SONY

MINIATURE CCD VIDEO CAMERA MODULE

XC-57/57CE

JUNCTION BOX

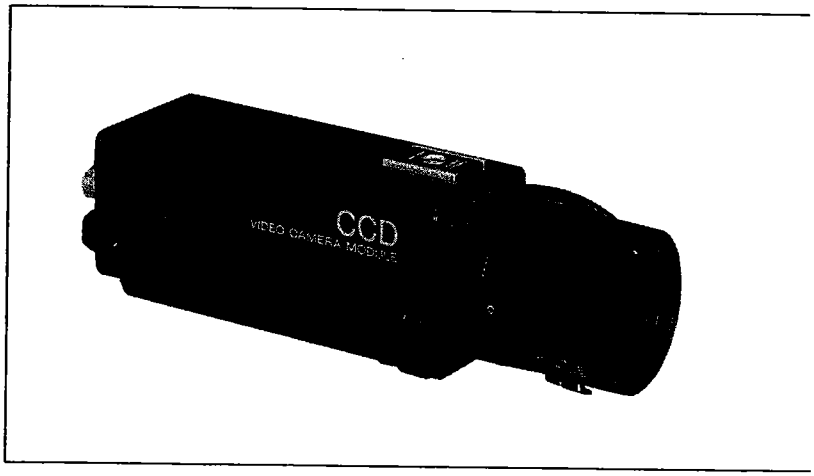
JB-77

STANDARD LENS

VCL-16Y-M

CAMERA CABLE

CCXC-12P02/12P05
CCXC-12P10/12P25



SERVICE MANUAL

XCM-57

SECTION 1
OPERATION

1-1. FEATURES

The XC-57/57CE is a monochrome video camera which uses a CCD (Charge Coupled Device), a solid state image sensor.

High-resolution picture
510 (XC-57)/500 (XC-57CE) picture elements (horizontal line) give a high-resolution picture.

Low lag, no image burning, and precise image geometry
Low lag— A clear picture can be obtained when shooting a rapidly moving object or shooting in a place where illumination is very low.
No image burning— It is possible to shoot a bright object and to hold the camera on it for a long time.
Precise image geometry can be obtained.

Quick start-up
Shooting can begin within a second after turning on the power.

High sensitivity
Makes it possible to detect images in a dark place.

Shooting in a strong magnetic field
This camera can obtain a stable picture even near an electric furnace or welding machine.

Miniaturized and lightweight
Permits installation on a wall or ceiling with a mounting bracket.

High resistance to vibration and mechanical shock
Makes it possible to take a picture while moving.

EXT SYNC connector
When two or more cameras are to be used with a video switcher, the same sync signal is input so that each camera can obtain the same picture tone.

1-2. COMPOSITION

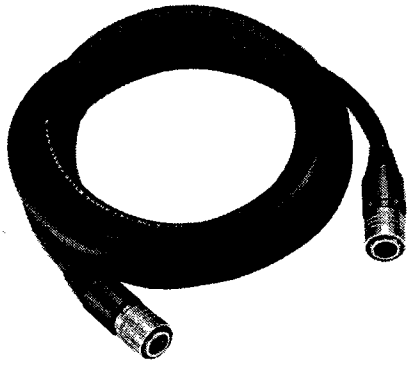
The miniature CCD video camera module system consists of the following optional products which can be purchased separately.

XC-57/57CE miniature CCD video camera module

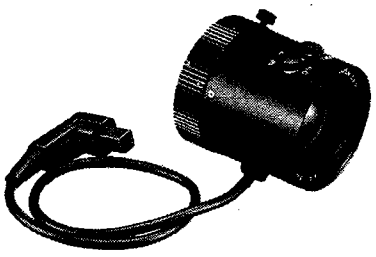
XC-57

XC-57CE

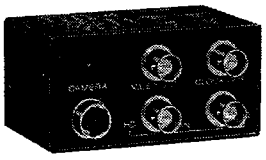
CCXC-12P02 (2m)
CCXC-12P05 (5m)
CCXC-12P10 (10m)
CCXC-12P25 (25 m)
camera cable



Auto iris lens



JB-77 junction box



VCL-16Y-M standard lens

XC-57/57CE miniature CCD video camera module
XC-57: EIA model
XC-57CE: CCIR model

Auto iris lens
The following lenses are usable.
Sony VCL-08Y/16Y
CANON JF7.5 1.4EA, JF16 1.4EA
COSMICAR C814 BEX-2

VCL-16Y-M manual lens
f = 16 mm, F1.4 manual lens.
The iris and focus are adjusted manually.

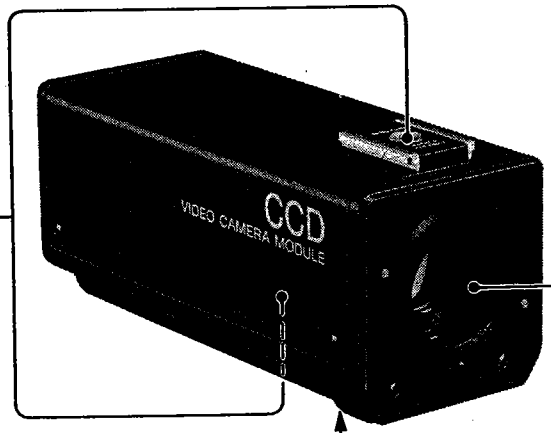
CCXC-12P02 (2 m), 12P05 (5 m), 12P10 (10 m), 12P25 (25 m) camera cable
Attach to the 12-pin connector of the camera module to supply power and transmit video and sync signals.

JB-77 junction box
Connect to the camera module for the power supply, the video signal input, and the transmission of the sync signal with the CCXC-12P02 (2 m), 12P05 (5 m), 12P10 (10m), 12P25 (25 m) camera cables.

1-3. PARTS LOCATION, FUNCTION AND OPERATION

1-3-1. XC-57/57CE miniature CCD video camera

FRONT



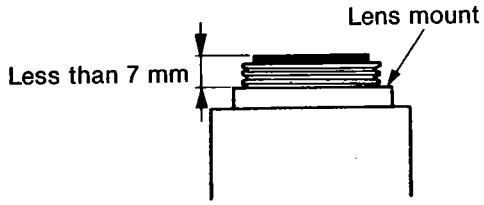
Screw holes for camera mounting (U1/4-20 UNC)

Lens mount (C mount)

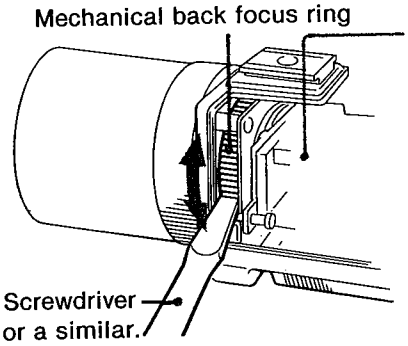
Groove for the lens cord

Lens mount (C mount)
Attach almost any C mount lens or piece of optical equipment, such as a video camera microscope adaptor.

NOTE
Use a C mount lens or piece of optical equipment with a projection from the lens mount of less than 7 mm.



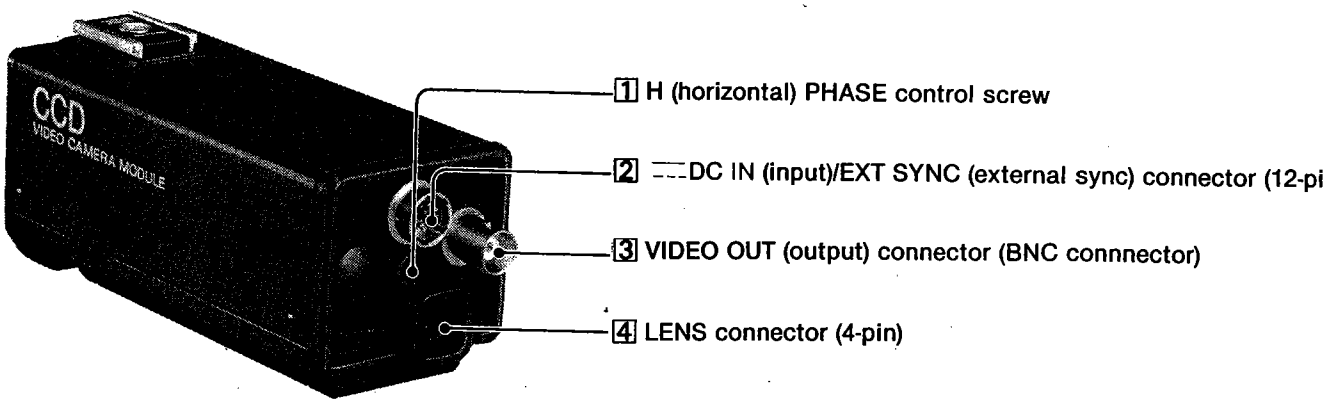
Mechanical back focus adjustment
By turning the mechanical back focus ring (inside), it is possible to adjust the mechanical back focus.



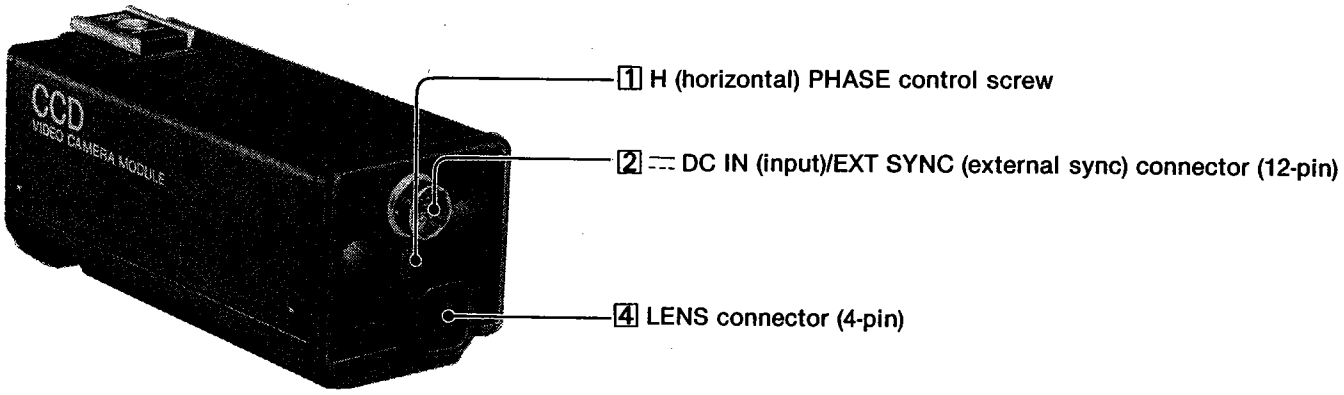
Inside
Remove the 2 screws on both sides, and take off the cover.

REAR

XC-57



XC-57CE



1 H (horizontal) PHASE control screw
Adjusts the H phase difference between the gen-lock input and video output signals when two or more cameras are used.
Remove the cap and turn the screw with a screwdriver while checking the result in an oscilloscope or other equipment.

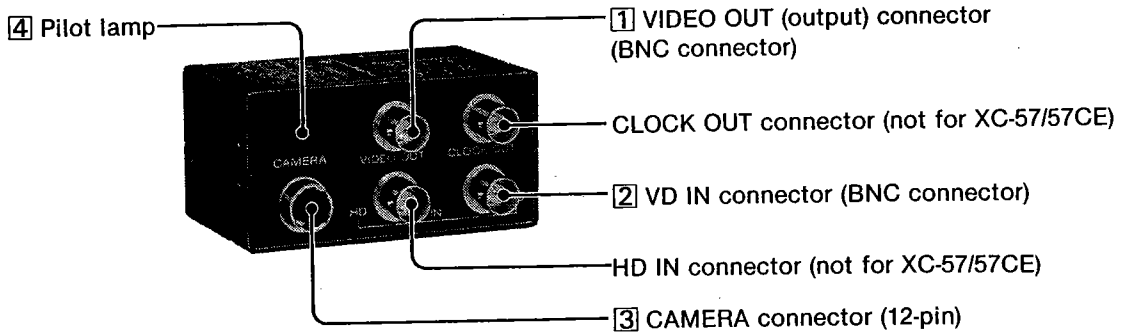
2 ⎓ DC IN (input)/EXT SYNC (external sync) connector (12-pin)
Connect a CCXC-12P02, CCXC-12P05, CCXC-12P10 or CCXC-12P25 camera cable to this connector to supply power (+ 12 V DC) from an external power source and to output the video signal from the video camera module. When a sync signal generator is connected, the camera module can be synchronized with the sync signal, VBS, VS, or BS.

3 VIDEO OUT (output) connector (BNC connector) (only XC-57)
The video output signal from the video camera module is output from this connector. This connector can be used only when a CCXC-12P02 camera cable (2 m) is connected to the DC IN/EXT SYNC connector and the video output of the 12-pin connector of the CCXC-12P02 cable is not terminated with 75 ohms.

4 LENS connector (4-pin)
When the auto iris lens is connected, it is possible to adjust the iris of the lens automatically.

1-3-2. JB-77 JUNCTION BOX

FRONT



1 VIDEO OUT (output) connector (BNC connector)
Connect to a video monitor or a VTR to supply the video signal from the camera module.

2 VD IN connector (BNC connector)
Connect to a sync signal generator to input the sync signal, such as VBS, VS, or BS. It is possible to synchronize the camera module with other camera(s).

3 CAMERA connector (12-pin)
Connect the CCXC-12P02/12P05/12P10/12P25 camera cable to supply the power or to output the external sync signal to the camera module, and to input the video signal from the camera module.

4 Pilot lamp
When the 12V DC power is supplied, this lamp will light up.

SECTION 2
COMPREHENSIVE SPECIFICATIONS

2-1. SPECIFICATIONS

<CAMERA MODULE XC-57>

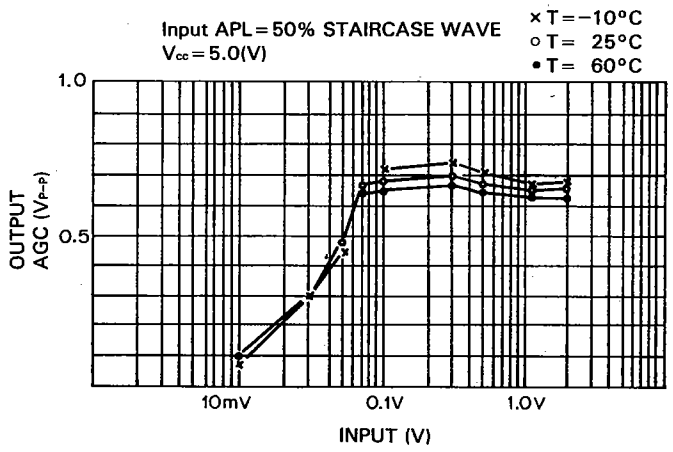
Pickup Device		Interline transfer CCD
Picture elements		510 (H) x 492 (V)
Sensing area		8.8 mm x 6.6 mm (the same as the 2/3-inch camera tube)
Optical black		22 pixels each horizontal line
Vertical drive frequency		15.734 kHz
Horizontal drive frequency		9.545 MHz
Signal system		EIA standard
Structure		Interline transfer
Cell size		17 μm (H) x 13 μm (V)
Chip size		10.0 mm (H) x 9.3 mm (V)
Optical System		
Lens mount		C mount
Frange back length		17.526 mm
Sync System		Internal/External autmatic change
External sync input		VBS, VS, BS (SYNC LEVEL 0.3 Vp-p ± 6 dB)
External sync frequency tolerance		± 1%
Jitter		Within ± 100 n sec
Locking time uhen power is on.		Within 10 sec
Scanning System		2 : 1 Interface ; 525 lines
Video Output		1.0 V p-p sync negative, 75 ohms unbalanced.
Horizontal Resolution		380 TV lines
Vertical Effective lines		2 : 1 Interlace ; 485 lines.
Sensitivity		200 Luxes with F8 (γ ON/odB)
Minumum Illumination		3 Luxes, F1.4 (without an infrared cut filter)
S/N ratio		50 dB
Power Requirement		DC 12 V
Power Voltage Tolerance		DC 11 V ~ 16 V
Power Consumption		2.5 W
Weight		
Camera module		290 g (XC-57)
Camera cable	(2 m)	130 g (CCXC-12P02)
	(5 m)	295 g (CCXC-12P05)
	(10 m)	560 g (CCXC-12P10)
	(25 m)	1.4 Kg (CCXC-12P25)
Junction Box		170 g (JB-77)
Strange Temperature		−30°C ~ +60°C
Operating Temperature		0°C ~ 40°C
Shock Moisture		Within 90%
Operating Moisture		Within 70%

<STANDARD LENS VCL-16Y-M>

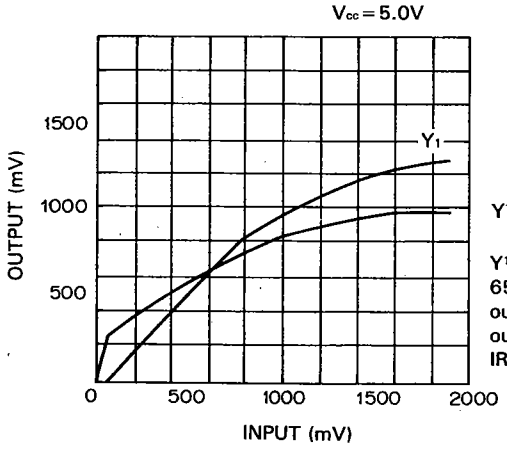
Focal Length	16 mm
Maximum Aperture Ratio	1 : 1.4
Iris Control	F1.4 ~ F16
Filter Thread	M 25.5 mm x P 0.5 mm
Mount	C mount
Weight	50 g

Typical characteristics

AGC AMP INPUT/OUTPUT LEVEL

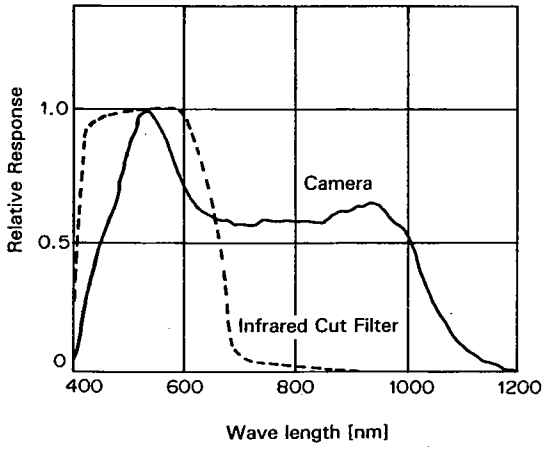


Yα INPUT/OUTPUT LEVEL



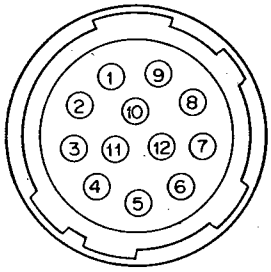
Y1/2 is set so that the output level at 655/2 mV input is 70.7% of the output level at 655 mV input. The output level at 655 mV input is 100 IRE.

SPECTRAL RESPONSE (TYPICAL)



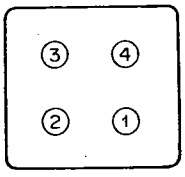
2-2. CONNECTOR'S PIN FUNCTION

12-PIN MULTICONNECTOR (EXT VIEW)



PIN No.	SIGNAL	SPECIFICATION
1 2	GND +12 V IN	DC 12 V input
3 4	VIDEO OUT (G) VIDEO OUT	Composite B/W video signal input Z0 = 75 Ω 1 V p-p, sync negative
5	GND	GND
6	NC	NC
7	GENLOCK IN	Control voltage input for external sync
8	GND	GND
9	NC	NC
10 11	GND +12 V IN	DC 12 V input
12	GND	GND for sync signal

4-PIN LENS CONNECTOR (EXT VIEW)



PIN No.	SIGNAL	SPECIFICATION
1	+8.5 V OUT	DC 8.5 V output
2	GND	GND
3	NC	NC
4	VS OUT	video signal output