

**INFRARED-CCD VIDEO CAMERA
C2400-79H
OPERATION MANUAL**

HAMAMATSU

55310-218

Thank you for purchasing the C2400-79H.

Before using your equipment, please read this manual carefully, to make sure you use your unit properly.

If you have any questions concerning the contents, please contact your nearest HAMAMATSU sales representative.

OVER VIEW

The C2400-79H is a compact, lightweight black and white CCD camera module with built-in 2/3-inch infrared CCD chip.

It has many functions like electrical shutter, gain control, external synchronization, variable integration as standard.

And it is suitable for image-sensor not only for industrial applications.

But also for surveillance thanks to high near infrared sensitivity of the camera.

Main features are no distortion, long life, no after image and as follows.

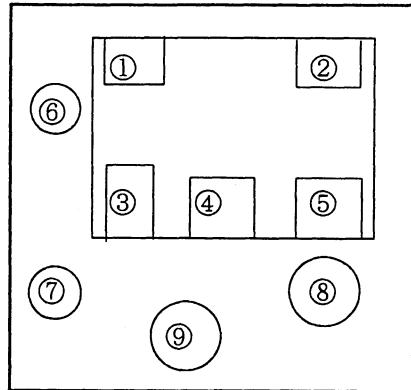
FEATURES

- High resolution 780(H) × 488(V)pixel.
- High sensitivity with 100% window ratio by frame-transfer CCD.
- Wide wavelength range, over 800nm near infrared high sensitivity.
- Non-interlace operation.
- Watch guard use AGC circuit.
- +18dB maximum gain adjustment.
- Electric shutter.
- Variable integration mode.

OPERATION PROCEDURE

When the above operations have been completed, use the following procedure to operate the equipment.

REAR PANEL



① Shutter speed control switch (SW1)

SW No.	Shutter speed	SW No.	Shutter speed
0	1/500	5	1/3000
1	1/750	6	1/4000
2	1/1000	7	1/8000
3	1/1500	8	no use
4	1/2000	9	no use

② External synchronization termination resistor select switch (SW4)

Left	75 Ω
Center	100K Ω
Right	150 Ω



L C R

③ Mode select switch (SW3)

SW No.	Function	Operate
1	Shutter1	Fig.1
2	Shutter2	Fig.2
3	External synchronization	ON=External synchronization
4	External synchronization	ON=External synchronization
5	Interlace / Non-interlace	ON=Interlace
6	No use	

Fig.1

Shutter1	Shutter2	Mode
OFF	OFF	Shutter OFF
ON	OFF	Continue shutter ※ 1
ON	ON	Continue shutter ※ 2
OFF	ON	V.I. (Variable Integration) mode

※ 1 : V reset (External trigger input)

※ 2 : V non-reset (External trigger input)

④ Gain mode select switch (SW2)

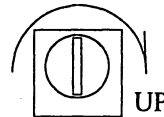
Left	AGC
Center	FIX
Right	MANUAL



L C R

⑤ GAIN VOLUME (VR1)

Gain mode select switch (SW2) is
" MANUAL " set only active.



⑥ DC IN Terminal

DC power supply from AC adaptor.

Connector spec : EIAJ RC-5320A (voltage level 4)

⑦ LENS Terminal

When plug of auto iris lens is connected, it is possible to adjust automatically iris of lens.

And also it is input terminal of shutter trigger.

Pin No.	Input-output signal	Signal level
1	Field index output	HC125 Level
2	Shutter trigger input V.I. command input	C-MOS Level C-MOS Level
3	GND	
4	SMOD Output	HC125 Level
5	Video output (for auto iris)	
6	DC+12V Output	

Cable side connector : HR10A-7P-6P (HIROSE)

Caution : Pin5 is only for auto iris lens so don't use it for the other purpose.

⑧ DC IN / SYNC Terminal

This terminal is for power supply of DC+12V, for video output from camera module and for input / output of synchronization signal.

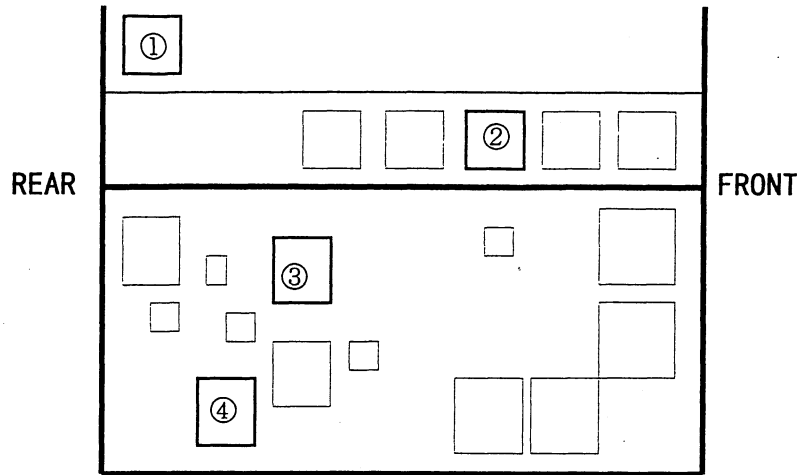
Pin No.	Input-output signal	Signal level
1	GND	
2	DC+12V	
3	Video output (Return)	
4	Video output (Signal)	
5	HD Input-output (Return)	
6	HD Input (Signal) HD Output (Signal)	HCT14 Level HC125 Level
7	VD Input (Signal) VD Output (Signal)	HCT14 Level HC125 Level
8	Option output (Return)	
9	Option output (Signal)	HC126 Level
10	GND	
11	DC+12V Output	
12	VD Input-output (Return)	

Cable side connector : HR10A-10P-12S (HIROSE)

Caution : Last resistor (SW4) must be C (100K Ω) when output synchronization (HD / VD).

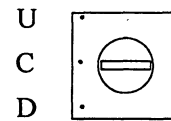
INTERNAL SWITCH

Remove the cover setup the switch.



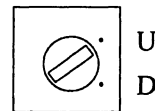
① Synchronization (HD / VD) input or output select switch. (SW1)

UP	HD / VD input
CENTER	no use
DOWN	HD / VD output



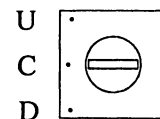
② Option output select switch. (S1)

UP	Shutter monitor output
DOWN	Pixel clock output



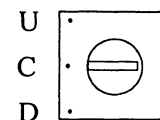
③ GAMMA select switch. (SW1)

UP	$\gamma = 1$ (OFF)
CENTER	no use
DOWN	$\gamma = 0.45$ (ON)



④ Output coupling type select switch. (SW4)

UP	DC coupling
CENTER	no use
DOWN	AC coupling



SPECIFICATIONS

IMAGER

imaging device	: frame transfer CCD
effective pixel	: 754 × 484 (Horizontal / Vertical)
image area	: 2/3 inch
signal	: NTSC B / W
spectral response	: 400 to 1300 nm

OPTICAL

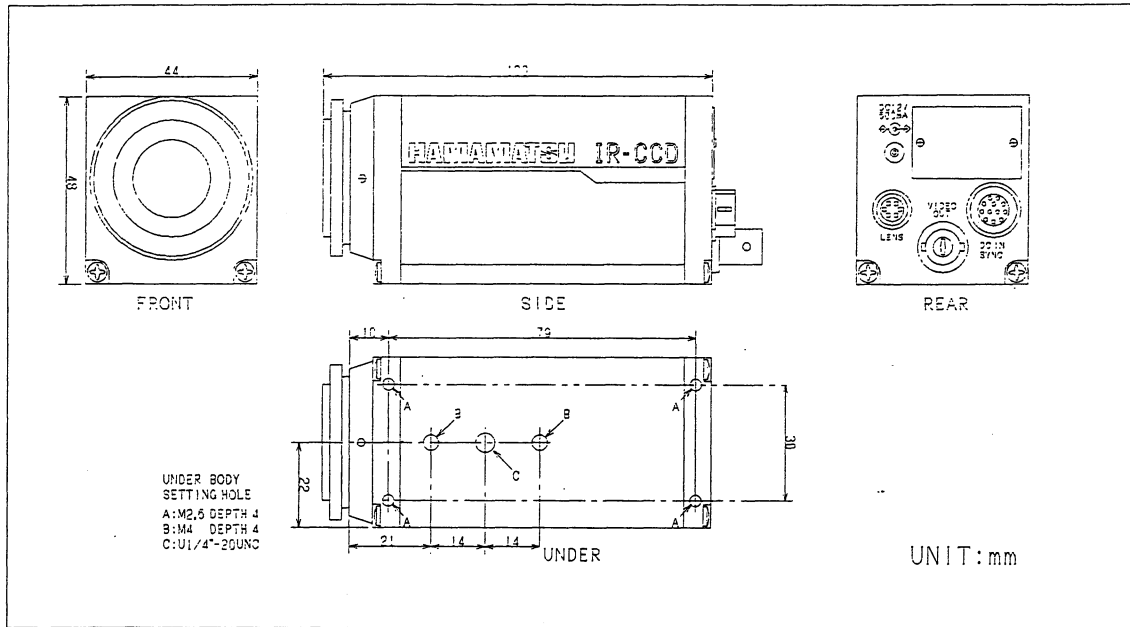
lens mount	: C-mount
flange back	: 19 mm (adjustable)

OTHER

method of synchronization	: internal / external
external synchronization	: HD / VD (input level = TTL)
jitter	: within ± 1 nsec.
scan method	: 2 : 1 interlace / non-interlace
horizontal resolution	: 570TV line
sensitivity	: 0.8 Lux (FIX gain)
minimum luminous	: 0.1 Lux (MANUAL gain)
S/N ratio	: 57dB minimum
GAMMA	: ON = 0.45 OFF = 1.0
gain	: AGC (0 ~ 18dB) FIX (0dB) MANUAL (0 ~ 18dB)
shutter function	: shutter 1 (continue shutter) shutter 2 (random shutter)
shutter speed	: 1/500, 1/750, 1/1000, 1/1500, 1/2000, 1/3000, 1/4000, 1/8000
V.I.mode	: variable integration function (with external trigger)
power supply	: DC+12V (+10.5 ~ 15V)
power consumption	: 4.2W
operation temperature	: 0 ~ +40 °C
storage temperature	: -25 ~ +60 °C
operation humidity	: 20 ~ 80% (no condensation)
storage humidity	: 20 ~ 95% (no condensation)
shock & vibration	: 4.4G (11 ~ 100Hz)
outline dimension	: 44 (W) × 48 (H) × 112 (D) mm
weight	: 215 g
accessories	: focus ring cap (1) instruction manual (1)

Sensitivity is measured by "OPT LINER K-1500V" supplied by Optical Instruments Corp (USA).

DIMENSIONAL OUTLINE



Adjustable focus ring ($\pm 2.0\text{mm}$)

OPTION

C-mount lens : A3591 (Infrared lens F1.8 f=25mm)

Infrared filter : A3592 (800 nm)
A3592-01 (700 nm)

Signal cable : A3581 (2 m BNC type)

TV monitor : PVM-96J (9inch NTSC resolution=900TVline)
PVM-96E (9inch CCIR resolution=900TVline)
PVM-146J (14inch NTSC resolution=1000TVline)
PVM-146E (14inch CCIR resolution=1000TVline)

Handgrip : A3594

Infrared illuminator : L5777 (LED type short distance illuminator)

WARRANTY

1. Warranty period

One year from the date of delivery.

However, this warranty is limited to repair or replacement of the pertinent parts.

2. Exceptions

The following shall be repaired for a charge even if they occur within the warranty period.

- Damage due to earthquake, lightning, typhoon, tidal wave, fire, and other disasters.
- If the user has made any modifications that affect the functions of the equipment.
- When the equipment was handled in a manner contrary to that described in the instruction manual.
- Accidents due to use in an adverse environment.
(high temperature and humidity, very low temperature, corrosive gas, vibration, shock, etc.)

3. Repair and inspection after expiration of warranty period.

Repairs and inspection shall be performed for a charge.

Please contact the Hamamatsu Sales Division or your Hamamatsu dealer.

When requesting repair or inspection, please provide the following information along with the equipment:

Your address

Your name

Your telephone number

Product name

Serial No.

Name of store where purchased

Date purchased

Description of problem (in as much detail as possible)