

Progressive Scan Type Black and White Camera

KP-F100BCL

フレーム・オン・デマンド

取扱説明書

このたびは日立KP-F100BCL白黒CCDカメラをお買い上げいただきまことにありがとうございます。ご使用前にこの取扱説明書をよくお読みいただき、正しくお使いください。

OPERATION MANUAL

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

株式会社 日立国際電気

Hitachi Kokusai Electric Inc.

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- 弊社は保証期間内に万一製造上の不備に起因する故障が発生した場合は、弊社のサービス担当において無料で修理いたします。
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- 本保証書は日本国内においてのみ有効です。
This warranty is valid only in Japan.

形式		製造番号	
KP-F100BCL			
お買上げ年月日		保証期間	1年
※ 年 月 日			
お客様様	ご芳名	様	
	ご住所	〒 TEL	
販売店	店名	※	TEL
住所			

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- 保証期間経過後の修理につきまして修理可能な場合に限り有償にて修理いたします。
- 保証範囲はカメラ単体についてのみとし、カメラ故障により波及すると考えられるお客様のシステム、またこれに伴う取り外し、再取り付けに関わる費用等は保証の対象外とさせていただきます。
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- 本製品には有限寿命部品が使用されています。高温、多湿の環境下ではさらに経年劣化が早くなります。長時間安定した性能が要求される場合は約1～2年毎の定期的な、点検の実施をお願いいたします。
- 各ケーブルの取り付けミスによるカメラの破損に関しては、保証の対象外とさせていただきます。

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 KOKUSAI ELECTRIC responsible for compliance could void the user's authority to operate the equipment.

KP-F100BCL 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.

Declaration of Conformity

Manufacturer's Name: Hitachi Kokusai Electric, Inc.
 Manufacturer's Address: 3-14 20,Higashi-Nakano,Nakanoku Tokyo 164 8511, Japan
 Representative(s) Address in the EU: Hitachi Denzhi (Europa) GmbH Weiskircher StraÙe 88, Jùgsharim D-58110 Rodgau, Germany
 Hitachi Denzhi (U.K.) Ltd. 14 Gerrard Industrial Centre, Irving Way, Hendon, London, NW9 6AQ,United Kingdom

declares, that the product:

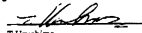
Product Name: CCD Camera
 Model Number(s): KP-F100BCL

conforms to the following Standards:

EMC: EN 50081-1:1992
 EN 50082-1:1997

Supplementary Information:
 "The product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC."

Signature:


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 Dept. Manager, Quality Assurance
 Broadcast/Telecommunication
 Systems Group
 Hitachi Kokusai Electric Inc.


 K. Onda
 Managing Director
 Hitachi Denzhi (Europa) GmbH
 Hitachi Denzhi (U.K.) Ltd.

Date:29th October,2002

V3T 0048

NOTES TO USERS

a. Power supply

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

b. Cleaning

- Do not touch the glass surface of the sensor to avoid dirt and scratches.
- Use a manual type blower or lens brush to clear debris from the lens and glass. Carefully wipe the glass with a cotton swab to avoid scratches.
- Even when not using the camera, attach the lens or seal to protect the glass from soiling or damage.

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 (40C 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 or vibration to the camera.
- Before connecting or disconnecting a connector, turn off the camera. Be sure to hold the connector body to 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.

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.



Install the cameras as far as possible from each other or operate the cameras by an external sync signal.

e. Fixing of camera

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

f. Handling

- Use a clean site when installing the lens or other attachment.
- Use care not to tilt the camera when attaching the lens. Also observe absence of foreign matter and scratches on the lens mount.

GENERAL

Hitachi's KP-F100BCL is a 2/3-inch size black and white CCD camera designed for high resolution and versatile functions.

- High resolution : 1392 (H) × 1040 (V) effective pixels
- RS-232C control

- Digital output is Camera Link
- 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) | 10226-5202JL or equivalent |
| (4) AC adaptor | AP-130 |
| (5) Dummy glass (AR coated) | ARC1214 |
| (6) Junction box | JU-M1A, JU-F1* |
| (7) Camera cable | |

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

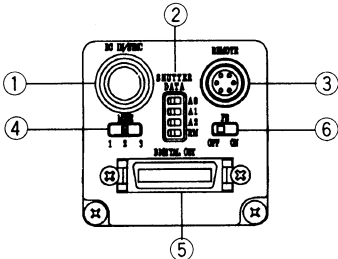
Note : Assembly type is made to order.

In the CE marking Legion, use the Shield type

*12-pin connector output pin differences

Pin	JU-F1	KP-F100BCL output
4	VIDEO 1	VIDEO

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 RS-232C Connector (REMOTE)
KP-F100BCL : Not used.
- ④ MODE switch
Set to electric shutter ON/OFF, or fixed shutter, one or two trigger mode.
- ⑤ DIGITAL OUT connector
Camera Link output.
- ⑥ FD switch
Set to on to use Frame On Demand function.

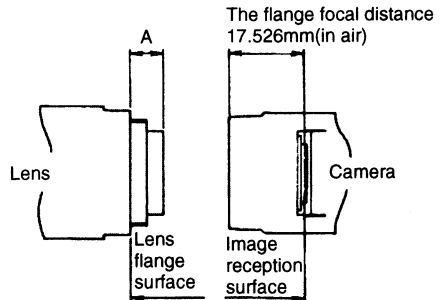
OPTICAL SYSTEM

Flange focal distance

Image size: 2/3-inch

The flange focal distance is 17.526mm (in air)

Flange focal distance cannot be adjusted.



Note:

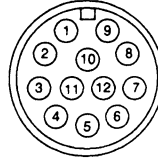
Select such a lens as the length (A) from the flange surface of the lens to the end of the screw side is 8mm or less.

SIGNAL CONNECTION TO CONNECTOR

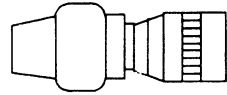
(1) Signal connections to DC IN and SYNC(DC IN/SYNC)

Pin No.	Internal SYNC mode	External SYNC mode			
		HV/V/D	Frame-On-Demand		
			Field shutter	TWO 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	GND	GND	GND	GND	GND
6	—	—	—	—	—
7	—	—	—	—	—
8	GND	GND	GND	GND	GND
9	—	—	—	—	—
10	GND	GND	GND	GND	GND
11	+12V	+12V	+12V	+12V	+12V
12	GND	GND	GND	GND	GND

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



View from
this side



Camera
side

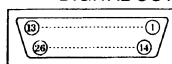
(2) Signal connection to DIGITAL OUT(S)

Pin No.	Signal	Pin No.	Signal
1	GND	14	GND
2	T _X OUT0(-)	15	T _X OUT0(+)
3	T _X OUT1(-)	16	T _X OUT1(+)
4	T _X OUT2(-)	17	T _X OUT2(+)
5	T _X CLKOUT(-)	18	T _X CLKOUT(+)
6	T _X OUT3(-)	19	T _X OUT3(+)
7	RX(+)	20	RX(-)
8	TX(-)	21	TX(+)
9	TRIG-A/V/D [CC1(-)]	22	TRIG-A/V/D [CC1(+)]
10	TRIG-B(+)[CC2(+)]	23	TRIG-B(+)[CC2(-)]
11	EXT-HD(-)[CC3(-)]	24	EXT-HD(-)[CC3(+)]
12	NC [CC4(+)]	25	NC [CC4(-)]
13	GND	26	GND
		Shield	GND

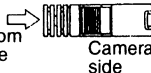
-H: Hgh, -L: Low

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



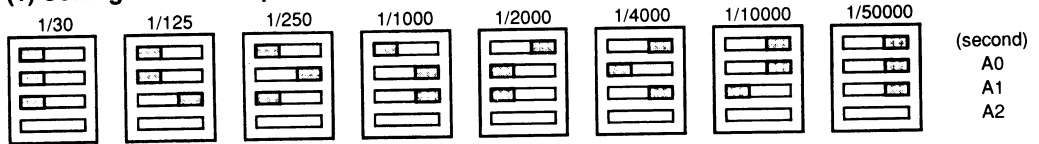
View from
this side



Camera
side

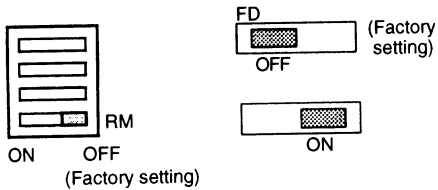
Note : In the CE marking Legion, use the Shield type

(1) Setting of shutter speed



(Factory setting)

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

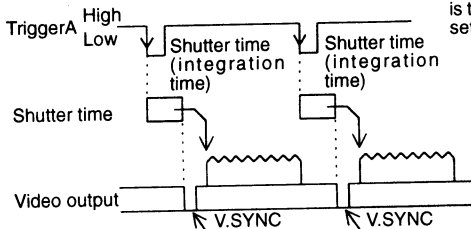


(4) SETTING OF MODE

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

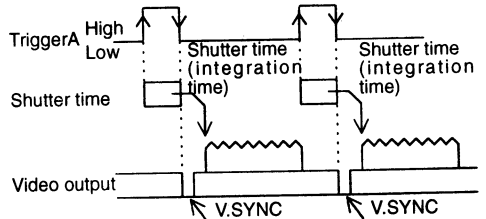
FRAME-ON-DEMAND-FUNCTION

● Fixed shutter mode

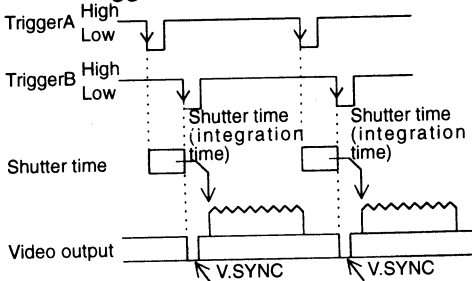


The fixed shutter time is the electronic shutter setting.

● ONE trigger mode



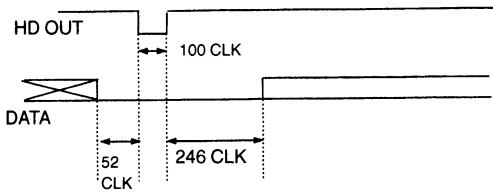
● TWO trigger mode



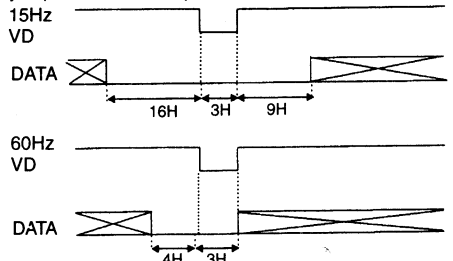
INPUT/OUTPUT SIGNAL LEVELS AND TIMING

(1) Digital output

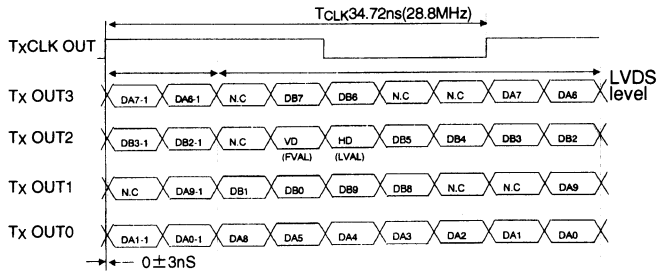
- H sync phase relationship



- V sync phase relationship

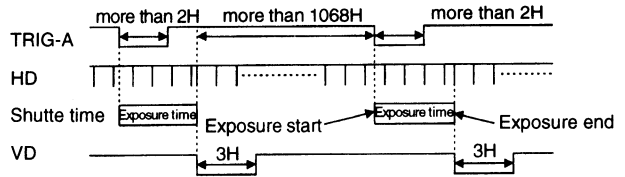


- CLK & DATA phase relationship



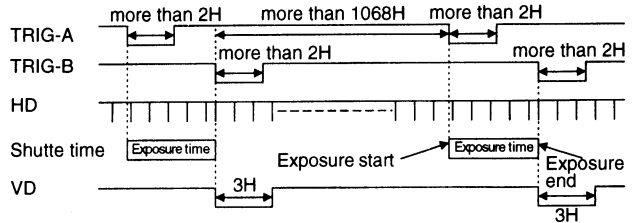
(2) TRIG-A input and HD & VD phase during Fixed shutter mode

Transmit TRIG-A at LVDS level



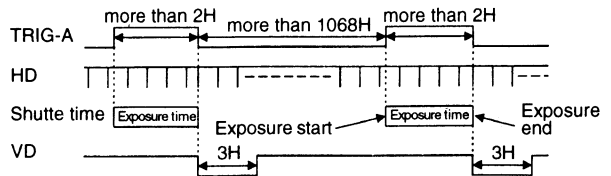
(3) TRIG-A & B input phase and HD & VD phase during Two trigger mode

Transmit TRIG-A & B at LVDS level



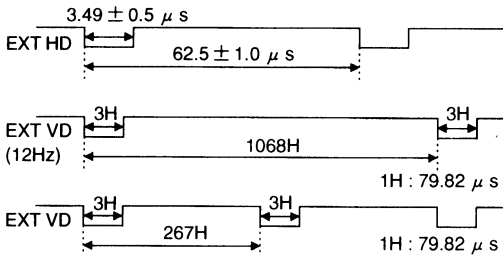
(4) One trigger mode

Transmit TRIG-A at LVDS level

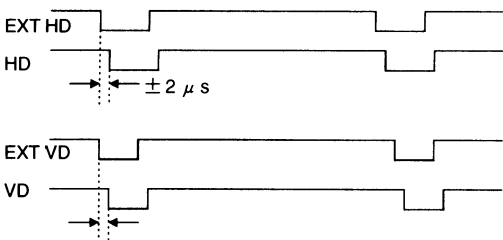


(5) External HD & VD input levels and phase

Level: LVDS level

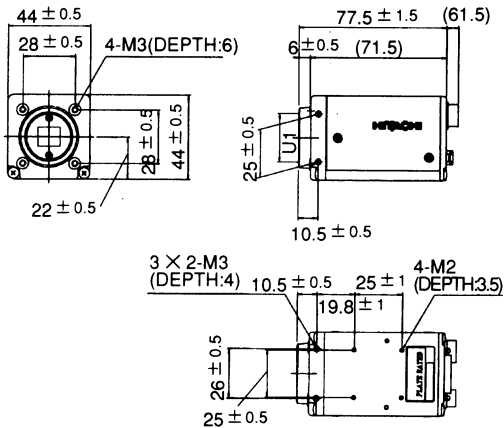


Align falling edges of external HD and VD.



VD output is delayed 2H compared to EXT VD.

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 | 1432 (H) × 1050 (V) | Digital output | Camera Link |
| Effective pixels | 1392 (H) × 1040 (V) | (12) External sync input | HD/VD LVDS level negative |
| Pixel pitch | 6.45(H) × 6.45(V) μm (square lattice) | Input impedance: | 1 k Ω |
| (2) Imaging area | 8.98 (H) × 6.71 (V) mm | Frequency deviation: | ± 1% |
| (3) Scanning system | Non-interlaced | (13) Electronic shutter speed | Selectable by external switches: |
| (4) Aspect ratio | 4 : 3 | | Off (frame rate), 1/30, 1/125, 1/250, 1/1000, 1/2000, 1/4000, 1/10000, 1/50000 second. |
| (5) Frame rate | 15 frames/second (full pixel readout) | | Set by external switch.. |
| | 60 fps (4 × accelerated mode) | (14) Gamma compensation | γ = 1 |
| (6) Horizontal scanning frequency | 16 kHz | (15) Frame-on-demand | External switch setting on/off and modes (fixed shutter, two trigger, and one trigger). |
| (7) Vertical scanning frequency | 15 Hz | (16) Power supply voltage | 12 ± 1 VDC |
| (8) Synchronization | Internal/external (automatic switching) | (17) Current consumption | Approx. 320 mA |
| (9) Lens mount | C mount | | |
| (10) Flange focal distance | 17.526 mm | | |

(18) Ambient, operating 0 to + 40 °C(+32 to ; 104 F), less than 90 % RH
Ambient, storage -10 to + 50 °C(+14 to +122 F), less than 70 % RH

Note: If operated continuously, be sure to use at less than +40 °C(104 F) for long term stable performance.

(19) Vibration endurance 3G (3 directions, 30 minutes each)

(20) Shock endurance 30G (vertical, horizontal, once each face)

(21) External dimensions 44 (W) × 44 (H) × 78 (D) mm

(22) Mass Approx. 180 g

(23) RS-232C control

(a) Signal system

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

(b) Communications control system

Full control by remote control software, data send/receive by text data transfer to camera microprocessor (BSC system handshake)

(C) Control items

1. Shutter speed	(1/30, 1/125, 1/250, 1/1000, 1/2000, 1/4000, 1/10000, 1/50000 second)
2. FD (frame-on-demand)	On/off
3. Mode	Fixed shutter, two trigger, one trigger
4. 4 × accelerated mode	On/off
5. Gain	Variable in 50 steps
6. Black level	Variable in 50 steps
7. Input trigger	Negative/Positive

※ Specifications are subject to change without notice.

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