

# SONY®

3-CCD High Definition Color Video Camera

## DXC-H10



### HDVS

## A new HDVS Camera for a new line of Applications

The DXC-H10 is a small HDVS (High Definition Video System) camera boasting 1000 TV lines of resolution and weighing only 1.2 kg (2 lb 10 oz). Incorporating high definition technology, this camera provides images that are clear, detailed and true to life accurate. Ideal for installation where space is at a premium, the DXC-H10 can capture images from locations that were previously difficult or impossible for other bulkier high definition cameras.

The DXC-H10 is suitable for a number of uses including microscope applications, photo and portrait applications, and surveillance. Affordably priced and portable, the DXC-H10 can be used to complement or even substitute for existing camera systems, making its potential uses almost limitless.



Simulated picture



## HDVS

HDVS (High Definition Video System) is different from conventional video transmission systems such as the NTSC standard in North America, or PAL in Europe. Almost five times more information is contained in the HDVS system compared to conventional TV systems (2,000,000 pixels compared to roughly 410,000 pixels) enabling the HDVS system to produce very detailed and life-like images.

### Format of HDVS vs. NTSC

	HDVS	NTSC
Number of scanning lines	1125	525
Aspect ratio	16:9	4:3
Line-interlace ratio	2:1	2:1
Field-repetition frequency	60 Hz	59.94 Hz
Video frequency bandwidth	30 MHz	4.2 MHz

## High Resolution of 1000 TV Lines

The DXC-H10 incorporates three newly developed 2/3 inch IT (Interline Transfer) Hyper HAD™ (Hole Accumulated Diode) CCDs with 2,000,000 effective picture elements producing a horizontal resolution of 1000 TV lines. Hyper HAD CCDs provide sensitivity of up to F8.0 at 2,000 lux while drastically reducing the vertical smear level. This enables images of very high quality to be captured in difficult lighting conditions.

## Precise Picture Controls

The DXC-H10 provides precise camera control with functions such as Linear Matrix Circuit, Vertical Shading Compensation, Advanced Detail, Knee, Master Pedestal, and Negative/Positive mode. Three different white balance settings are also available in order to meet a variety of shooting conditions.

```
PAGE 1/3
▶ GAIN      : 0db 6db 12db AGC
SHUTTER    : OFF STEP MANU
            CCD-IRIS R. R
            EXT. TRIG LTR
└─ SPEED   : -----
AE MODE    : MULTI AVERAGE
            SPOT PEAK
└─ LEVEL   : 0
KNEE       : HI LOW AUTO
IRIS       : ON OFF
```

**Linear Matrix (ON/OFF):** Provides electronic adjustments for accurate color reproduction.

**Vertical Shading Compensation (Manual):** electronically compensates for color shading to provide uniform brightness.

**Advanced Detail Control (Manual):** adjusts sharpness of object outlines with minimal noise using digital filter technology.

**Knee (AUTO/HIGH/LOW):** makes bright and non defined areas become more clearly visible and defined.

**Master Pedestal:** enables black/dark area of the picture to be seen more clearly.

**Negative/Positive mode:** negative scenes can be shot positive, or vice versa.

```
PAGE 2/3
▶ WHT. BAL  : AWB ATW MANU
└─ R. PAINT : 0
└─ B. PAINT : 0
C. TEMP    : 3200 5600
MAS. PED   : 0
└─ R. PED   : 0
└─ B. PED   : 0
MATRIX     : ON OFF
DETAIL     : ON OFF
└─ LEVEL    : 0
```

### Three White Balance Modes

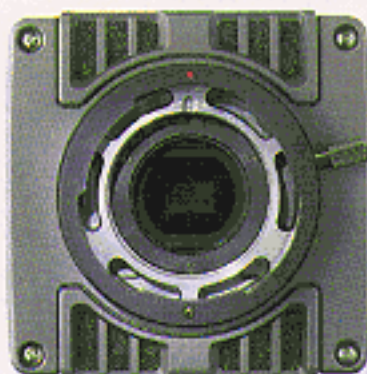
1. **AWB (Auto White Balance):** memorizes the adjusted white balance value.

2. **ATW (Auto Tracing White Balance):** adjusts white balance automatically in response to varying light conditions. This mode is used when the light source frequently changes.

3. **Manual (R/B Gain):** white balance manually adjusted using the red and blue gain level controls. Also available is the R/B Paint function which can finely adjust red and blue gain.

```
PAGE 3/3
▶ FLD/FRM  : FLD FRM
SYNC       : ⬆ ⬇
H. PHASE   : 10
SYNC/UD    : SYNC UD
GBR/YPbPr : GBR YPbPr
FLASH      : OFF ON
SHADING    : OFF ON
LEVEL      : 0
NEGA       : OFF ON
GAMMA      : ON OFF
```

Front View



Side View



Rear View



3-CCD HIGH DEFINITION COLOR VIDEO CAMERA

3-CCD HIGH DEFINITION COLOR VIDEO CAMERA

## Flash Synchronization Function

Flash Synchronization is possible by directly connecting a flash unit to the camera. Flash Synchronization enables the DXC-H10 to be used in portrait applications. When synchronizing a flash with the DXC-H10 and connecting it with a monitor or printer,

every shot can be immediately identified. When pushing the trigger button on the camera's rear panel or remote control unit, the connected external flash unit detects the synchronization pulse and fires a flash (Flash Master Mode).

## Electronic Shutter

The DXC-H10 electronic shutter features the following:

### CCD IRIS™ Function

The CCD IRIS function, developed by Sony, automatically controls exposure by electronically adjusting incoming light levels and is equivalent to seven F stops in a lens iris. The CCD IRIS function is particularly effective in microscope applications as it enables the DXC-H10 to adjust the incoming light level automatically, even when using a basic microscope adaptor which does not have auto iris level control.

### Ten-step Shutter Speed Selection

A variable speed electronic shutter is built into the CCD imager, making it possible to capture blur-free, clear pictures of objects moving at high speeds. Ten different speeds are available: 1/100 (flickerless mode), 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/20000, 1/40000, 1/100000 (seconds).

### Clear Scan™ Function

This function enables a computer display screen to be shot without horizontal lines appearing across the display screen. To use the Clear Scan function simply match the DXC-H10 shutter speed with the scanning frequency of the computer display.

### Long Term Exposure

The charge accumulation time can be selected from 1 to 255 frames (Field mode) or 2 to 256 frames (Frame mode) in one-frame steps. This provides higher sensitivity by accumulating the charge on the CCDs over a longer period than normal. This feature is ideal for microscope and surveillance applications because objects in the dark and other non-illuminated objects can be clearly captured.

### Other Electronic Shutter Functions

LTR (Long Term Reset), RR (Restart Reset), External Trigger Shutter.

## AE (Auto Exposure) Detectable Light Metering Method

AE automatically adjusts incoming light, combining the CCD IRIS function, AGC (Automatic Gain Control) function, and Auto Iris function of the lens. When shooting in the AE mode, the user can choose from four different light metering methods: Multi, Average, Spot, and Peak Mode.

**Multi Mode:** divides the screen into nine sections and adjusts the auto exposure according to the luminance level in each section. This mode continuously adjusts the incoming light for a bright uniform picture.

**Average Mode:** adjusts the light based on the average brightness of the whole picture.

**Spot Mode:** makes light adjustments based on the brightness of the central area of the picture.

**Peak Mode:** makes light adjustments based on the brightest part of the picture.

## Optional Accessories

### RM-C950 Remote Control Unit

The RM-C950 control can remotely control all functions of the DXC-H10. Frequently used camera functions - such as gain, detail, master pedestal and red and blue gain - are easily controlled by turning a knob. The RM-C950 is particularly useful in microscope applications because users can adjust the image while concentrating on the pictures.



#### SPECIFICATIONS

Connector:	REMOTE (8-pin)
Operating temperature:	-5 to 45°C (23 to 113°F)
Power requirements:	DC 12V
Mass:	Approx. 400 g (14 oz)
Dimensions:	212 (W) x 41 (H) x 132 (D) mm (8 3/8 x 1 5/8 x 5 1/4 inches)
Supplied accessories:	Connection cable (3 m), Operation manual

### CMA-H10 Camera Adaptor

The CMA-H10 Camera Adaptor allows the DXC-H10 camera to be operated from as far away as 100 meters.



#### SPECIFICATIONS

Connectors:	CAMERA (26-pin) VIDEO OUT (BNC) SYNC IN/OUT (BNC) TRIGGER INPUT (BNC) WE PULSE OUTPUT (BNC) REMOTE (mini DIN 8-pin)
DC out:	15 V
Operating temperature:	0 to 40°C (32 to 104°F)
Power requirements:	120 V AC, 50/60 Hz
Power consumption:	40 W (AC), 30 W (DC)
Dimensions:	210 (W) x 44 (H) x 210 (D) mm (8 3/8 x 1 3/4 x 8 3/8 inches)
Mass:	1.4 kg (3 lb 1 oz)
Supplied accessories:	AC power cord Operation manual

### MVA-690 Microscope Adaptor

The small and light weight MVA-690 Microscope Adaptor is specially designed for use with the DXC-H10 Camera and Zeiss microscopes. Users have the option of using two supplied lenses: the attached 85 mm, F6.8 lens or the 70 mm, F5.6 lens.



#### SPECIFICATIONS

Video camera mount:	2/3 inch bayonet mount
Connector:	Camera Connector (12 pin)
Mass:	Approx. 590 g (1 lb 5 oz)
Dimensions:	147.5 (W) x 98.5 (H) x 50 (D) (5 7/8 x 4 x 2 inches)
Supplied accessories:	Front cap, Lens block front cap, Camera mount cap (2), 85 mm, F6.8 and 70 mm, F5.6 lens block, Operation manual

## DSC-1024G Digital Scan Converter

The versatile upward and downward digital scan converter makes it possible to convert HD video signals to other conventional signals, allowing the total integration of video signals. Features include adjustable aspect ratios and on-screen display for adjustment and operation.

## SPECIFICATIONS

Operating temperature:	0 to 35°C (32 to 96°F)
Power requirements:	AC 100 to 120 V, 50/60 Hz AC 220 to 240 V, 50/60 Hz
Power consumption:	30 W (max. power on), 3 W (power off)
Dimensions:	424 (W) x 44 (H) x 354 (D) mm (16 3/4 x 1 3/4 x 4 inches)
Mass:	4.1 kg (9 lb 1 oz)
Supplied accessories:	D-sub 15-pin ↔ 5BNC cable (6 ft.) Operation manual



## Lenses and Cables



**A16x9BMD**  
(F 1.8, 9 to 144 mm)  
By Fujinon



**A16x9BRM**  
(F 1.8, 9 to 144 mm)  
By Fujinon



**MAF35BMD**  
(F 2.0, 35 mm)  
By Fujinon



**YJ18x9B**  
(F 1.8, 9 to 162 mm)  
By Canon



**HJ15x8B**  
(F 1.9, 8 to 104 mm)  
By Canon



**HJ18x7.8B**  
(F 2.2, 7.8 to 132 mm)  
By Canon



**CCXC-9DBS**  
Monitor Cable (D-sub 9 Point ↔ 5BNC)

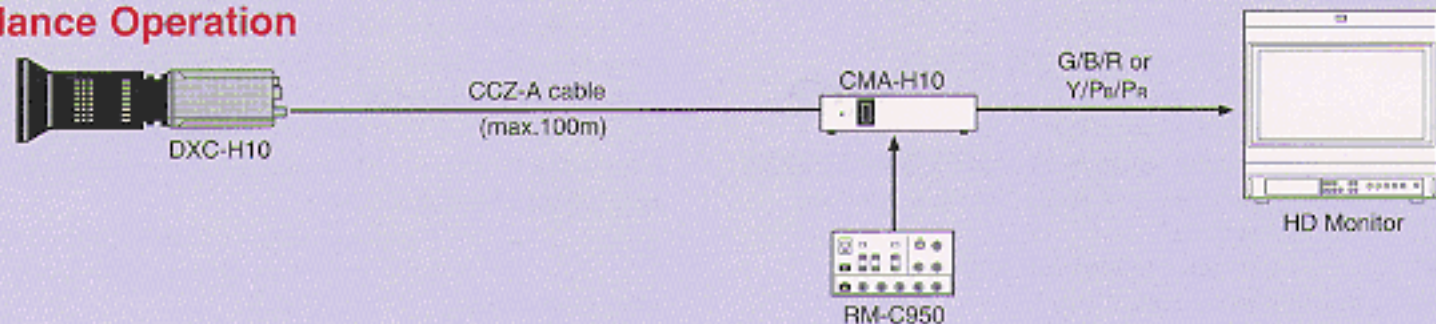


**CCZ-A2/A5/A10/A25/A50/A100**  
Camera Adaptor Connecting Cable (26-pin)  
CCZ-A2 (2 m)  
CCZ-A5 (5 m)  
CCZ-A10 (10 m)  
CCZ-A25 (25 m)  
CCZ-A50 (50 m)  
CCZ-A100 (100 m)

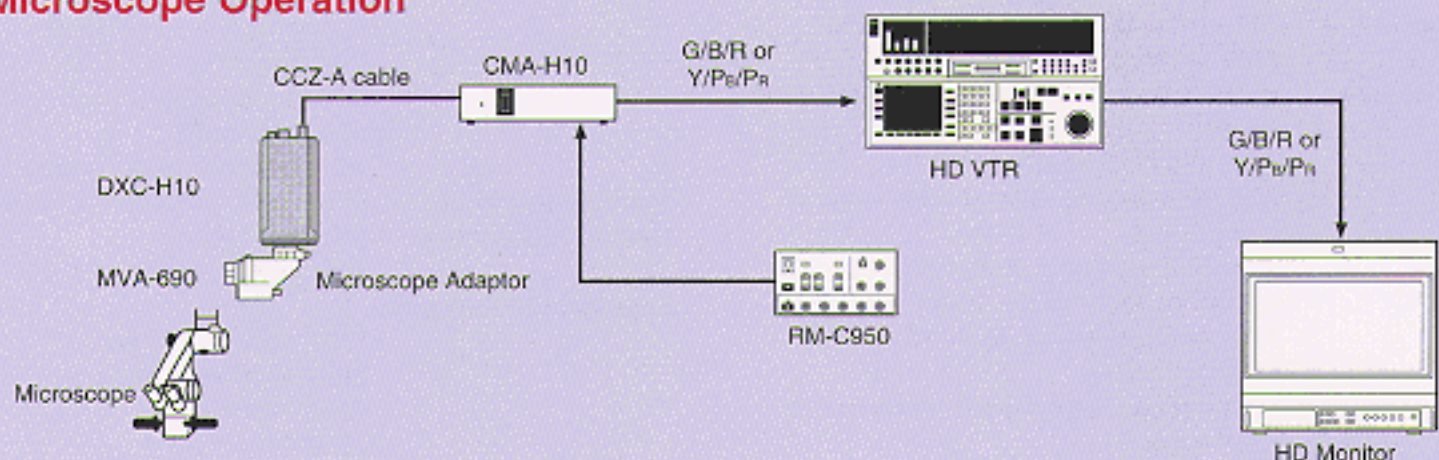
**ECF-125**  
6 pin-12 pin conversion cable  
By Fujinon

# System Connections

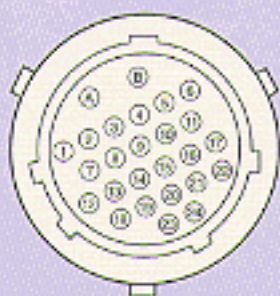
## Surveillance Operation



## Video Microscope Operation

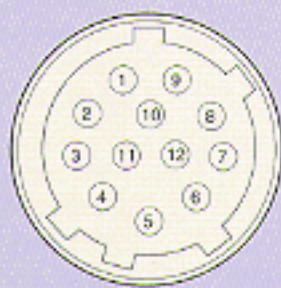


## DXC-H10 Rear Connector Pin Assignments



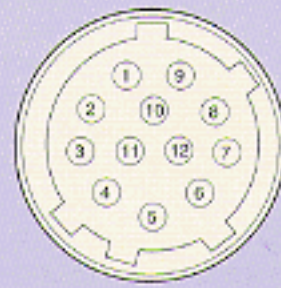
### CAMERA ADAPTOR connector (26-pin)

Pin Number	Signal
A	Power input
B	GND
1	TRIG input
2	GND
3	GND
4	G/Y output
5	R/Pa output
6	GND
7	B/Pa output
8	GND
9	-
10	-
11	-
12	Trigger/ WE pulse output
13	Control
14	SENS (+)
15	-
16	GND
17	SENS (-)
18	HD input/output
19	GND
20	-
21	VD/SYNC input/output
22	VSTBY/WE pulse output
23	-
24	-



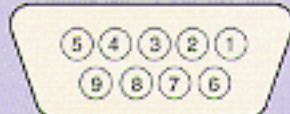
### LENS CONTROL connector (12-pin, male)

Pin Number	Signal
1	Focus mode output
2	Zoom mode output
3	-
4	-
5	Iris control output
6	-
7	-
8	Focus control output
9	Zoom control output
10	Iris mode output
11	COM + V input (+7.5 V)
12	COM - V input (+2.5 V)



### LENS IRIS connector (12-pin, female)

Pin Number	Signal
1	-
2	-
3	GND
4	ENF auto output
5	Iris control output
6	Lens power output
7	-
8	-
9	-
10	-
11	Reserve
12	Reserve



### MONITOR connector (D-sub 9-pin)

Pin number	Signal
1	GND
2	GND
3	R/Pa output
4	G/Y output
5	B/Pa output
6	HD output
7	VD/SYNC output
8	GND
9	Reserve



### FLASH connector

Pin number	Signal
1	Flash
2	GND

# DXC-H10 Specifications

## Image system/optical system

<b>Image device:</b>	Three 2/3-inch Interline Transfer Hyper HAD CCDs
<b>Picture elements:</b>	1920 (horizontal) x 1035 (vertical)
<b>Lens:</b>	Prism type, F1.4
<b>Lens mount:</b>	2/3 inch bayonet type

## Video system

<b>Synchronization:</b>	Internal/external synchronization, automatic switching
<b>Signal format:</b>	HD format (conforms to BTA standard)
<b>Output frequency (horizontal/vertical):</b>	33.75 kHz/60 Hz or 33.716 kHz/59.94 Hz (60 Hz or 59.94 Hz switchable)
<b>Horizontal resolution:</b>	1000 TV lines
<b>Minimum illumination:</b>	16 lux (F1.4, G or Y: 100%, gain: + 12 dB)
<b>Sensitivity:</b>	2000 lux (F8, 3,200K)
<b>Signal-to-noise ratio:</b>	50 dB (Y, Gain: 0 dB, Gamma: OFF, 100 kHz to 30 MHz)
<b>Gain control:</b>	Fixed: 0/6/12 dB selectable AGC: Automatically adjusted within range of 0 dB to 12 dB
<b>White balance:</b>	AWB: automatic adjustment (2,500 K to 9,000K) (R. PAINT and B. PAINT adjustable) ATW: Automatic tracing (R. PAINT and B. PAINT adjustable) MANU: Manual adjustment (R. GAIN and B. GAIN adjustable)
<b>Color temperature:</b>	3200K/5600K switchable
<b>Electronic shutter:</b>	CCD IRIS: Automatic exposure control (within range of 1/60-1/10000 seconds) STEP: 1/100 (flickerless mode), 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/20000, 1/40000, 1/100000 s MANU: 2 to 256 frames (low speed mode frame), 1 to 560H (high speed mode)
<b>External trigger shutter:</b>	RR (Restart Reset) EXT. TRIG LTR (Long-term reset)
<b>AE mode:</b>	MULTI, AVERAGE, SPOT, PEAK
<b>Knee:</b>	HI, LOW, AUTO
<b>Master pedestal:</b>	Adjusts pedestal levels of G, B, and R channels simultaneously
<b>Linear matrix:</b>	ON/OFF switchable
<b>Vertical shading compensation:</b>	OFF/MANUAL switchable
<b>Gamma compensation:</b>	ON/OFF switchable

<b>Negative/Positive mode:</b>	ON/OFF switchable
<b>Accumulation mode:</b>	Field/frame switchable
<b>Detail compensation:</b>	ON/OFF switchable
<b>Flash synchronization:</b>	ON/OFF switchable
<b>Video signal output mode:</b>	GBR and Y/P <sub>B</sub> /P <sub>R</sub> switchable
<b>Sync signal format:</b>	Tri-level sync signal/Bi-level switchable
<b>Sync signal input/output mode:</b>	Input/output switchable (HD/VD and SYNC signals switched simultaneously)
<b>Horizontal phase:</b>	Adjustable

## Inputs/outputs

<b>Video input/output signals:</b>	Y/R/G/B output: 1 Vp-p (75 Ω) P <sub>B</sub> /P <sub>R</sub> output: 0.7 Vp-p (75 Ω) HD/VD input/output: 1 Vp-p (75 Ω) SYNC input/output: 0.6 Vp-p (tri-level, 75 Ω), 0.3 Vp-p (bi-level) WEN pulse: TTL level, negative
<b>External sync input:</b>	SYNC or HD/VD switched automatically
<b>External trigger input:</b>	TTL level, negative Pulse width: more than 3H

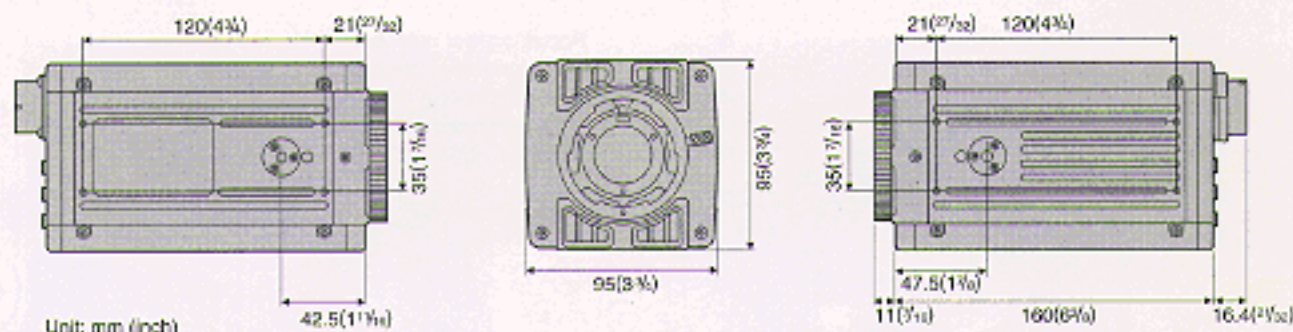
## Input/output connectors:

MONITOR:	D-sub 9-pin
CAMERA ADAPTOR:	26-pin
LENS IRIS:	12-pin
LENS CTRL:	12-pin
FLASH:	small coaxial type

## General

<b>Power supply:</b>	15 V DC (10.5 to 15 V)
<b>Power consumption:</b>	Approx. 25 W
<b>Operating temperature:</b>	-5 to 45°C (23 to 113°F)
<b>Storage temperature:</b>	-20 to 60°C (-4 to 140°F)
<b>Operating humidity:</b>	20% to 80% (free of condensation)
<b>Storage humidity:</b>	20% to 95% (free of condensation)
<b>Mass:</b>	1.2 kg (2 lb 10 oz)
<b>Supplied Accessories:</b>	Lens mount cap, Operation manual, name sheet for keys on RM-C950
<b>Optional Accessories:</b>	
Camera adaptor:	CMA-H10
Remote control unit:	RM-C950
Digital scan converter:	DSC-1024G
Camera cable:	CCZ- A2/A5/A10/A25/A50/A100
Microscope adaptors and couplers:	MVA-690/20/33, MVAC-33-0/NSM
Monitor cable:	CCXC-9DBS, D-SUB 9-pin→5BNC

## Dimensions:



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