

KP-F230SCL

KP-F230SCL

OPERATION MANUAL

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

取扱説明書

この取扱説明書には、あなたや他の人々への危害や財産への損害を未然に防ぎ、この機器を安全に使いいただくために、守っていただきたい事項を示しています。ご使用になる前に、取扱説明書をよくお読みいただき、正しい使い方でご愛用ください。
お読みになった後も、この機器のそばなどいつも手元に置いてご使用ください。

Hitachi Kokusai Electric

株式会社日立国際電気

KP-F230SCL 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 generate, 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 users authority to operate the equipment.

KP-F230SCL 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 applicables aux appareils numériques de classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par le ministère des communications du Canada.

KP-F230SCL

Bescheinigung des Herstellers/Importeurs
Hiermit wird bescheinigt, daß CCD-Kamera KP-F230SCL in Übereinstimmung mit den Bestimmungen der Amtsblattverfügung Nr. 1046/1984 funktentstört 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

RoHS Compliant

This product complies with the requirement of the RoHS(Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment) Directive 2002/95/EC.

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. _____

GENERAL

The KP-F230SCL is a progressive scan black and white CCD camera with a 1/1.8-inch size CCD and a full frame shutter. The full repertoire of functions includes high sensitivity, high resolution, multi-stage electronic shutter, partial scan, remote control and frame on demand (FD). The square format picture elements provide suitability for image processing applications.

MAJOR FEATURES

- Small Camera Link
- High resolution
- Frame shutter function
- Multiple step electronic shutter
- Partial Scan
- Frame-on-Demand function
- Remote control

COMPOSITION

Standard composition

- (1) Camera (w/Dummy glass)
- (2) Operation manual

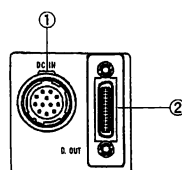
Optional accessories

- (1) Lens
- (2) Tripod adaptor TA-F230
- (3) 12-pin plug, HR10A-10P-12S (01)
- (4) AC adaptor, AP-130
- (5) Junction box, JU-M1A, JU-F30
- (6) Camera cables

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

Note
In the region CE Marking required, use the Shield type cable.

NAME OF EACH SECTION



- ① DC IN connector
12 V DC input.
- ② DIGITAL OUT connector
Used for digital and digital sync signal output.

SIGNAL CONNECTION TO CONNECTOR

(1) Signal connections to DC IN

Pin No.	Internal SYNC mode	Pin No.	Internal SYNC mode
1	GND	7	—
2	+12V	8	—
3	—	9	—
4	—	10	GND
5	—	11	+12V
6	—	12	—



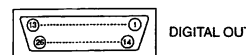
Please do not unplug and insert each cable, with a power supplied to a camera.

CONNECTOR

(2) Signal connection to DIGITAL OUT

Pin No.	Signal	Pin No.	Signal
1	GND	14	GND
2	TxOUT0(-)	15	TxOUT0(+)
3	TxOUT1(-)	16	TxOUT1(+)
4	TxOUT2(-)	17	TxOUT2(+)
5	TxCLKOUT(-)	18	TxCLKOUT(+)
6	TxOUT3(-)	19	TxOUT3(+)
7	Rx(+) SERTC(+)	20	Rx(-) SERTC(-)
8	Tx(-) SERTFG(-)	21	Tx(+) SERTFG(+)
9	TRIG-A(-) CC1(-)	22	TRIG-A(+) CC1(+)
10	NC CC2(+)	23	NC CC2(-)
11	NC CC3(-)	24	NC CC3(+)
12	NC CC4(+)	25	NC CC4(-)
13	GND	26	GND

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 cable: Install clamp filter (ZCAT 3035-1330 TDK) at both ends (camera and video processor ends) in the CE marking Legion.

Tx: Transmit data from camera to PC
Rx: Transmit data from PC to camera

Declaration of Conformity

Manufacturer's Name: Hitachi Kokusai Electric, Inc.
4-1-1 Setokubo, Chiyoda-ku, Tokyo 100-8604, Japan

Representative(s) Address to the EU: Hitachi Kokusai Electric Europe GmbH, Weiskircher Straße 88, Jügesheim D-60549 Rodgau, Germany

Hitachi Kokusai Electric U.K. Ltd., Windsor House, Botolph Claydon, Norfolk, England, United Kingdom

Product Name: CCD Camera
Model Number(s): KP-F230SCL

conforms to the following Standard:
EMC: EN 61000-4-4:2001
EN 61000-4-5:2001

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

Date: 2nd Feb. 2007

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

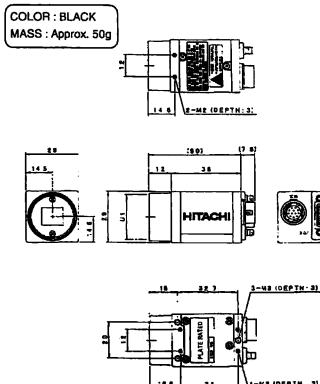
- 1) Smear and blooming
When strong light (lamp, fluorescent lamp, reflected light, etc.) is shot, pale bands are displayed vertically above and below the light.
In this case, change the angle of the camera so that such strong light does not enter the camera through the lens.
- 2) Fixed pattern noise
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.

EXTERNAL VIEW



REMOTE CONTROL

The remote control mode is produced by connecting the personal computer with the camera rear panel 26 pin connector (7, 8, 20, 21). The remote setting status can be stored in memory.

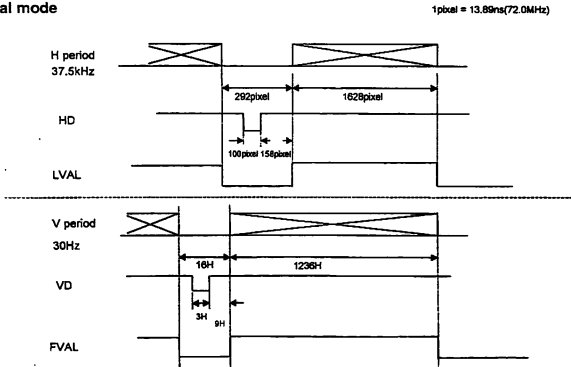
- FD(Frame on Demand)
Fixed shutter, ONE trigger
- Gain
0 ~ 12dB(0.0358dB Step)
- Partial scan
ON/OFF
- Black level
- Shutter speed
1/30, 1/60, 1/125, 1/250, 1/1000, 1/2000, 1/10000, 1/50000, Variable shutter(1/30 ~ 1/100000)
- Digital output
10 bit, 8 bit
- Vertical 2 pixel Addition

It is possible that picture distorts after power supplies because the camera needs three seconds for the initialization. Moreover, please do not operate a remote control.

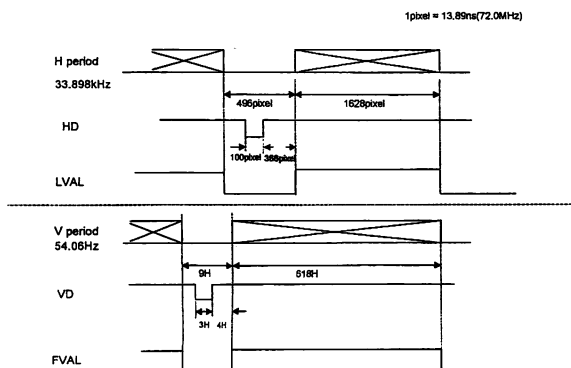
OUTPUT SIGNAL LEVELS AND TIMING

(1) Output signal timing

(A) Normal mode

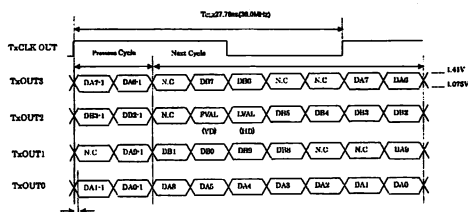


(B) Vertical 2 pixel Addition mode.

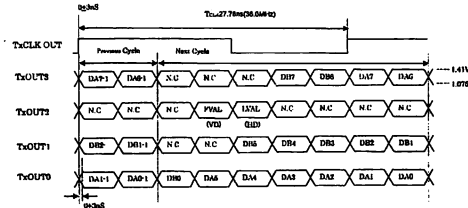


(2) Phase relationship between CLK & DATA

(A) 10 bit



(B) 8 bit



FRAME-ON-DEMAND FUNCTION

Frame/field-on-demand refers to a function whereby a trigger pulse input is applied at a desired timing to take a high speed object at a desired or fixed exposure time. It is effective for rendering a fast moving object at always the same position of the screen. The KP-F230SCL has 2 field on demand modes. At 1 Trigger input, 1 image output is produced.

● One trigger mode

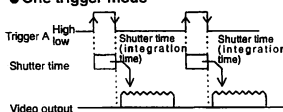
At a single trigger pulse input, exposure starts at the pulse rising edge and ends at the pulse falling edge. The vertical sync is reset and the video output is obtained immediately. The pulse width equals the exposure time.

● Fixed shutter mode

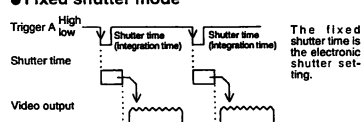
At a single trigger pulse input, exposure starts at the pulse falling edge. The exposure time is set by the camera electronic shutter switch. The video output is obtained immediately after the end of fixed exposure. In this mode, the vertical sync signal is absent from the video output.

Note: Trigger input cannot be applied to fields of the video output where a picture is produced (a normal picture will not be obtained). Use a sync signal free of noise.

● One trigger mode

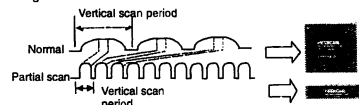


● Fixed shutter mode

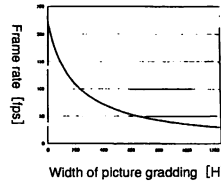


PARTIAL SCAN FUNCTION

The frame rate is increased by reading part of the CCD image.

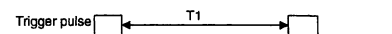


- Selectable start position and width of picture grabbing from 1H to 1236H by 1H step.
- Graph following shows frame rate in each width of picture grabbing.



● Please follow the following trigger input condition in the case of use with a trigger mode. (Cannot use the partial scan in reset control mode.)

Example
ONE Trigger mode(T1: Period from exposure finish to next trigger.)



X < T1 < 33.4ms X: Variable by width of picture grabbing.

Example

Width of picture grabbing [H]	X(Minimum of T1) [ms]
1H	4.6
100H	6.9
500H	16.2
1000H	27.9

Note1 Cannot use the partial scan in following condition. Start position of picture grabbing+ width of picture grabbing ≥ 1236H.

Note2 Please use FVAL in the partial scan.

Note3 There is possibility that the first frame image is disturbed in the partial scan function. In addition, S/N may become worse in some degree.

SPECIFICATIONS

- Imaging device: 1/1.8 inch progressive scan Interline CCD
- Total pixels: 1688(H) × 1248(V)
- Effective pixels: 1628(H) × 1236(V)
- Pixel size: 4.4(H) × 4.4(V) μm
- Sensing area: 7.16(H) × 5.44(V)mm
- Scanning system: Progressive scan
- Lens mount: C mount
- Flange focal distance: 17.526 mm(Not adjustable)
- Hor. scanning frequency: 37.5 kHz
- Vert. scanning frequency: 30 Hz
- Sync system: Internal
- Video output: Digital output Camera Link
- Data: Base configuration CLK=36.000MHz x 2TAP
- Resolution: 1200(H) × 1200(V) TV lines
- Sensitivity: 500 lx, F5.6, 3200K
- Minimum Illumination: 3.9 lx, F1.4, MAX GAIN
- Signal to noise ratio: 45 dB
- Electronic shutter: External switch settings for off (standard exposure), 1/5000ths to 1/30s

- Gamma correction: 1 Factory setting is off.
- Gain control: 0 ~ 12dB (Approx. 0.0358dB Step)
- Frame on demand: Selectable One trigger, fixed shutter.
- Partial scan: Factory setting is off. (Selectable start position and width of picture grabbing by 1H step.)
- Power supply voltage: 12 ± 1 VDC
- Power consumption: Approx. 3.2W (MAX Partial scan 1H Approx. 4.3W)
- Ambient temperature and humidity: Operating 0 to 40°C RH less than 90 % Storage -10 to 50°C RH less than 70 %

Caution:

For continued stable operation, the camera should be used under 40°C or less when it is used continuously for extended period of time.

- Anti-vibration: 98m/s² (Acceleration: constant) (10 to 200Hz, sweep: 10 min., XYZ, 30 min.)

- Resistance to shock: 686m/s² (Drop test, once each top, bottom, left and right)

- Dimensions: 29(W) × 29(H) × 38(L)mm
- Mass: Approx. 50g

26) Remote control

- Signal system: Start-stop synchronization system
- Transmission rate: 9600 bps
- Data length: 8 bits
- Start bit: 1 bit
- Stop bit: 1 bit
- Parity: None
- Bit transfer: LSB first

(b) Communication control method

Overall control of transmission is from the communication software. Data send/receive (BSC handshake) by sending text data to the camera control CPU)

※ 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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