2m Audio Cable (3.5 mm Stereo-mini-RCA pin-jack x2) 10cm

\*1 The maximum specified distances may not be achievable with some device combinations, cabling method, or other manufacturer's cable. For the same reasons, video signal disturbances or interruptions may occur, even if signals are within the specified distance (cable length) parameters.

The maximum cable length varies depending on the connected devices. The specifications have been qualified under following conditions:

- HDMI : When 18 Gbps supported cable was used and signal of 3840x2160@60 24 bits was transmitted.
- USB : When attached USB cable was used, and USB 3.2 Gen1x1 signal was transmitted.

\*2 USB Power Delivery & USB Alternate Mode are not supported.

\*3 Utility software is only supported by Windows OS.

## Supported video signals

Signal	Resolution	Frame Rate [Hz]	Pixel Clock [MHz]	Color Depth [bits]	INPUT	
					HDMI	
640x480@60	640x480	59.94	25.18	24 / 30 / 36		○
800x600@60	800x600	60.32	40.00	24 / 30 / 36		○
1024x768@60	1024x768	60.00	65.00	24 / 30 / 36		○
1280x768@60	1280x768	59.87	79.50	24 / 30 / 36		○
1280x800@60	1280x800	59.84	83.50	24 / 30 / 36		○
1280x960@60	1280x960	60.00	108.00	24 / 30 / 36		○
1280x1024@60	1280x1024	60.02	108.00	24 / 30 / 36		○
1360x768@60	1360x768	60.02	85.50	24 / 30 / 36		○
1366x768@60	1366x768	59.79	85.50	24 / 30 / 36		○
1400x1050@60	1400x1050	59.98	121.75	24 / 30 / 36		○
1440x900@60	1440x900	59.89	106.50	24 / 30 / 36		○
1600x900@60	1600x900	60.00	118.25	24 / 30 / 36		○
1600x1200@60	1600x1200	60.00	162.00	24 / 30 / 36		○
1680x1050@60	1680x1050	59.95	146.25	24 / 30 / 36		○
1920x1080@60 RB	1920x1080	59.93	138.50	24 / 30 / 36		○
1920x1200@60 RB	1920x1200	59.95	154.00	24 / 30 / 36		○
2048x1152@60 RB	2048x1152	60.00	162.00	24 / 30 / 36		○
2560x1440@60 RB	2560x1440	59.95	241.50	24 / 30 / 36		○
2560x1600@60 RB	2560x1600	59.97	268.50	24 / 30 / 36		○
480i	720x480	59.94	27.00	24 / 30 / 36		○
480p	720x480	59.94	27.00	24 / 30 / 36		○
576i	720x576	50.00	27.00	24 / 30 / 36		○
576p	720x576	50.00	27.00	24 / 30 / 36		○
720p@50	1280x720	50.00	74.25	24 / 30 / 36		○
720p@59.94	1280x720	59.94	74.18	24 / 30 / 36		○
720p@60	1280x720	60.00	74.25	24 / 30 / 36		○
1080i@50	1920x1080	50.00	74.25	24 / 30 / 36		○
1080i@59.94	1920x1080	59.94	74.18	24 / 30 / 36		○
1080i@60	1920x1080	60.00	74.25	24 / 30 / 36		○
1080p@50	1920x1080	50.00	148.50	24 / 30 / 36		○
1080p@59.94	1920x1080	59.94	148.35	24 / 30 / 36		○
1080p@60	1920x1080	60.00	148.50	24 / 30 / 36		○
3840x2160@24	3840x2160	24.00	297.00	24 / 30 / 36		○
3840x2160@25	3840x2160	25.00	297.00	24 / 30 / 36		○
3840x2160@30	3840x2160	30.00	297.00	24 / 30 / 36		○
3840x2160@50	3840x2160	50.00	594.00	24 / 30 / 36*		○
3840x2160@59.94	3840x2160	59.94	593.41	24 / 30 / 36*		○
3840x2160@60	3840x2160	60.00	594.00	24 / 30 / 36*		○
4096x2160@24	4096x2160	24.00	297.00	24 / 30 / 36		-
4096x2160@25	4096x2160	25.00	297.00	24 / 30 / 36		-
4096x2160@30	4096x2160	30.00	297.00	24 / 30 / 36		-
4096x2160@50	4096x2160	50.00	594.00	24 / 30 / 36*		-
4096x2160@59.94	4096x2160	59.94	593.41	24 / 30 / 36*		-
4096x2160@60	4096x2160	60.00	594.00	24 / 30 / 36*		-

RB: Reduced Blanking

\*For RGB/YCbCr 4:4:4, only 24 bit is supported.

For best results, please confirm that the source device(s) video output can be configured to match the listed formats above. For questions regarding other input video signals, please contact your IDK representative.

Resolution <sup>*1</sup>	Frame Rate [fps] <sup>*1</sup>	Color Depth [bits] <sup>*1</sup>	Color Format <sup>*1</sup>	OUTPUT	
				USB Type-C	
				USB 3.2 Gen1x1 <sup>*2</sup>	USB 2.0 <sup>*3</sup>
640x480	25/30/50	24	YUY2/NV12/RGB24	○	-
640x480	60	24	YUY2/NV12/RGB24	○	○ <sup>*4</sup>
720x480	25/30/50	24	YUY2/NV12/RGB24	○	-
720x480	60	24	YUY2/NV12/RGB24	○	○ <sup>*4</sup>
720x576	25/30/60	24	YUY2/NV12/RGB24	○	-
720x576	50	24	YUY2/NV12/RGB24	○	○ <sup>*4</sup>
1280x720	25/50/60	24	YUY2/NV12/P010/RGB24	○	-
1280x720	30	24	YUY2/NV12/P010/RGB24	○	○ <sup>*5</sup>
1920x1080	25/30	24	YUY2/NV12/P010/RGB24	○	-
1920x1080	50/60	24	YUY2/NV12/P010	○	-
1920x1080	100/120	24	NV12	○	-
2560x1440 <sup>*6</sup>	25/30/50/60	24	NV12	○	-
3840x2160 <sup>*7</sup>	25/30	24	NV12	○	-

YUY2/NV12: Color formats meeting the UVC specification; equivalent to YCbCr 4:2:2/4:2:0, respectively.

<sup>\*1</sup> Part of contents may not be displayed depending on the capture software.

<sup>\*2</sup> Video signal that can be output if the USB-C output is connected to a USB 3.2 Gen1 connector.

<sup>\*3</sup> Video signal that can be output if the USB-C output is connected to a USB 2.0 connector.

<sup>\*4</sup> When transmission via USB 2.0, only YUY2 & NV12 are supported.

<sup>\*5</sup> When transmission via USB 2.0, only NV12 is supported.

<sup>\*6</sup> 2560x1440 or 3840x2160 input video is needed.

<sup>\*7</sup> 3840x2160 input video is needed.

## Troubleshooting

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

In case the NP-CPHD2 does not work correctly, please check the following items first.

- Are the NP-CPHD2 and all devices connected to power or 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?
- 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?

Refer to the manuals of connected devices as well, since they may possibly be the cause of the problem.

If the problem persists, please contact us after checking the following items.

- Does the problem occur at all connectors?

Does the problem occur when you connect the devices without connecting the NP-CPHD2?

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