New PTZ Camera

AW-UR100

AW-UE160

Built-in Auto Tracking（AW-UE80/50/40）

4K PTZ Camera for an Era of Enhanced Creativity and the Pursuit of Visual Expression

PTZ Camera **AW-UE160**

SRT ALLIANCE SECURE RELIABLE TRANSPORT | Zoom 20x | 12G-SDI | 4K PROFESSIONAL HDR | Wide 75.1° | HDMI | ST2110 | 1" MOS | Fiber | PoE++ | NDI & NDI|HX Built-in

Application	Broadcast, Staging & Event, Sports, Corporate, Education, Live Streaming, AR/VR Shooting
Sensor	1-type(1") (Effective size) 4K MOS x 1
Lens	Optical Zoom: 20x, Horizontal FOV: 75.1°
Video Format	(4K) 2160/60p*5, 2160/59.94p, 2160/50p, 2160/29.97p*4, 2160/25p*4, 2160/24p*4, 2160/23.98p*4, (HD) 1080/119.98p, 1080/100p, 1080/60p, 1080/59.94p, 1080/50p, 1080/29.97p*4, 1080/25p*4, 1080/24p*4, 1080/23.98p*4, 1080/59.94i, 1080/50i, 720/59.94p, 720/50p
Video Output	12G-SDI, 3G-SDIx2, HDMI, IP, Optical Fiber
Dimensions (W x H x D)	213mm x 277mm x 240mm (excluding protrusions, direct ceiling mount bracket)
Mass	Approx. 4.6kg (excluding direct ceiling mount bracket)
Other Features	SRT support, Free-D support, Cropping function, O.I.S.+E.I.S., SMPTE ST 2110 support (option*2)
Rear Panel	

MAIN FEATURES

Uncompromising Shooting Performance and Operability

- High sensitivity by a newly developed sensor (F11/2000lx (Normal), F14/2000lx (Low Light))
- Fast, accurate and less-confused auto-focus by Phase Detection AF*5
- Optical low-pass filter significantly reduces moiré during LED/LCD panel shooting

Realize Next-Generation of Video Production with Various Functions

- Industry-leading PTZ camera that can be operated in conjunction with studio cameras
- Industry's first*1 support for SMPTE ST 2110, IP standard in the broadcasting industry (option*2)
- Industry's first*3 PTZ camera with high-speed output (HD, 2x)

Easy of Use and Versatility Reduces Stress of Shooting On-site

- A wide range of interfaces that can be flexibly adapted to various sites
- High bandwidth NDI/NDI|HX as standard for high quality, low latency video transmission
- Supports remote operation panel that can be operated in common with studio cameras

Panasonic CONNECT

*1: As PTZ camera supports SMPTE ST 2110, Internal investigation, Oct. 2022. *2: A license (AW-SFU60) must be purchased for use.
*3: As PTZ camera supports high-speed output via HDMI/SDI, internal investigation, Oct. 2022. *4: Native output. *5: It will be supported with a future firmware update.

Evolution of an image sensor to support creators’ commitment to imaging

■ High image quality to capture subjects even in the dark

Equipped with 1-type(1”)*1 MOS sensor (Effective pixels: Approx. 9.62M pixels) with high sensitivity F11/2,000lx(Normal), F14/2,000lx(Low Light), resulting in low noise image even in low light conditions.

Image is for illustration purposes.

■ Focus adjustment for capturing a decisive moment

Combination of Phase Detection AF*2 and contrast AF to provide fast, accurate and less-confused AF.
The UI also displays the direction of focus when manual focusing, to assist in focusing*2.

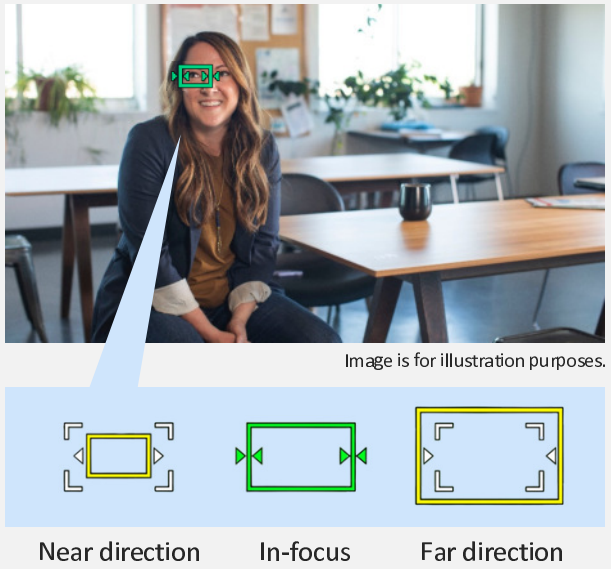


Image is for illustration purposes.

*1: Effective size. *2: It will be supported with a future firmware update.

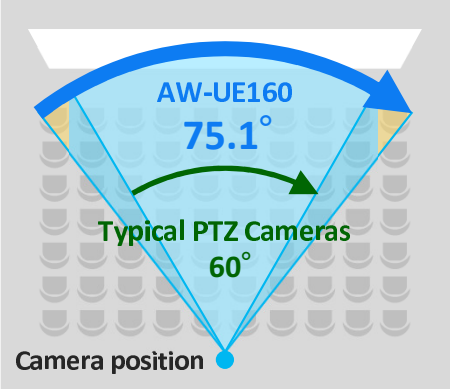
Wide 75.1° Angle / High-Magnification 20x Optical Zoom

For shooting from near and far, from various positions with a single camera

■ Wide 75.1° angle

Enables a wide overall shot even when close to the subject.

Image is for illustration purposes.



■ 20x Optical Zoom

Captures distant subjects in sharp detail.

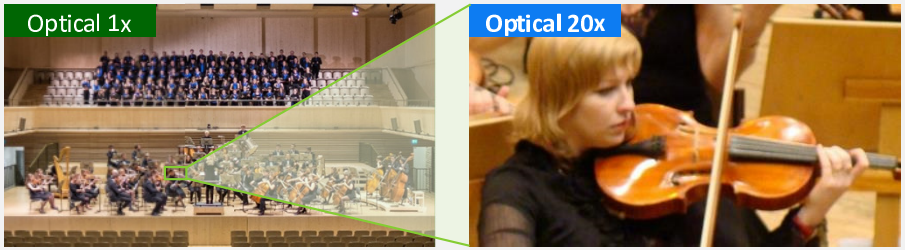


Image is for illustration purposes.

- Optical zoom: 20x
  (f = 8.8mm - 176.0mm, 35mm equivalent: 24.5mm - 490.0mm)
- i. Zoom: Available in UHD/FHD
- Digital Zoom: 10x
- Digital Extender: 1.4x, 2.0x

Enables high quality, low latency and secure video transmission over the public internet

What is SRT?

Open-source video transmission protocol developed by Haivision. SRT stands for 'Secure Reliable Transport'.
The AW-UE160 supports the SRT encoding function, so only the decoder[*1] needs to be prepared.

Features of SRT

High Picture Quality
Packet loss recovery function

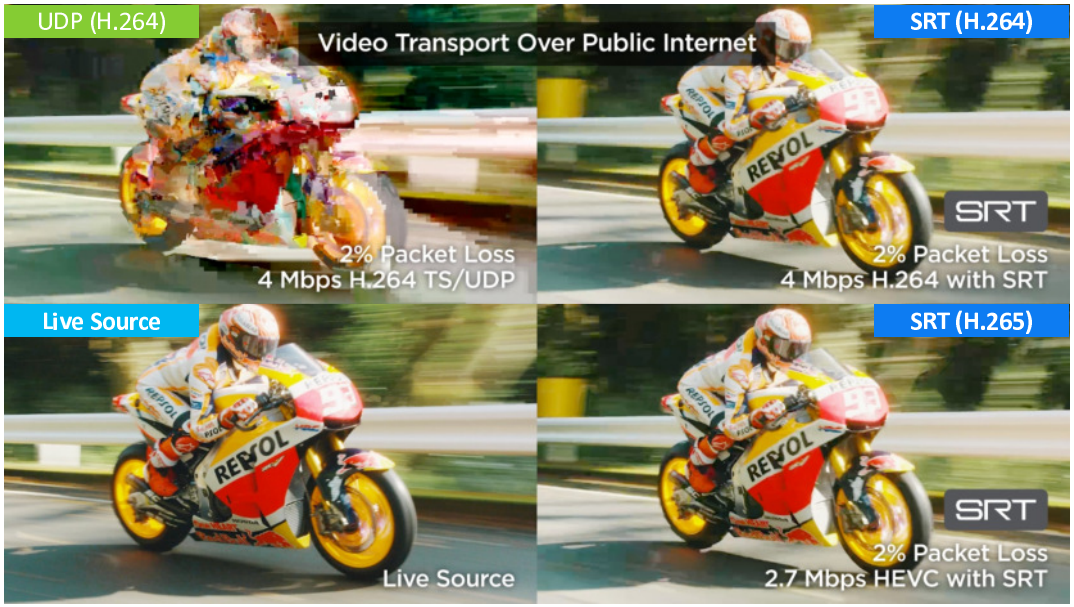
Low Latency
Based on UDP high-speed transmission

High Security
AES128/256 encryption support

Usable over a Public Internet
Communication stabilizing mechanisms

Firewall Traversal
Easy external connection

SRT Alliance
Over 500 vendors around the world



Picture quality comparison at 2% packet loss (UDP vs SRT)

*1: For more information about the operation verified decoders, please see the Panasonic Connect website.

AR/VR Shooting made easier with PTZ cameras

What is Free-D?

Protocol for outputting camera tracking data (Pan/Tilt/Zoom/Focus/Iris) for AR/VR systems.
AR/VR contents can be easily captured without expensive sensors and encoder systems.

Examples of the major AR/VR Software

vizrt BRAINSTORM Zero Density DISRUPTAR PIXOTOPE BY THE FUTURE GROUP

Case studies

Public Education in Virtual Studio
(France TV, France)

https://business.panasonic.co.uk/professional-camera/case-study/case-study-en-97

BOULDERING JAPAN CUP 2022
(Arque Inc., Japan)

https://pro-av.panasonic.net/en/casestudies/arque/pdf/arque.pdf

AR Live Event
(mikai Inc., Japan)

https://connect.panasonic.com/jp-ja/case-studies/mikai

Standard support for NDI, an IP transmission standard for efficient video production

What is NDI?

Open standard developed by NewTek for transmitting video, audio and control commands over IP networks.
The AW-UE160 supports NDI as standard, so it can be connected to a variety of equipment such as switchers that support NDI and used immediately.

Features of NDI

High Picture Quality
Used by global broadcasters

Low Latency

Highly Efficient/Low bandwidth
No need for large investments in NW

Automatic recognition of devices
Automatically show up as sources

Sources sharing in the same NW
Available on multiple devices in NW

NDI®
Various compatible products
Over 1,000 vendors around the world

Comparison of High bandwidth NDI and NDI|HX

		High bandwidth NDI	NDI|HX
Format		4K/60p	4K/60p
Compression system		NewTek proprietary system (low compression)	H.264 base (high compression)
Bitrate	HD	up to 125Mbps	up to 25Mbps
	4K	up to 250Mbps	Up to 75Mbps
Glass to glass latency*1		Approx. 120ms	Approx. 200ms
Network equipment		Ordinary gigabit Ethernet environment	

Panasonic's NDI® compatible products*2

IT/IP Platform
KAIROS*3


Live Switchers
AV-UHS500

+


NDI I/F Unit
AV-UHS5M6G

*1: An example of the over all latency from capture by camera to display on the monitor via the switcher.
*2: For more information about Panasonic's NDI compatible products, please see the Panasonic Connect website. *3: KAIROS supports High bandwidth NDI only.

SMPTE ST 2110 Support (option)

Industry's first*1 support for SMPTE ST 2110, IP standard in the broadcasting industry

■ What is SMPTE ST 2110? ST2110

A set of standards developed by SMPTE (Society of Motion Picture and Television Engineers) for IP transmission of high-quality video for use in the broadcasting industry. The AW-UE160 supports uncompressed transmission up to 2K/60p and compressed transmission up to 4K/60p*3 by purchasing a software key(AW-SFU60) and an optical transceiver (on the market).

■ Features of SMPTE ST 2110

Video and audio can be handled as individual packets

Each element, such as video and audio, can be routed separately and brought together again at the endpoint.

Precision time sync. of each device (within Approx. 1µs)

■ Seamless integration with KAIROS

- IT/IP platform 'KAIROS' is a new video production platform that uses CPU and GPU capabilities for video processing.
- Seamless integration with KAIRSO by supporting SMPTE ST 2110

● **Standards supported by AW-UE160**

Standards	Description
SMPTE ST2110-10	System architecture and synchronization
SMPTE ST2110-20	Uncompressed video transport
SMPTE ST2110-21	Traffic shaping and network delivery timing
SMPTE ST2110-30	Audio transport, based on AES67
AMWA NMOS IS-04	Discovery and Registration
AMWA NMOS IS-05	Device connection management

● **Required to use the SMPTE ST 2110 function on the AW-UE160**

- Software key for SMPTE ST 2110 function (**AW-SFU60**)
- Optical transceiver (SFP+)
  Coherent Corp. (Finisar), FTLX1475D3BTL etc.*2

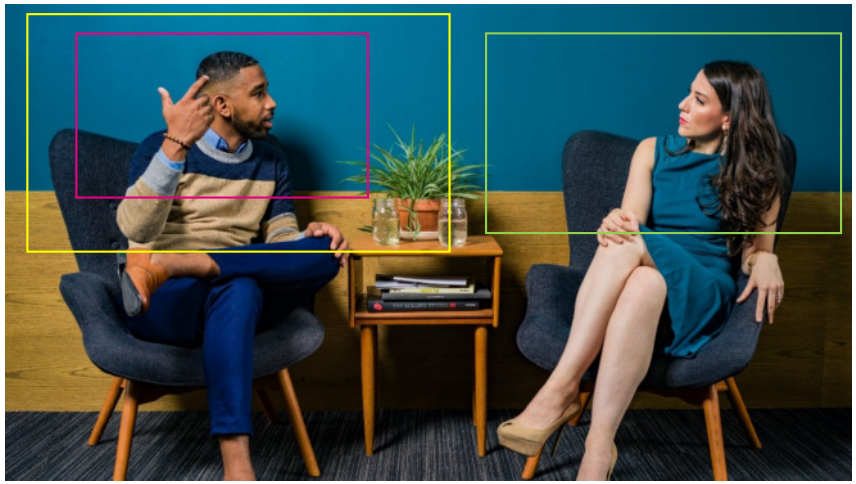
Panasonic CONNECT

*1: As PTZ camera supports SMPTE ST 2110, Internal investigation, Oct. 2022.
*2: For more information about the latest operation verified products, please see the Panasonic Connect website. *3: It will be supported with a future firmware update.

Cropping (+Zoom) Function

Captures two footage from a single camera: “Wide (Full)” and “Close-up (Crop)”

- Three crop frames (yellow, green, magenta) can be set. One of them can be selected and output from 3G-SDI or IP/NDI.
- The crop zoom ratio can be specified between the range of 120% (3200x1800) to 500% (768x432). *1



(IP Out1, IP Out2) or (NDI Out):
Selectable from Full or Crop

(12G SDI OUT):
Overall image(4K)

(3G SDI OUT2/PM):
Overall image (HD) with crop frames

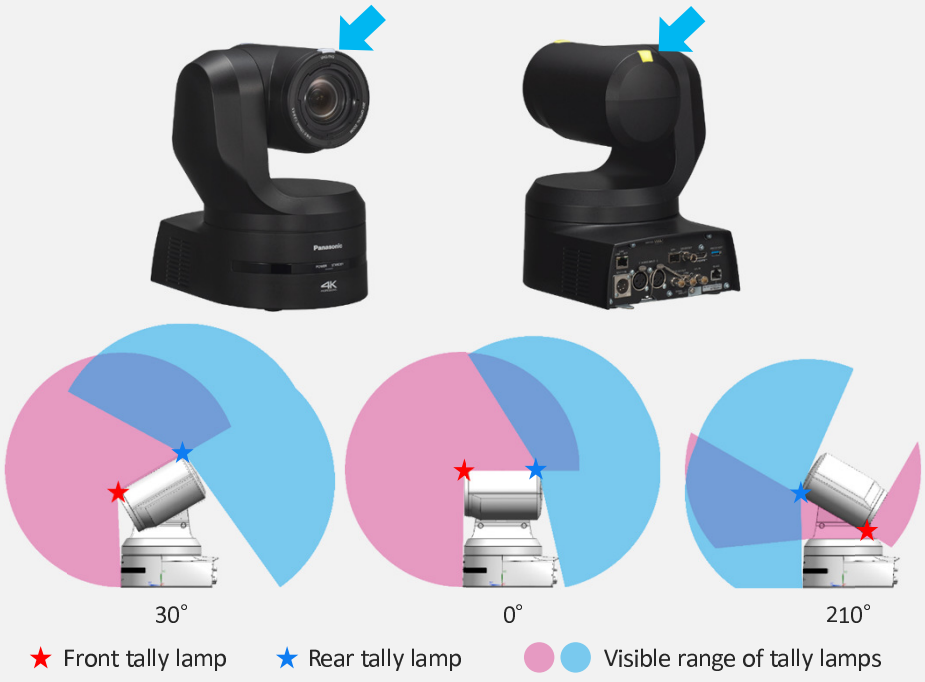
(3G SDI OUT1):
Selectable from Full or Crop

*1: When using crop zoom, the image quality will be rougher than when no zooming is used, as digital zooming is used.

Further functions to support on-site operations

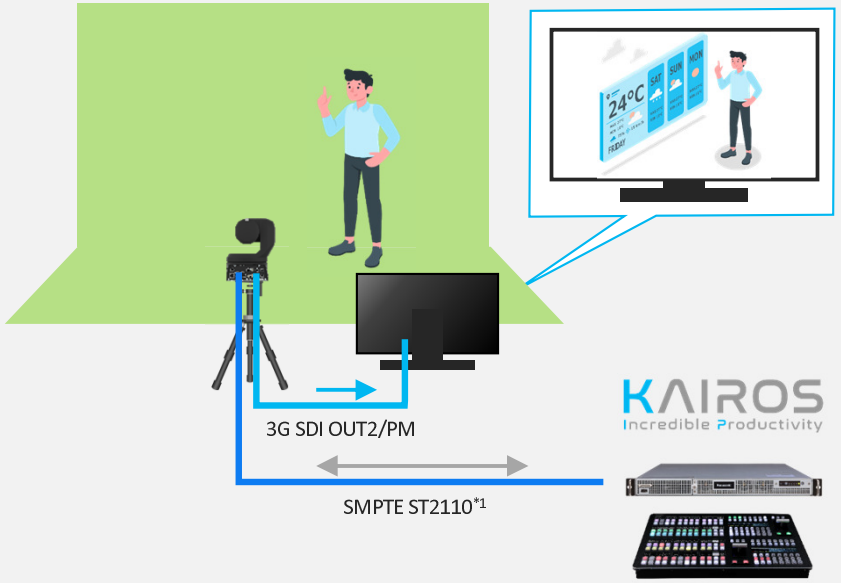
■ Large tally lamps (Front & Rear)

New rear tally lamp, easy to see from all directions.
New support for yellow tally in addition to red and green.



■ Return video

Footage is sent back to the camera from the switcher,
allowing the cast to review the final footage or teleprompter script.*1



Panasonic CONNECT

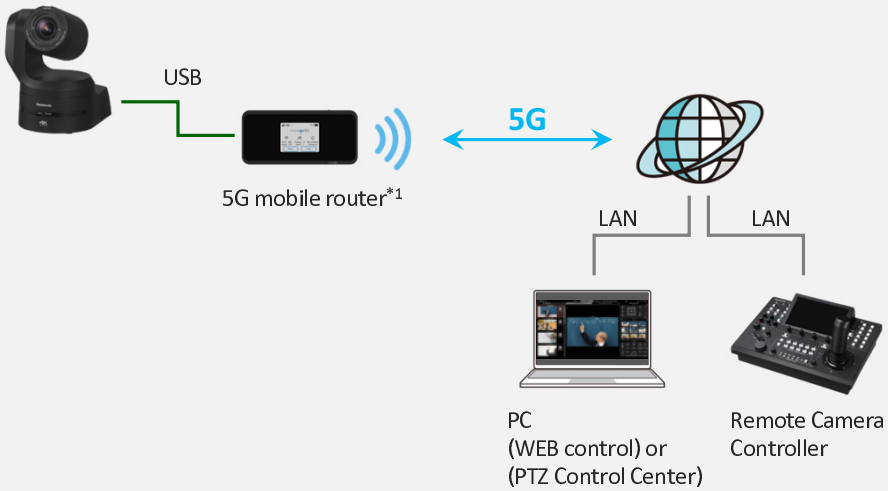
*1: Only when using SMPTE ST 2110 option. A license (AW-SFU60) must be purchased for use.

5G mobile router connection*1 for wireless video transmission and remote camera control

■ Use case 1

Connection to the Internet

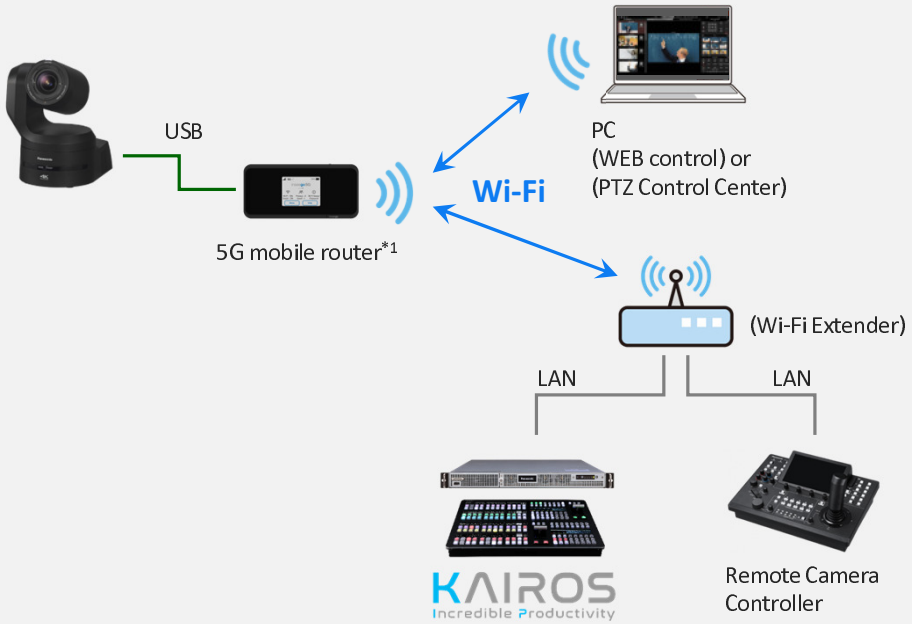
Connecting to the internet via a 5G mobile router*1 allows video transmission and control from devices on the network*2*3.



■ Use case 2

Connection under the same Wi-Fi network

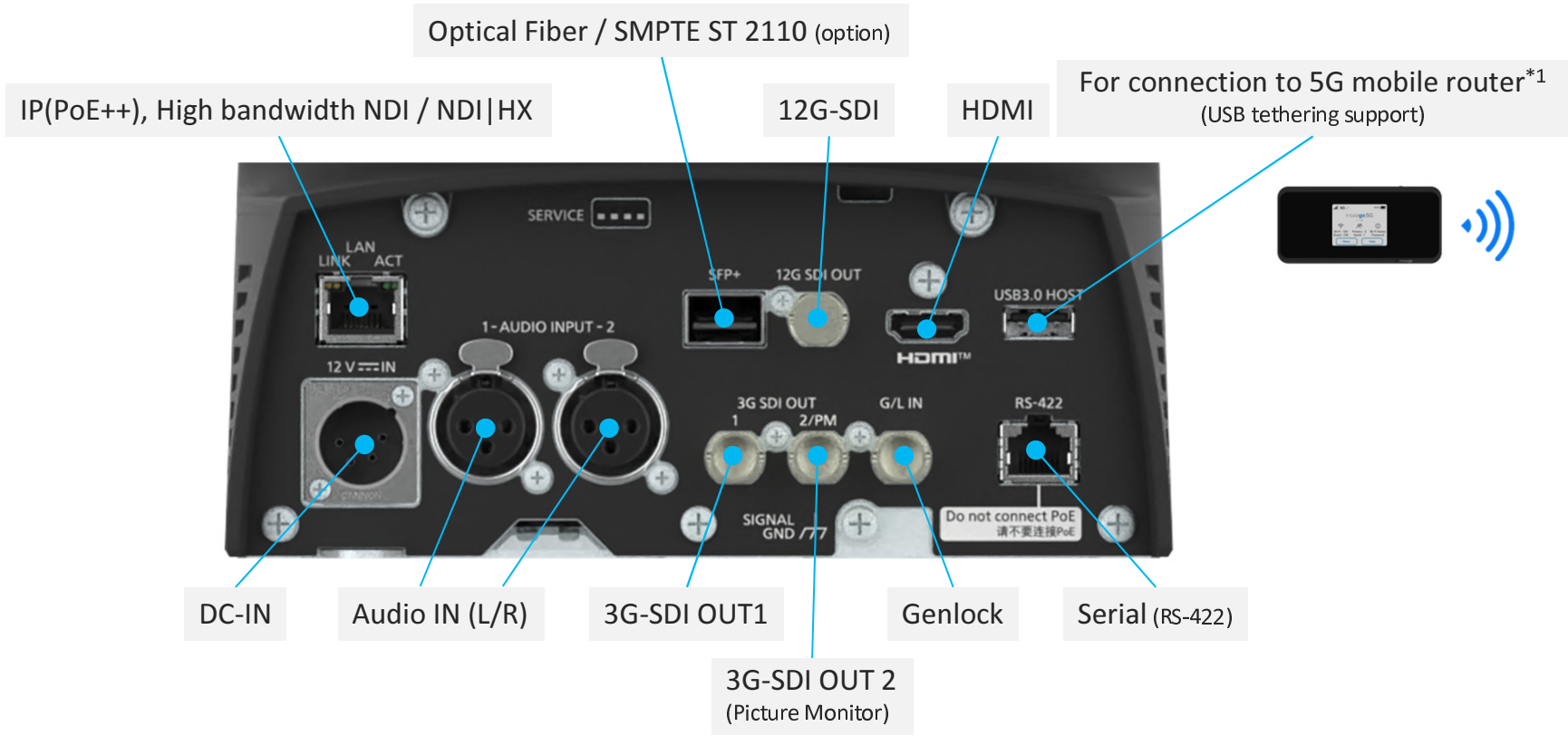
Video transmission and control from a remote camera controller/PC can be performed under the same Wi-Fi network.



*1: Operation-verified product: inseego, 5G MiFi M2000 *2: To control the camera from an external network via a 5G mobile router, a SIM card supporting Global IP is required.
*3: Port forwarding needs to be configured on the mobile router.

Flexible interfaces for a variety of sites to expand operational options

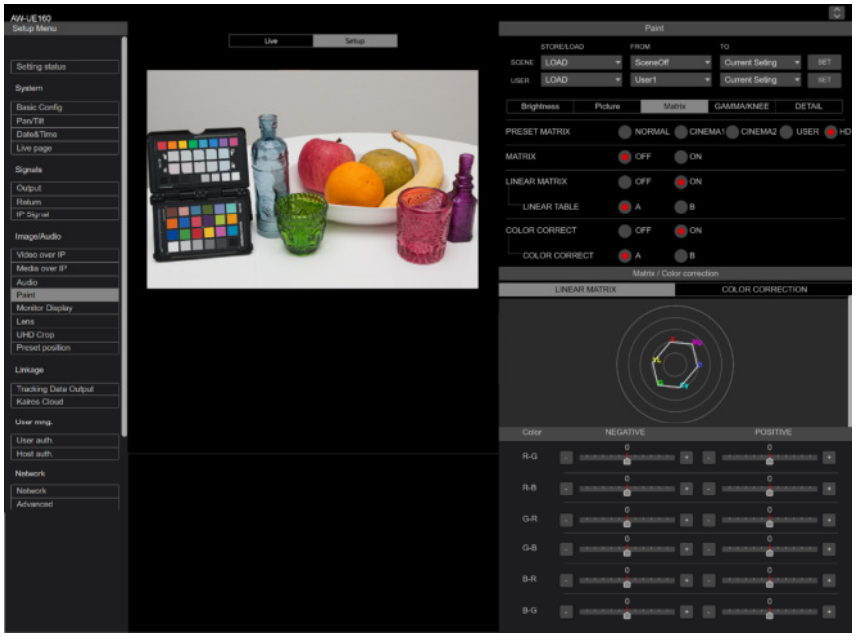
Simultaneous output of video, except for switching between Optical Fiber and SMPTE ST 2110 outputs (option)



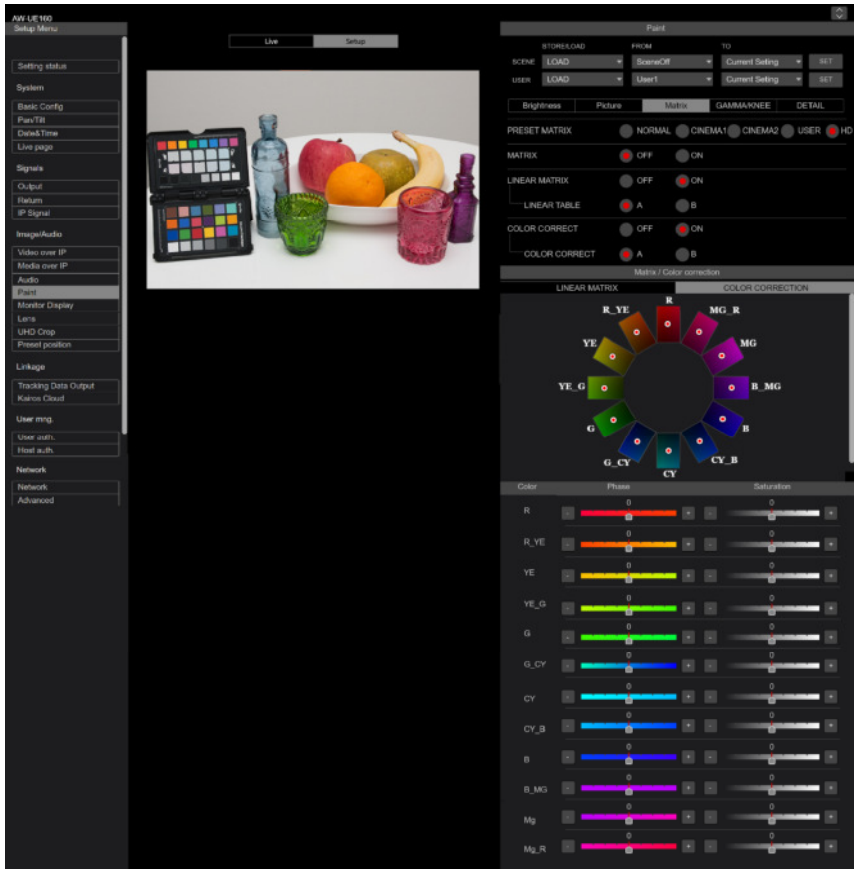
*1: Operation-verified product: inseego, 5G MiFi M2000

Image adjustment from the WEB is now more visual and easier to understand

Linear Matrix



Color Correction



Various functions to support on-site operations

■ High-speed output

Industry's first[*1] PTZ camera supports 2x output at 1080p (119,88p, 100p)[*2]

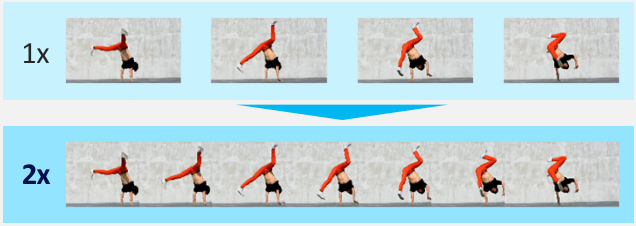
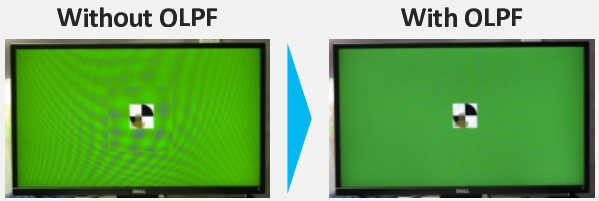


Image is for illustration purposes.

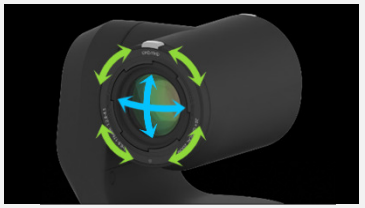
■ Built-in optical low-pass filter

Optical low-pass filter significantly reduces moiré during LED/LCD panel shooting.



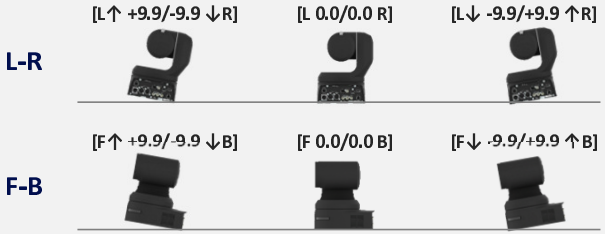
■ O.I.S.+E.I.S. (Image stabilization)

Stable shooting with less blurring of images, even when used with special equipment such as rail systems and camera arms.



■ Horizontal level gauge display

Horizontal level gauge display added to OSD/WEB. Easy to see if the installation is level.



■ Scene files

Number of scene files increases from 4 to 8. They can also be LOAD/STORE via WEB browser, remote camera controller[3] and remote operation panel[*3].

■ Waveform display

Waveform can be overlaid on the monitor output (3G SDI OUT2).

Image is for illustration purposes.

*1: As PTZ camera supports high-speed output via HDMI/SDI, internal investigation, Oct. 2022. *2: Output from HDMI or two SDI OUTs (3G SDI OUT1 and 3G SDI OUT2). When outputting using two SDI OUTs, a separate slow-motion server is required. Operation-verified product: EVS, XT3 and XT-VIA *3: It will be supported by a future firmware update.

Comparison with Other High-end PTZ Camera Line-up

		AW-UE160 NEW	AW-UE150	AW-HE145 *1	AW-UE100
					
Video Format		4K/60p	4K/60p	FHD/60p	4K/60p
Sensor		1-type(1")*2 4K MOS x 1	1-type(1") 4K MOS x 1	1-type(1") Full-HD MOS x 1	1/2.5-type(1/2.5") 4K MOS x 1
Sensitivity		F11/2000lx (Normal) F14/2000lx (Low Light)	F9/2000lx (Normal) F12/2000lx (High Sens.)	F9/2000lx (Normal) F12/2000lx (High Sens.)	F4/2000lx (Normal) F5.6/2000lx (High Sens.)
Auto Focus		Phase Detection AF + Contrast AF	Contrast AF	Contrast AF	Contrast AF
Optical Zoom		20x	20x	20x	24x
Horizontal FOV		75.1°	75.1°	75.1°	74.1°
Video Output	SDI	12G x 1, 3G x 2	12G x 1, 3G x 1, 1.5G x 1	3G x 1	12G x 1, 3G x 1
	HDMI	1 (2160/59.94p)	1 (2160/59.94p)	1 (1080/59.94p)	1 (2160/59.94p)
	Optical Fiber	1	1	-	-
	High Bandwidth NDI	✓(4K/60p)	-	-	✓(4K/60p)
	NDI|HX	✓	✓*3	✓*3	✓
Audio		XLR(3pin) x 2	ϕ3.5mm stereo mini jack	ϕ3.5mm stereo mini jack	ϕ3.5mm stereo mini jack
PoE		PoE++	PoE++	PoE++	PoE++
SMPTE ST 2110		✓*6	-	-	-
High-speed Output		✓ (HD 2x)	-	-	-
Quietness		NC35 or less (At rest: NC25 or less)	NC35 or less	NC35 or less	NC25 or less
Image Stabilization		Optical(O.I.S.) + Electronic(E.I.S.)	Optical(O.I.S.)	Optical(O.I.S.)	Optical(O.I.S.) + Electronic(E.I.S.)
SRT Protocol		✓	✓	✓	✓
Free-D Protocol		✓	✓	-	✓
Dimensions*4 (W x H x D)		213.0 x 277.0 x 240.0mm	213 x 267 x 219mm	213 x 267 x 219mm	169.2 x 204.6 x 170.6mm
Mass*5		Approx. 4.6 kg (10.14 lb)	Approx. 4.2kg (9.24 lb)	Approx. 4.1 kg (9.04 lb)	Approx. 2.2kg (4.84 lb)*7

Panasonic CONNECT

*1: US and Europe only model. *2: Effective size. *3: A license must be purchased for use. *4: Excluding protrusions, direct ceiling mount bracket. *5: Excluding mount bracket
*6: A license (AW-SFU60) must be purchased for use. *7: Excluding cable cover, mount bracket.