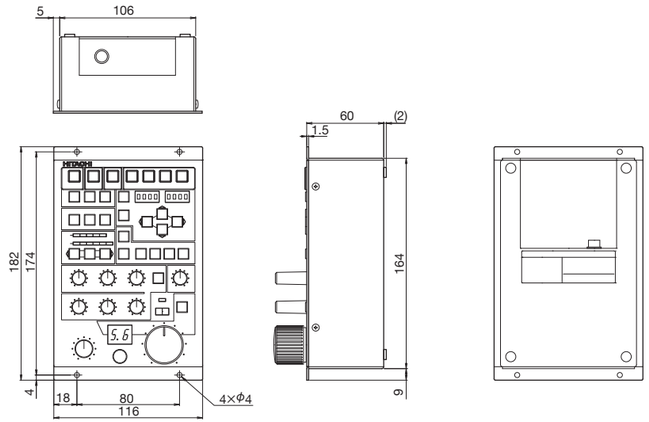
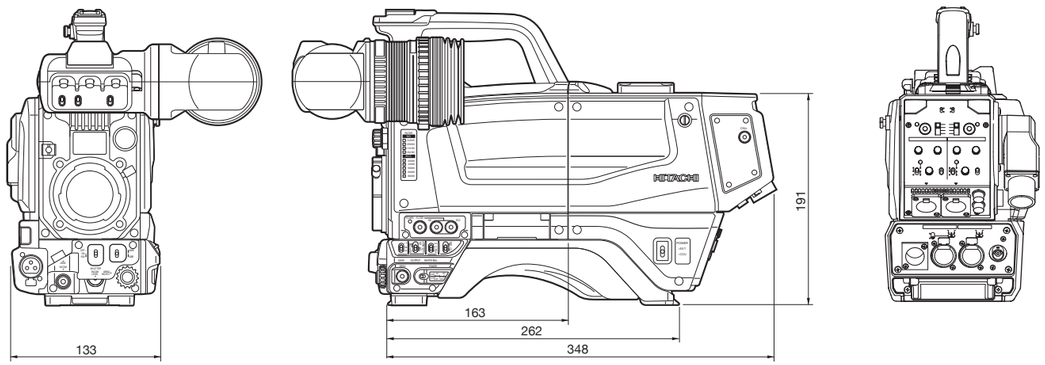
RU-1000VR Operation Control Panel

Dimensions	“VR” Knob version : 116 (W) x 182 (D) x 60 (H) mm
Mass	1.5kg, 3.3lbs.
Power input	+12VDC
Operational temperature	0°C to 40°C, 32°F to 104°F



DIMENSIONS (Z-HD5000)



⚠ CAUTION : To ensure safe operation, please read the instruction manual before using this product.

These Specifications are subject to change without notice.

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Hitachi Kokusai Electric

HITACHI

Professional HDTV Camera System
Z-HD5000



Introducing the newest member
of the prestigious Z-camera family
of economical HDTV cameras.

Hitachi Z-HD5000 Multi-application HDTV Studio and Field Production Camera

Professional HD Camera System
Z-HD5000



Premier user of 14-bit analog-to-digital conversion

Hitachi cameras were the first on the market to recognize and implement 14-bit analog-to-digital conversion. The Z-HD5000 takes full advantage of the increased dynamic range output of the NEW imagers by using 3 (Red, Green, Blue channel) 14-bit analog-to-digital converters. These high speed ADCs are the bridge between the serial output of the CCDs and the advanced Hitachi processor. They assure that every nuance of the image captured and, converted to electrical energy by the sensors is interpreted in the digital domain resulting in faithful image reproduction.

Hitachi's advanced digital signal processing

Each essential part of the Hitachi Z-HD5000 camera system has its own DSP processor. Different DSP ICs are used independently for the HDTV camera head processing, the transmission system and the Camera Control Unit (CCU) processing. The new, power-efficient Digital Signal Processor LSI' s are designed under the 65nm rule with dynamic processing capability in excess of 30-bits per pixel, per RGB channel. Hitachi' s DSP processors are designed for and, can adopt to progressive readout HDTV sensors. The processing dynamic headroom of the Z-HD5000 in theory (14-bit), allow for signals in excess of 85dB to be faithfully reproduced. Additional digital encoding at the camera head and CCU provides low interference and high signal integrity for both digital and analog outputs.
An outstanding overall signal-to-noise ratio specification of 58dB is achieved by use of our own low-noise circuit technology. The standard sensitivity is rated at F10 with 2000 lx.
Even at high gain, clear images are obtained with little noise.

Digital signal transmission via Hybrid Fiber Optical Cable

The Z-HD5000 camera system utilizes industry standard Hybrid Fiber-optic cable connectors made of high-strength stainless steel to insure durability and reliable performance under the most demanding TV Studio and Field production circumstances. All command audio and video signals to and from the camera are digitally transmitted hence, totally immune to EMI/ RFI interference. Camera power and cable condition supervision are also performed when using the Hybrid Fiber-Optic Cable (HFOC). Full Auxiliary (up to 4 analog or digital, HD or SD) video return and individual Teleprompter facilities are also available with the Z-HD5000 transmission system. The maximum HFOC length with applied camera power and fully operational facilities is 1,000 meters* (3,280 feet*) .

Unique to cameras in the Z-HD5000' s price range are optical power meters at the camera head (via engineering menu) and on the front of the CU-HD5000 camera control unit. These meters indicate the optical condition of both the receive and, transmit signals independently to accurately depict the proximity to the "digital cliff", maximum cable distance or provide basic HFOC diagnostics in the field.

*HFOC distance with applied CCU power differs depending on the system configuration.
It is dependant on the type of lens used, viewfinder, studio Adaptor, teleprompter and other accessories that may be connected and thereby consuming power otherwise available for the camera head.

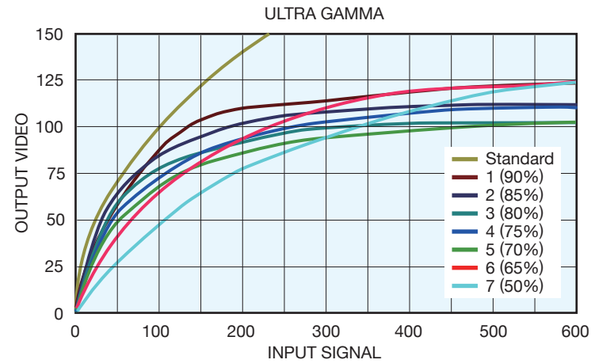


Superb High Definition picture reproduction & enhancement tools

Luminance response tools

Black stretch
The Z-HD5000's Black stretch function allows for better reproduction of dark or underexposed areas by evenly raising the luminance response without changing the pedestal or white clip/ knee settings. It is especially useful in high contrast image venues, outdoors or sports production.

Ultra-Gamma
A new and useful function implemented in the Z-HD5000 is the Ultra-Gamma function. It dramatically increases the exposure latitude of the camera in shooting conditions where lighting and scenery vary widely in intensity. Seven different ultra-gamma responses are pre-programmed to suit just about every possible adverse shooting condition.



Color reproduction excellence

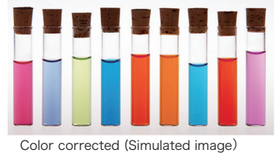
Skin-tone masking
The Skin-tone masking function provides "fine Painting" (hue and saturation) of Skin tones without affecting other colors in the scene. This functions additional and independently from the linear and 12-vector-masking functions thereby adding an additional color-correction (Triple-masking) Channel to the overall image color control.


Skin tone masking OFF


Skin tone masking ON (Simulated image)

Chroma Saturation
In addition to the extensive colorimetry controls offered in the Z-HD5000, the overall color saturation can be varied to achieve "dramatic" or artistic "effects".


Original Image


Color corrected (Simulated image)

Knee Saturation
The Knee Saturation function dynamically restores color saturation to scene highlights above the Knee point. Color-saturated highlights lost in overexposed scenes are now visible. This function provides excellent results in ; for example when imaging : high-contrast, sunny outdoor scenes, fireworks, concerts, theatre stage lighting, and colored night scenes.

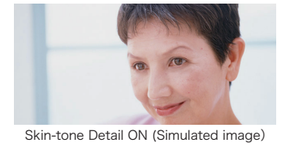

Knee Saturation OFF


Knee Saturation ON (Simulated image)

Picture sharpness enhancement

Skin-tone Detail
The Skin-tone Detail functions allow a flesh color-based softening of the image to achieve the impression of more youthful TV personalities. 2 individual memories exist as well as a function to automatically detect the hue, saturation and luminance of the Skin-tone to be affected. This function is not limited to Skin-tones only ; it can increase or decrease the sharpness of any pair of colors in the image.


Skin-tone Detail OFF


Skin-tone Detail ON (Simulated image)

High-chroma detail
The High-chroma detail adjustments allow precise control of the detail level in highly color-saturated portions of the picture such as the petals of a rose or a colorful fabric.


High-chroma detail OFF


High-chroma detail ON (Simulated image)

ACCESSORIES

Flexible Choice of Camera Control Units

Two models of Camera Control Units are offered for the Z-HD5000 camera system. The CU-HD1000 and the CU-HD500 CCUs both serve applications for Studio and Field production.
The CU-HD1000 offers the ability of 50/60Hz line power switching, it is compliant with RoHS/ WEEE directives* and as a standard function, the ability to output 1080i or 720p (CU-HD1000). Its reduced size (half-rack width/ 3RU' s high), weight (7Kg approx.) and improved power consumption make it ideal for OB applications**. It also includes a unique optical power meter that indicates the status of the HFOC.
Both CCUs are of easy-to-maintain modular design; employ the same control panels, data cables and peripherals. Other common CCU features include;

- Dual HD TV format outputs. Switchable between 1080i and 720p. (CU-HD1000)
- Simultaneous HDTV/ SDTV, digital and analog video outputs.
- 3 clean HD-SDI and SD-SDI outputs.
- Analog RGB or Y, B-Y, R-Y component outputs. (CU-HD1000)
- 4 auxiliary returns
- Dedicated teleprompter channel.
- ARIB-type color bar output.
  2 channel balanced analog Mic audio outputs or embedded.
- HD-SDI digital audio.
- Genlock with composite or tri-level sync.
- 2-tally (Red/Green) system.
- 2-channel, 2W/4W intercom system.
  RS-232C remote control.

*RoHS stands for the "restriction on the use of certain hazardous substances in electrical and electronic equipment". It is a European Directive aiming to control the use of certain hazardous substances in the production of new electrical and Electronic equipment (EEE).
** (See detailed specifications on the last page of this brochure)

CU-HD1000

Unique Optical Power Meter





CU-HD1000 Rear Panel

CU-HD500





CU-HD500 Rear Panel

RU-1000VR Remote Control Unit

The RU-1000VR Remote Control Unit is a new design of remote operation panels for the Hitachi Z-HD5000. Painstaking attention has been paid to making the most commonly used controls and functions directly and instantaneously accessible to the video control engineer.
It is an ideal production tool that enhances any HD studio or field production.



Studio and Field Production Viewfinders

The Z-HD5000 camera system offers two choices for Studio or Field production viewfinders. Model VF-L9HD is a color 9-inch TFT-LCD screen designed for critical color viewing of the image. The LCD screen offers a wide viewing angle and fast transient response time for a lag-less, crisp image similar to a CRT-type screen. It is most suitable where precise composition and color evaluation of the image are required. The VF-HD500 model is a monochrome 5-inch CRT-type unit that is more suited for Sports and OB applications where high-brightness and contrast are required. Both our Studio and Field production viewfinders can be outfitted with alternate mounts thereby decreasing the overall system cost.

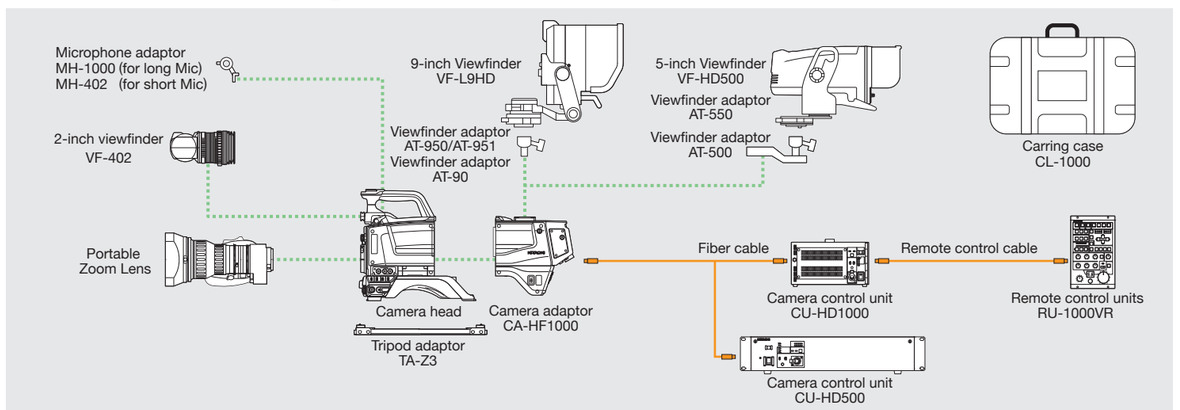


VF-L9HD Viewfinder/AT-951



VF-HD500 Viewfinder/AT-550

System configuration chart



SPECIFICATIONS

Professional HD Camera System
Z-HD5000

Z-HD5000 Camera Head

Imaging Device	(3X - RGB) 2/3-inch, 16:9, 1M Pixel Super-Advanced,
	micro-lens IT-CCD
TV System	1,920(H) X 1,080(V) / 59.94i or 50i
Optical system	F1.4 prism
Optical Filters	1X manual filter wheel w/4 filter positions
	Clear, Cross, 1/16ND, 1/64ND
	ECC (Electronic Color Corrector) with 5 settings
	(3200K, 4300K, 5600K, 6300K, 8000K)
Sensitivity	F10 @2000lx, 3200K, 89.9% reflectance
Signal to Noise Ratio	58dB
Horizontal resolution	>800 TVL (1080i)
Registration	Overall 0.05% (excluding lens limitations)
Lens mount	B4 bayonet-type
Gain selection	L (low) -3, 0dB
	M (medium) 0, +3, +6, +9, +12, +15, +18, +21dB
	H (high) +3, +6, +9, +12, +15, +18, +21, +24dB
Electronic Shutter	1/100, 1/250, 1/500, 1/1000, 1/2000 (59.94i)
	1/60, 1/250, 1/500, 1/1000, 1/2000 (50i), AES, CC Frame
Power consumption	Camera head 16 W Head only (without VF, lens)
Dimensions	133 (W) x 191 (H) x 262 (D) mm
Mass	2.2kg, 4.8lbs. Camera head
Operating temperature	-10ºC to +45ºC, 14ºF to 113ºF
Camera head	1X BNC HD-SDI VF out (Character ON/OFF)
	or HD-SDI RET out
Input & Output	4-pin Multi connector for remote control panel
	20-pin Multi VF connector, 12-pin Multi LENS connector
	3-pin XLR MIC-1 connector, SD Memory Card Slot

VF-402 ENG Viewfinder

TV System	50 or 60Hz 1080i
Construction	Metal die-cast chassis and mount
CRT	2-inch B&W 16:9 CRT with removable Diopter (CRT Focus ring)
User-comfort	VF angle rotation, X-Y mechanical movement, anti-fog lens,
	rubber eyecup
Resolution	650TVL
Functions	Bright, Contrast, Peaking, knobs VR front-facing
Internal Tally	Red/ Green, Front-facing high brightness LEDs
Tally controls	Tally OFF, NORMAL, HIGH
Mass	0.76kg, 1.7lbs
Power Consumption	5W (approx.)

VF-L9HD LCD Color Studio Viewfinder

TV System	50/60Hz, 1080i/ 720p auto-switching
Construction	Metal chassis and mount
	9-inch, color TFT-LCD, 800 (H) x 450 (V)
Display	6500°K with removable hood
Camera mounts	2X, AT-90/ AT-950
Functions	Chroma, Backlight, Marker-1/2 On/Off, Bright,
	Contrast, Peaking, knobs VR front-facing, Power On/Off
Internal Tally	Red/ Green, Front-facing high brightness LEDs
Tally controls	Tally OFF, NORMAL, HIGH
Mass	1.8kg, 4lbs
Power consumption	18W (approx.)

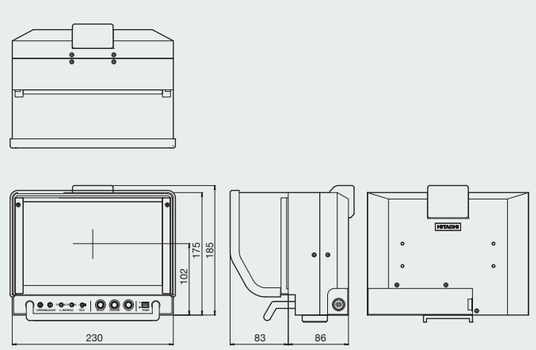
VF-HD500 B&W CRT Studio Viewfinder

TV System	50 or 60Hz, 1080i
Construction	High-impact plastic
CRT	5-inch B&W 4 : 3 CRT with removable hood
Camera mounts	2X, AT-500/ AT-550
Resolution	750TVL
Functions	Bright, Contrast, Peaking, knobs VR front-facing
Internal Tally	Red/ Green, Front-facing high brightness lamp
Tally controls	Tally On/ Off
Mass	1.8kg, 4lbs
Power consumption	15W (approx.)

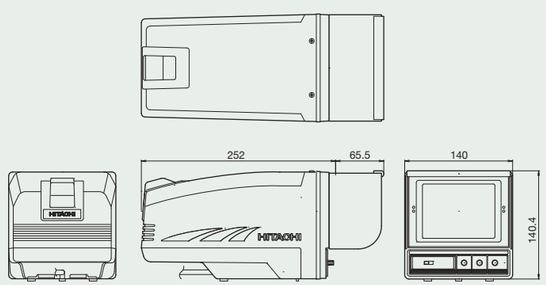
CA-HF1000 Camera Adaptor

CCU connector	1X-type HFOC female connector (LEMO/Tajimi Type)
	SMPTE-304M-type
Video transmission system	Fully digital, bi-directional, 10-bit, 4 : 2 : 2 sampling,
	SMPTE-274M
Intercom	2X channel, 5-pin each XLR, channel selection,
	MIC on/off, volume
Program audio	2X, PGM audio level controls w/ Chnl1 & Chnl2 intercom mix
Teleprompter power output	1X 5-pin, 230VAC, 60W~100W, external prompter Tally drive out
	(depending on configuration accessories)
Microphones	Chnl1 & 2 Line or MIC level select (MENU),
	with phantom power on/off
Return/ Aux switcher	2-channel, 4-input remote AUX/VF video select connector
	(RET control)
Video Inputs & Outputs	2X HD-SDI out, 1X SD analog teleprompter out switchable
	with, 1X Genlock in (Tri-level)
Other I/O	1X 29-pin (for SA-1000 cable-less interface)
	1X 4-pin script lamp +12VDC (1.0A max)
	1X 5-pin VF AUX return
	(for use in cranes or extended Head/VF configurations)
	1X 4-pin XLR, 12VDC, power input
	2.2kg, 4.8lbs

DIMENSIONS (VF-L9HD LCD Color Studio Viewfinder)



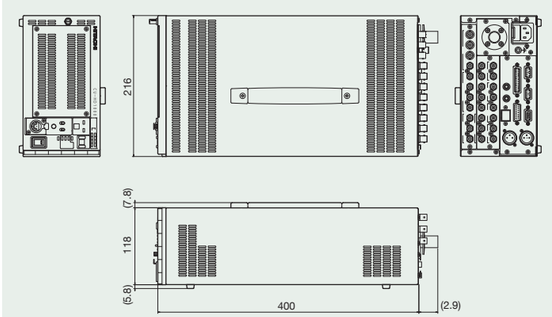
DIMENSIONS (VF-HD500 B&W CRT Studio Viewfinder)



CU-HD1000 Camera Control Unit

Genlock	BNC, B-BST 0.45Vp-p/75ohm (loop through)
	HDTV tri-level sync 0.60Vp-p/75 Q (loop through)
Digital Return 1/2/3/4	BNC, HD SDI or SD SDI
Analog Return 1/2	BNC, VS or VBS 1.0Vp-p/75ohm (loop through)
Prompt	BNC, VS or VBS 1.0Vp-p/75ohm (loop through)
Intercom (Headset)	5-pin XLR, -60dBm
Communication	1x D-sub 25pin
Intercom	0dBm, 600Ω/ 4Wire, 0dBu or -15dBu, 200Ω with 2-wires
PGM	0dBm, 600Ω
R/G TALLY	Contact or DC supply
Output signals	
ENCR	3x BNC, VBS 1.0Vp-p/75 Ω
R-Y or R	1x BNC, NTSC : 0.7Vp-p, PAL : 0.525Vp-p/ 75Ω
	VS 1.0Vp-p/ 75Ω (Selectable)
Y or G	1x BNC, VS 1.0Vp-p/ 75Ω
	1x BNC, VS 1.0Vp-p/ 75Ω (Selectable)
B-Y or B	1x BNC, NTSC : 0.7Vp-p, PAL : 0.525Vp-p/ 75Ω
	VS 1.0Vp-p/ 75Ω (Selectable)
Digital Out	3x BNC, HD-SDI (Embedded audio available)
	3x BNC, HD-SDI or SD-SDI selectable (Embedded audio available)
	HD-SDI or SD-SDI selectable PIX (Embedded audio available)
	720P/1080i Switchable
PIX (R,G,B,ENCR)	1x BNC, VS or VBS 1.0Vp-p/ 75Ω
WFM OUT (R,G,B,ENCR)	1x BNC, VS or VBS 1.0Vp-p/ 75Ω
MIC OUT 1	1x XLR, 3-pin, 0dBm/ 600Ω
MIC OUT 2	1x XLR, 3-pin, 0dBm/ 600Ω
Intercom (headset)	1x XLR, 5-pin, 0dBu Max +15dB
Remote 1	1x 4-pin, 1.5Vp-p or 1x D-sub, 9-pin RS-232C (Switchable)
Remote 2	1x 4-pin, 1.5Vp-p
RS-232C	1x D-sub 9-pin 9600 baud
MIC REMOTE	1x D-sub 15-pin MIC 1.2GAIN
TALLY OUT	1x D-sub 9-pin
R/G Tally	Contact or Voltage selectable
WFM control	1x D-sub 15-pin WFM 0-7, 0/5V
Power supply voltage	CU-HD1000J AC100V @ 50/60Hz
	CU-HD1000U AC117V @ 60Hz
	CU-HD1000E AC230V @ 50Hz
HFOC maximum cable distance	1,000 meters* (3,280 feet*) with CCU power
Operating temperature	0°C to 40°C, 32°F to 104°F
Mass	7kg, 15.4lbs.
Power consumption	210W approx. (AC operation, including Z-HD5000
	VF-402 and AUX POWER OUT 100VA)

DIMENSIONS (CU-HD1000)



CU-HD500 Camera Control Unit

Genlock	BNC, B-BST 0.45Vp-p/75ohm (loop through)
	HDTV tri-level sync 0.60Vp-p/75 Q (loop through)
Digital Return 1/2	BNC, HD SDI or SD SDI
Prompt	BNC, VS or VBS 1.0Vp-p/75ohm (loop through)
Intercom (Headset)	5-pin XLR, -60dBm
Communication	1x D-sub 25-pin
Intercom	0dBm, 600Ω/ 4Wire, 0dBu or -15dBu, 200Ω with 2-wires
PGM	0dBm, 600Ω
R/G TALLY	Contact or DC supply
Digital Out	2x BNC, HD-SDI (Embedded audio available)
	4x BNC, HD-SDI or SD-SDI selectable (Embedded audio available)
	HD-SDI or SD-SDI selectable PIX (Embedded audio available)
MIC OUT 1	1x XLR, 3-pin, 0dBm/ 600Ω
MIC OUT 2	1x XLR, 3-pin, 0dBm/ 600Ω
Intercom (headset)	1x XLR, 5-pin, 0dBu Max +15dB
Remote 1	1x 4-pin, 1.5Vp-p
Remote 2	1x 4-pin, 1.5Vp-p
RS-232C	1x D-sub 9-pin 9600 band
MIC REMOTE	1x D-sub 15-pin MIC1.2 GAIN
TALLY OUT (R/G Tally)	1x D-sub 9-pin
	Contact 24V DC. 10mA
WFM control	1x D-sub 15-pin WFM 0-7, 0/5V
Power supply voltage	CU-HD500J AC100V @ 50/60Hz
	CU-HD500U AC117V @ 60Hz
	CU-HD500E AC230V @ 50Hz
HFOC maximum cable distance	1,000 meters* (3,280 feet*) with CCU power
Operating temperature	0°C to 40°C, 32°F to 104°F
Mass	9kg, 15.4lbs
Power consumption	300W approx. (AC operation, including Z-HD5000
	VF-402 and AUX POWER OUT 100VA)

DIMENSIONS (CU-HD500)

