SONY
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XCI Series

Intelligent Cameras

IMAGE SENSING SOLUTIONS

The Next-Generation Smart Cameras for Machine Vision and Surveillance Applications from Sony – Now in Colour!

XCI-SX100 XCI-SX100C XCI-V100 XCI-V100C

XCI-SX100
XCI-SX100C
XCI-V100
XCI-V100C

Sony is enhancing its intelligent camera line up with the introduction of four new cameras to its **XCI Series** – offering users a choice of VGA or SXGA resolution in either monochrome or colour.

The XCI-SX100/SX100C*1 is equipped with a 1/3 type progressive scan CCD that achieves outstanding picture quality and high-resolution SXGA images (1280 x 960) at 30 fps. The XCI-V100/V100C*2 employs a 1/3 type progressive scan CCD that captures clear images in VGA resolution (640 x 480) at a frame rate of up to 90 fps.

Compared to previous models, these smart cameras ore equipped with enhanced processing power (x86-compatible 1GHz VIA Eden ULV), built-in Microsoft® Windows® XP operating system and a highly capable 512MB of SDRAM memory. They achieve high-speed processing with low power consumption and also offer high-speed network operation up to 1000Base-T.

In addition these unique cameras are equipped with various interfaces including: two USB 2.0 ports, Gigabit Ethernet I/F to enable wideband transmission, monitor output, serial interface (RS-232C), trigger input and exposure output. They also employ Field-Programmable Gate Array (FPGA) as an additional processing device, which enables easy customisation for system designers via programmable blocks. And when applications call for precise colour monitoring, the XCI-SX100C and XCI-V100C colour cameras are ideal.

Combining high-quality image processing within the camera, direct data transfer via a network, and the ability to control peripheral devices, these intelligent cameras offer a perfect solution for machine vision applications.

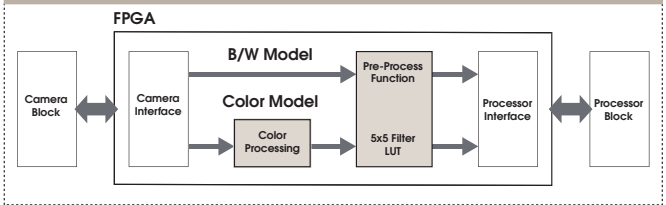
They are also an excellent choice for high-end security monitoring of parking lots, shopping centres, and train stations since they are equipped with several key surveillance features, including: support CS mount lenses, mounted Auto Iris interface, AWB, AGC, and Wide-D images. These next-generation smart cameras from Sony are ideal for traffic control, security, pharmaceutical, food and beverage inspection, as well as traditional machine vision applications.

*1 In the following text, 'XCI-SX100' refers to both the XCI-SX100 and XCI-SX100C
*2 In the following text, 'XCI-V100' refers to both the XCI-V100 and XCI-V100C

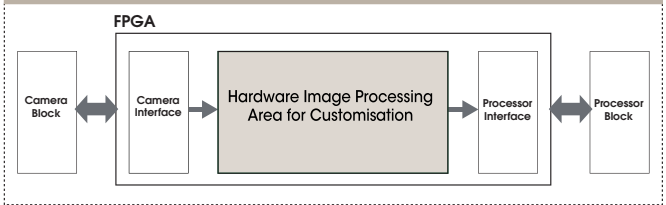
Customisable FPGA (Field Programmable Gate Array)

All four camera models contain customisable space in their FPGA block. This allows you to replace part of the pre-installed area with your own image-processing software, thereby increasing the camera's overall image-processing capability.

Standard Configuration (Pre-installed)



Customised Configuration



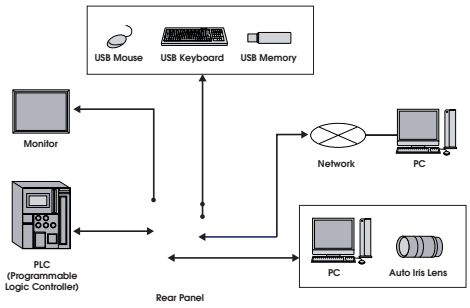
C/CS mount lens

C/CS mount lens attachable to support both machine vision and high-end security applications, such as Intelligent Traffic System (ITS).

Features

For Machine Vision (C mount) For High-end Security (CS Mount)

- X86-Compatible1 GHz CPU
- Monitor Output
- Gigabit Ethernet
- USB 2.0
- Customisable FPGA
- Auto Iris
- C/CS Mount



High-performance Processor

- x86-compatible CPU (1GHz. VIA Eden ULV)
- MMX SSE, SSE2 and SSE3 compatibility
- Low power consumption
- 512 MB main memory (DDR2 SDRAM)

Microsoft Windows XP Embedded Support

Enables the cameras to integrate with a wide range of machine vision systems and surveillance systems.

Excellent Picture Quality/ High Frame Rates

XCI-SX100/SX100C: SXGA (1280 x 960) at 30 fps ideal for applications that require the capture of highly detailed images.

XCI-V100/V100C: VGA (640 x 480) at 90 fps perfect for applications that require high-speed image capture.

Watch Dog Timer (WDT)

This monitors software activity on the CPU and reboots the hardware if problems occur.

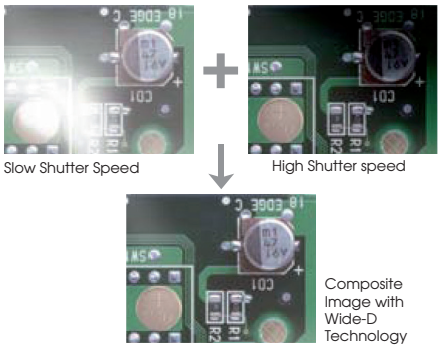
Full Range of Pre-processing Functions

- Colour-processing function enables the reproduction of extremely detailed images*3
- Built-in real-time 5x5 image pre-processing filter
- Hardware LUT (Look Up Table)

*3 Available only with XCU-SX100C and XCI-V100C

Dual Readout by Wide-D Technology

This function allows you to capture two images at different shutter speeds. For machine vision applications, you can obtain two different images simultaneously and analyse them in separate ways without changing the lighting. In addition, for security applications, a composite image with a wide dynamic range can be produced with software image processing.



Dual Readout by Wide-D Technology (simulated images)

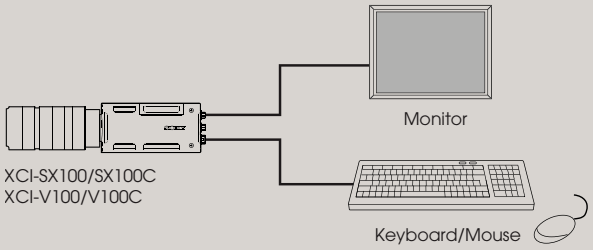
Various Interfaces

- Easy and direct monitor output (D-sub 15-pin)
- High-speed network connectivity, up to 1000Base-T
- USB 2.0 interface
- Two USB ports allow users to control the camera via a mouse and/or keyboard
- Auto Iris control, convenient for a wide range of security applications
- Digital Input/Output and RS-232C allow cameras to connect with external equipment. such as sensors, strobe lights, and Programmable Logic Controllers (PIC)

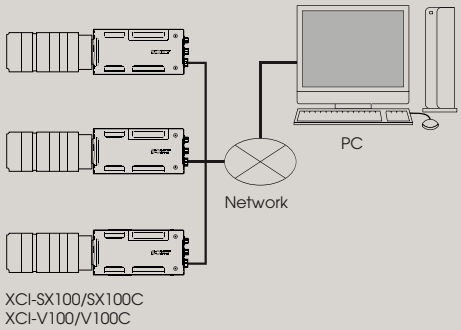
Other Features

- External trigger shutter
- Vertical and horizontal partial scanning function
- Vertical and horizontal binning function
- Selectable power supply between 12V and 24V
- High shock and vibration resistance

Application Development



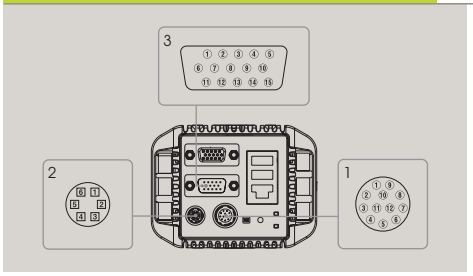
Operation Over Network



Specifications

	XCI-SX100	XCI-SX100C	XCI-V100	XCI-V100C
Sensor Block				
Image device	1/3 type IT Progressive Scan CCD			
Effective picture elements (H) × (V)	1,280 × 960 (SXGA)		640 × 480 (VGA)	
Cell size (H) × (V)	3.75 µm × 3.75 µm		7.4 µm × 7.4 µm	
Resolution depth	Mono 8: 8 bits/pixel Mono 16: 10 bits/pixel	Raw 8: 8 bits/pixel Raw 16: 10 bits/pixel Y 8: 8 bits/pixel Y 16: 10 bits/pixel BGRi: 8 bits B/G/R, Interleave RGBp: 8 bits R/G/B, Plane YUVi: 8 bits Y/U/ V, Interleave YUVp: 8 bits Y/U/ V, Plane Y+BGRi: Y8 bits+8 bits B/G/R, Interleave Y+RGBp: Y8 bits+8 bits R/G/B, Plane	Mono 8: 8 bits/pixel Mono 16: 10 bits/pixel	Raw 8: 8 bits/pixel Raw 16: 10 bits/pixel Y 8: 8 bits/pixel Y 16: 10 bits/pixel BGRi: 8 bits B/G/R, Interleave RGBp: 8 bits R/G/B, Plane YUVi: 8 bits Y/U/ V, Interleave YUVp: 8 bits Y/U/ V, Plane Y+BGRi: Y8 bits+8 bits B/G/R, Interleave Y+RGBp: Y8 bits+8 bits R/G/B, Plane
Frame rate	30 fps (SXGA)		90 fps (VGA)	
Sensitivity	400 lx F5.6 (0 dB)	2000 lx F5.6 (0 dB)	400 lx F5.6 (0 dB)	2000 lx F5.6 (0 dB)
Gain control	Manual (0 to +18 dB, 0.1 dB steps)			
Readout modes	Normal, Binning (1 × 2, 2 × 2), Partial scanning (H/ V 16 division), LUT, 5 × 5 filter	Normal, Partial scanning (H/V 16 division), LUT, 5 × 5 filter	Partial scanning (H/ V 16 division), LUT, 5 × 5 filter	Normal, Partial scanning (H/ V 16 division), LUT, 5 × 5 filter
Normal shutter speed	2 to 1/50,000 s			
External trigger shutter	Trigger start (shutter speed: 2 to 1/50,000 s), Trigger start and exposure duration (4 s Max), Trigger inhibit function, Trigger delay function: 0 to 4 s, 1ms step			
Strobe delay function	0 to 4 ms (1 µs steps)			
Auto features	AGC, AWB, ATW, Auto Iris Control			
Processor				
CPU	x86 1GHz, VIA Eden ULV (L1 caches 64 KB × 2, L2 caches 128 KB)			
Memory	512 MB DDR2 SDRAM			
Interface				
Ethernet	1000 Base-T/100 Base-TX/10 Base-T			
Monitor output	D-sub 15 pin for multi scan monitor			
USB	Hi-Speed USB (USB 2.0) × 2			
Serial communication	RS-232C			
Iris control	DC			
Trigger input	Low: 0 to +0.5 V, High: +4.5 V to +24.0 V			
Strobe output	Low: 0 to +1.0 V, High: +4.0 V to +5.0 V			
Digital I/Os	Isolated IN (4), Isolated OUT (8)			
General				
Lens mount	C mount/CS mount switchable (C mount of the shipment)			
Power requirements	DC +10.5 to 26.4 V			
Power consumption	17.4 W (Max.)	18.2 W (Max.)	17.4 W (Max.)	18.2 W (Max.)
Dimensions	94 (W) × 70 (H) × 140 (D) mm (not including projecting parts)			
Mass	Approx. 760 g			
Operating temperature	–5 to +45°C			
Storage temperature	–30 to +60°C			
Operating humidity	20 to 80% (no condensation)			
Storage humidity	20 to 95% (no condensation)			
Vibration resistance	10 G (20 to 200 Hz)			
Shock resistance	70 G			
Regulations	FCC/IC/CE/VCCI Class A, MIC			
Supplied Accessories	Lens mount cap, C mount conversion adapter (installed), Fall-prevention wire rope, Screw, Operating instructions			

Pin Assignment (Rear Panel)



1. 12-pin male connector

Pin No.	Signal
1	GND
2	VCC
3	GND
4	NC
5	GND
6	NC
7	NC
8	GND
9	VCC
10	EXPOSURE_OUT
11	TRIG_IN
12	GND

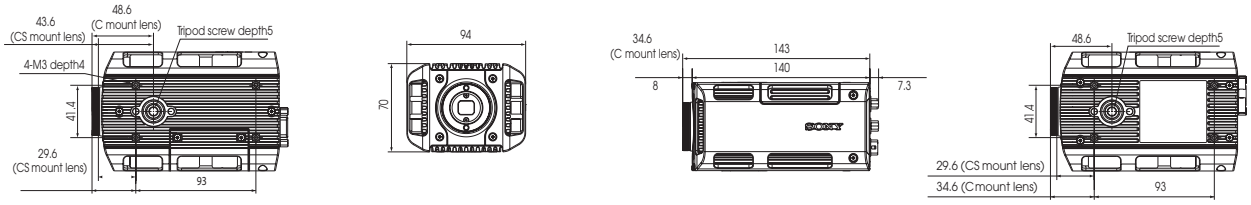
2. 6-pin male connector

Pin No.	Signal
1	TXD
2	RXD
3	GND
4	IRIS_CONT-
5	IRIS_CONT+
6	IRIS_DRV+

3. D-Sub 15-pin Male connector

Pin No.	Signal
1	ISO_IN1
2	ISO_IN2
3	ISO_IN3
4	ISO_IN4
5	ISO_IN_COM
6	ISO_OUT1
7	ISO_OUT2
8	ISO_OUT3
9	ISO_OUT4
10	ISO_OUT_COM1
11	ISO_OUT5
12	ISO_OUT6
13	ISO_OUT7
14	ISO_OUT8
15	ISO_OUT_COM2

Dimensions (mm)



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