

Ikegami

Ultra-wideband Studio/Field Digital CCD Camera System

HK-388



- **HK-388** Digital Studio Camera.
- **HK-388P** Portable companion with performance and functionality equivalent to the HK-388 and utilizing the BS, MCP and OCP common to the HK-388
- **HK-388W** 16:9/4:3 Switchable Studio Camera.
- **HK-388PW** Plug compatible Portable Companion to the HK-388W also with switchable 16:9/4:3 aspect ratio.

The HK-388 with Full Digital Power

The HK-388 and HK-388P are 12-bit full digital processing cameras that combine Ikegami's vast studio camera experience with today's digital technology.

By incorporating newly developed digital processing IC's (ASIC's), these cameras achieve consistently high picture quality and reliability that only digital processing can deliver.

A 10MHz ultra-wideband component triax system and a fiber optic digital transmission system are introduced together with the HK-388.

Both systems deliver high resolution pictures even at long cable lengths.

● Newly Developed ASICs

Three VLSI (Very Large Scale Integration) chips have been developed by Ikegami for the digital process, digital encoder, and data rate converter IC's. Cutting-edge VLSI technology with 300,000 gates per chip, 3 volt power, and up to 60MHz sample frequency allows extended digital functions and performance with the equivalent power consumption of conventional analog circuits.

● Video Processing by DSP

A single ASIC provides 16-bit video processing including functions of flare correction, linear matrix, gamma correction, detail enhancement, knee, and auto iris.



● Digital Encoders

Both camera head and base station incorporate the new digital encoder ASIC providing highly stable performance with NTSC encoded outputs available as standard at the camera as well as base station.

● Standard with Digital Outputs

In addition to the full compliment of analog outputs, the system comes standard with four component serial digital (270 Mbps) outputs from the base station. This is accomplished by the development of a data rate converter ASIC which changes the digital component video from CCD sample frequency to D1 sample frequency. The identical ASIC is used at the camera to convert the aspect ratio between 4:3 and 16:9 in the HK-388W and HK-388PW.



Combining Top Image Quality with Production Creativity

The HK-388 and HK-388P deliver high resolution, low noise image quality with a wide dynamic range and accurate color fidelity. Due to the extensive use of digital circuits, top image quality is achieved in a consistent and easy manner. Also for production creativity, a wide range of state-of-the-art functions can be selected to enhance the image quality.

● High-Density CCDs

The HK-388 and HK-388P employ high-density 520,000 pixel 2/3-inch FIT CCD image sensors. The HK-388W and HK-388PW employ newly developed 640,000 pixel 2/3-inch FIT CCDs. And HK-388Wi, employs 640,000 pixel 2/3-inch IT CCDs (switchable 16:9/4:3), and HK-388PH, employs 640,000 pixel 2/3-inch FIT CCDs (4:3 fixed) are also available. In the studio cameras, the CCD block is mounted on a bedplate with axis adjustment assuring perfect optical alignment between zoom lens and CCD sensor.

● Instant Switching between 4:3 and 16:9

By command from the MCP or from the external system, the camera will instantly convert between 4:3 and 16:9 aspect ratios. Camera video is converted by digital process eliminating the need for re-calibration of analog circuits or re-alignment of optical axis. The viewfinder automatically follows the switching of the camera video.

● New Level of Wide Screen Performance

The HK-388 and HK-388W, operating in 4:3, have the same resolution performance. Owing to the 640,000 pixel CCD, however, the 16:9 performance of the HK-388W establishes a new higher level of performance with greater modulation depth and true wide-screen angles-of-view.

● New Super V

The New Super V mode for CCD operation allows the vertical resolution to be increased in three increments from 400 to 480 TV Lines for frame capture and wide screen applications, bridging the gap in vertical resolution between conventional and high definition performance.

● Extended Range Continuous Variable Speed Shutter

This unique system for FIT CCDs permits variable shutter operation above and below 1/60 second so the camera can sync to slow scan or fast scan PC display monitors. High shutter speeds, including continuously variable mode, are also available for sports applications.

● Flexible Filter System

Both studio and portable camera types include dual motor driven 5-position optical filter wheels and electronic color temperature correction so it is easy to satisfy production requirements. Daylight color temperature can be corrected electronically so optical filter positions are available for combined filter effects.

● True-to-Life Color Reproduction

The camera is equipped with a digital linear matrix circuit for accurate colorimetry. For special applications the standard colorimetry can be changed via six function remote control of the linear matrix as well as the overall Color Saturation remote control function.

● Dual Knee System

Both Pre Knee and Digital Knee Circuits are incorporated to handle a wide dynamic range maintaining faithful color reproduction. The digital encoder includes Black Stretch and Black Press to improve reproduction of high and low contrast scenes.

● Digital Detail Enhancement

Operating in the digital domain the DTL system provides 3-channel enhancement for uniform sharpness of all colors. It includes conventional as well as new digital functions not possible in analog DTL systems.

◆ Diagonal DTL

Diagonal DTL derives an edge signal from the diagonal components of the video signal to enhance resolution. Not only horizontal and vertical edges are influenced by the detail signal, but also diagonal edges. This key function enables the HK-388 to provide a very natural image impression which can not be obtained with conventional cameras. With the Diagonal DTL function, cross-color artifacts are reduced.

◆ Slim DTL

Slim DTL reduces edge thickness without changing the boost frequency of the edge signal. This permits a fine edge which will not be attenuated by bandwidth limits in the path to the home receiver.

◆ Skin DTL

Skin DTL softens the facial complexions of the talent while retaining the detail in the rest of the scene. The AHD (Auto Hue Detect) function facilitates Skin DTL adjustment to select a desired skin tone at the mere touch of a switch.

◆ DTL Boost Frequency

The boost frequency of the horizontal edge signal can be shifted within the range of 3MHz to 8MHz. Appropriate edge enhancement can be selected for different applications and different scenes.

◆ DTL B-W Balance

The balance of sharpness between dark and bright areas can now be controlled by adding the DTL signal to video both before and after gamma.

Total Commitment to Practical Use

The HK-388 and HK-388P are designed for easy operation in practical applications. New component triax and fiber cable systems are available together with interface accessories for existing RGB triax. Camera operator and video operator facilities are further enhanced over predecessor models.

● Ultra-Wideband Triax System

A 10MHz ultra-wideband component triax transmission system permits a maximum distance of 2,100 meters (on 14.5mm diameter triax). Component video transmission provides an excellent combination of high output resolution with long cable length capability. It is a proper match for the component digital output and component digital studio system.

● Optical Fiber System (option)

Full data rate uncompressed digital transmission is available utilizing a new hybrid fiber and copper cable. A maximum length of 2,000 meters (on 9.2mm diameter cable) powered from the base station is possible.

● RGB Triax System (option)

The studio camera heads can be interfaced to the BS-366 base station, through RGB triax transmission, by mounting the TIF-86 interface adaptor and TA-366 triax adaptor. Compatibility can be retained with RGB triax systems currently in use. In similar fashion, the portable companion can be fitted with IF-21 interface adaptor and TA-375P or TA-553 RGB triax adaptors.



HK-388P+IF-21+TA-553

● Teleprompter Video / Video Trunk

In addition to Return Video (selectable between RET 1 and RET 2) for the viewfinder or external monitor, there is a second video channel from the base station to camera for teleprompter video. For applications with point-of-view cameras in the field, the triax system permits the direction of the second channel to be reversed, providing a video trunk feed from camera head to base station.

● Full Automatic Set Up

Consistent high quality performance is easily achieved by using the automatic set up system. Several processes including Full, Daily Level, and Quick allow the operator to rapidly align the camera to reference settings. Lens files are utilized to immediately correct for changes in the optical path such as the use of a range extender, as well as changes between different lenses. The lens file can also be programmed to make corrections for the glass of the teleprompter mirror.

● Snap Shot Files with Memory Card

The "total look" of the camera can be captured by the Snap Shot File and stored on a Memory Card. The Memory Card provides a very secure long term means to restore camera set up. The Memory Card plugs into the MCP and has a capacity for 20 Snap Shot Files. In addition, up to 240 Scene Files can be stored on a single Memory Card.

● Control Panel System

The microprocessor control system for the HK-388 features high speed direct access panels which can be configured to best meet the customer's requirements.

A typical control configuration consists of one OCP Operation Control Panel for each camera and a single MCP Maintenance Control Panel shared by a system of cameras (up to 40 cameras).

The OCP-388 is available in joystick and rotary versions. It provides primary operating control, and includes new facilities such as variable control for skin detail and master gamma.

The MCP-388 compliments the OCP with maintenance and secondary operating control.

An alternate control configuration consists of one CCP Camera Control Panel for each camera.

The CCP-388 integrates operating as well as maintenance control in a single panel dedicated to one camera.



OCP-388 (Rotary) OCP-388 (Joystick)
Operation Control Panel



MCP-388 Maintenance Control Panel



CCP Camera Control Panel



● High-Performance Viewfinders

A range of high-performance viewfinders are available for the studio and portable cameras.

◆ 7-inch Viewfinder

- Standard for HK-388 and HK-388W, also option for HK-388P and HK-388PW

◆ 7-inch Color Viewfinder

- Option for HK-388 and HK-388W

◆ 1.5-inch Viewfinder

- Standard for HK-388P

◆ 2-inch Viewfinder

- Standard for HK-388PW

◆ 6-inch Viewfinder

- Option for HK-388P and HK-388PW

◆ 5-inch Viewfinder

- Option for HK-388P and HK-388PW

The 7-inch monochrome and color viewfinders attach to the camera with a mechanism allowing easy panning and tilting for the viewfinder. As the height of the mechanism is changed to permit more tilt range, the front to rear position remains unchanged minimizing the effect to the overall camera balance.

The 2-inch viewfinder for the HK-388PW provides the standard viewing size in 4:3 but increases in width to provide an enlarged viewing size in 16:9, about twice the screen area as compared to scanning a 1.5-inch viewfinder in 16:9.

The 6-inch viewfinder for the HK-388P and HK-388PW includes a cableless, one-touch mount for easy exchange between tripod and on the shoulder operation.

● Viewfinder Detail

The viewfinder receives full horizontal and vertical detail enhancement independent of the DTL level set for the camera output. The VF DTL is set by the camera operator to satisfy their requirement to find focus easily.

● Viewfinder Character Indicators

In addition to LED indicators, a variety of characters can be displayed on the viewfinder.

- ◆ Safe Action
- ◆ Safe Title
- ◆ Center Marker
- ◆ Optical Filter Position
- ◆ Video Level (zebra pattern)
- ◆ Auto Setup and Warning Indication
- ◆ Working Time (hour meter for camera)

● Picture-in-Picture

The PIP (Picture-in-Picture) function permits simultaneous monitoring of RET video on a small screen window while viewing the ongoing camera picture on the remaining viewfinder screen. This feature is standard on the HK-388 and HK-388W.

● New Ergonomic Design for the Portable Companion

The HK-388P and HK-388PW have a new mechanical design with lower center-of-gravity for good balance on the shoulder. The triax connector is mounted with pivot to provide excellent freedom of movement.

In addition to triax or fiber operation, the HK-388P and HK-388PW can be docked with a Betacam recorder utilizing the VA-95SA VTR Adaptor and IF-21 Interface.

● Perfect Match

The portable and studio cameras use the same CCD, same analog and digital video processing, same optical filters, and in most cases, the same PC boards, providing an unparalleled similarity in performance and function between the two camera types.



Right Side Panel



Left Side Panel



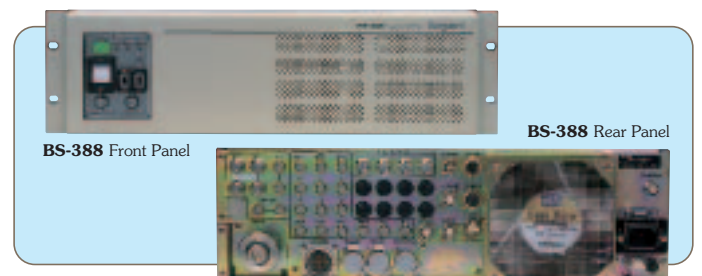
Rear Panel of TA-388P

● Expanded Intercom Facilities

Both studio and portable cameras include 2-channel intercom each with separate program listen, and with stereo split selection for dual headset. There is a facility to remotely switch headset mics OFF when they are inadvertently left ON. Also, there is the added facility for production to leave a message for the camera operator to playback upon return to the camera.

● Compact Base Station

The size of the BS-388 is reduced by 25% compared to predecessor models. Despite this decrease in size, an Expansion Slot is provided in the base station for applications in future upgrades.



BS-388 Front Panel

BS-388 Rear Panel

ON/OFF CONTROL

CONTROL ITEMS	OPERATION			SCENE FILE ×8
	OCP	MCP/CCP	HEAD	
HEAD POWER ON/OFF	○	CCP only	○*5	
VF POWER ON/OFF	○*1	CCP only*1	○*1	
CAP ON/OFF	○	○	○*1,4	
COLOR BARS ON/OFF	○	○	○*4	
DIASCOPE ON/OFF	○	○	○	
TEST PULSE ON/OFF	○	○	○*1,4	
CAL 100% ON/OFF	○	○	○*1,4	
CAL 200% ON/OFF	○	○	○*1,4	
DTL ON/OFF		○		○
SOFT DTL ON/OFF	○	○	○*4	○
SKIN DTL ON/OFF	○	○	○*4	○
SLIM ON/OFF		○	○*4	○
DIAGONAL DTL ON/OFF		○	○*4	○
AUTO KNEE	○	○	○*4	○
KNEE ON/OFF		○		○
COLOR SATURATION CONT ON/OFF	○	○	○*4	○
CHROMA ON/OFF		○		○
MATRIX ON/OFF		○	○*4	○
COLOR TEMP 5600K ON/OFF	○	○	○*4	○
FLARE ON/OFF		○		○
WHITE CLIP ON/OFF		○		○
GAMMA SELECT	○	○		○
MASTER GAIN SELECT	○	○	○*4	○
SUPER V SELECT	○	○	○*4	○
SHUTTER SPEED SELECT	○	○	○*4	○
SHUTTER ON/OFF	○	○	○*4	○
BLACK PRESS/STRETCH SELECT	○	○	○*4	○
BLACK PRESS/STRETCH ON/OFF	○	○	○*4	○
ND/CC FILTER SELECT	○	○	○	○
FILTER PRIORITY	○	○	○	
AUTO SETUP-FULL		○	○*2	
AUTO SETUP-LEVEL	○	○	○*2	
AUTO SETUP-QUICK	○	○	○*2	
AUTO SETUP-FULL QUICK		○	○*2	
AUTO SETUP-AWB	○	○	○	
AUTO SETUP-ABB	○	○	○	
AUTO SETUP-BLACK SHADE	○	○	○*1	
AUTO SKIN HUE DETECT	○	○	○	
SCENE FILE SELECT	○	○	○	
SCENE FILE STORE	○	○		
PM/WFM SELECT	○	○		
CALL	○	○	○*5	
AUTO IRIS ON/OFF	○	○	○*1,4	
M PED/IRIS ENABLE		MCP only		
PM IND/PAGE SELECT	○	○		
PANEL ENABLE	○	CCP only		
CSU /CAMERA SELECT		MCP only		
MANUAL CLEAR		○		
MANUAL SET		○		
WIDE (16:9/4:3)		○*3	○*3,4	
FILE TRANSFER		○		
COLOR MATCH	○	CCP only		
MEMORY CARD OPERATION		○		
VARIABLE SHUTTER ON/OFF	○	○	○*4	○

*1 Only HK-388/W. *2 Only HK-388P/PW. *3 Only HK-388W/PW. *4 Self-contain use only.
*5 Available for HK-388/W and/or HK-388P/PW with TA-388P.

LENS FILE

ITEMS	LENS	DIASCOPE	EXTENDER-1	EXTENDER-2*
LAVEL				
GAIN	R,B	R,G,B	R,B	R,B
GAMMA	R,G,B	R,G,B	R,G,B	R,G,B
FLARE	R,G,B	R,G,B	R,G,B	R,G,B
WHITE SHADE				
H SAW	R,G,B	R,G,B	R,G,B	R,G,B
H PARA	R,G,B	R,G,B	R,G,B	R,G,B
V SAW	R,G,B	R,G,B	R,G,B	R,G,B
V PARA	R,G,B	R,G,B	R,G,B	R,G,B

* Only HK-388/W

LEVEL CONTROL

CONTROL ITEMS	OPERATION			SCENE FILE ×8	CONTROL RANGE
	OCP	MCP/CCP	HEAD		
IRIS	○	○	○*2		OPEN-CLOSE
MASTER PED	○	○	○*2		±20%
LEVEL					
BLACK SET		R,G,B			±10%
PED	R,G,B*1	R,G,B		○	±20%(GAMMA ON)
GAIN	R,G,B	R,G,B		○	±6dB
GAMMA	MASTER	MASTER/R,G,B	MASTER*2		±5%
BLACK GAMMA		R,G,B			
FLARE	R,G,B*1	R,G,B		○	±5%
WHITE CLIP		R,G,B		○	±5%
WHITE SHADE					
H SAW		R,G,B			±3%
H PARA		R,G,B			±3%
V SAW		R,G,B			±3%
V PARA		R,G,B			±3%
BLACK SHADE					
H SAW		R,G,B			±3%
H PARA		R,G,B			±3%
V SAW		R,G,B			±3%
V PARA		R,G,B			±3%
KNEE					
MANU POINT		R,G,B		○	70 to 100%
MANU SLOPE		R,G,B		○	0 to 1/6
TOTAL POINT	○	○		○	70 to 100%
TOTAL SLOPE	○	○		○	0 to 1/6
DTL					
LEVEL	○	○	○*2	○	+6 to -9dB
BALANCE		○		○	
THRESHOLD		○		○	0 to 20%
BOOST FREQUENCY		○		○	(3.4 to 6MHz)
NOISE SUP		○		○	
B-W BALANCE		○		○	
WHITE SUP		○		○	
BLACK SUP		○		○	
SKIN DTL LEVEL	○	○	○*2	○	
SKIN DTL R HUE		○		○	
SKIN DTL B HUE		○		○	
MATRIX		R-G,R-B		○	
		G-R,G-B		○	
		B-R,B-G		○	
COLOR					
SATURATION		○	○*2	○	
VARIABLE SHUTTER	○	○	○*2	○	
VF DTL			○		

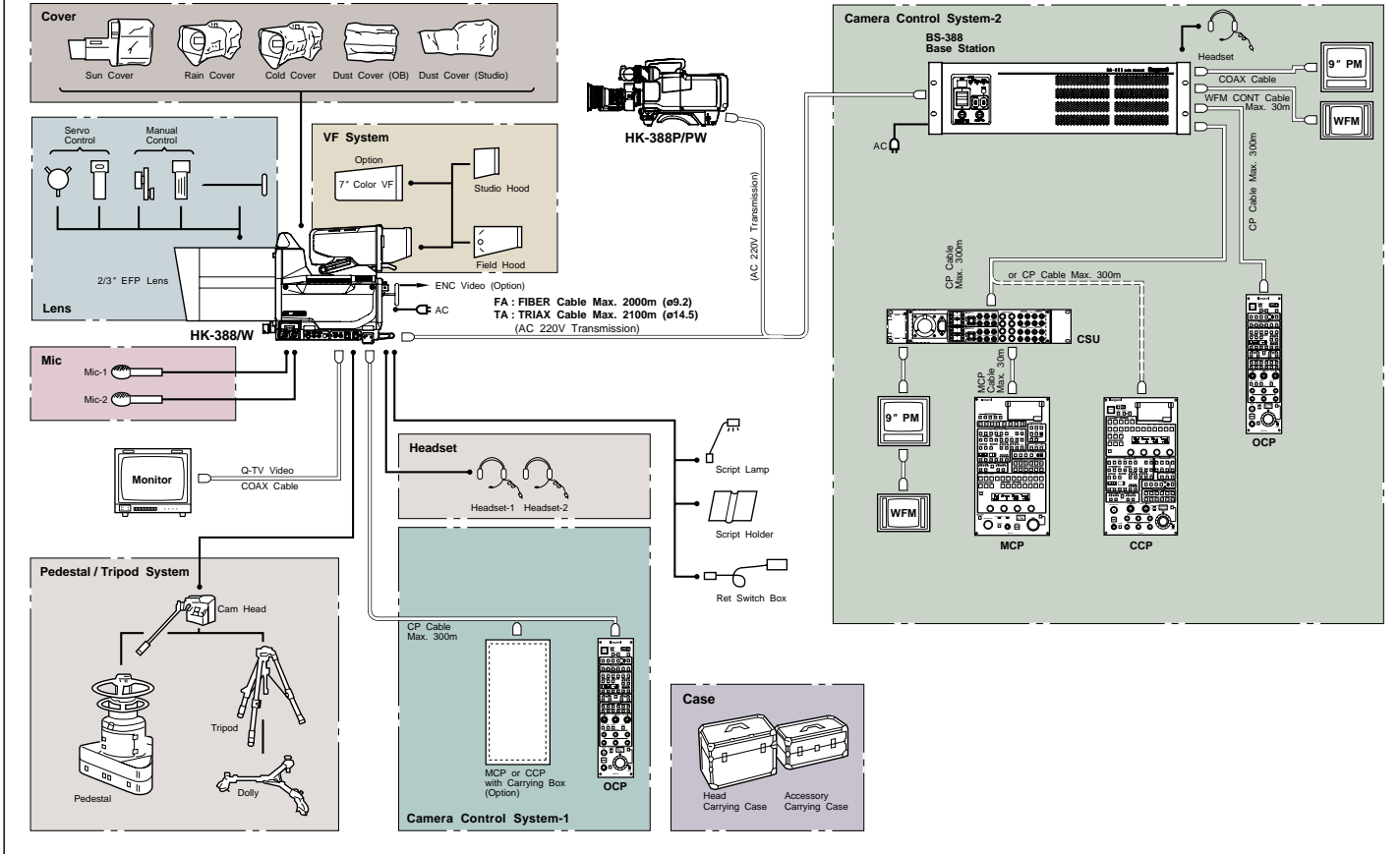
*1 FLARE or PED. selectable. *2 Self-contain use only.

AUTO SETUP CONTROL

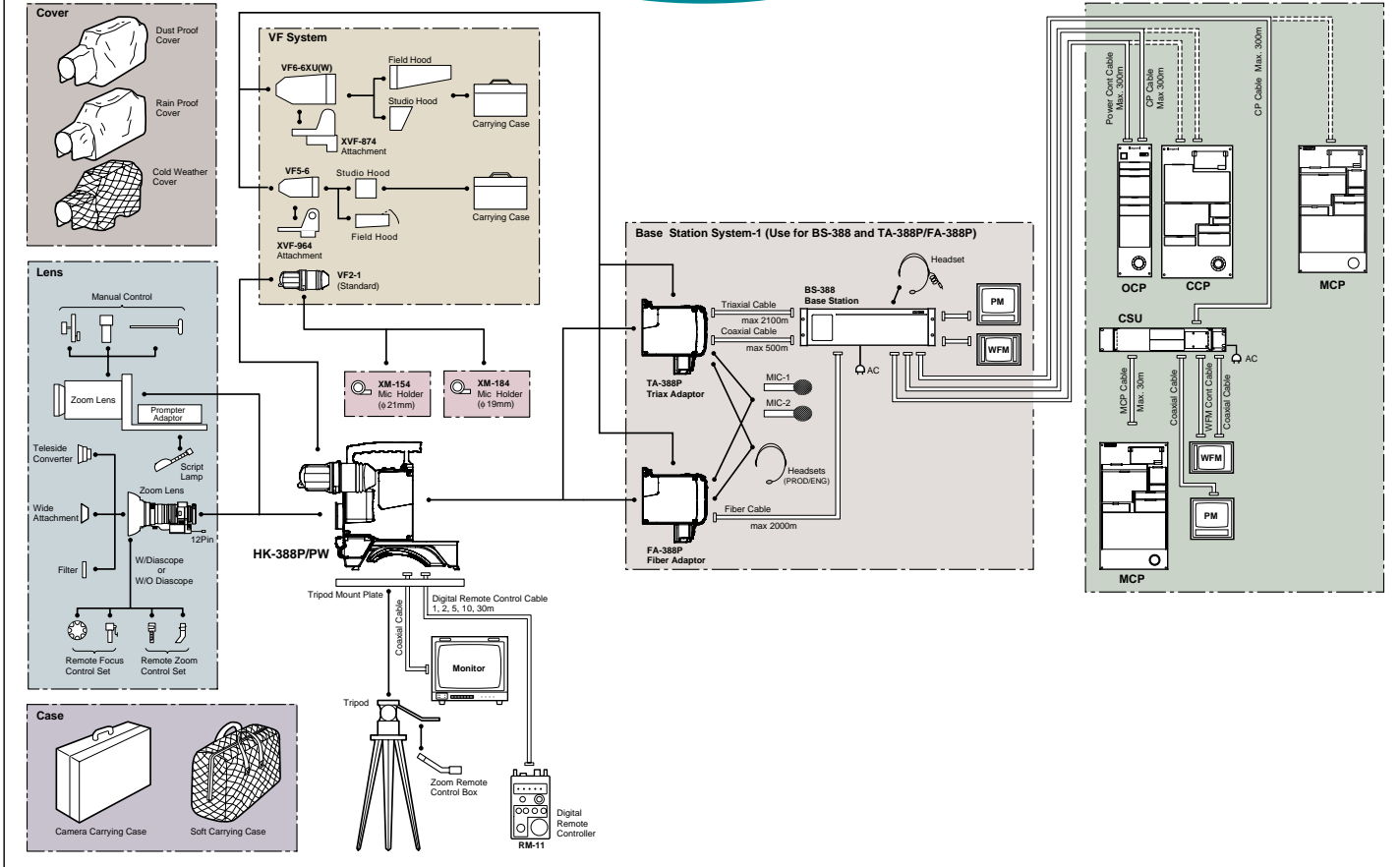
CONTROL ITEMS	AUTO SETUP FUNCTION															
	OCP					MCP/CCP					CAMERA HEAD					
	LEVEL	QUICK	AWB	ABB	FULL	LEVEL	QUICK	AWB	ABB	FULL	LEVEL	QUICK	AWB	ABB	FULL	
REF	EXT	EXT	EXT	EXT	INT/EXT	EXT	INT/EXT	EXT	EXT	EXT	INT/EXT	EXT	INT/EXT	EXT	EXT	EXT
LEVEL																
BLACK SET	R,G	R,G		R,G	R,G	R,G	R,G	R,G		R,G	R,G	R,G	R,G		R,G	
PED	R,G	R,G		R,G	R,G	R,G	R,G	R,G		R,G	R,G	R,G	R,G		R,G	
GAIN	R,G	R,G	R		R,G	R,G	R,G	R,G	R		R,G	R,G	R,G	R		
GAMMA	R,G	R,G			R,G	R,G	R,G	R,G			R,G	R,G	R,G	R,G		
FLARE	R,G	R,G			R,G	R,G	R,G	R,G			R,G	R,G	R,G	R,G		
WHITE CLIP	R,G	R,G			R,G	R,G	R,G	R,G			R,G	R,G	R,G	R,G		
KNEE SLOPE	R,G	R,G			R,G	R,G	R,G	R,G			R,G	R,G	R,G	R,G		
KNEE POINT	R,G	R,G			R,G	R,G	R,G	R,G			R,G	R,G	R,G	R,G		
AUTO																
KNEE SLOPE	R,G	R,G			R,G	R,G	R,G	R,G			R,G	R,G	R,G	R,G		
KNEE POINT	R,G	R,G			R,G	R,G	R,G	R,G			R,G	R,G	R,G	R,G		
WHITE SHADE																
H SAW					R,G						R,G					
H PARA					R,G						R,G					
V SAW					R,G						R,G					
V PARA					R,G						R,G					
BLACK SHADE																
H SAW					R,G*	R,G		R,G			R,G*	R,G		R,G		R,G*
H PARA					R,G*	R,G		R,G			R,G*	R,G		R,G		R,G*
V SAW					R,G*	R,G		R,G			R,G*	R,G		R,G		R,G*
V PARA					R,G*	R,G		R,G			R,G*	R,G		R,G		R,G*
CALX100 (GAIN,PED)					R,G			R,G			R,G			R,G		R,G

*1 Practice only with Quick switch.
**The control functions marked G (for G-channel), operates only when the camera is set up using diascope(internal chart). In case of using external chart, set G-chance; to 100% level by IRIS.

System Applications HK-388



System Applications HK-388P



Specification

● Rating

< Input Signals >

[HK-388/HK-388W Camera Head]

External Sync Signal	VBS 1Vp-p positive 75Ω (BBS 0.45Vp-p positive 75Ω)
Mic	-60dB~ -40dB/-20dB 600Ω, 2 channels (option)
Intercom	-10dB/-50dB, 2 channels (ENG/PROD) (114B TYPE/XLR TYPE)
Intercom	0dB 600Ω, 4-wire/RTS Extension

[HK-388P/HK-388PW Camera Head]

External Sync Signal	VBS 1Vp-p positive 75Ω (BBS 0.45Vp-p positive 75Ω)
Mic	-60dB~ -40dB/-20dB 600Ω, 2 channels
Intercom	-10dB/-50dB, 2 channels(ENG/PROD) (114B TYPE/XLR TYPE)
Tally	Contact (R tally) (System connector)

[BS-388 Base Station]

Analog

External Sync Signal	BBS 0.45Vp-p positive 75Ω Loop through (VBS 1Vp-p positive 75Ω)
Return Video Signal	VBS 1Vp-p, positive 75Ω Loop through, 2 channels
Q-TV Signal	VBS 1Vp-p positive 75Ω Loop through
Intercom	0dB 600Ω, 2 channels 4-wire/RTS (ENG/PROD)
PGM(Audio)	0dB 10kΩ, 2 channels
Tally	R, G, 2 channels, Contact/Power

Digital

Return Video Signal	Component serial digital signal (270Mbps) 0.8Vp-p 75Ω (BNC Connector), 2 channels(option)
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< Output Signals >

[HK-388/HK-388W Camera Head]

Composite Video Signal	VBS 1Vp-p positive 75Ω
Q-TV Signal	VBS 1Vp-p positive 75Ω
Monitor Signal	Menu select signal positive 75Ω
Intercom	0dB, 2 channels (ENG/PROD) (114B TYPE/XLR TYPE)
Intercom	0dB 600Ω 4-wire/RTS Extension
Tally	R,G 2 channels, Contact/Voltage
Audio Trunk Signal	Through 600Ω (XLR)
Utility Power	200VA

[HK-388P/HK-388PW Camera Head]

Composite Video Signal	VBS 1Vp-p positive 75Ω (System connector)
Component Signal	Y, CB, CR 1kΩ (System connector)
Monitor Signal	R+G+B, R, G, B, Y, ENC positive 75Ω
Return Video Signal	VBS 1Vp-p positive 75Ω
Intercom	0dB, 2 channels (ENG/PROD) (114B TYPE/XLR TYPE)
Q-TV signal	VBS 1Vp-p positive 75Ω

[BS-388 Base Station]

Analog

Composite Signal	VBS 1Vp-p positive 75Ω, 3 channels
R, G, B Signal	V 0.7Vp-p positive 75Ω (for chroma-key use)
Component Signal	Y, CB, CR 75Ω
PM Signal	R, G, B, -G, Y, ENC 1Vp-p positive 75Ω, 2 channels
WFM Signal	R, G, B, SEQ, Y/C, ENC 1Vp-p positive 75Ω, 2 channels
Sync Signal	2Vp-p negative 75Ω

WFM Control Signal Tally

SEQ ON, STAIR CASE signal
R, G 2 channels, Contact/Voltage
(for video monitor)

Intercom

0dB 600Ω 2 channels 4-wire/RTS (ENG/PROD)
0dB 600Ω, 2 channels

Digital

Component serial digital signal
(270Mbps/SMPTE259M) 0.8Vp-p 75Ω,
4 channels(BNC connector)

Image Sensor

HK-388/388P:
2/3-inch 520,000-pixel FIT CCD X3
HK-388W/388PW:
2/3-inch 640,000-pixel 16:9 FIT CCD X3
f1.4

Optical System

Optical Filter

	1	2	3	4	5
ND CAP	100%	25%	6.2%	1.6%	
CC CROSS	3200K	4300K	6300K	8000K	

Gain Selection

*Master gain: -3dB/0dB/3dB/6dB/12dB
* R, G, B gain: ± 6dB

Shutter

1/60 (OFF),
1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000
CVSS: 1/30.3~1/57.6 sec., 1/61.4~1/1966 sec.
Continuously Variable

Power Consumption

HK-388(W) camera head: approx. 130VA
HK-388(W) camera head + BS-388:
approx. 270VA
HK-388P(W) camera head:
20.5W (DC+11V~+16V)

Ambient Temperature

Camera head: -20°C~+45°C(-4°F~+113°F)
(25%~85% relative humidity)
Base station: 0°C~+45°C(+32°F~+113°F)
(25%~85% relative humidity)

External Dimensions

HK-388(W) camera head (including 7"VF) :
W12.2 × H16.2 × D15.0 inches
(W310 × H410.5 × D380 mm)
HK-388P(W) camera head + TA-388P
(including 1.5" or 2"VF) :
W4.9 × H9.1 × D14.8 inches
(W125 × H230.5 × D375 mm)
BS-388 base station :
W19.0 × H5.2 × D16.9 inches
(W483 × H133 × D430 mm)
Weight
HK-388(W) camera head: 27 kg (59.5 lbs) approx.
HK-388P(W) camera head: 3.3 kg (7.3 lbs) approx.
(excluding VF and TA)

● Performance

Modulation Depth (5MHz)

HK-388/388P:70% or more
HK-388W/388PW:80% (16:9) or more
70% (4:3) or more

Registration

0.02% or less, relative to the screen height
(over the entire screen,excluding lens aberration)

S/N

62dB (gamma, DTL, matrix: OFF ;
band limitation: 4.2MHz)

Sensitivity

F8.0 at 2000 lx

Frequency Response

(With reference to base station output,
Ych, 100kHz Standard)
60Hz~4.5MHz: within ± 0.5dB
4.5MHz~8MHz: within ± 1dB

Gamma

Step change over 1.0 (OFF)/0.45/0.40/0.35
Fine adjustment: ± 0.05 continuously variable

Design and specifications are subject to change without notice.

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