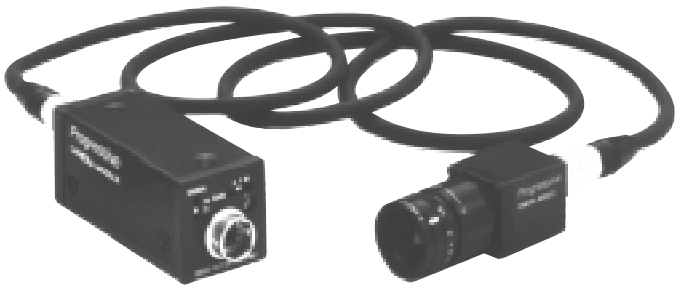
SONY

PROGRESSIVE SCAN
B/W CAMERA MODULE

XC-55/55BB

XC-55



XC-55BB

Application Guide

— English —

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OUTLINE

The XC-55/55BB is an industrial-use ultra-small black/white frame shutter camera module mounting the VGA (video graphic array) format-compatible interline solid state pick-up device CCD (charge coupled device).
The CCD adopts the square pixels best suited for machine vision, eliminating the need for dimensional correction in image processing since vertical and horizontal resolutions are equal. With the use of the all pixel independent reading format for the CCD, all pixel signals can be output independently in approximately 1/30 seconds.
While the XC-55 is an integrated camera module, the XC-55BB is a remote head type. The ultra-small head of the XC-55BB can be mounted easily in any minute space of various devices. It has a square shape with high CCD attaching face accuracy.
Both models are the first ultra-small and lightweight camera
modules to have been developed, answering to a wide range of image processing needs.

MAIN FEATURES

1/3" IT Progressive Scan CCD

Adopts square pixel : 7.4 μm × 7.4 μm.

This eliminates the need for dimensional correction in image processing since the vertical and horizontal resolutions are equal.

Progressive scan output method

1I setting : 2 : 1 interlace
Interlaces all odd and even CCD pixels respectively every 1/60 seconds as field signals by the field mix (2 line mix) method and outputs the signals.
(EIA method-compatible)

1N setting : Non-interlace
Interlaces CCD pixels independently every 1/30 seconds and outputs the signals.
This setting turns on the frame shutter (E-DONPISHA II) function which captures high speed moving objects accurately.

Frame shutter (When set to 1N)

Can be set to various settings according to the purpose.

- Normal (1/100 to 1/8,000 seconds) — Frame shutter signals are output continuously.
- E-DONPISHA II (1/4 to 1/100,000 seconds) — By inputting the trigger, one still image can be obtained, enabling high speed moving objects to be captured accurately.

Restart Reset

By inputting the continuous HD signal and VD signal (above 2VD) from outside, register control of the CCD can be performed according to the length between the VD pulses.
This function is useful for exposure of a long period of time.

MAIN FEATURES

Gain setting

Gain can be set in three ways by the slide switch on the rear.

- AGC : The gain is automatically changed between 0 and +18 dB according to the brightness of the subject to control to the optimum image.
  Function useful for monitoring.
- F : Fixed gain. Set to 0dB.
  Most useful for image processing for high S/N ratio.
- M : The gain can be varied between 0 and 18 dB using the control on the rear. Useful when the appropriate brightness cannot be obtained due to lighting conditions.
- M (Set at shipment) : The control is adjusted so that all XC-55/55BBs are set to the same sensitivity based on Sony's standards according to the inconsistency of the CCD sensitivity.
  Useful for using several XC-55/55BBs for the same subject.

Sync format : Internal/External (HD/VD)

External sync is set automatically when the HD/VD signal is input from outside.

Features of each model

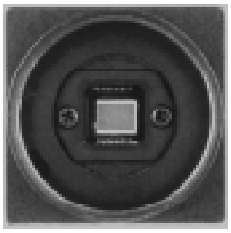
◇ **XC-55**

- Integrated type
- C mount lens-compatible
- Dimensions : 29 (W) × 29 (H) × 67 (D) mm
- Weight : 110g

◇ **XC-55BB**

- Remote head type (Length : 2m)
- NF mount lens compatible (Can be changed to C mount)
- Dimensions : CHU 22 (W) × 22(H) × 30 (D) mm
  CCU 29 (W) × 29 (W) × 67 (D) mm
- Weight : CHU 40g
  CCU 100g

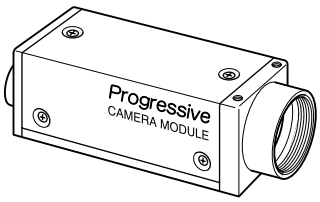
XC-55 actual size



XC-55BB actual size (Head)

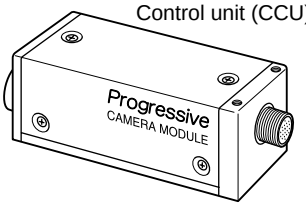
SYSTEM CONFIGURATION

The components making up the system based on the video camera module XC-55 and XC-55BB are as follows.
(The XC-55BB comes with an exclusive cable CCXC-T20P02, which can be purchased separately.)

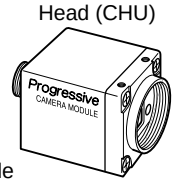


Video camera module
XC-55

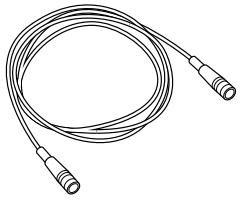
Control unit (CCU)



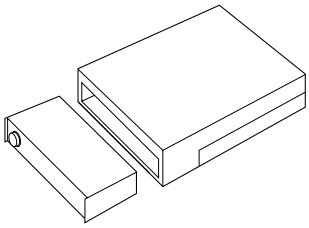
Head (CHU)



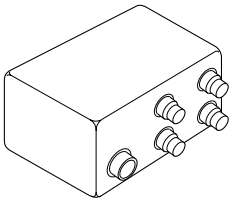
Video camera module
XC-55BB



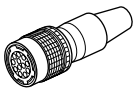
Camera cable
CCXC-12P02S (2 m)
CCXC-12P05S (5 m)
CCXC-12P10S (10 m)
CCXC-12P25S (25 m)
CCXC-12P05D/U/R/L (5 m)
CCMC-12P02 (2 m)



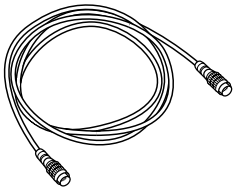
Camera adaptor
DC-77RR/77RRCE
DC-777/777CE



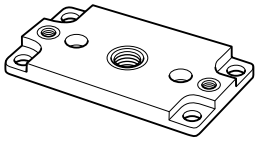
Junction box
JB-77



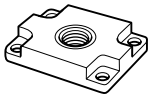
12-pin connector
PC-XC12



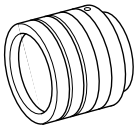
XC-55BB exclusive cable
CCXC-T20P02



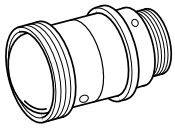
Tripod adaptor
VCT-55I
(Isolated type)
(For XC-55, CCU of XC-55BB)



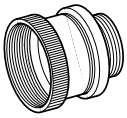
Tripod adaptor
VCT-333I
(Isolated type)
(For CHU of XC-55BB)



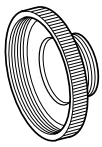
C mount lens
VCL-50Y-M
VCL-25Y-M
VCL-16Y-M
VCL-12YM (Standard)
VCL-08YM



NF mount lens
VCL-03S12XM
VCL-06S12XM
VCL-12S12XM
VCL-12SXM



Extension ring kit
LO-77ERK (For XC-55)
LO-999ERK (For XC-55BB)



C mount adaptor
LO-999CMT (For XC-55BB)

MAIN SPECIFICATIONS

Pick-up block

Pick-up device : Interline transfer CCD
No. of effective pixels : 659 × 494 (Horizontal/Vertical)
Pick-up area : 1/3 inch size
CCD vertical drive frequency :
15.734 kHz
CCD horizontal drive frequency :
12.2727 MHz
Signal format : EIA format
Cell size : 7.4 × 7.4 μm (Horizontal/Vertical)

Optical system, others

Lens mount : C mount (XC-55)
NF mount (XC-55BB)
Flange back : 17.526 mm (C mount)
12.00 mm (NF mount)
Sync format : Internal/External
(Automatically switched according to the input signal)
External sync input/output :
HD/VD (HD/VD level : 2 to 5 Vp-p, automatically switched according to the input signal, input/output switched by the internal switch)
External sync allowable frequency deviation :
±1% (according to horizontal sync frequency)
Jitter : Within ±50 nsec.
Scanning method : 525 lines
2 : 1 interlace (1I mode)
Non-interlace (1N mode)
Video output : 1.0 Vp-p, sync negative, 75Ω unbalanced
Horizontal resolution : 500 TV lines
No. of effective vertical lines :
483 lines
Sensitivity : 400 lx F5.6 (γ compensation ON, 0 dB)
Minimum Ilumination on subject :
0.5 lx (At automatic gain adjustment F1.4 γ compensation ON)
Video SN ratio : 56 dB
Gain : Automatic gain control/Fixed gain/ Manual gain adjustment
(Switched by the switch on the back)
γ : γ compensation/γ-ON (0.45)/OFF (1)
(Switched by internal switch)
White clip : 115 IRE±10 IRE
Shutter mode : Normal shutter/
E-DONPISHA II shutter
Shutter speed (Normal mode) :
1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/8000 seconds
(Switched by the internal switch)
Power voltage : DC +12V (+10.5 to 15.0V)
Power consumption : XC-55 : 1.8W (±10%)
XC-55BB : 2.2W (±10%)
Operating temperature : -5˚C to +45˚C
Storage temperature : -25˚C to +60˚C
Operating humidity : 20 to 80% (no condensation)
Storage humidity : 20 to 95% (No condensation)
Vibration-resistance : 10G (20 Hz to 200 Hz, 20 minutes for X, Y, Z directions)
Shock-resistance : 70G
Dimensions : XC-55 : 29 × 29 × 67 mm
(Width/Height/Depth) XC-55BB : (CHU) 22 × 22 × 30 mm
(CCU) 29 × 29 × 67 mm
(Excluding projections)
Weight : XC-55 : Approx. 110g
XC-55BB (CHU) : Approx. 40g
(CCU) : Approx. 100g
Accessories : Lens mount cap (1)
Exclusive cable CCXC-T20P02 (For connecting XC-55BB CCU and CHU) (1)
Instruction manual (1)
Clamp filter (1)

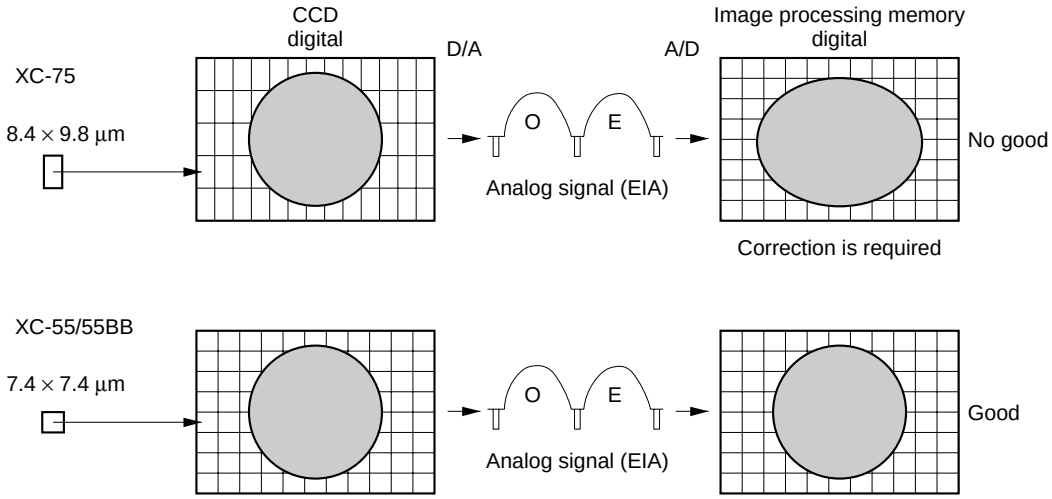
ADOPTION OF PROGRESSIVE SCAN CCD

The XC-55/55BB adopts the all pixel read method (progressive scan) CCD. The main features of this CCD include (1) use of square pixels and (2) frame shutter function.

Adoption of square pixels

Since each pixel is a square pixel, it eliminates the need for image distortion correction (aspect error correction) during image processing which is required in conventional CCDs. The ideal image data for image processing are output. The horizontal and vertical resolution characteristics are more or less the same.

The CCD cell is a square pixel ⟶ Ideal for image processing



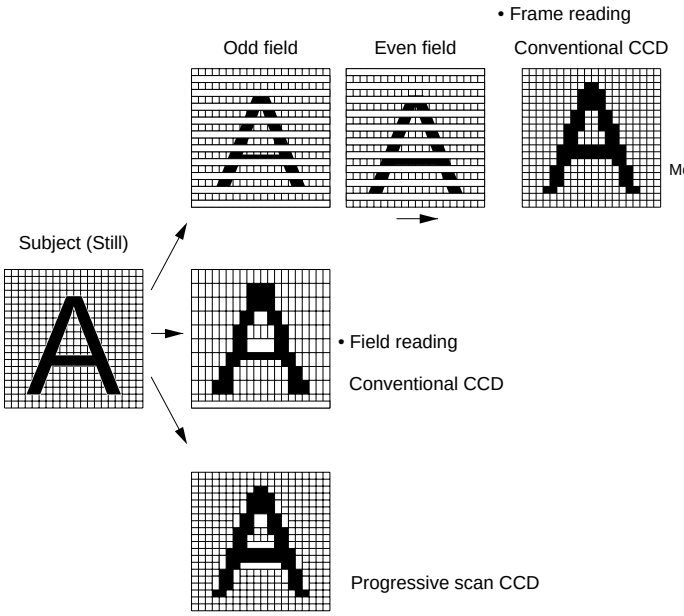
Adoption of frame shutter

The vertical resolution of the conventional CCD pick-up device that can be obtained is only 350 TV lines using the field accumulation reading method compatible with the NTSC broadcast method. This is because the pick-up device has been designed to output 262.5-line signals in one field (one exposure) using the image sensor (IT method) by mixing the signal load of adjoining two vertical pixels in the vertical CCD, for compatibility with the NTSC method to generate one frame by interlacing two fields made of 262.5 scanned TV lines at a ratio of 2:1 and so that movements of the subject can be seen more smoothly and clearly than the vertical resolution.
In image measurement, image processing, and still images, the vertical resolution is more insufficient than the horizontal resolution. In these fields, vertical resolution equivalent to the horizontal resolution must be obtained in one exposure.

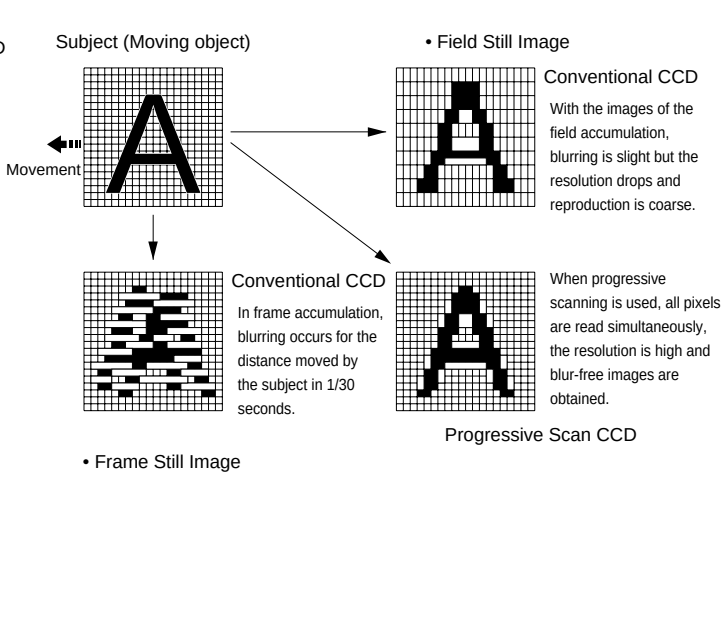
In machine vision fields centering around FA, there have been demands for functions to capture high speed moving objects as blur-free images. In electronic shutters of conventional CCD cameras, only half of the V direction resolution of CCD information could be used due to field accumulation. (Field shutter) For this reason, the method by frame accumulation and strobe light was adopted. But then the life of the strobe lamp is a problem and the emergence of a high resolution electronic shutter has been looked forward to. The frame shutter mounted on this camera realizes this with its function for obtaining new high resolution.

ADOPTION OF PROGRESSIVE SCAN CCD

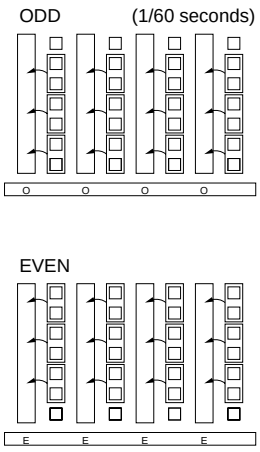
• Image output according to reading method (Still subject)



• Images output according to reading method (Moving subject)

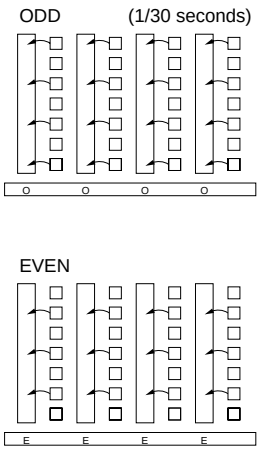


[Field Accumulation]
XC-55/55BB 1I mode



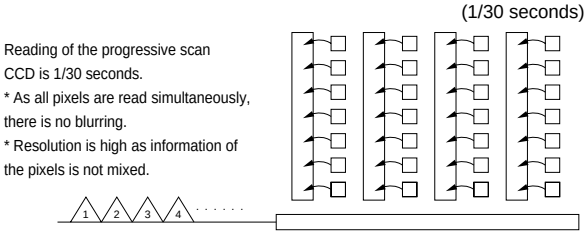
The vertical resolution is low
The resolution when moving is high (No blurring)

[Frame Accumulation]
Conventional Camera

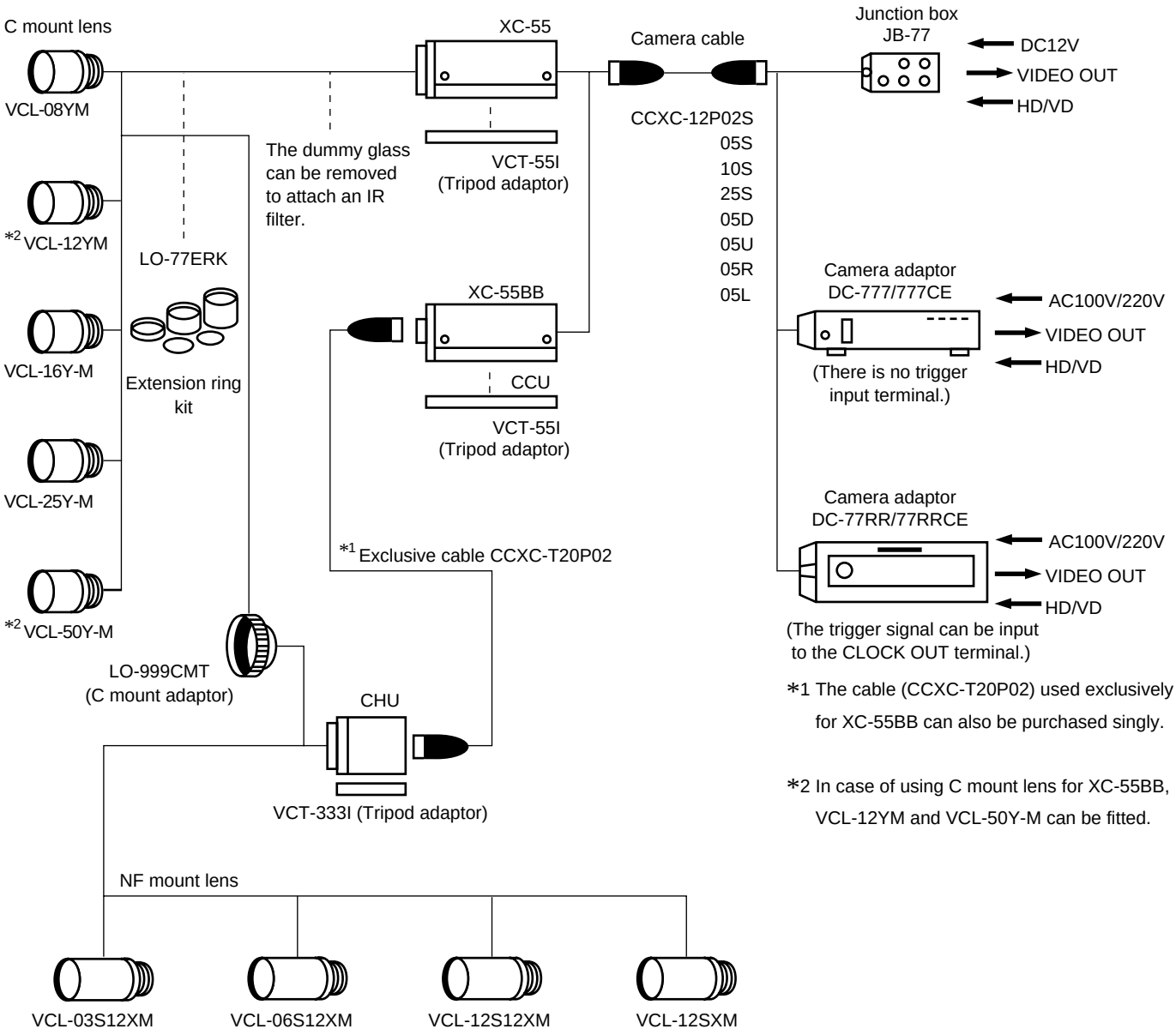


The vertical resolution is high
The resolution when moving is low (Blurring)

[Simultaneous Accumulation of All Pixels]
XC-55/55BB 1N mode



CONNECTION DIAGRAM

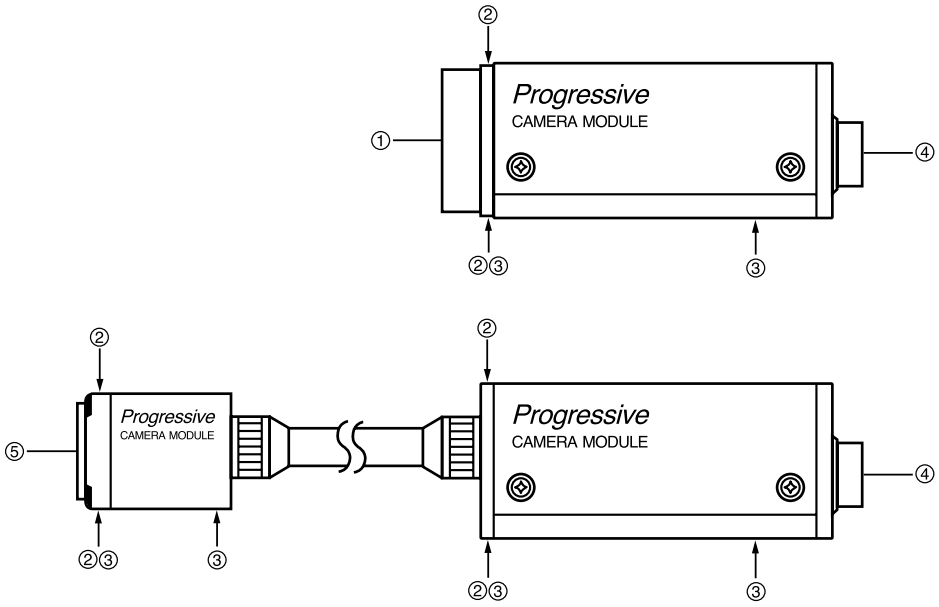


*1 The cable (CCXC-T20P02) used exclusively for XC-55BB can also be purchased singly.

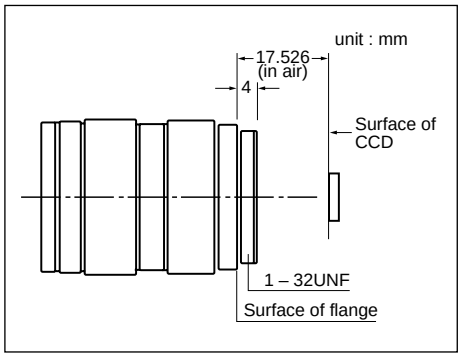
*2 In case of using C mount lens for XC-55BB, VCL-12YM and VCL-50Y-M can be fitted.

Note) Use the XC-55BB CHU and CCU of the same serial number.

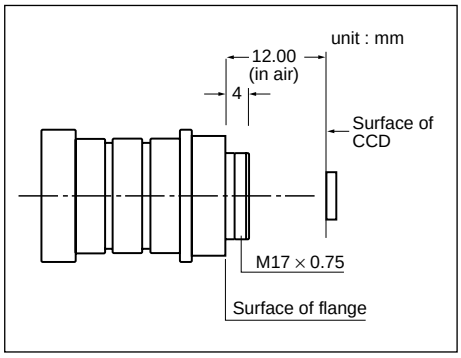
LOCATION OF PARTS AND OPERATION



C mount standard



NF mount standard



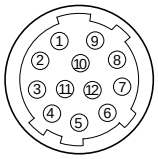
⑥

SIGNAL SWITCH	
1N	1/30 Non-Interlaced
1 I	1/60 Interlaced

⑦

GAIN SWITCH	
A	AUTO GAIN
F	FIXED GAIN
M	MANUAL GAIN

④ **12Pin Multiconnector**



⑧ MANUAL GAIN CONTROL VOLUME

Rear Panel
XC-55/55BB

12P Multiconnector					
Pin No.	EXTERNAL HD/VD MODE	INTERNAL SYNC MODE	Pin No.	EXTERNAL HD/VD MODE	INTERNAL SYNC MODE
1	GND	GND	7	VD IN	VD OUT
2	+ 12V	+ 12V	8	TRIGGER IN(G)	TRIGGER IN(G)
3	VIDEO(G)	VIDEO(G)	9	TRIGGER IN	TRIGGER IN
4	VIDEO OUT	VIDEO OUT	10	GND	GND
5	HD(G)	HD(G)	11	+ 12V	+ 12V
6	HD IN	*HD OUT	12	VD(G)	VD(G)

*For HD OUT, the internal switch (S4/SG-257) should be changed.

① Lens mount (C mount)
A commercial C mount lens as well as the Sony standard lens can be used.

② Camera fixing reference hole
High-precision screw hole machined on the lens mount surface. The reference hole can suppress the shift of an optical axis to the minimum.

③ Screw hole for tripod adaptor installation (VCT-333I/55I)

④ 12Pin Multiconnector
The 12Pin multiconnector is connected to a DC IN/SYNC (DC power/sync signal input) CCXC-12Pxxx cable.

⑤ Lens mount (NF mount)
Mount standard with flange back of 12 mm developed by Sony. The lens mount can also be converted into a C mount. (LO-999CMT)

⑥ Signal switch
1N: Outputs all pixel data of a CCD continuously in 1/30 seconds.

1I: Outputs all pixel data of a CCD in 1/60 seconds x 2. The output display appears on the monitor as interlacing of 2:1.

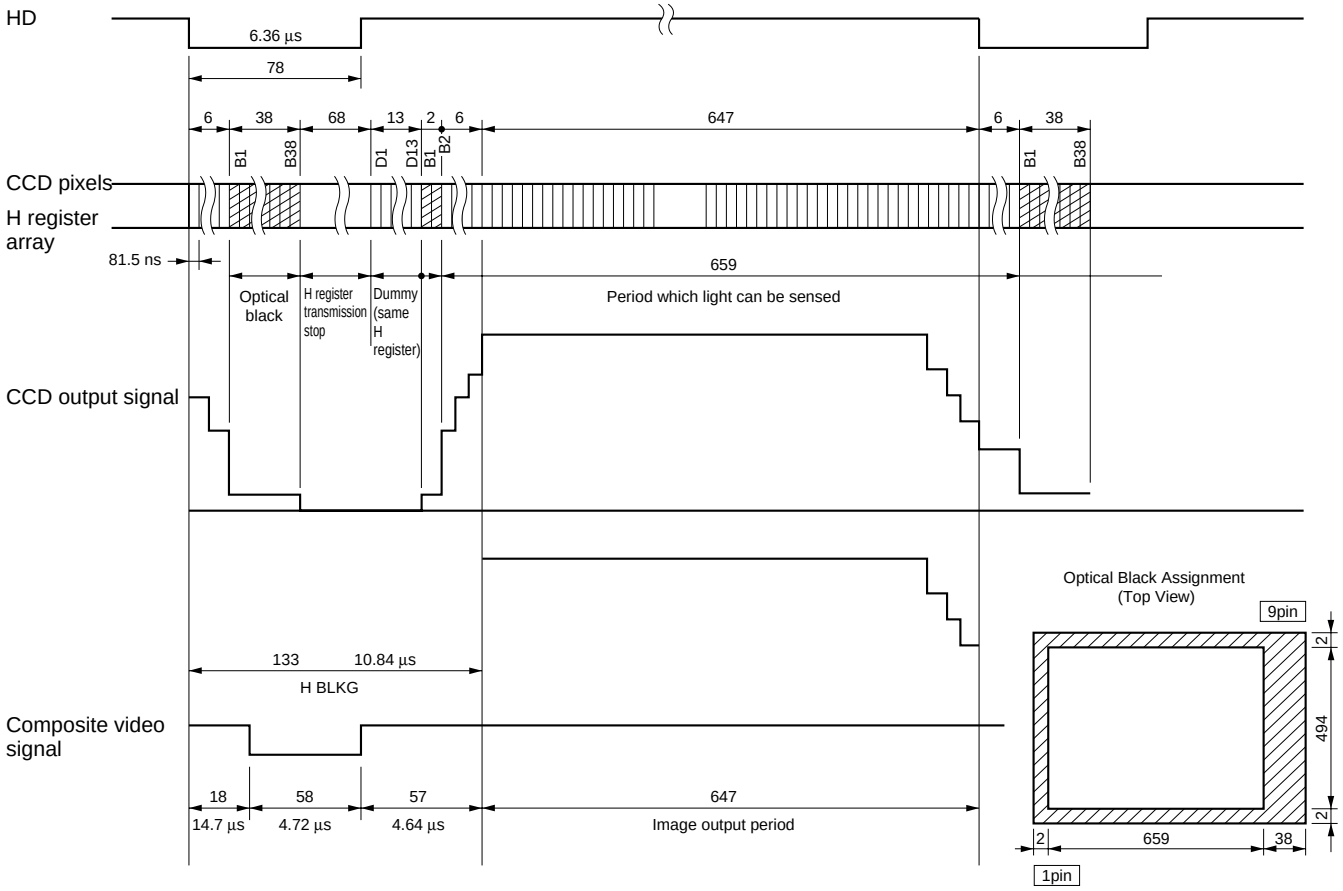
⑦ Gain switch
A: Outputs a fixed level of image according to the brightness of a subject. (Variable range: 0 to 18 dB)

F: Fixed gain 0 dB
The highest S/N ratio can be obtained.

M: Variable gain (manual)
At the factory, the variable gain is adjusted to the fixed sensitivity for a standard subject.
An image in the same level can be obtained when two or more XC-55/55BB are used for an identical subject.

⑧ The gain can be changed in the range of 0 to 18 dB when the gain switch is set to "M".

CCD OUTPUT WAVEFORM TIMING CHART



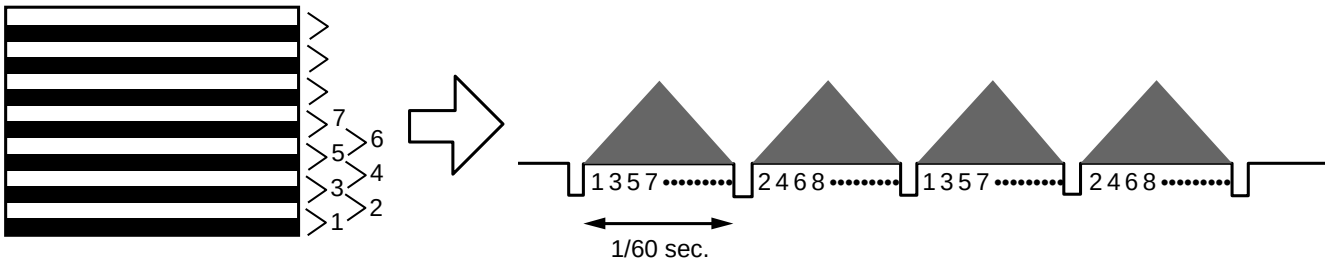
VIDEO OUTPUT MODES

The signal output below can be obtained by selecting the signal switch on the rear panel.

1I Setting (1/60 sec. Interlaced)

TV Standard Video Output / External Genlock

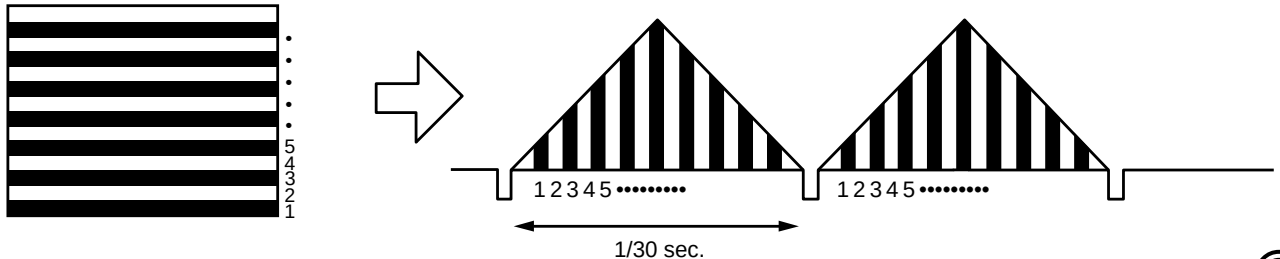
CCD Signal Output 2-line read out VIDEO OUT It can be connected a TV monitor



1N Setting (1/30 sec.Non-Interlaced)

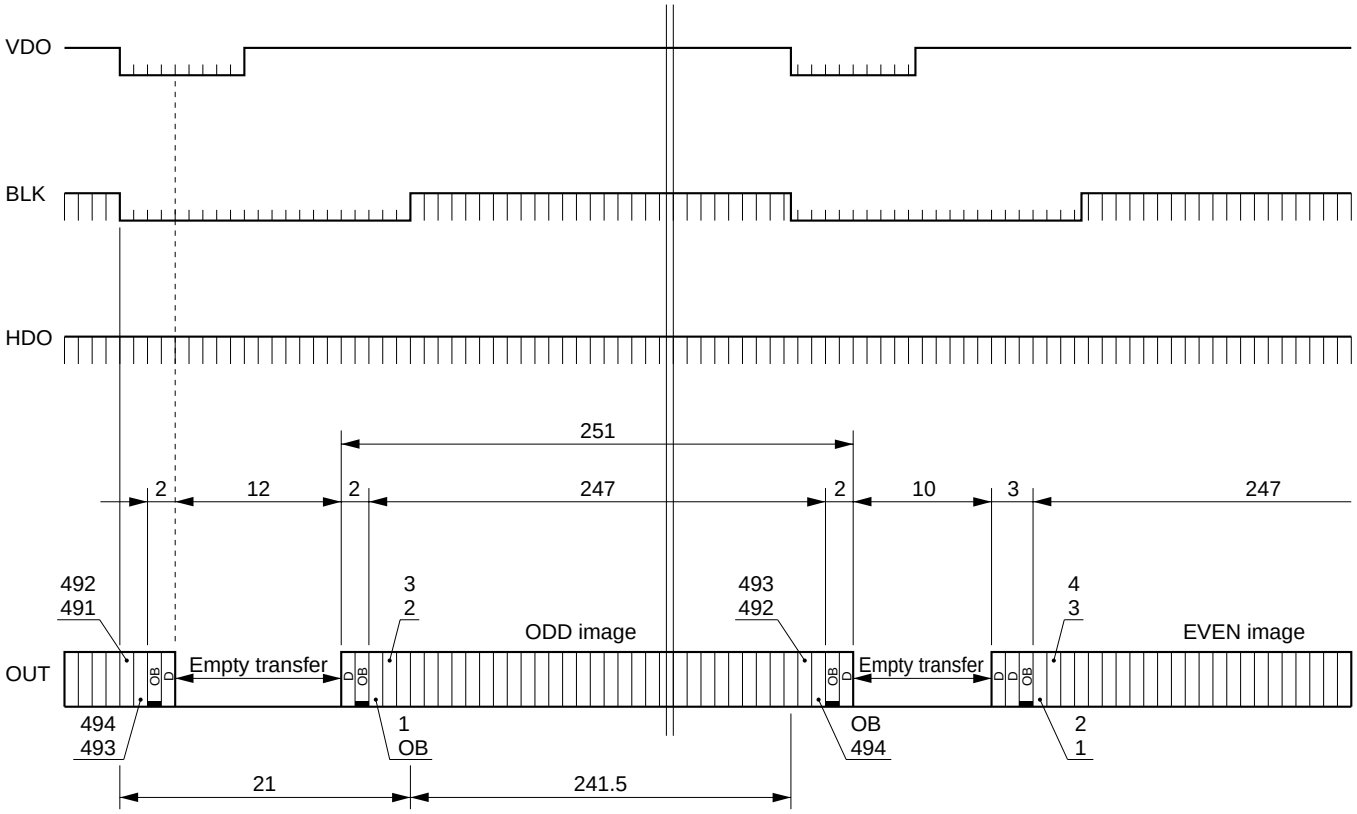
Progressive Scan Video Output / External Genlock

CCD Signal Output VIDEO OUT

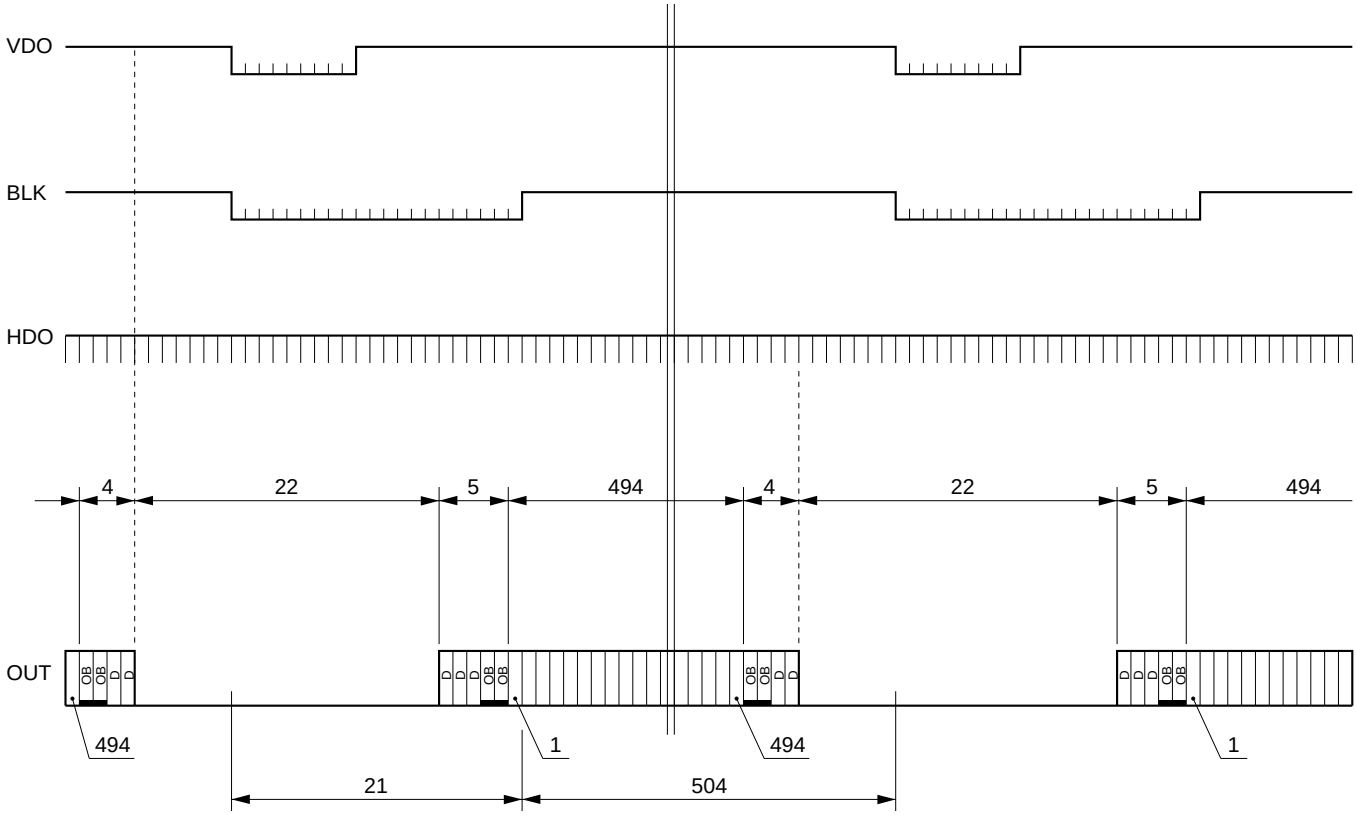


VIDEO OUTPUT MODES

◇ 1I Mode



◇ 1N Mode

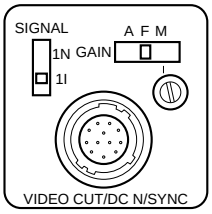


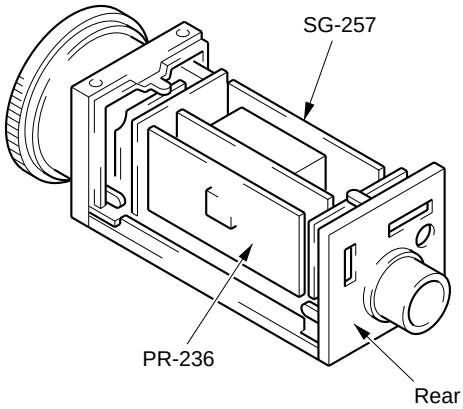
REAR AND INTERNAL SWITCH SETTINGS

Rear

CN-1531 (REAR)

	Function	At Shipment
S1	GAIN MODE	F
S2	VIDEO OUT MODE	1I

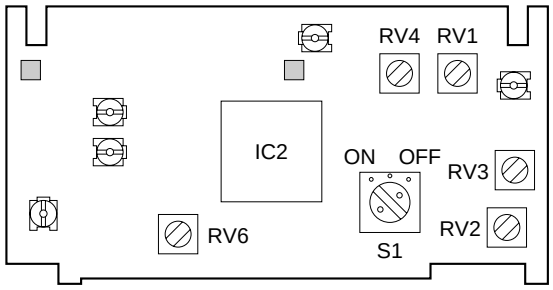




Internal Switches

◇ Locations of Switches on PR-236 Board

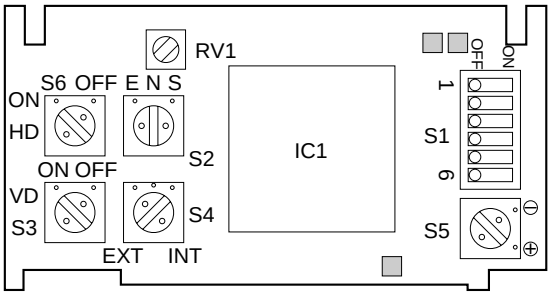
B side



	Function	At Shipment
S1	γ ON/OFF	OFF

◇ Locations of Switches on SG-257 Board

B side



	Function	At Shipment
S1	NORMAL shutter speed	———
S1-1		OFF
S1-2		
S1-3		
S1-4		
S1-5	NORMAL shutter speed setting	
S1-6		OFF
S2	Trigger mode switching	Neutral
S3	VD 75Ω termination ON/OFF	ON
S4	INT/EXT switching	EXT
S5	TRIG polarity	Positive polarity⊕
S6	HD 75Ω termination ON/OFF	ON

Description of Internal Switches

◇ PR-236

• S1 : When γ compensation is set to ON (0.45), the video signal subjected to γ compensation will be output. Used when connecting the unit to a monitor.

When γ compensation is set to OFF (1), the video signal proportional to the light amount of the subject will be output. Suitable for image processing.

◇ SG-257

• S1-4, 5, 6 :

Used to set the speed of the normal shutter.
Shutter speeds : 1/100 to 1/8,000 seconds

• S2 : Used to switch the trigger mode.

N : Outputs continuous video signals in the normal mode (at shipment).

E : Produces images by the trigger shutter (E-DONPISHA II).

S : For performing long period exposures by Restart Reset.

• S3 : Used to terminate the VD terminal at 75Ω (ON).

• S4 : When set to INT, HD/VD signals by the internal sync signals of the camera are output.

• S5 : Used to set the polarity of the trigger input pulse.

⊕ ⊖

• S6 : Used to terminate the HD terminal at 75Ω (ON).

SETTINGS BY FUNCTION

Function	Feature	Rear Side Settings				Internal Settings (SG257 Board)						Purpose
		SIGNAL		GAIN		S2			S1			
		1N	1I	A	F M	E	N	S	4	5	6	
TV standard signal output 2 : 1 interlace	• Like XC-77, 75, can be connected to a TV monitor to view images. • Can be connected to a general image board (1ch input).		●	○	● ○		●		0	0	0	General use
Normal shutter (Field)			●		● ○		●		Set using shutter speed value			
Progressive scan output Non-interlace (1/30 seconds)	• An input system (image board, etc.) for outputting all pixels at one time is required. • One frame image is output when trigger input.	○		○	● ○				0	0	0	Frame image processing
Normal shutter (Frame)		○		○	● ○				Set using shutter speed value			
Trigger shutter E-DONPISHA II (Frame)		○			● ○	○			0	0	0	High speed machine vision
Restart Reset	• Long period exposures • 1/2 of all pixels (only field) are output in 1/60 seconds.		●		● ○			○	0	0	0	Increased sensitivity
	• Long period exposures • 1/2 of all pixels (frame) are output in 1/30 seconds.	○			● ○			○	0	0	0	Security Microscope
Trigger shutter E-DONPISHA II (Field)	• One field image is output when trigger input		●		● ○	○			0	0	0	

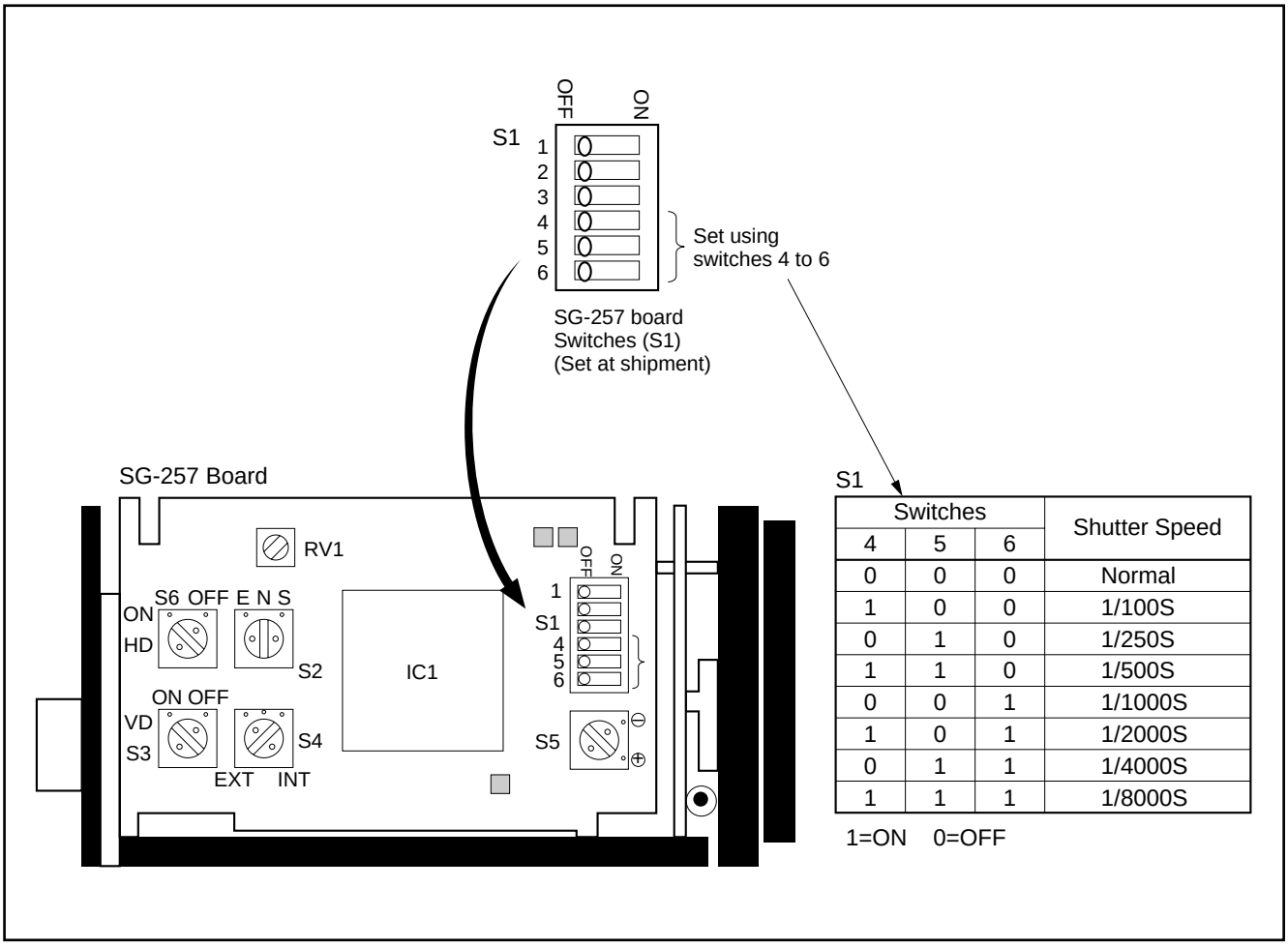
● : shipment
●,○: setting available
0 : OFF

ELECTRONIC SHUTTER

There are two types of shutters-normal shutter and trigger shutter (E-DONPISHA II).
The unit can be set to the field shutter (1I) or frame shutter (1N) using the SIGNAL switch on the rear side.

Normal shutter

Mode for capturing objects clearly moving at high speed by the shutter function using continuous video signals obtained.



S1

Switches			Shutter Speed
4	5	6	
0	0	0	Normal
1	0	0	1/100S
0	1	0	1/250S
1	1	0	1/500S
0	0	1	1/1000S
1	0	1	1/2000S
0	1	1	1/4000S
1	1	1	1/8000S

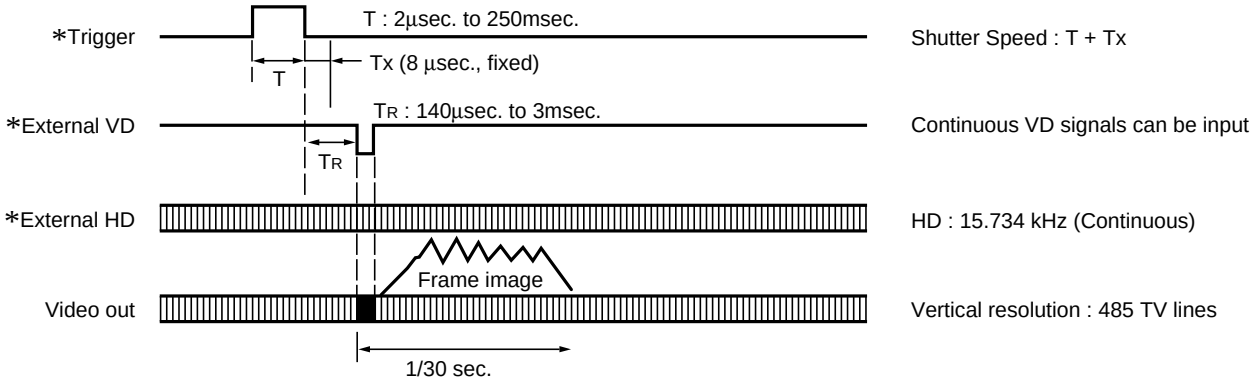
1=ON 0=OFF

ELECTRONIC SHUTTER

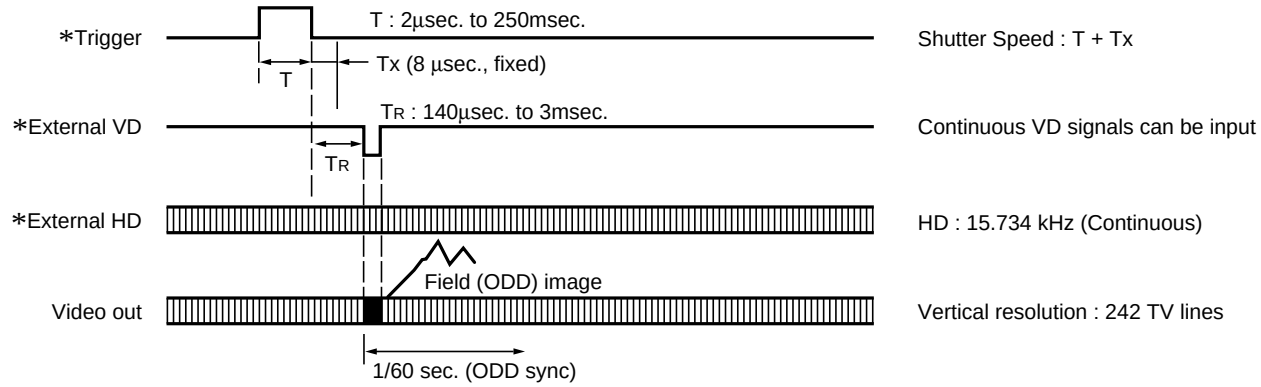
■ Trigger shutter (E-DONPISHA II)

Objects moving at high speeds can be captured accurately by trigger inputs.
The shutter speed can be set by adding a fixed accumulation time (fixed at 8 μsec.) to the trigger pulse width so that the speed can be controlled easily from outside.
Input also the continuous EXT HD signal and single VD pulse (T_R : 140 μsec. to 3 msec.) from outside.
To output the video signal from the trigger input in the shortest time, set T_R to 140 μsec.
When the trigger pulse width is set to above 1/3 sec., the output will be switched to the normal video signal.

◇ 1N mode Frame output Camera setting : Rear side : IN SG-257 board S2 : E



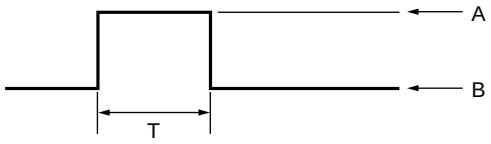
◇ 1I mode Field output Camera setting : Rear side : 1I SG-257 board S2 : E



* mark : Signal input from outside.

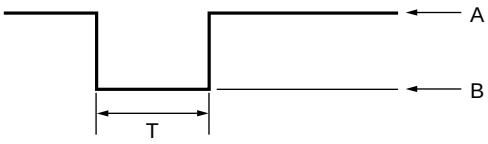
ELECTRONIC SHUTTER

■ Trigger pulse



A : 2 to 5.0V
B : 0 to 0.6V
T : 2µsec to 1/4sec

When trigger with minus polarity as shown in the following diagram is used, change the S5 setting of the SG-257 board, and set as follows.

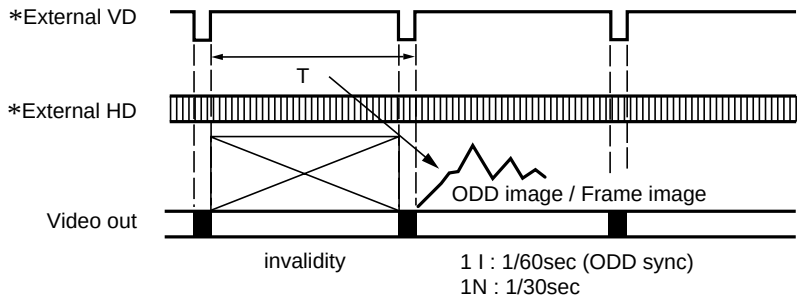


A : 4.6 to 5.0V
B : 0 to 3.8V
T : 2µsec to 1/4sec

■ Restart Reset (R.R)

This function outputs the information of one screen at a certain time. Long period exposures are effective for obtaining high sensitivity and for watching the path of a moving object.
This long period exposure can be performed and controlled by widening the interval (T) between VD pulses.
Input continuous HD signals and any VD pulse signal into the camera, and this function can be operated in both the 1I (field) and 1N (frame) modes.

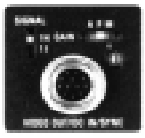
◇ Camera setting : Rear side, 1I/1N SG-257 board S2 : S



Exposure Time : T
External VD interval : 1I over 1/60 sec.
1N over 1/30 sec.

* mark : Signal input from outside to the camera.

COMPARISON OF MAIN FEATURES WITH XC-7500

		XC-7500	XC-55/55BB	FEATURES
Video Output System Differences XC-7500  XC-55/55BB  (Rear Panel)	2I : 2-line Output VIDEO OUT1 O1 E2 VIDEO OUT2 E1 O2 1/60sec	○	—	Mode where the information in odd and even fields is obtained in 1/60 sec.
	2N : 2-line Output VIDEO OUT1 E1 E2 VIDEO OUT2 O1 O2 1/60sec	○	—	Discrimination on the image processing side is not required because the field in which the same frame as 2I is always output is fixed.
	1N : 1-line Output (Non-Interlaced) VIDEO OUT O1+E1 1/30sec	○	○	A frame image is obtained by one output (1/30 sec).
	1I : 1-line Output (2 : 1 Interlaced) CCD 2-line readout (field mixed) VIDEO OUT O1 E2 1/60sec × 2	—	○	High-sensitivity mode where the 2-line read image of a CCD is obtained from one output (1/30sec) by interlacing.
Trigger Shutter E-DONPISHA	Low Speed Normal Speed High Speed	○ ○ ○	— — —	∞ to 1/60 sec. 1/1,000 to 1/11,000 sec. 1/10,000 to 1/100,000 sec.
	Trigger Control (External)	○	○	∞ to 1/10,000 sec. (XC-7500) 1/4 to 1/100,000 sec. (XC-55/55BB)

VARIOUS LENS SELECTION

The following shows the various lens specifications of the accessories available.

■ XC-55/55BB compatibility

List of C mount lenses

Model		VCL-08YM	*VCL-12YM	VCL-16Y-M	VCL-25Y-M	*VCL-50Y-M
Focus distance		8 mm	12 mm	16 mm	25 mm	50 mm
Max. opening diameter ratio		1 : 1.4	1 : 1.8	1 : 1.4	1 : 1.6	1 : 2.8
Operation	Iris	Manual	Manual	Manual	Manual	Manual
	Focus	Manual	Manual	Manual	Manual	Manual
Screen (Horizontal × Vertical)	1/3"	32.6° × 24.8°	22.4° × 16.9°	17.0° × 12.8°	11.0° × 8.2°	5.5° × 4.1°
Shortest shooting distance		300 mm	300 mm	300 mm	250 mm	500 mm
Closest imaging range (Horizontal × Vertical)	1/3"	180 × 135 mm	120 × 90 mm	90 × 67 mm	48 × 36 mm	48 × 36 mm
Back focus		11.54 mm	10.99 mm	12.50 mm	11.60 mm	22.10 mm
Flange back		17.526 mm	17.526 mm	17.526 mm	17.526 mm	17.526 mm
Weight		40 g	40 g	50 g	42 g	50 g

*The XC-55BB can be mounted with a VCL-12YM and VCL-50Y-M lens.
The C mount adaptor (LO-999CMT) however will be required.

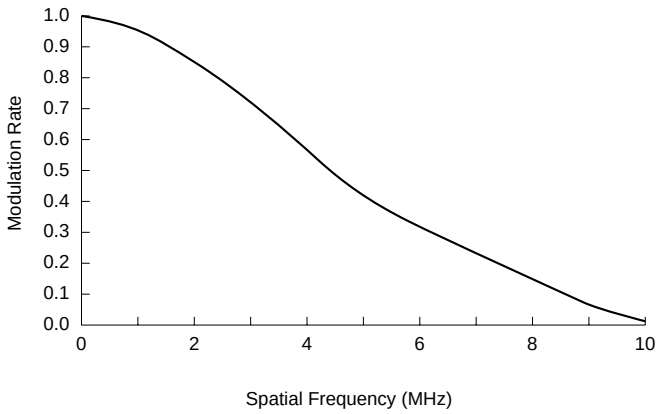
■ XC-55BB compatibility

List of NF mount lenses

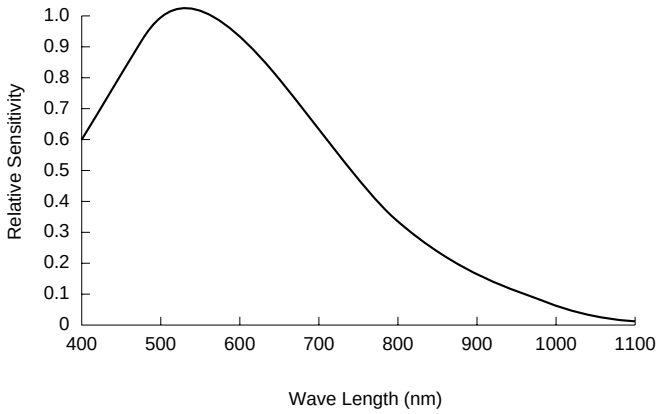
Model		VCL-03S12XM	VCL-06S12XM	VCL-12S12XM	VCL-12SXM
Focus distance		3.5 mm	6 mm	12 mm	12 mm
Max. opening diameter ratio		1 : 1.8	1 : 1.4	1 : 1.4	1 : 1.4
Operation	Iris	Manual	Manual	Manual	Manual
	Focus	No	Manual	Manual	Manual
Screen (Horizontal × Vertical)	1/3"	79.3° × 59.3°	44.1° × 33.3°	22.4° × 16.8°	22.59° × 17.14°
Shortest shooting distance		300 mm	300 mm	300 mm	100 mm
Closest imaging range (Horizontal × Vertical)	1/3"	609 × 457 mm	259 × 189 mm	103 × 77 mm	47 × 35 mm
Back focus		9.57 mm	8.57 mm	11.62 mm	8.55 mm
Flange back		12 mm	12 mm	12 mm	12 mm
Weight		40 g	25 g	25 g	26 g

VARIOUS CHARACTERISTICS

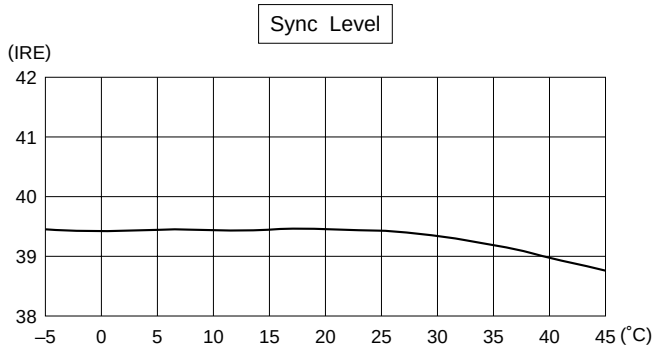
Total MTF Response (typical value)

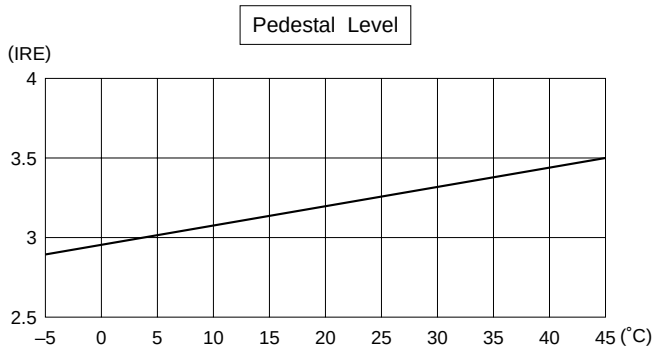


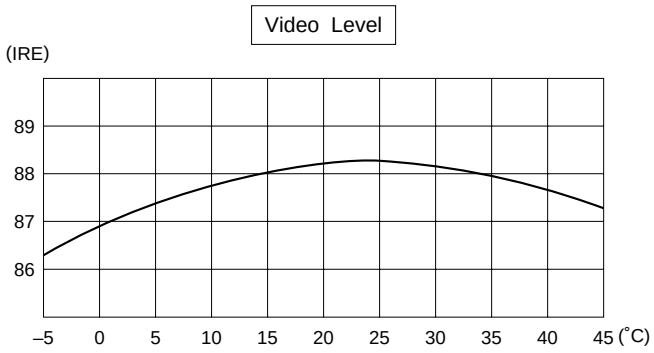
Spectral Response (typical value)



Temperature Characteristics (typical value)



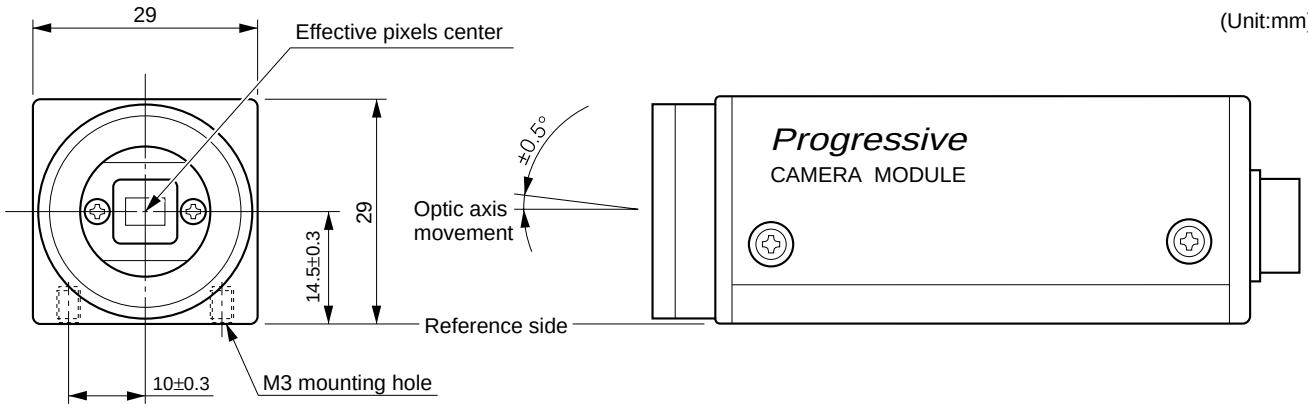




CCD MOUNTING ACCURACY

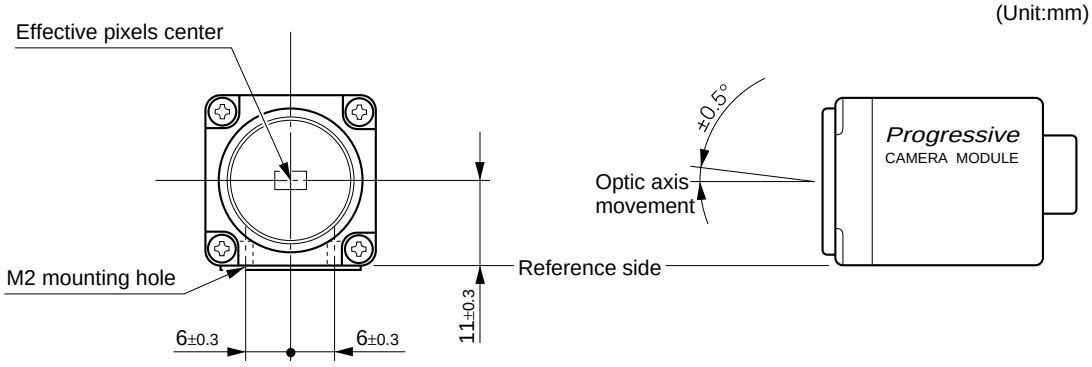
XC-55

(Unit:mm)

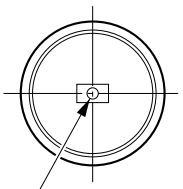


XC-55BB

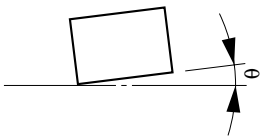
(Unit:mm)



XC-55/55BB



The effective pixels center should be less than ø0.6 in respect to the mount center

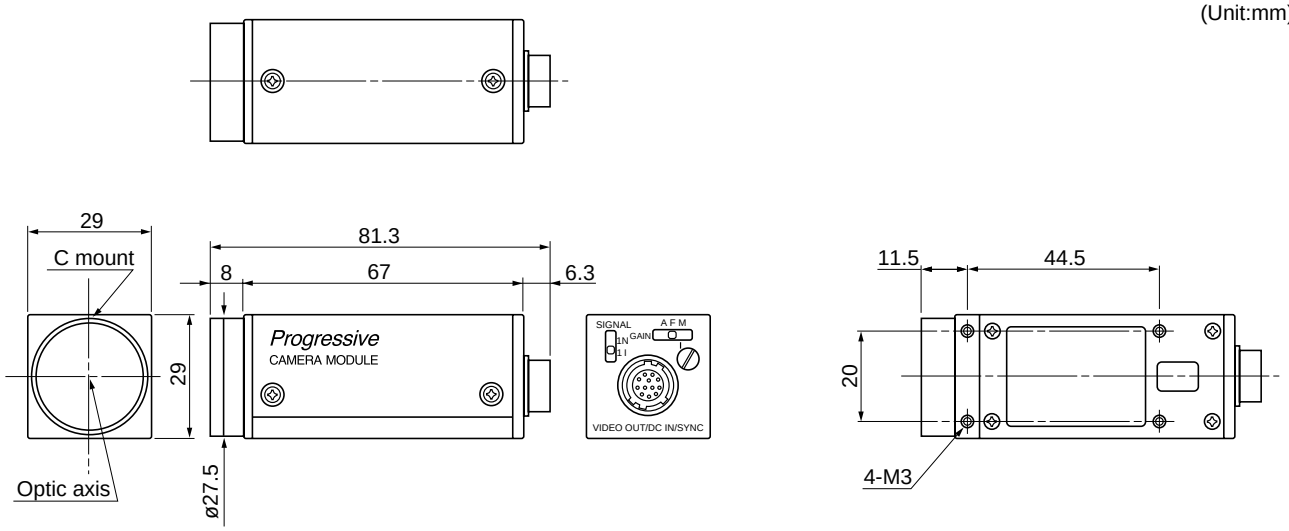


The tilt θ of the effective pixels should be θ ≦ ±1˚ in respect to the reference side.

DIMENSIONS

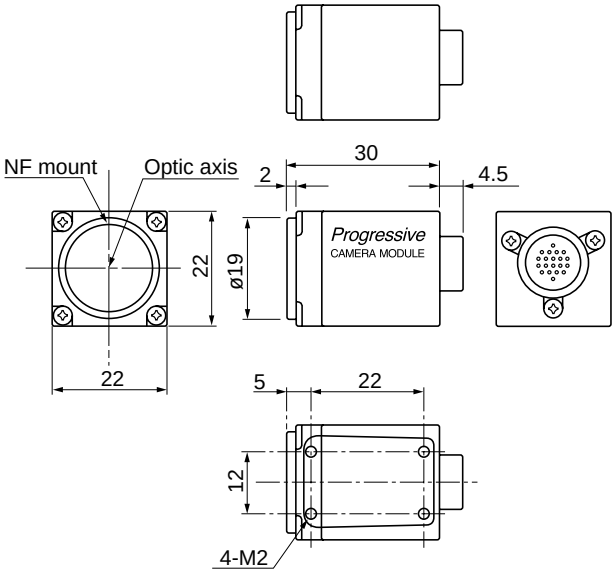
XC-55

(Unit:mm)

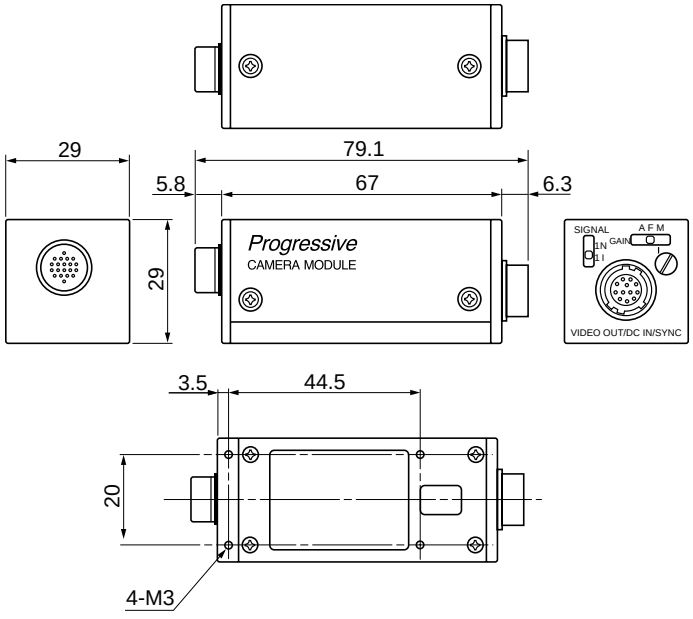


XC-55BB

CHU



CCU



PRECAUTIONS

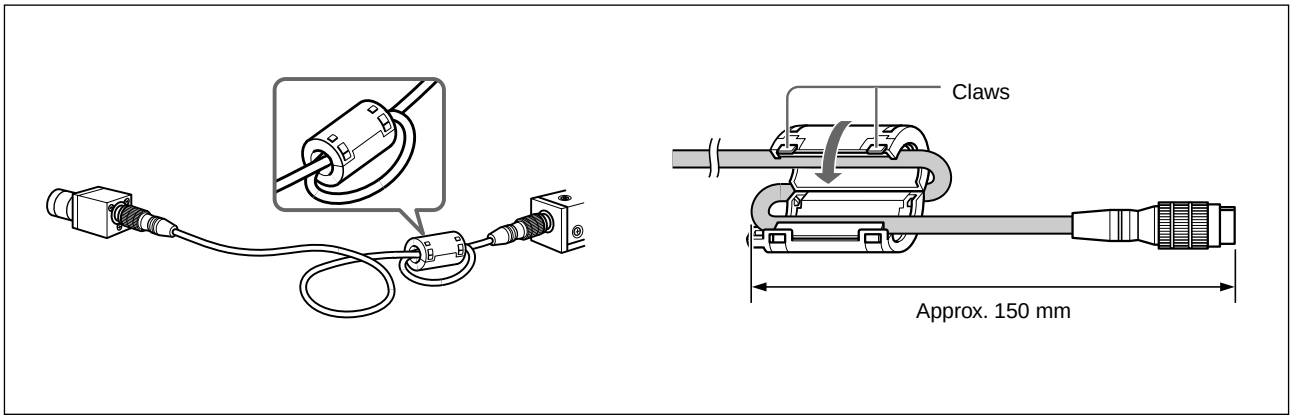
■ The CHU and CCU of XC-55BB must have the same serial numbers.

■ The cable CCXC-T20P02 (2m) for XC-55BB can be purchased separately, but the CCXC-T20P05, P10 cannot be used. (The CCXC-T20P05 and P10 are for the XC-333.)

■ The CE standards can be satisfied for this SONY product with the clamp filter and CCMC-12P02 cable provided.

◇ **Attaching the clamp filter**

When using in Europe, attach the clamp filter to the cable.
Attach the clamp filter to the side connecting to the control section.
Wind the cable as shown in the figure, and close the clamp filter. Make sure that the cable does not get caught by the claws of the clamp filter.

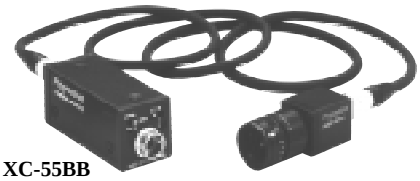


■ The XC-55/55BB cannot be connected to the CMA-87.

XC-55/55BB

Sales Office :

XC-55



XC-55BB

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