

XCD-SX910 XCD-X710



*1 :XCD-SX910
*2 :XCD-X710



Outline

The XCD-SX910 and XCD-X710 are high-resolution monochrome C-mount cameras. The XCD-SX910 is an SXGA model that features a 1/2 type 1.45 million pixel progressive scan CCD, and the XCD-X710 is an XGA model that features a 1/3 type 800,000 pixel XGA CCD. The output incorporates an IEEE 1394 digital interface, has double the frame rate of the XCD-SX900 and XCD-X700 base models, and is equipped with a larger variety of functions. These cameras have the same body design and boast a high resistance to shock and vibration.

Features

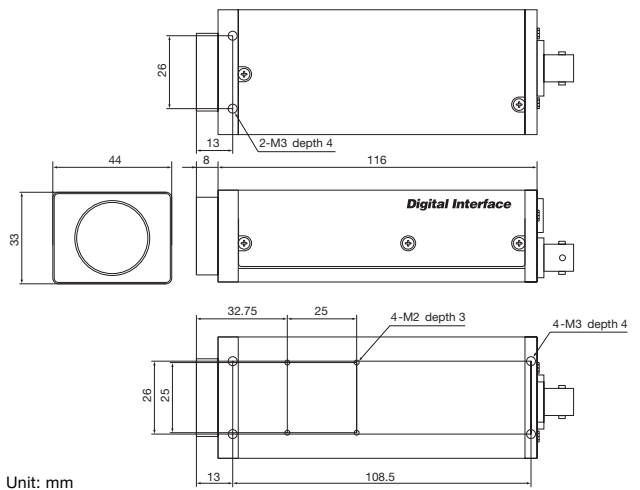
- High resolution
XCD-SX910: SXGA 1,280 (H) x 960 (V)
XCD-X710: XGA 1,024 (H) x 768 (V)
- Frame rate
XCD-SX910: 15/7.5/3.75/1.875 fps
XCD-X710: 30/15/7.5/3.75/1.875 fps
- Black & White (Monochrome) 16-bit mode
- C-mount lens
- Digital camera protocol:
1394-based Digital Camera Specification (Ver. 1.30)
- Partial scan function (256 zones)
- Trigger shutter function
Trigger pulse width control
- Lead-free solder

Accessories

- Tripod adaptor
●VCT-ST70I

Dimensions

Camera body of all models

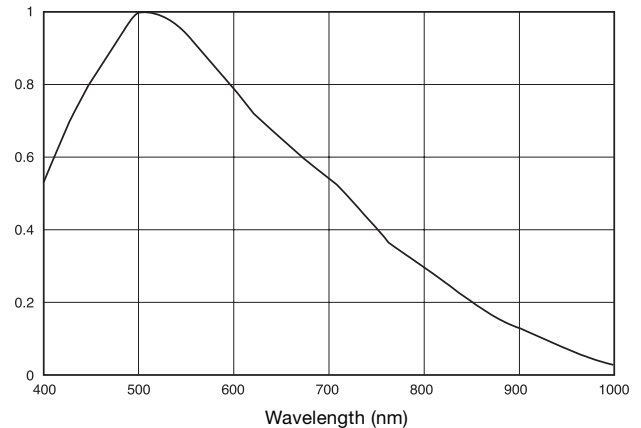


Unit: mm

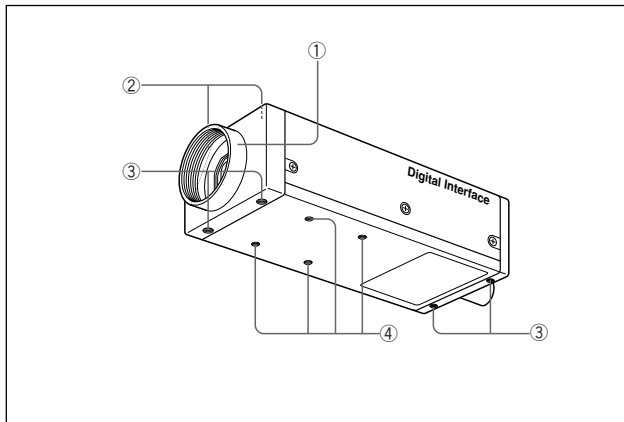
Spectral Sensitivity Characteristics

●XCD-SX910/X710

Relative sensitivity



Location and Function of Parts and Controls

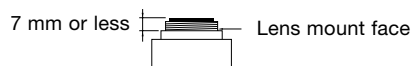


① Lens mount (C-mount)

Attach any C-mount lens or other optical equipment.

Note

The lens must not project more than 7 mm from the lens mount.



② Reference holes (Top)

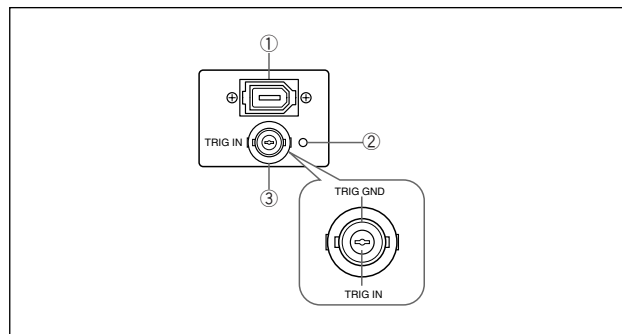
③ Reference holes (Bottom)

These precision screw holes are for locking the camera module. Locking the camera module into these holes secures the optical axis alignment.

④ Tripod adaptor screw holes

Screw the tripod adaptor VCT-ST70I into the four screw holes when you use a tripod.

Rear Panel



① CAMERA connector

Connect the IEEE1394 camera cable (supplied) to this connector.

② Pilot lamp

This lamp indicates the camera module operation states:

OFF: Camera power OFF

Green: Camera power ON / Video signal output OFF

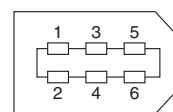
Orange: Camera power ON / Video signal output ON

④ TRIG IN/Exposure OUT connector

Connect the trigger signal generator (trigger output connector) to this connector.

When trigger is OFF, or software trigger is ON, a signal that indicates the exposure time is output from the BNC connector of the camera.

Connector Pin Assignments



- 1: Power
- 2: Power (GND)
- 3: TPB-
- 4: TPB+
- 5: TPA-
- 6: TPA+

Specifications

	XCD-SX910	XCD-X710
Image device	1/2 type progressive scan IT CCD	1/3 type progressive scan IT CCD
Effective picture elements	1,392 (H) x 1,040 (V); 1,450,000 pixels	1,034 (H) x 779 (V); 800,000 pixels
Effective lines/Output image size	1,280 (H) x 960 (V)/SXGA	1,034 (H) x 768 (V)/XGA
Unit Cell size	4.65 μm (H) x 4.65 μm (V)	
Lens mount	C mount	
Minimum illumination	4 lx (F1.4, Gain+18 db)	
Digital interface	IEEE 1394-1995	
Protocol	IIDC 1394-based Digital Camera Specification Version 1.30	
Transfer rate	400 Mbps/200 Mbps/100 Mbps	
Frame rate	15/7.5/3.75/1.875 fps	30/15/7.5/3.75/1.875 fps
Gain control	Auto/Manual (0 to 24 dB) Auto gain	
Gamma	γ=1 (Fix.)	
Electronic shutter	1/100,000 to 17.5 s Auto shutter	
External trigger shutter	Available (Trigger mode 0, 1)	
Partial scan function	256 zones (16 x 16)	
Power requirements	DC 8 to 30 V	
Power consumption	3.5 W (12 V)	
Dimensions	44 (W) x 33 (H) x 116 (D) mm	
Mass	250 g	
Operation temp. / humidity	-5 to +45 °C/20 to 80 % (no condensation)	
Storage temp. / humidity	-20 to +60 °C/20 to 95 % (no condensation)	
Performance guarantee temperature	0 to 40 °C	
Vibration resistance	10 G (20 to 200 Hz)	
Shock resistance	70 G	
MTBF	59,549 hrs. (approx. 6.8 years)	
Regulation	UL60950, FCC Class B Personal computers and peripherals, ICES-003 Class B Digital Device, CE (EN61326/97+A1/98), Australia EMC (AS4251.1 + AS4252.1)	
Supplied accessories	Lens mount cap (1), Operation instructions (1), Cable (1), Clamp filter (2)	

Shutter

This camera allows both Manual and Auto Shutter setting. The variable range extends from 10 microseconds to 17.5 seconds; relative control values are indicated by a 12-bit integer, and absolute control values are indicated using a 32-bit floating point value.

The shutter settings for the XCD-SX910CR/SX910UV/SX910 and XCD-X710CR/X710 are the same, but these settings differ from some of those for the XCD-SX900 or XCD-X700.

The relationship between the parameter and the exposure time is given by the following formulas.

Where

P = Parameter (003h ~ 424h)

E = Exposure time (s)

$P \geq 3 \sim P \leq 1000$

$$E = \frac{P^2}{1000000} \quad \text{①}$$

$P > 1000 \sim P \leq 1150$

$$E = (P - 1000) * 0.1 + 1 \quad \text{②}$$

Setting examples

3 (003h) :	9 μ s (1/100000)
32 (020h) :	1 ms (1/1000)
100 (064h) :	10 ms (1/100)
1000 (3E8h) :	1 s
1010 (3F2h) :	2 s
1150 (47Eh) :	16 s

When Auto Shutter is selected, the exposure time is adjusted automatically, based on the brightness of the subject. At this time, the reference level (target point) is set in the AutoExposure register.

Gain

Both Manual and Auto Gain setting are available with this camera. The variable range extends from 0 to 18 dB(XCD-SX910CR/XCD-X710CR) 0 to 24 dB (XCD-SX910UV*/SX910*/X710), and the unit is designed so that the gain can be subdivided and set to any of 640 steps.

At the factory default setting, the gain is set to 0 dB.

When Auto gain is selected, the gain is adjusted automatically, based on the brightness of the subject. At this time, the reference level (target point) is set in the AutoExposure register.

The XCD-SX910CR/SX910UV/SX910 and XCD-X710CR/X710 are not compatible with the XCD-SX900 and XCD-X700 in Gain settings.

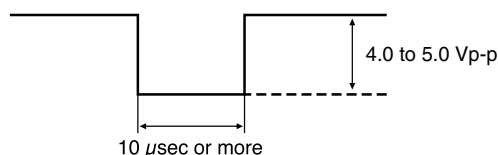
*: If you set the gain to +18 dB or higher, the S/N ratio will be severely degraded. Note this characteristic when you use the XCD-SX910UV/SX910/X710.

Trigger Shutter

Trigger shutter is useful for capturing images in response to a trigger that starts the exposure to match a preset timing. It can also be used to capture an image using multiple cameras with the same timing. When a trigger shutter is used, the required trigger is input via the BNC connector on the rear panel. The input signal is a 5-volt negative pulse. The falling edge of the signal is detected as the trigger, and the unit is equipped with an exposure time consisting of the shutter parameter set as trigger mode 0, and trigger mode 1 that controls the exposure timing using the width of the trigger signal pulse. When trigger mode 0 is used, the minimum width of the trigger is 10 microseconds. When trigger mode 1 is used, there is no limit to the exposure time.

This unit can also be used with a software trigger that issues the trigger signal via a software command. Both trigger mode 0 and trigger mode 1 can be used with software triggers.

Trigger shutter



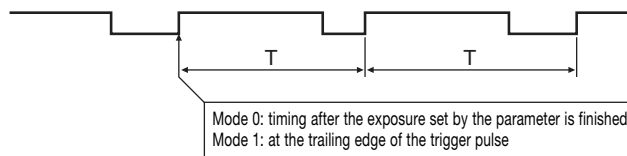
• Input impedance: 10 k Ω

When using Trigger mode

When this camera is set to accept a trigger at the fastest possible timing, it can accept overlap of the next trigger signal in the midst of video transmission.

For this reason, a trigger inhibition period is not available. Thus, if a trigger signal is input before the CCD can change to the state where it can accept exposures, multiple exposures can occur, and it cannot capture the correct image. Make sure that the following conditions are met when the trigger is activated.

(However, partial activation can be used if the following conditions are exceeded.)



XCD-SX910 : $T \geq 1/15$ sec

XCD-X710 : $T \geq 1/30$ sec

Non-TV Format

TV Format
BMW Model
Color Model

Intelligent

Digital Interface
IEEE1394

Camera Link compatible

Accessories

Color PTZ Model

Color Camara Block