

CCD signal processing module C10416

Signal processing module for CCD area image sensor (S9840)



The C10416 is a signal processing circuit designed for HAMAMATSU CCD image sensor S9840. The C10416 can be used in spectrometer when combined with the S9840.

The C10416 holds a CCD driver circuit, analog video signal processing circuit (14-bit A/D converter), timing generator, control circuit and power supply. The C10416 converts analog video signals from a CCD into digital signals and outputs them. The USB connector (USB 1.1/2.0) provided as a standard feature easily connects to a PC for the C10416 control and data acquisition. No additional power supply for the C10416 is needed since power is supplied from the PC through the USB connector. The C10416 also has a BNC connector for external trigger. The C10416 is compact, lightweight and very easy to handle.

Application software (DCamAPL) that comes with the C10416 allows easy operation from a PC running on Windows 2000/Xp. A function library (DCamCtl.DLL) included with the application software helps you to develop your own software. This software is available with DLL to help you develop your own software programs under various developmental environments.

Features

- Built-in 14-bit AD converter
- Signal frequency: 1 MHz
- Adjustable offset
- Adjustable gain
- Interface of computer: USB 1.1/2.0

Applications

- Control of CCD area image sensor (S9840) and data acquisition

The table below shows CCD image sensor applicable for the C10416.

Since the C10416 does not include a CCD image sensor, so select the desired sensor and order it separately.

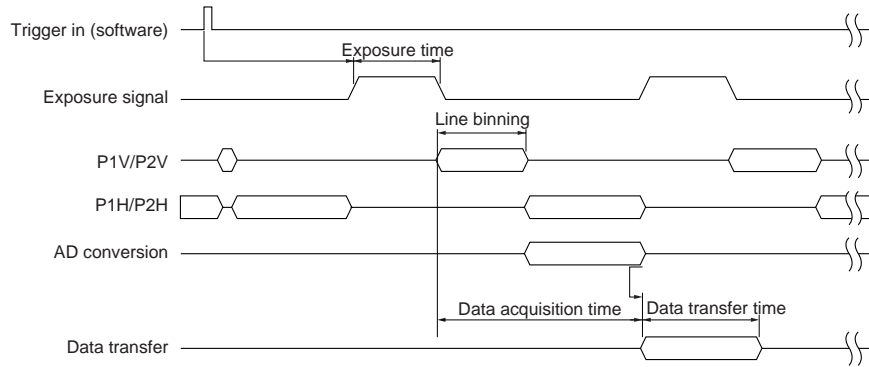
CCD area image sensor				
Type No.	Number of pixels	Number of active pixels	Pixel size [μm]	Active area [mm (H) × mm (V)]
S9840	2080 × 20	2048 × 14	14 × 14	28.672 × 0.196

■ Specifications (Typ. Ta=25 °C, unless otherwise noted)

Parameter	Condition	Specification	Unit
Scanning		1	MHz
Frame readout time		2.2	ms
Data transfer time	USB 1.1	4.2	ms
	USB 2.0	0.7	
Total transfer time	USB 1.1	6.4	ms
	USB 2.0	2.9	
AD conversion resolution	6383ADU	14	bit
Conversion gain		8	e ⁻ /ADU
Readout noise		6	ADU
Dynamic range		2730	-
Memory size		512	Kbyte
Supply voltage	USB 1.1	365 mA Typ.	V
	USB 2.0	380 mA Typ.	
Storage temperature		-20 to +70	°C
Operating temperature		0 to +50	°C
Operating humidity	No condensation	70 % Max.	-
Dimension		120 (H) × 91 (W)	mm
Weight		Approx. 200	g

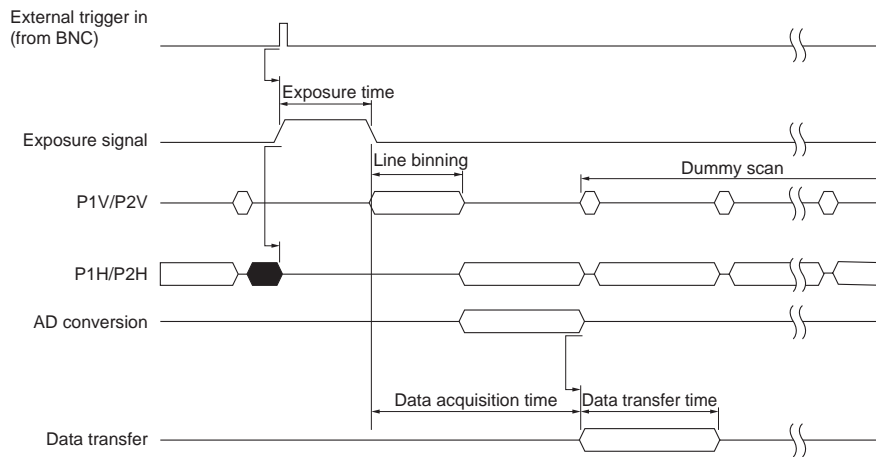
■ Timing chart

“INT” mode



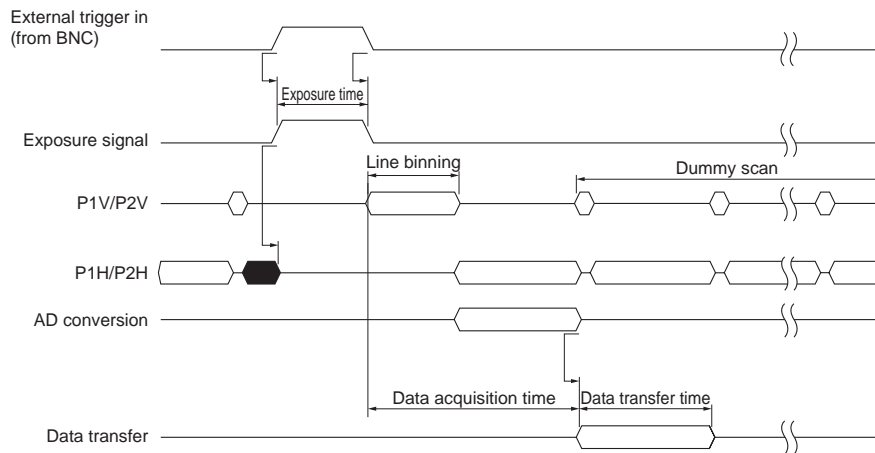
KACCC0388EA

“EXT. EDGE” mode



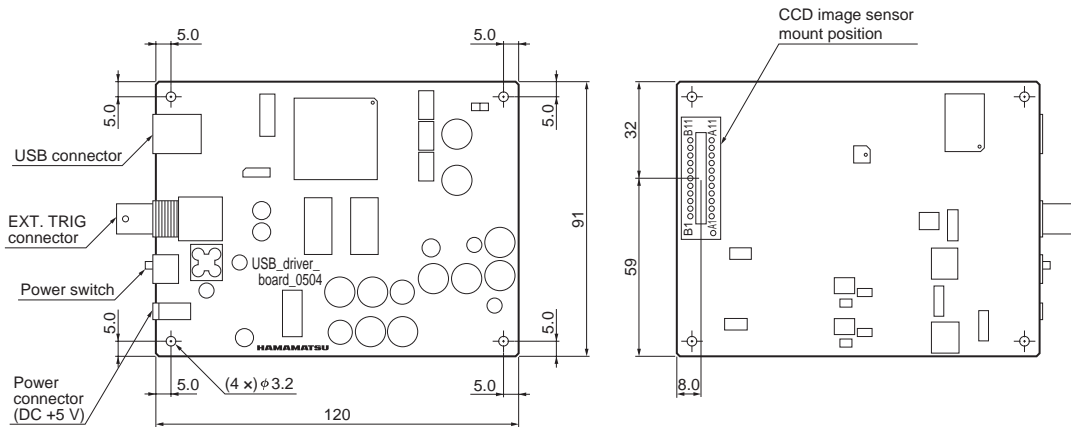
KACCC0389EA

“EXT. LEVEL” mode



KACCC0390EA

■ Dimensional outline (unit: mm)



KACCA0231EA

■ Pin connection CCD image sensor S9840

Pin No.	Signal name	Voltage (amplitude)	Pin No.	Signal name	Voltage (amplitude)
A1	OS		B1	SG	0 V/+14 V
A2	OD	+28 V	B2	P2V	0 V/+14 V
A3	SS	+8 V	B3	P1V	0 V/+14 V
A4	RD	+20 V	B4	TG	0 V/+14 V
A5	RG	0 V/+14 V	B5	NC	
A6	OG	+11 V	B6	NC	
A7	OFD	+20 V	B7	RD	+20 V
A8	OFG	(=P1H)	B8	SS	+8 V
A9	P2H	0 V/+14 V	B9	P1V	0 V/+14 V
A10	P1H	0 V/+14 V	B10	P2V	0 V/+14 V
A11	ISH	+20 V	B11	IGH	+8 V

■ Power connector (DC power jack conforming to EIAJ RC-5320A, voltage Class-2)

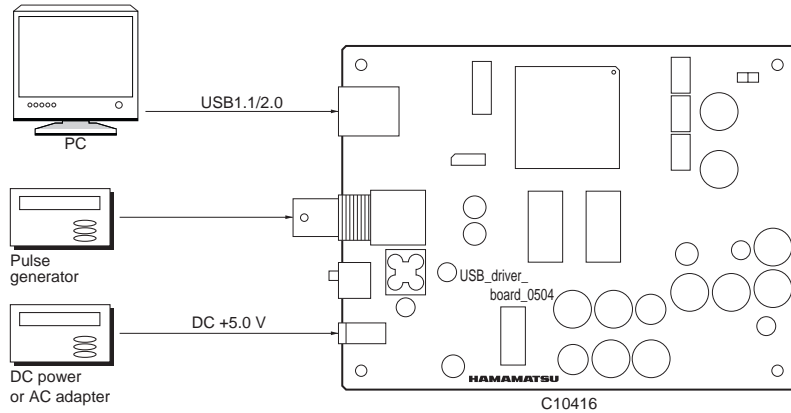


Supply connector
(C10416)

KACCC0392EA

■ Connections

Refer to the following diagram to connect hardware peripherals.



KACCC0391EA

■ Accessory

- CD-ROM (includes C10416 instruction manual, application software, SDK)

HAMAMATSU

Information furnished by HAMAMATSU is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications are subject to change without notice. No patent rights are granted to any of the circuits described herein. ©2008 Hamamatsu Photonics K.K.

HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Higashi-ku, Hamamatsu City, 435-8558 Japan, Telephone: (81) 53-434-3311, Fax: (81) 53-434-5184, www.hamamatsu.com

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P.O.Box 6910, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 08152-3750, Fax: (49) 08152-2658

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: 33-(1) 69 53 71 00, Fax: 33-(1) 69 53 71 10

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294888, Fax: (44) 1707-325777

North Europe: Hamamatsu Photonics Norden AB: Smidesvägen 12, SE-171 41 Solna, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01

Italy: Hamamatsu Photonics Italia S.R.L.: Strada della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39) 02-935-81-733, Fax: (39) 02-935-81-741