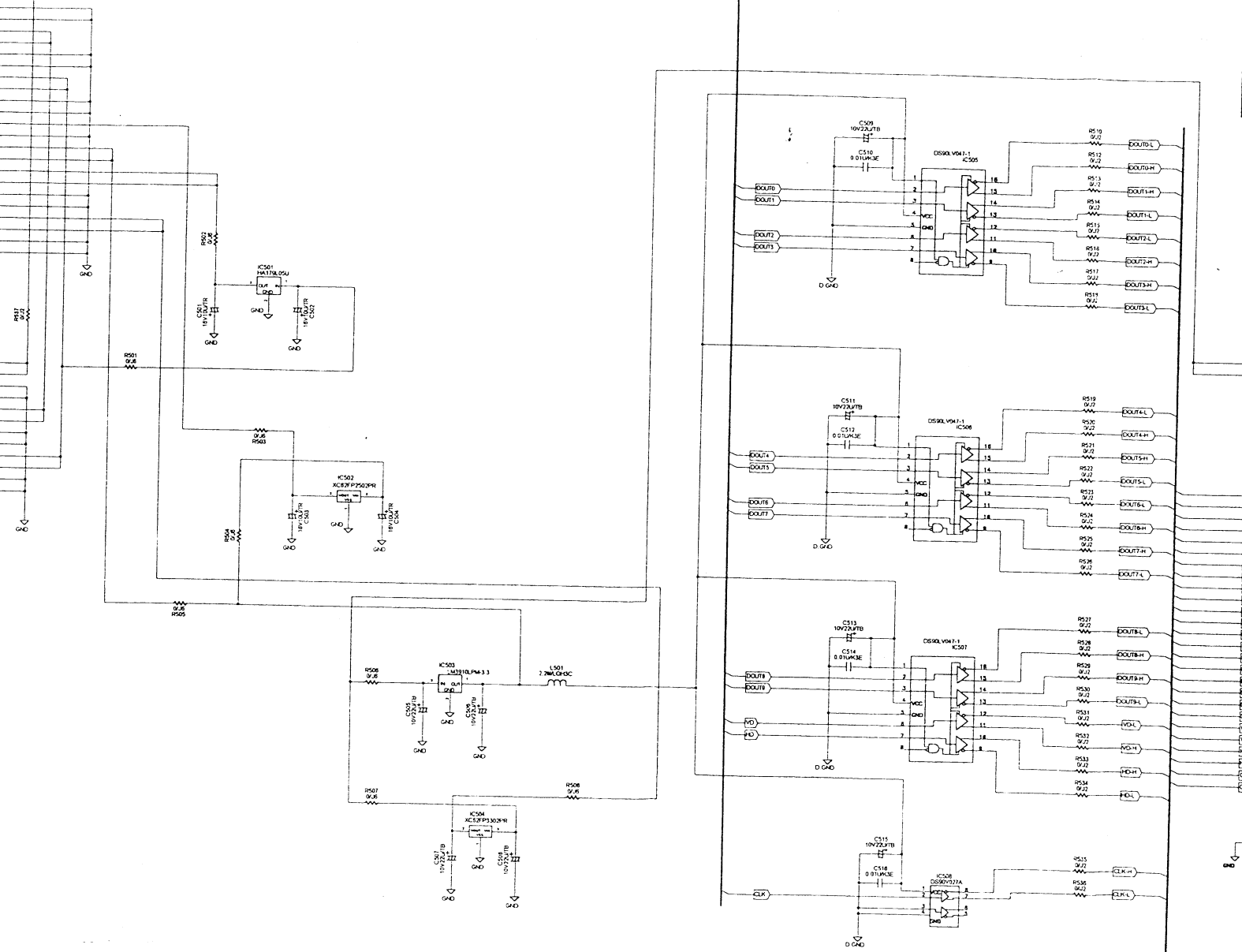
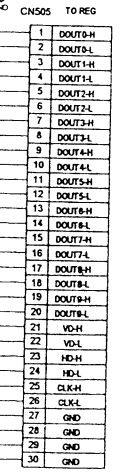
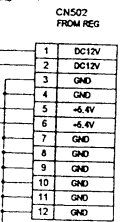
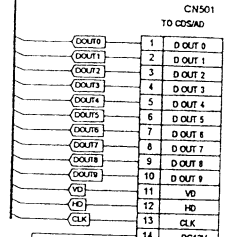
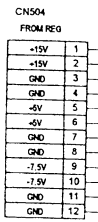
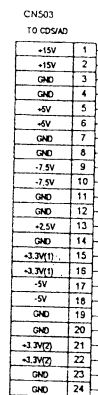


PP-2637A

SYMBOL	REVISIONS	DATE	DSGN	CHKD	APPD	KUENO	KUENO	N.FUJIMARA	N.FUJIMARA	FEB.8.01	FEB.8.01	FEB.8.01	FEB.8.01	FEB.8.01	FEB.8.01
<p>SCALE: 1:1</p>															
<p>Hitachi Kokusai Electric Inc. Tokyo Japan</p>															

KP-F100A CPU



PP-2640A

DWN	KUENO	FEB.01
DSGN	KUENO	FEB.01
CHKD	KUJIMARA	FEB.01
APPD	KUJIMARA	FEB.01

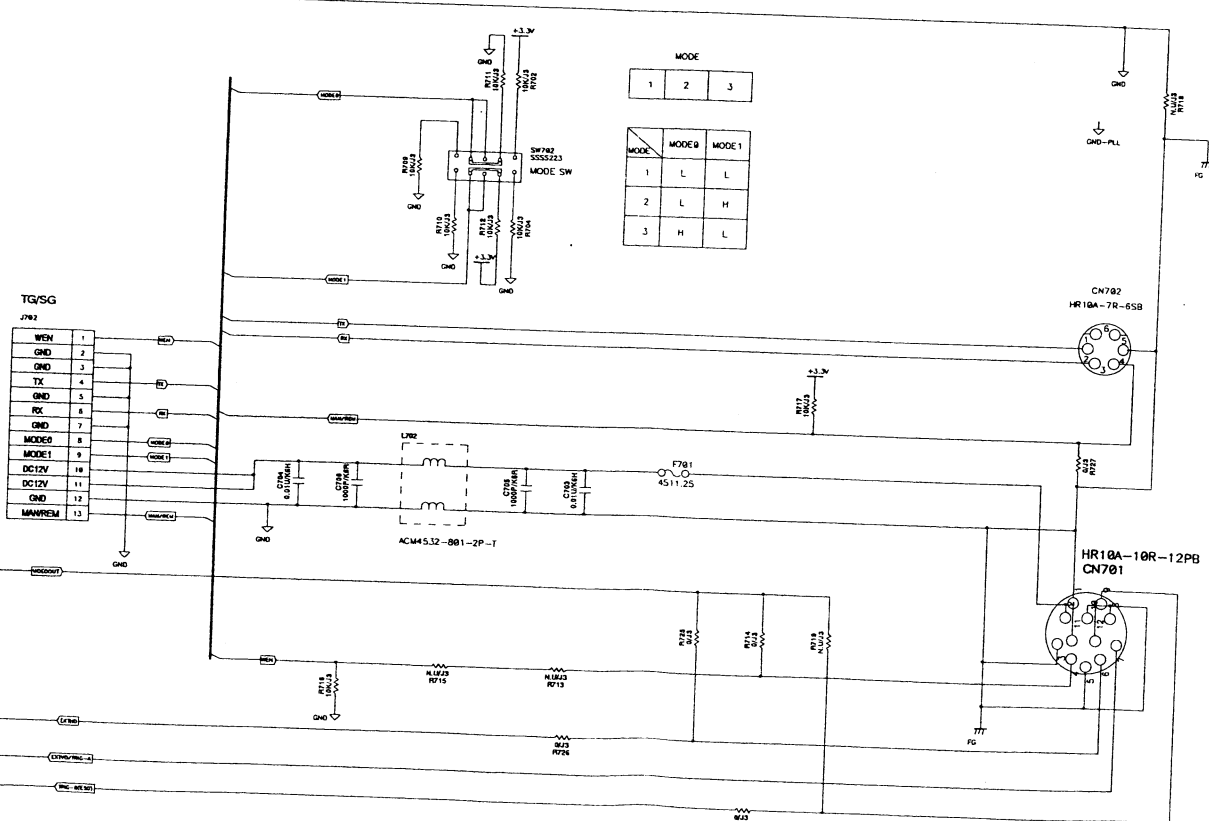
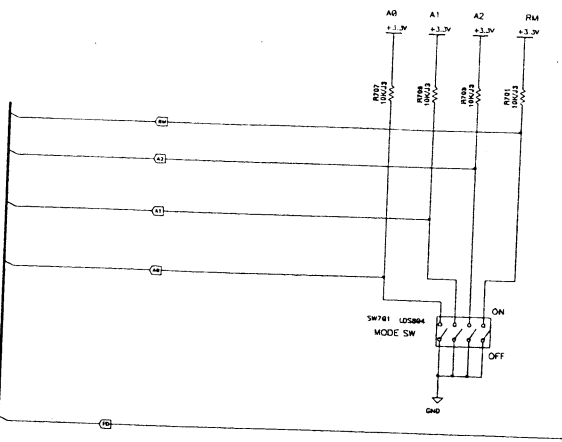
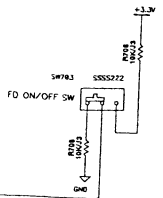
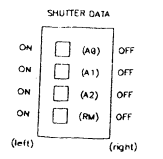
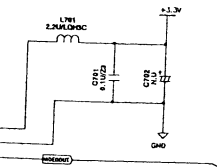
Hitachi Kokusai Electric Inc
Tokyo Japan

A
B
C
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A
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D
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F
G
H

TG/SG
J701

-1.3V	1
GND	2
VIDEO OUT	3
GND	4
EXTV/MSG	5
TRNG-MSG	6
EXTHD	7
A0	8
A1	9
A2	10
GND	11
RM	12
FD	13



TG/SG
J702

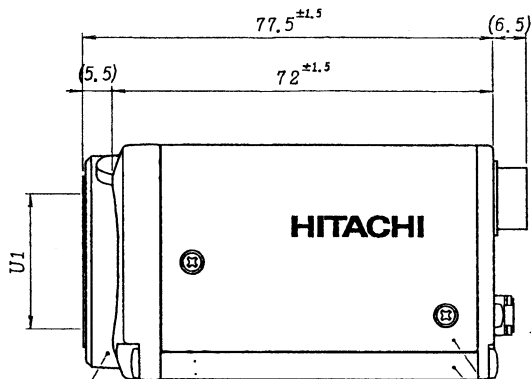
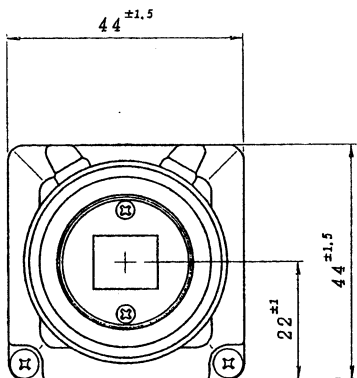
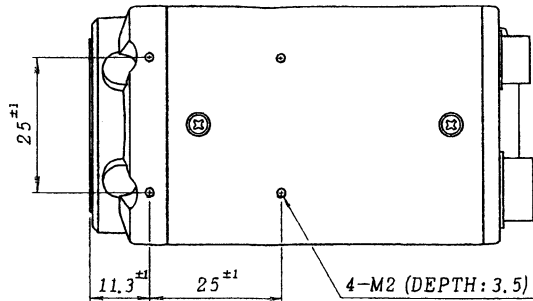
WEN	1
GND	2
GND	3
TX	4
GND	5
RX	6
GND	7
MODE0	8
MODE1	9
DC12V	10
DC12V	11
GND	12
MANREM	13

MODE

1	2	3
MODE0	MODE0	MODE1
1	L	L
2	L	H
3	H	L

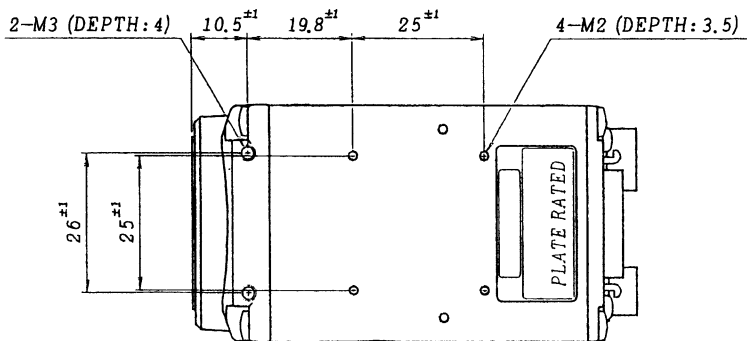
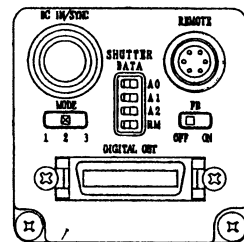
	R713	R714	R715
VIDEOOUT	N.U	0Ω	N.U
WEN	100Ω	N.U	0Ω

SYM	REVISIONS	DATE	DSGN	CHKD	DWN DSGN	K. UENO	FEB 80	SCALE	CHKD	K. UENO	FEB 80	APPD	NP-F102 REAR
Hitachi Kokusai Electric Inc. Tokyo Japan													



COLOR : BLACK

COLOR : BLACK



**Progressive Scan Type
Black and White Camera**

KP-F100A

OPERATION MANUAL

Please read this operation manual carefully for proper operation, and keep it for future reference.

Hitachi Kokusai Electric Inc.

KP-F100A for U. S. A.

These products have been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. These equipments generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of these products in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

Changes or modifications not expressly approved by Hitachi Denshi responsible for compliance could void the user's authority to operate the equipment.

KP-F100A for Canada

These products do not exceed the class A limits for radio noise emissions from digital apparatus as set out in the radio interference regulations.

Le présent appareil n'émet pas de bruits radioélectriques dépassant les limites applicable aux appareils numériques de classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par le ministère des communications du Canada.

KP-F100A P

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß CCD-Kamera KP-F100A in Übereinstimmung mit den Bestimmungen der Amtsblattverfügung Nr. 1046/1984 funkenstört ist. Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Hitachi Denshi(Europa) GmbH
Weiskircher Straße 88, D-6054 Rodgau 1 (Jügesheim)
F. R. Germany

Note: The model and serial numbers of your CAMERA are important for you to keep for your convenience and protection. These numbers appear on the nameplate located on the bottom of the products. Please record these numbers in the spaces provided below, and retain this manual for future reference.

Model No. _____

Serial No. _____

**Phenomena inherent to CCD
imaging device**

Following are the phenomena inherent to a CCD imaging device, and not defects

1) Smear and blooming

When strong light (lamp, fluorescent lamp, reflected light etc.) is shot, pale bands are displayed vertically above and below the light.

In this case, change the angle of the camera so that such strong light does not enter the camera through the lens.



2) Fixed pattern noise

When the camera is operated in a high temperature, fixed pattern noise may appear on the entire screen.

3) Moire

When fine patterns are shot, moire may be displayed.

NOTES TO USERS

a. Power supply

Connect 12V ± 1V DC from an external power supply.

b. To protect CCD (sensor)

- Do not touch the glass surface of the sensor to avoid dirt and scratches.
- If the glass surface of the sensor should become dusty or dirty, wipe off dust or dirt carefully with a cotton-tipped applicator. Never use dry cloth or paper. The surface may be scratched and further the sensor may be damaged by static electricity.
- Be sure to mount a lens or the supplied mount cap on the camera to protect the sensor from dust.

c. To protect camera

- Do not use or store the camera under direct sunlight, in environments exposed to rain, or snow, or at a place exposed to flammable or corrosive gas.
- The camera operates in the temperature range between -0 and 40C.
If the camera is used or left at a high temperature (40°C or more) for hours, the life of the camera may be shortened. When using the camera continuously for hours, avoid using the camera in such a high temperature or high humidity.

- Do not drop the camera. Do not apply strong shock vibration to the camera.
- Before connecting or disconnecting a connector, turn off the camera. Be sure to hold the connector body connect or disconnect the connector.

d. Arrangement of camera

When several cameras are installed very close with each other the cameras may interfere with each other to cause noise. Install the cameras as far as possible from each other operate the cameras by an external sync signal.

e. Fixing of camera

When a heavy lens is used, or when excessive shock vibration is applied, fix the lens to the equipment, too.

GENERAL

Hitachi's KP-F100A is a 2/3-inch size black and white CCD camera designed for high resolution and versatile functions.

- High resolution : 1300 (H) X 1030 (V) effective pixels
- RS-232C control

- Digital output is EIA-644
- Frame shutter function and multiple electronic shutter
- Positive or negative select switch for Input trigger
- Frame-on-Demand function

COMPOSITION

Standard composition

- (1) Camera (with infrared cut filter)
- (2) Operation manual

Optional accessories

- | | |
|--------------------------------|--------------------------|
| (1) Tripod adaptor | TA-M1 |
| (2) 12 pin plug | HR10A-10P-12S(01) |
| (3) D. OUT connector (26 pins) | DX30AM-26P or equivalent |
| (4) AC adaptor | AP-130 |
| (5) Dummy glass (AR coated) | ARC1214 |
| (6) Junction box | JU-F1* |
| (7) Camera cable | |

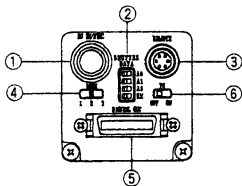
	Model type	Assembly type	00000
2m	C-201KSM	C-201KS	C-201KSS
5m	C-501KSM	C-501KS	C-501KSS
10m	C-102KSM		C-102KS

Note : Assembly type made to order

*12-pin connector output pin differences

Pin	KP-F1	KP-F100A
2m	VIDEO 1	VIDEO
5m	HD/TRIG-B	HD(input)
10m	VIDEO 2	TRIG-B

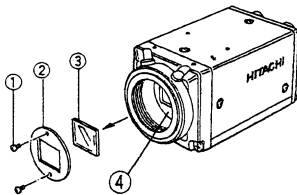
NAME OF EACH SECTION



- ① DC IN/SYNC connector
Connector for DC 12V supply, external SYNC input, and Video signal output.
- ② SHUTTER DATA switch
Use these switches to set a shutter speed.
- ③ REMOTE connector
Connector for RS-232C control.
- ④ MODE switch
Set to electric shutter ON/OFF, or fixed shutter, one or two trigger mode.
- ⑤ DIGITAL OUT connector
RS-644 digital data output.
- ⑥ FD switch
Set to on to use Frame On Demand function.

OPTICAL FILTER

This camera is provided with an IR cut filter.



How to remove the IR cut filter.

- (1) Remove two screws ① and filter holder ② will come off.
- (2) Remove the IR cut filter ③ from filter frame ④.
- (3) Then, reinstall and secure filter holder ② with two screws.

Caution

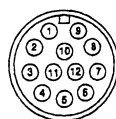
Prior to removal of the optical filter, be sure to turn off power.

SIGNAL CONNECTION TO CONNECTOR

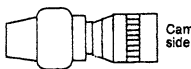
(1) Signal connections to DC IN and SYNC(DC IN/SYNC)

Pin No.	Internal SYNC mode	External SYNC mode			
		HV/VD	Frame-On-Demand		
			Field shutter	TW2 trigger	ONE trigger
1	GND	GND	GND	GND	GND
2	+12V	+12V	-12V	+12V	+12V
3	GND	GND	GND	GND	GND
4	VIDEO	VIDEO	VIDEO	VIDEO	VIDEO
5	—	EXTHD(GND)	—	—	—
6	—	EXTHD (SIGNAL)	—	—	—
7	—	EXTVD (SIGNAL)	TRIG-A (SIGNAL)	TRIG-A (SIGNAL)	TRIG-A (SIGNAL)
8	—	—	—	TRIG-B(GND)	—
9	—	—	—	TRIG-B (SIGNAL)	—
10	GND	GND	GND	GND	GND
11	+12V	+12V	+12V	+12V	+12V
12	—	EXTVD(GND)	TRIG-A(GND)	TRIG-A(GND)	TRIG-A(GND)

DC IN/SYNC
HR10A-10P-12S(01)
Product : 23810AX



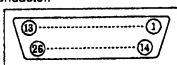
View from this side →



(2) Signal connection to DIGITAL OUT(S)

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	DATA0-H	8	DATA3-L	15	DATA7-H	22	VD-H
2	DATA0-L	9	DATA4-H	16	DATA7-L	23	HD-H
3	DATA1-H	10	DATA4-L	17	DATA8-H	24	HD-L
4	DATA1-L	11	DATA5-H	18	DATAB-L	25	CLK-H
5	DATA2-H	12	DATA5-L	19	DATA9-H	26	CLK-L
6	DATA2-L	13	DATA6-H	20	DATA9-L	Shield	GND
7	DATA3-H	14	DATA6-L	21	VD-H		

-H: High, -L: Low
The digital out pin is not grounded. Connect the ground terminal of a frame grabber or other equipment to the shield of the digital out cable. The digital out cable should be comprised of a twisted pair of wires having 100 Ω characteristic impedance and an outer sheath shield type conductor.



DIGITAL OUT
DX30AM-26P
Part code : JMD0240

View from this side → Camera side

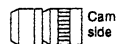
(3) Signal connection to REMOTE connector

Pin No.	Signal
1	—
2	RD
3	TD
4	MANU/REM
5	GND
6	—



REMOTE
HR10A-7P-6P(01)
Part code : JMH00

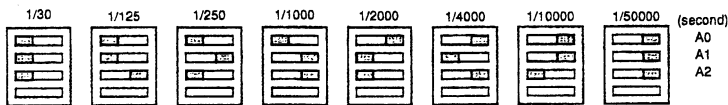
View from this side →



● Connect the cable between the camera Remote connector and the personal computer serial interface connector (D-SUB 9 pin).

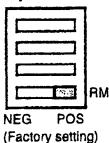
● Notes: At the camera Remote plug, connect pin Manual/remote and pin 5 ground. At the computer serial interface connector (SUB), short pins 7 (RTS) and 8 (CTS).

(1) Setting of shutter speed

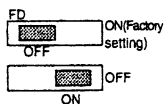


(Factory setting)

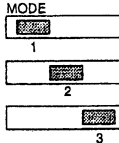
(2) Setting of Negative trigger input, or Positive trigger input.



(3) Setting of Frame-On-Demand ON/OFF



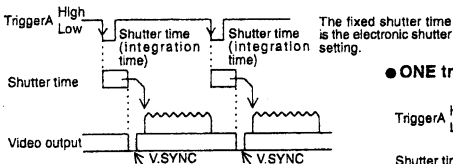
(3) SETTING OF MODE



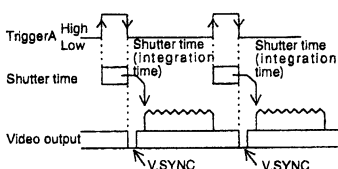
FD switch: OFF	FD switch: ON
1: Electronic shutter OFF	1: Fixed shutter
2: Electronic shutter ON	2: TWO trigger
3: _____	3: ONE trigger

FRAME-ON-DEMAND-FUNCTION

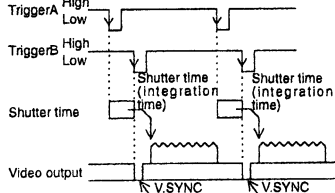
● Fixed shutter mode



● ONE trigger mode



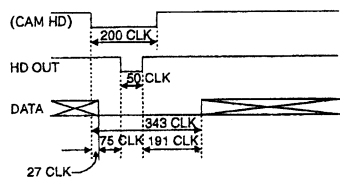
● TWO trigger mode



INPUT/OUTPUT SIGNAL LEVELS AND TIMING

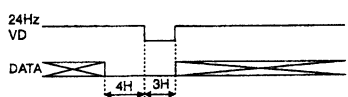
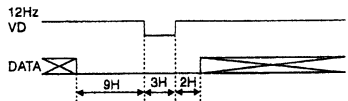
(1) Digital output

● H sync phase relationship

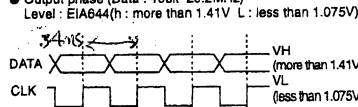


HD OUT is obtained at RS-422A rating from the digital connector pins 23 and 24.
 HD = 12.528kHz = 1616CLK

● V sync phase relationship

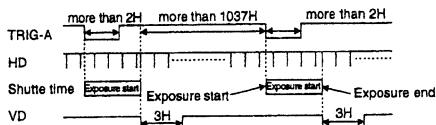


● Output phase (Data : 10bit 20.2MHz)



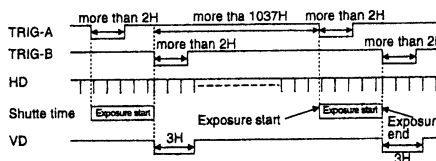
(2) TRIG-A input and HD & VD phase during Fixed shutter mode

Transmit TRIG-A at TTL level



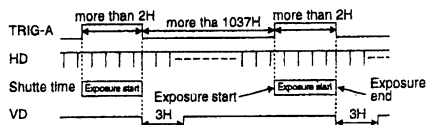
(3) TRIG-A & B input phase and HD & VD phase during Two trigger mode

Transmit TRIG-A & B at TTL level

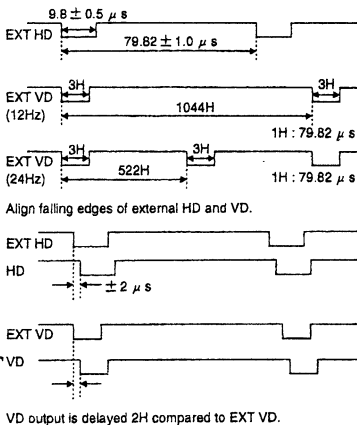


(4) One trigger mode

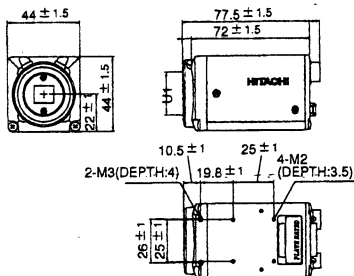
Transmit TRIG-A at TTL level.



(5) External HD & VD input levels and phase



EXTERNAL VIEW



Caution

When a heavy lens is used, or when excessive shock or vibration is applied, fix the lens to the equipment, too.

SPECIFICATIONS

- | | | | |
|-----------------------------------|--|-----------------------------------|--|
| (1) Pickup element | 2/3-Inch interline CCD | (11) Video output | Digital output or analog output for image checking |
| Total pixels | 1360 (H) × 1034 (V) | Digital output | EIA-644 |
| Effective pixels | 1300 (H) × 1030 (V) | | Note: Maximum digital out cable length is 8 meters. |
| Pixel pitch | 6.7 (H) × 6.7 (V) μm (square lattice) | | Data: Single channel 10 bits, 20.2 MHz |
| (2) Imaging area | 8.71 (H) × 6.90 (V) mm | (12) External sync input | HD/VD 5 Vp-p negative |
| (3) Scanning system | Non-interlaced | | Input impedance: 1 k Ω |
| (4) Aspect ratio | 5 : 4 | | Frequency deviation: ± 1% |
| (5) Frame rate | 12 frames/second (full pixel readout) | (13) Electronic shutter speed | Selectable by external switches: |
| | 24 fps (2V pixels simultaneous readout) | | Off (frame rate), 1/30, 1/125, 1/250, 1/1000, 1/2000, 1/4000, 1/10000, 1/50000 second. |
| | 24 fps is without frame on demand function. | | Set by external switch.. |
| (6) Horizontal scanning frequency | 12.528 kHz | (14) Gamma compensation | γ = 1 |
| (7) Vertical scanning frequency | 12 Hz | (15) Frame-on-demand | External switch setting on/off and modes (fixed shutter, two trigger, and one trigger). |
| (8) Synchronization | Internal/external (automatic switching) | (16) Power supply voltage | 12 ± 1 VDC |
| (9) Lens mount | C mount | (17) Current consumption | Approx. 290 mA |
| (10) Flange focal distance | 17.526 mm | | |
| (18) Ambient, operating | 0 to +40 °C (+32 to ; 104 F), less than 90 % RH | (b) Communications control system | Full control by remote control software, data send/receive by text data transfer to camera microprocessor (BSC system handshake) |
| Ambient, storage | -10 to +50 °C (+14 to +122 F), less than 70 % RH | (C) Control items | |
| | Note: If operated continuously, be sure to use at less than +40 °C (104 F) for long term stable performance. | 1. Shutter speed | (1/30, 1/125, 1/250, 1/1000, 1/2000, 1/4000, 1/10000, 1/50000 second) |
| (19) Vibration endurance | 3G (3 directions, 30 minutes each) | 2. FD (frame-on-demand) | On/off |
| (20) Shock endurance | 30G (vertical, horizontal, once each face) | 3. Mode | Fixed shutter, two trigger, one trigger |
| (21) External dimensions | 44 (W) × 44 (H) × 78 (D) mm | 4. V-binning | On/off |
| (22) Mass | Approx. 180 g | 5. Gain | Variable in 50 steps |
| (23) RS-232C control | | 6. Black level | Variable in 50 steps |
| (a) Signal system | | 7. Input trigger | Negative/Positive |
| Control system | Start-stop synchronization system | | |
| Transmission rate | 9600 bps | | |
| Data length | 8 bits | | |
| Start bit | 1 bit | | |
| Stop bits | 2 bit | | |
| Parity | None | | |
| Bit transfer | LSB first | | |

※ Specifications are subject to change without notice.

● Operation Guide

For more details, see the operation guide. Please ask your sales representative about the Operation Guide.

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Service (734) 721-8180

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Phone : (877) 326-8105, Fax : (516) 496-3718
Service (678) 937-0201

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