

Ikegami

UNICAM XE

UHK-430

4K/HD PORTABLE CAMERA SYSTEM

4K



UNCOMPROMISING

4K / HD Portable Camera System "UHK-430" debut

Featuring native 4K 2/3-inch CMOS sensors, three chip optics, conventional B4 lens mount, and the world's first* transmission of an uncompressed 4K signal between camera and CCU, the UHK-430 4K/HD Portable Camera System makes its debut as the first member of Ikegami's next generation UNICAM XE camera series, developed with "no compromises" for the advent of a fully fledged 4K age.

*Note: this is the world's first 2/3-inch 3 CMOS sensor 4K camera with uncompressed transmission of 4:4:4 4K video (as of February 16, 2016). Source: our research.



UNICAM XE
A NEXT GENERATION CAMERA SERIES



Live Sports



Event/Large Venue



Studio Based Production



Broadcasters



REAL

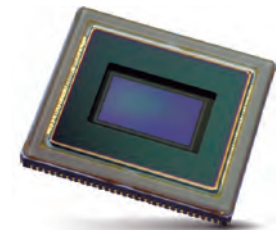
4K native sensors and a 3-chip prism deliver an overwhelming sense of resolution. Compatible with B4 mount HD lenses, which are widely used by broadcasters and production houses, the UHK-430 enables high resolution 4K shooting without wasting existing assets.

Innovative Technologies

Newly Developed 2/3-inch native 4K CMOS sensors give you Real 4K resolution

The UHK-430 utilizes three newly developed 2/3-inch 8 megapixel CMOS sensors, each capable of capturing native 4K 3840 x 2160 resolution images. It offers an excellent sensitivity of F10 (in 4K/60p) and a remarkable signal- to-noise ratio.

Unlike single chip cameras or cameras using pixel-offset technology, three native 4K CMOS sensors and prism optics provide real 4K resolution, superior color reproduction and no color aliasing.



Next generation high speed video processor, AXII

Ikegami has developed a new processing engine, AXII, for our next generation HD, 4K and 8K format cameras. This ASIC can perform high speed processing of HD, 4K (4 x HD) and 8K (16 x HD) super high resolution video signals in various formats and frame rates. The UHK-430 utilizes these new processors that make it possible to deliver high quality, high reliability and low power consumption. The camera is also capable of 16-axis color correction and an improved focus assist function for both 4K and HD modes.

Equipped 2/3-inch B4 bayonet lens mount

The B4 lens mount enables the use of existing lenses. Optical characteristics such as depth-of-field will be nearly the same as 2/3-inch HD cameras. For demanding applications, such as live sports and events, 4K resolution contents can be produced just as easily as conventional HD programs.

Signal formats

The camera system supports as standard various video formats and frame rates, such as 3840 x 2160p, 1920 x 1080p, 1920 x 1080i and 1280 x 720p, for both 60 and 50Hz.

| | | |
|----|-----------|----------------------------------|
| 4K | 3820x2160 | 59.94p,50p,29.97p,25p,24p,23.98p |
| | 1920x1080 | 59.94p,50p,119.88p,100p |
| HD | 1920x1080 | 59.94i,50i,29.97p,25p,24p,23.98p |
| | 1280x720 | 59.94p,50p |

In addition, segmented frame is supported in selected frame rates.

16-axis color correction

The color correction function enables precise color adjustment for all occasions. 16 axes of the color gamut can be fine tuned in both hue and saturation. The function works in real time and is extremely beneficial for live multi-camera applications.



Original



Corrected by color correction



ADVANCED

Optimized ergonomic design

The ergonomic design optimizes the location of various parts for ease of operation. It is easy to balance the camera on your shoulder. The improved mobility and superior picture performance support the shooting of convincing footage.

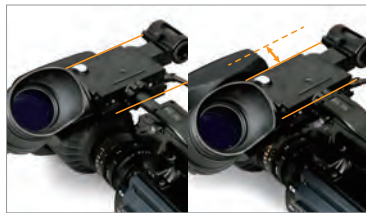


High Performance features

Ergonomic Design

The compact body and low center-of-gravity provide perfect balance when shooting on the shoulder. In addition, there is improved visibility over the front of the camera.

- **Improved lens connector position for easy connecting**
- **Wider adjustment range of the shoulder pad for perfect balance**
By improving the mechanical design, the adjustment range of shoulder pad is increased. It makes shooting more comfortable and easier.
- **VF position can be adjusted in 3 directions for optimum viewing**
The front and rear, and left and right position of the portable viewfinder is adjustable. Also the up and down position can be changed by mounting in either of two positions.



New Focus Assist function, Optical Aberration Correction (OAC), and Digital Extender.

The Quick Easy Focus assist function is improved especially for the 4K mode. The edge signal generated by the native 4K signals provides very distinct enhancement to the viewfinder signal to enable the camera operator to make critical focus adjustment. The size of area, area color, edge color, and display time on the viewfinder are adjustable in the camera menu.

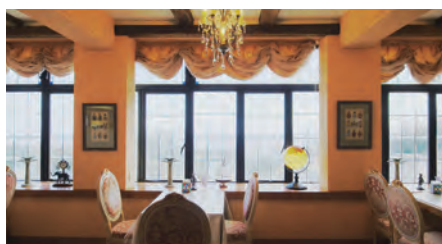


Focus Assist : ON

Optical Aberration Correction (OAC), digital extender, video frame rate conversion and viewfinder picture-in-picture are also supported.

HDR (High Dynamic Range) Mode

The camera provides an HLG (Hybrid Log-Gamma) mode, conforming to ITU-R BT. 2100 which is an international standard for HDR. With this mode, it is possible to expand the range represented from dark to bright areas, providing bright and superb pictures with High Dynamic Range and also achieves a rich color representation with wide color gamut.



4K SDR Image



4K HDR Image

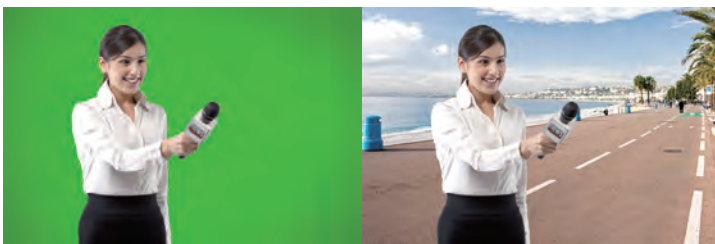


Wide Color Space

The performance of the newly developed optical system delivers high dynamic range and a wide color space, supporting the BT.2020 color space specification in the 4K mode, and the BT.709 color space in both 4K and HD modes.

Ultra Wide-Bandwidth Fiber Transmission

The built-in 40Gbps optical transceiver enables transmission of full bandwidth 4K resolution video signals between the camera and the CCU. Signals include uncompressed RGB 4:4:4 video, 4 lines of return video, 2 lines of QTV video, 4 channels of audio, Gigabit Ethernet trunk, etc. Due to the availability of uncompressed RGB signals at the CCU, super high quality signals for Chroma Key are created.



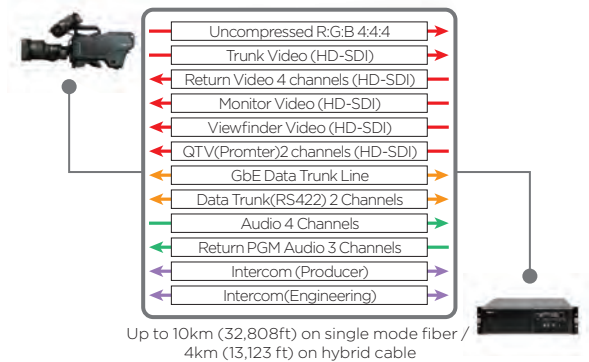
Gigabit Ethernet Trunk

The built-in network trunk allows data transmission between camera and CCU at up to 1Gbps (1000BASE-T). It makes communication with various IP-based products possible utilizing the camera's transmission system.

Supports both ICCP and Ethernet camera control

The system supports not only Ikegami's conventional one-by-one ICCP control, but also an Ethernet based control system, allowing customers to choose the camera control system based on their needs.

Signal path between camera and CCU



Video signal from CCU to HEAD



CAMERA CONTROL UNIT CCU-430

The CCU-430 is the camera control unit for the UHK-430 camera. The CCU is connected to the camera using fiber cable to transmit video, audio and control signals, as well as, supplying the power to the camera when hybrid fiber/copper cable is used. Since it works for both 4K and HD workflows, it supports smooth and easy migration from HD to 4K production. The cable length between camera and CCU is up to 4km(13,123ft) with power from the CCU and up to 10km(32,808ft) using the fiber single mode which requires local power at the camera.



Multi-Video Interface

- Switchable 4K or HD signal output
- Built-in 4 x 3G-SDI standard 4K output (Switchable quad link square division /2 sample interleave division)
- With option board, 4K, HD and HD cut-out signals from native 4K are available simultaneously
- Compact (3RU) and light weight

4K/HD Simultaneous Output (Option)

The CCU can output 4K and HD signals at the same time by fitting an optional processing module (the HD_VP board) and an optional output module (the HD_OUT board). Key processing functions such as Detail, Gamma, and Matrix can be separately optimized for each of the two simultaneous outputs.

- Simultaneous output for 4K Quad Link (2 sets of outputs) and HD/3G-SDI (8 outputs) is available.
- For HD/3G-SDI, the CCU can output the down-converted picture from the full 4K image and cut-out a HD image, including the ability to control the position of the cutout at the same time.



Original Native 4K picture



HD cut-out picture

12G-SDI Interface (Option)

Moreover, the CCU-430 Camera Control Unit has been designed taking into consideration that it would support 12G-SDI output interface by swapping the rear plug-in module. So it has flexibility to support future trends for 4K systems.

- 12G-SDI Option Board
 - With the 12G board it is possible to switch the outputs between 12G-SDI and 3G-SDI Quad Link.
 - The board is selectable between three modes according to customer's application.
 - 1) 12G-SDI x 8
 - 2) 12G-SDI x 4 + 3G-SDI x 4
 - 3) 3G-SDI x 4 + 3G-SDI x 4



12G-SDI Option Board

MoIP Interface (Option)

The CCU-430 can provide transportation for separate video, audio, and metadata as independent IP multicast streams by optional plug-in MoIP Gateway Unit, realizing more flexible system integration. The unit supports uncompressed 4K IP main output in 25GbE or 10GbE with low latency, providing superb picture quality. Moreover, redundancy is possible by using a 2nd SFP module (option), based on ST.2022-7.

- Supports uncompressed 4K IP main output based on ST.2110
- 25GbE and 10GbE, multi-mode (short distance) and single mode (long distance) SFP modules available.
- Provides simultaneous output for UHD and HD
- * HD_VP module (option) is required for this feature.
- Simultaneous output for MoIP and SDI (12G, 3G, 1.5G)
- MoIP I/F x4 ports
- SDI Out (12G/3G/1.5G) x2ch
- HD RET Out x4ch
- HD QTV Out x2ch
- HD Trunk In x1ch
- HD MON In x1ch
- Sync Out x1ch for Tri-Sync Pulse from ST.2059 packet
- GbE Trunk x1port



Accessories

SE-U430, System Expander

The SE-U430 System Expander enables the use of a large studio viewfinder and studio lenses with the UHK-430, converting the portable camera into a full facility studio camera. Installation of the camera into the SE-U430 is very easy, and conversion back to portable configuration is quick for maximum operating flexibility. The camera can be slid back by releasing the lens lock while maintaining the optical axis of the lens and camera. This makes the swapping of large lenses very easy.



SE-U430
System Expander



Sliding back while camera is mounting on the sled



Viewfinders

| | | |
|---|--|--|
| | | |
| VFE741D 7.4-inch OLED color Viewfinder | VFL701D 7-inch Full HD LCD color Viewfinder | VFL201D 2-inch LCD color Viewfinder |

Control Panel

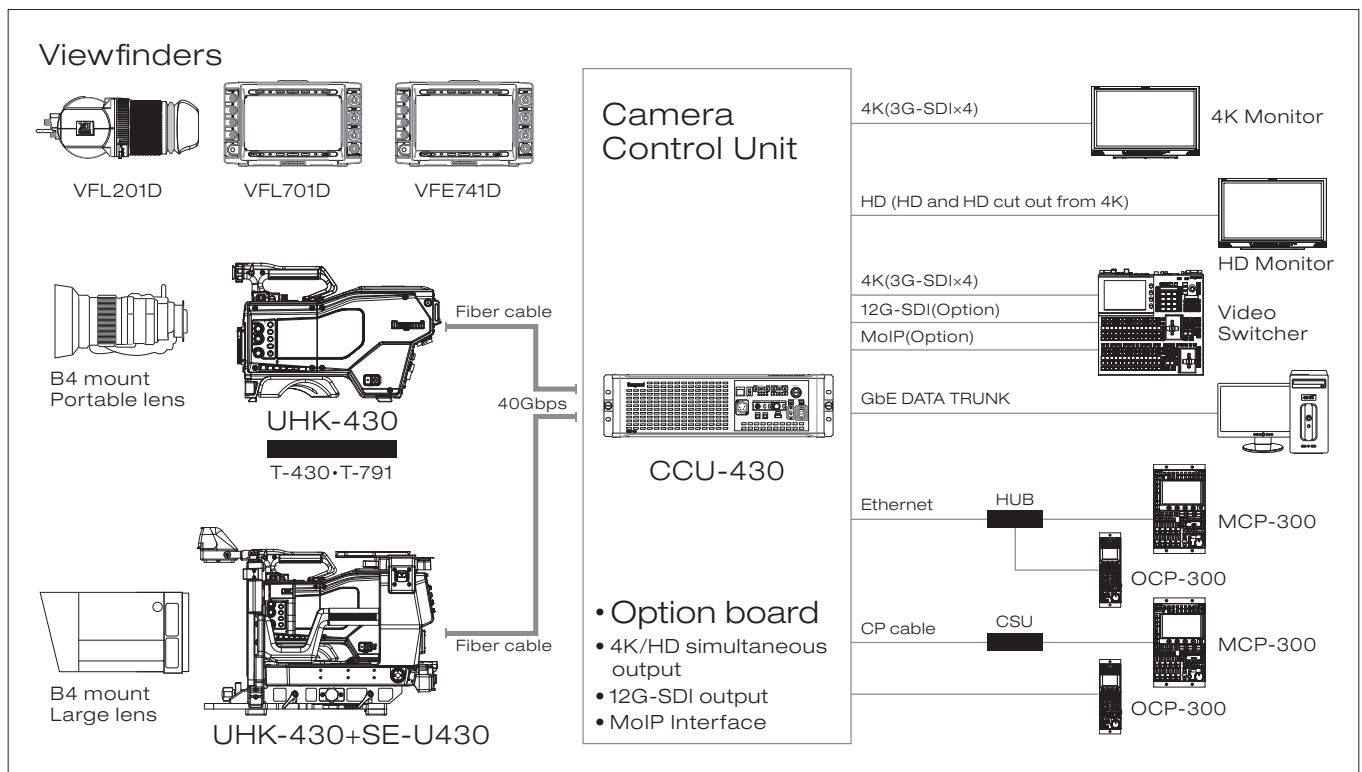
| | |
|---------------------------------|------------------------------------|
| | |
| MCP-300 Master Control Panel | OCP-300 Operation Control Panel |

Tripod Plate

| |
|-----------------------|
| |
| T-430 Tripod Plate |

The UHK-430 offers the choice of three newly developed viewfinders. They apply the new Focus Assist function that supports accurate focusing in both 4K and HD modes. The digital interface allows access to the camera menu from the viewfinder. Picture-in-picture, WFM, and Vector scope functions are built into the large studio viewfinders.

System Configuration



UHK-430

| | |
|-----------------------------|--|
| Camera Head | |
| Image Sensor | Three 2/3-inch Native 4K CMOS sensors, 8M pixel |
| Sensitivity | F10 @ 4K 59,94p/HD 59,94i F11 @ 4K 50p/HD 50i |
| Optical System | 2/3-inch R,G,B Prism |
| Lens Mount | B4 mount Bayonet |
| Filter | ND 1: CLEAR 2: 1/4 3: 1/8 4: 1/16 5: 1/64 CC A: 3200K B: 4300K C: 6300K D: CROSS E: OPTION |
| S/N Ratio | 62dB at HD mode |
| Limiting Resolution | 2000 TVL (typ.) @ 4K 60p 1000 TVL (typ.) @ HD |
| Input/Output | |
| Optical Fiber | Cable: SMPTE 311M Camera connector: SMPTE 304M |
| Rear HD-SDI Input/Output | BNC out (x3) BNC in/out (x1) : Available as HD-SDI trunk video input |
| Front HD-SDI Output | BNC (x1) |
| Analog Audio Input | XLR-type 3-pin, female (x2) [MIC] •Step : -60, -50, -40, -30, -20, -10, 0, +4dBu •Variable: ±10dBu [Power Supply] Off/+12V/+48V |
| Analog Audio Output | Stereo mini jack (x1) |
| Intercom | XLR-type (x2): ENG/PROD |
| Remote Control | 8 pin (x1) |
| Tracker | 20 pin (x1) |
| Gigabit Ethernet Trunk Line | 8P8C (RJ45) / UTP Cat.5e 1000BASE-T (IEEE 802.3ab) 1Gbps(Theoretical value) |
| USB | USB2.0 Type A (x1) |
| SE interface | 24 pin (x1) |
| General | |
| Operating Voltage | DC +11 to +16 V XLR 4pin (x1) |
| Ambient Temperature | Operation: -20°C to +45°C (-4°F to +113°F) Storage: -20°C to +60°C (-4°F to +140°F) |
| Relative Humidity | 30 % to 90 % (Non-condensing) |
| Dimensions | W 148.5 x H 243 x D 340mm (excluding protrusions) (W 5.8 x H 9.5 x D 13.4 inch) |
| Weight | approx. 4.6 kg (9.9lb) |
| Power Consumption | 55W |

CCU-430

| | |
|-----------------------------|---|
| Input | |
| SDI Return Video | 3G-SDI: SMPTE 424/425 Level A/B HD-SDI: SMPTE 292M 4ch |
| HD Q-TV (PROMPTER) | HD-SDI: SMPTE 292M 2ch |
| Reference (Genlock) | Tri-Sync SMPTE 274M / Black Burst Signal or SMPTE 318M (10 FIELD ID) |
| Program Audio | 3ch |
| Intercom | 4-wire / Clear-Com / RTS 2ch (ENG / PROD) selectable |
| Tally | Red / Green / Yellow 3ch |
| Output | |
| 3G/HD-SDI | 3G-SDI: SMPTE 424/425 Level A/B HD-SDI: SMPTE 292M 2ch 8outputs |
| 4K (3G-SDI)x4 | Quad Link Square Division or 2 Sample Interleave division 3G-SDI: SMPTE 424/425 Level-A/B, HD-SDI: SMPTE 292M QL 2ch 8outputs |
| Monitor | HD-SDI: 2ch 2outputs |
| HD Trunk Video | HD-SDI: 1ch 1output |
| Reference | Tri-Sync SMPTE 274M 1ch 1output |
| Audio | Analog 2ch XLR 3 pin: +4[dBu] / 0[dBu] AES/EBU: SMPTE 276M 1ch |
| Tally | Red / Green / Yellow |
| IF Connector | |
| Optical Fiber Cable | Cable: SMPTE 311M Camera connector: SMPTE 304M |
| Gigabit Ethernet Trunk Line | 8P8C (RJ45) / UTP Cat.5e 1000BASE-T (IEEE 802.3ab) 1Gbps(Theoretical value) |
| Remote Control | 8 pin (x2) |
| Ethernet | RJ45 (x1) |
| Remote(Mic Gain Remote) | D-sub 15 pin |
| External I/F | D-sub 15 pin |
| Communication | 25 pin |
| Data Trunk Channel #1 | D-sub 9 pin RS-422 115k[baud] |
| Front Intercom | XLR 4 pin male, XLR 5 pin female, XLR 7 pin XLR 7 pin female, 1/4" phone-jack (option) |
| USB | USB2.0 Type-A |
| General | |
| Ambient Temperature | Operation: 0°C to +40°C (+32°F to +113°F) Storage: -20°C to +60°C (-4°F to +140°F) |
| Relative Humidity | 30% to 90% (Non-condensing) |
| Dimensions | W 483 x H 133 x D 449 mm (excluding protrusions) (W 19 x H 5.2 x D 17.7 inch) |
| Weight | approx. 19kg (41.9lb) |
| Power Consumption | approx. 250VA |

Design and specifications are subject to change without notice.



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