

### XC-E Series

**XC-ES50/ES50CE**  
**XC-ES50L/ES50LCE**  
**XC-ES51/ES51CE**  
**XC-ES30/ES30CE**  
**XC-EI50/EI50CE**  
**XC-EI30/EI30CE**  
**XC-EU50/EU50CE**

### Component/OEM



#### OUTLINE

The XC-E Series are compact, light-weight one-piece black and white cameras incorporating the latest 1/2 and 1/3 type Interline (IT) CCD which produces new levels of picture detail. With dimensions of 29 x 29 x 32 mm (1 3/16 x 1 3/16 x 1 5/16 inches)\*, these cameras can easily be installed in places where installation was previously difficult for other larger cameras.

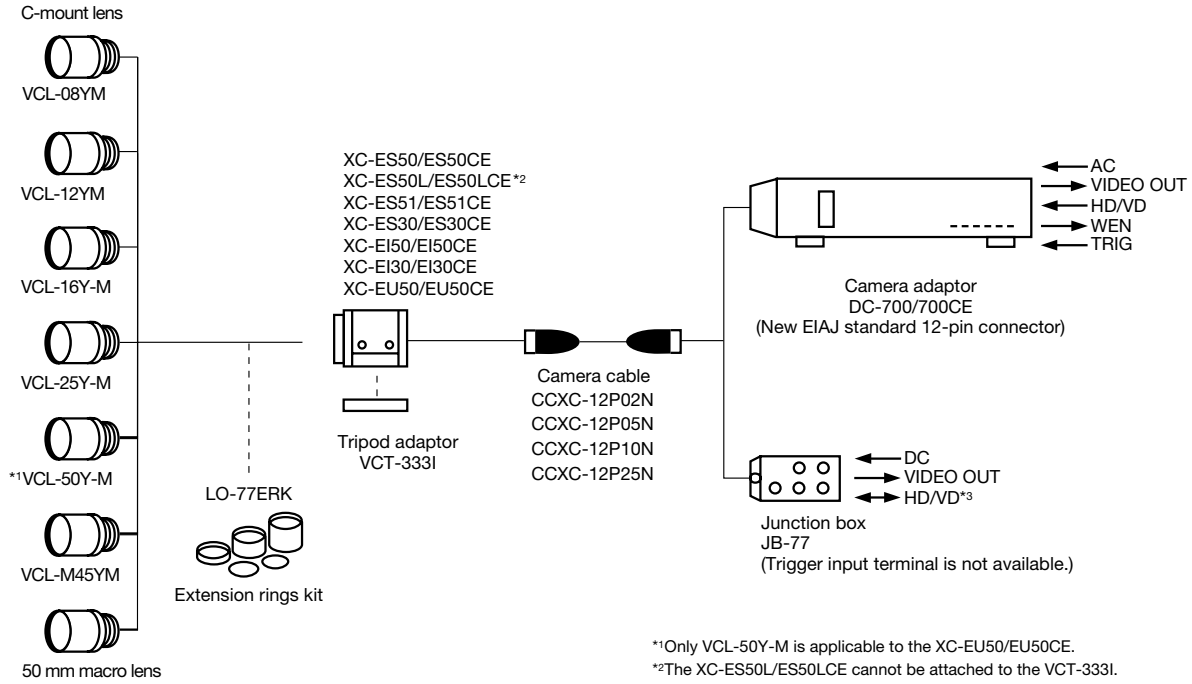
The XC-E Series offer three different model ranges that only differ in spectral sensitivity as to suit various application environments. The XC-ES Series (XC-ES50/ES50CE, XC-ES50L/ES50LCE, XC-ES51/ES51CE and XC-ES30/ES30CE) are standard models for general use under visible light conditions. The XC-EI Series (XC-EI50/EI50CE and XC-EI30/EI30CE) offer excellent near-infrared sensitivity. Under low light conditions or when used with IR LED illumination systems, these cameras provide clear images. The XC-EU Series (XC-EU50/EU50CE) offer near-ultraviolet sensitivity in the i-line, or 365 nm, range. The short wavelength allows the XC-EU Series to capture very fine detail. All models have identical dimensions and controls, making them easy to interchange. A variety of settings are available for differing subject and lighting conditions. All camera control switches are accessible from the outside of the camera. Excellent vibration and shock characteristics make these cameras ideal for demanding machine vision applications.

\*The XC-ES50L/ES50LCE, which are L-type versions of the XC-ES50/ES50CE, measure 29 (W) x 42.5 (H) x 43.8 (D) mm (1 3/16 x 1 11/16 x 1 3/4 inches).

#### FEATURES

- XC-ES50/ES50CE/ES50L/ES50LCE/ES51/ES51CE/EI50/EI50CE/EU50/EU50CE: 1/2 type IT CCD
- XC-ES30/ES30CE/EI30/EI30CE: 1/3 type IT CCD
- Compact and light weight:  
29 (W) x 29 (H) x 32 (D) mm, 50 g (1 3/16 x 1 3/16 x 1 5/16 inches, 2 oz):  
except for XC-ES50L/ES50LCE  
29 (W) x 42.5 (H) x 43.8 (D) mm, 110 g (1 3/16 x 1 11/16 x 1 3/4 inches, 4 oz):  
XC-ES50L/ES50LCE
- Near-infrared sensitivity: XC-EI50/EI50CE, XC-EI30/EI30CE
- Near-ultraviolet sensitivity: XC-EU50/EU50CE
- Minimum illumination at F1.4:  
0.3 lx: XC-ES50/ES50CE/ES30/ES30CE  
3.0 lx: XC-ES50L/ES50LCE  
0.1 lx: XC-EI50/EI50CE  
0.2 lx: XC-ES51/ES51CE/EI30/EI30CE
- High S/N Ratio: 60 dB
- Electronic shutter function:  
1/100 to 1/10,000 s: EIA, 1/120 to 1/10,000 s: CCIR
- Flexible trigger shutter function
- Scanning system: 2:1 interlaced
- Frame/field exposure
- Restart/reset function
- Synchronization: internal/external (HD/VD)
- High shock and vibration tolerance

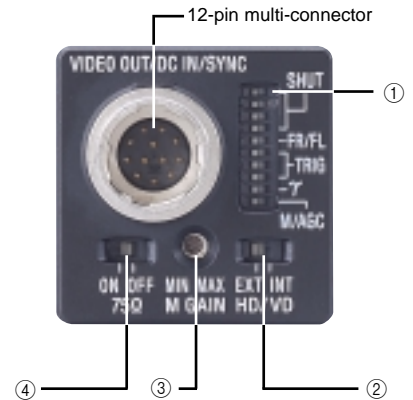
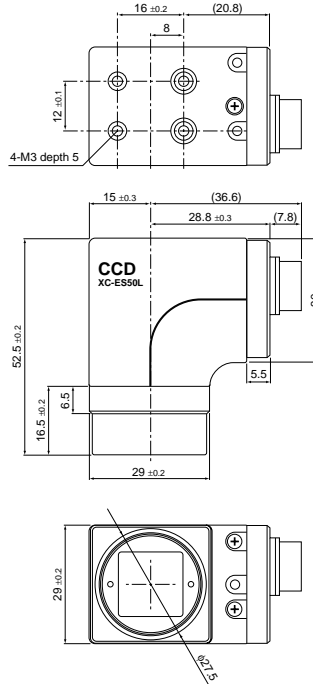
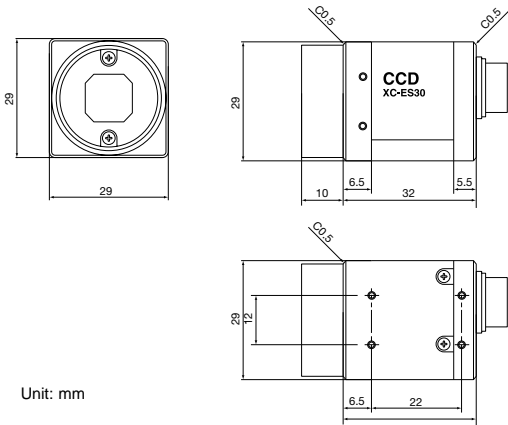
# CONNECTION DIAGRAM



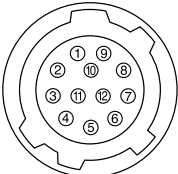
# DIMENSIONS & REAR PANEL

XC-ES50/ES50CE/ES51/ES51CE/ES30/ES30CE  
XC-EI50/EI50CE/EI30/EI30CE/EU50/EU50CE

XC-ES50L/ES50LCE



12-pin multi-connector



PIN No.	External sync (HD/VD)	Internal sync (HD/VD)
1	GND	GND
2	UNREG input	UNREG input
3	GND	GND
4	Video output	Video output
5	GND	GND
6	External HD input	Internal HD output
7	External VD input*1	Internal VD output
8	GND	GND
9	-	-
10	WEN output*2	WEN output*2
11	TRIG input	TRIG input
12	GND	GND

\*1 RESET pulse is required when using restart, reset mode.  
\*2 WEN output works only when in external trigger shutter mode.

## ● Factory setting mode of rear panel

No.	Switch name	Factory-setting mode	
①	Shutter speed/Mode setting DIP switch	Dip switch 1-4: Shutter speed	OFF
		Dip switch 5: FRAME/FIELD	FRAME
		Dip switch 6-8: External trigger shutter mode, restart/reset mode	Normal
		Dip switch 9: Gamma ON/OFF	OFF
		Dip switch 0: GAIN	Manual
②	HD/VD signal input/output switch	EXT	
③	Control volume for Manual GAIN	Twelve o'clock position	
④	75 Ω termination switch	ON	

# SPECIFICATIONS

	XC-ES50	XC-ES50L	XC-ES51	XC-ES30	XC-EI50	XC-EI30	XC-EU50
Image device	1/2 type IT CCD			1/3 type IT CCD	1/2 type IT CCD	1/3 type IT CCD	1/2 type IT CCD
Effective picture elements	768 (H) x 494 (V)						
Signal system	EIA (standard)						
Horizontal frequency	15.734 kHz						
Vertical frequency	59.94 Hz						
Cell size (μm)	8.4 x 9.8			6.35 x 7.4	8.4 x 9.8	6.35 x 7.4	8.4 x 9.8
Lens mount	C mount						
Flange back	17.526 mm						
Sync system	Internal/External (auto)						
External sync system	HD/VD (2 to 5 Vp-p)						
External sync frequency	± 1 %						
Jitter	Less than ± 50 nsec						
Scanning system	2:1 Interlaced						
Video output	1.0 Vp-p, negative, 75 Ω unbalanced						
Horizontal resolution	570 TV lines						
Sensitivity (Gamma ON, MIN GAIN, No IR cut filter)	400 lx F5.6	400 lx F4	400 lx F8	400 lx F4	400 lx F11	400 lx F8	–
Minimum illumination*	0.3 lx	3.0 lx	0.2 lx	0.3 lx	0.1 lx	0.2 lx	–
S/N ratio	60 dB						
Gain	AGC/Manual selectable						
Gamma	ON/OFF selectable						
Normal shutter	1/100 to 1/10,000 s						
External trigger shutter**	1/4 to 1/10,000 s						
Power requirements	DC 12 V (+9 to +16 V)						
Power consumption	1.6 W			1.4 W	1.6 W	1.4 W	1.6 W
Dimension (W) x (H) x (D)	29 x 29 x 32 mm (1 3/16 x 1 3/16 x 1 5/16 inches)	29 x 42.5 x 43.8 mm (1 3/16 x 1 11/16 x 1 3/4 inches)		29 x 29 x 32 mm (1 3/16 x 1 3/16 x 1 5/16 inches)			
Mass	50 g (2 oz)	110 g (4 oz)		50 g (2 oz)			
Operating temperature	-5 to +45 °C (23 to 104 °F)						
Operating humidity	20 to 80 %						
Storage temperature	-30 to +60 °C (-22 to +140 °F)						
Storage humidity	20 to 95 %						
Vibration resistance	10 G (20 to 200 Hz)						
Shock resistance	70 G						
MTBF	126,000 hrs.						
Regulatory compliance	UL1492, FCC Class B Digital Device, CE (EN61326/97 + A1/98), AS4251.1 + AS4252.2						
Supplied accessories	Lens mount cap (1), Operating instructions (1)						

\* (F1.4, AGC ON, without IR cut filter) \*\* Using Dip switch on the rear panel or Using trigger pulse width

	XC-ES50CE	XC-ES50LCE	XC-ES51CE	XC-ES30CE	XC-EI50CE	XC-EI30CE	XC-EU50CE
Image device	1/2 type IT CCD			1/3 type IT CCD	1/2 type IT CCD	1/3 type IT CCD	1/2 type IT CCD
Effective picture elements	752 (H) x 582 (V)						
Signal system	CCIR (standard)						
Horizontal frequency	15.625 kHz						
Vertical frequency	50 Hz						
Cell size (μm)	8.6 x 8.3			6.5 x 6.25	8.6 x 8.3	6.5 x 6.25	8.6 x 8.3
Lens mount	C mount						
Flange back	17.526 mm						
Sync system	Internal/External (auto)						
External sync system	HD/VD (2 to 5 Vp-p)						
External sync frequency	± 1 %						
Jitter	Less than ± 50 nsec						
Scanning system	2:1 Interlaced						
Video output	1.0 Vp-p, negative, 75 Ω unbalanced						
Horizontal resolution	560 TV lines						
Sensitivity (Gamma ON, MIN GAIN, No IR cut filter)	400 lx F5.6	400 lx F4	400 lx F8	400 lx F4	400 lx F11	400 lx F8	–
Minimum illumination*	0.3 lx	3.0 lx	0.2 lx	0.3 lx	0.1 lx	0.2 lx	–
S/N ratio	60 dB						
Gain	AGC/Manual selectable						
Gamma	ON/OFF selectable						
Normal shutter	1/120 to 1/10,000 s						
External trigger shutter**	1/4 to 1/8,000 s						
Power requirements	DC 12 V (+9 to +16 V)						
Power consumption	1.6 W			1.4 W	1.6 W	1.4 W	1.6 W
Dimension (W) x (H) x (D)	29 x 29 x 32 mm (1 3/16 x 1 3/16 x 1 5/16 inches)	29 x 42.5 x 43.8 mm (1 3/16 x 1 11/16 x 1 3/4 inches)		29 x 29 x 32 mm (1 3/16 x 1 3/16 x 1 5/16 inches)			
Mass	50 g (2 oz)	110 g (4 oz)		50 g (2 oz)			
Operating temperature	-5 to +45 °C (23 to 104 °F)						
Operating humidity	20 to 80 %						
Storage temperature	-30 to +60 °C (-22 to +140 °F)						
Storage humidity	20 to 95 %						
Vibration resistance	10 G (20 to 200 Hz)						
Shock resistance	70 G						
MTBF	126,000 hrs.						
Regulatory compliance	UL1492, FCC Class B Digital Device, CE (EN61326/97 + A1/98), AS4251.1 + AS4252.2						
Supplied accessories	Lens mount cap (1), Operating instructions (1)						

\* (F1.4, AGC ON, without IR cut filter) \*\* Using Dip switch on the rear panel or Using trigger pulse width

## Standard model

**XC-ES50/ES50CE**  
**XC-ES50L/ES50LCE**  
**XC-ES51/ES51CE**  
**XC-ES30/ES30CE**



### ■ Applicable wavelength range



## Near IR model

**XC-EI50/EI50CE**  
**XC-EI30/EI30CE**



### ■ Applicable wavelength range

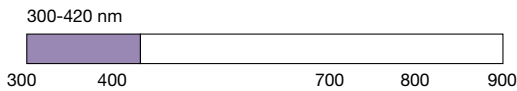


## UV model

**XC-EU50/EU50CE**



### ■ Applicable wavelength range



The XC-EU50/EU50CE models are compact and lightweight cameras that have near-ultraviolet sensitivity in the i-line, or 365 nm, range. Examples of typical application areas are PCB and solder inspection, document proofing, microscopy, medical and cosmetics applications. The short wavelength allows the XC-EU50/EU50CE models to capture clearly very fine detail and surface structures, which cannot be detected using visible or IR lighting, including very small scratches, dust or blemishes, as well as special fluorescent materials.

## ACCESSORIES



Compact camera adaptor  
**DC-700/700CE**

- Compact, lightweight (700 g, 1 lb 8 oz)
- External sync IN/OUT
- Trigger input/WEN output
- New EIAJ standard 12-pin connector
- Dimensions: 110 (W) x 53 (H) x 160 (D) mm (4 3/8 x 2 1/8 x 6 3/8 inches)



12-pin camera cable  
 (CE standard)

**CCXC-12P02N (2 m)**  
**CCXC-12P05N (5 m)**  
**CCXC-12P10N (10 m)**  
**CCXC-12P25N (25 m)**



Tripod adaptor  
**VCT-333I**

- ABS
- Approx. 6.1 g (0.2 oz)
- Dimensions: 18 (W) x 6 (H) x 2.9 (D) mm (23/32 x 1/4 x 1/8 inches)



Junction box  
**JB-77**

- Sony Electronics Inc. (USA) HQ
- Sony of Canada Ltd. (CANADA)
- Sony Broadcast & Professional Europe HQ

Germany  
 France  
 UK  
 Nordic  
 Italy

- 1 Sony Drive Park Ridge, NJ 07656
- 115 Gordon Baker Rd, Toronto, Ontario M2H 3R6  
 Schipholweg 275 1171 PK Badhoevedorp The Netherlands

Hugo-Eckener-Strasse 20 D-50829 Kohn  
 16-26 rue Morel 92110 Clichy  
 The Heights, Brooklands, Weybridge, Surrey KT13 0XW  
 Per Albin Hanssons vag 20 S-214 32 Malmo Sweden  
 Via Galileo Galilei 40 I-20092 Cinisello Balsamo, Milano

(TEL:+1-800-686-7669)  
<http://www.sony.com/videocameras>  
 (TEL:+1-416-499-1414) (FAX:+1-416-497-1774)  
 (TEL:+31-20-44-99-351) (FAX:+31-20-44-99-333)  
<http://www.sony-vision.com>  
 (TEL:+49-221-537-8923) (FAX:+49-221-537-491)  
 (TEL:+33-1-55-90-41-58) (FAX:+33-1-55-90-42-20)  
 (TEL:+44-990-331122) (FAX:+44-1932-817011)  
 (TEL:+46-40-190-800) (FAX:+46-40-190-450)  
 (TEL:+39-02-61-83-84-26) (FAX:+39-02-618-38-402)