

Interface board C8940 series

PCI board for CCD multichannel detector head



C8940 series is an interface board equipped with a PCI bus controller. Two types C8940 series are available: C8940 compatible with RS-422 digital interface cameras and C8940-01 compatible with LVDS digital interface cameras. Both types can be directly connected to a Hamamatsu multichannel detector head to perform image acquisition.

The internal dual buffer memory control circuit permits transfer of acquired image data to the PCI bus while acquiring image data. This control circuit also allows monitoring and acquiring images without caring about the image data size.

C8940 series also has a trigger function that acquires images from a CCD multichannel detector head in free-running operation. It is therefore possible to start acquiring a specified number of frames by input of an external trigger signal, or to acquire one image at each input edge of external trigger signals, or to acquire sequential frames in a period specified between external trigger levels. C8940 series can also generate trigger signals.

Furthermore, C8940 series has a frame rate measurement function to use during image acquisition, as well as a serial interface function and digital I/O function allowing you to control the CCD multichannel detector head through a single camera interface cable.

Features

- Dual buffer memory for high-speed acquisition of sequential images
- Image data acquisition function by external trigger
- Trigger signal generator for digital interface and trigger output function
- Frame rate measurement function
- Selective operation of two or more C8940 series installed on the same PCI bus
- Digital interface with serial interface and digital I/O functions
- DMA transfer of image data to PCI bus

Applications

- Data acquisition by CCD multichannel detector head (C8677/C9047/C9265 series)

■ Selection guide

C8940 series is available with two different digital interfaces.

C8940 series has a 16-bit PCI panel connector, but also works with a 32-bit camera interface when an optional extended panel (A9414) is added.

Type No.	Digital interface	CCD multichannel detector head
C8940	RS-422	C8677, C9047, C9265
C8940-01	LVDS	C8677-01, C9047-01, C9265-01

Specifications

Parameter		C8940	C8940-01
Image input	Interface for CCD multichannel detector head	RS-422	LVDS (RS-644)
	Sampling frequency	30 MHz Max.	
	AD conversion resolution	32-bit Max. * ¹	
Trigger	External input (BNC)	TTL level input * ²	
	Interface output for CCD multichannel detector head	Trigger generator, output of external input trigger to camera, output logic setting * ³	
Frame memory		2 M Byte × 2 Bank	
Serial interface		16C550, RS-232 level	
DI/O		DI × 1 bit, DO × 3 bit * ³ DO × 2 bit on A9414 (expansion panel) side output	
Frame rate measurement		2 s/frame Max.	
Interruption		1 level End of image data acquisition, end of frame rate measurement, serial interface	
BUS I/F		Comforms to PCI bus I/F Ver. 2.1 (PCI controller: PCI9080) 5 V, 32-bit card	
Occupation slot		1 slot When A9414 (extended panel) is used: 2 slots	
Supply voltage		DC+5 V / Approx. 700 mA	
Storage temperature		-20 to 70 °C	
Operating temperature * ⁴		0 to 50 °C	
Dimensions		175.63 × 106.68 mm (PCI short card size)	
Weight		Approx. 163 g	
Compatible camera		Hamamatsu multichannel detector head (C8677/C9047/C9265 series)	

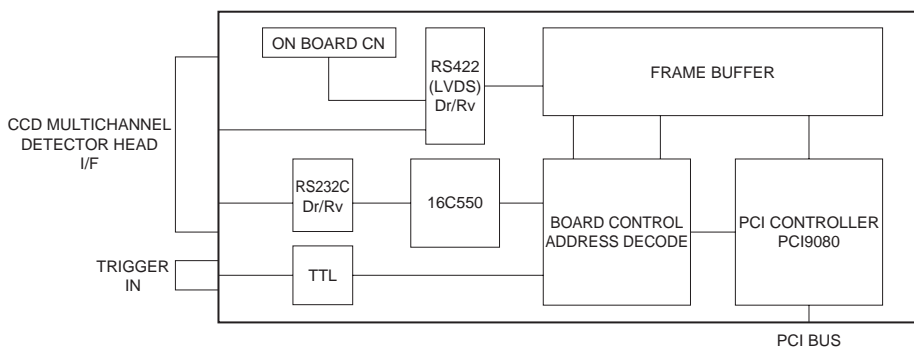
*1: 16-bit output from C8940 series panel connector: 32-bit output from C8940 series panel when A9414 (extended panel) is added.

*2: Operation up to specified number of frames from trigger edge, one frame operation from trigger edge, operation between trigger levels, and input logic setting are possible.

*3: C8940: RS-422, C8940-01: LVDS

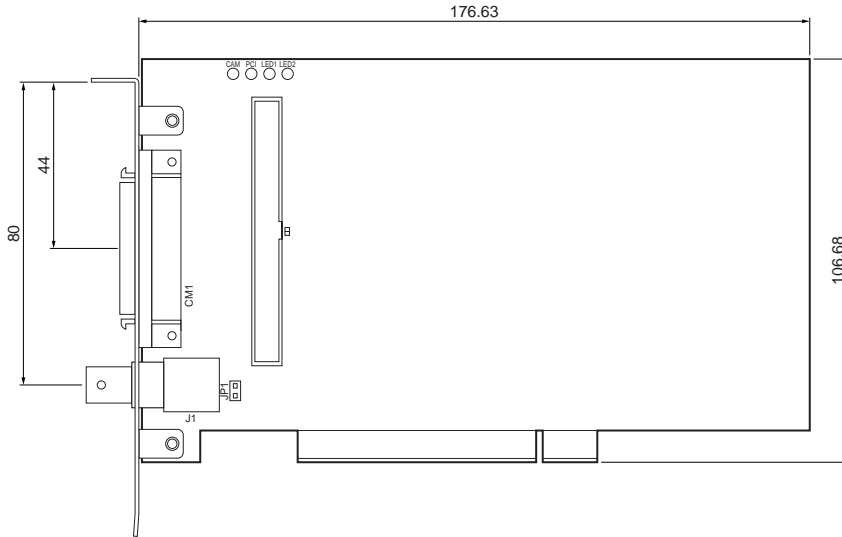
*4: Dust, corrosive gas, no condensation

■ Configuration diagram



KACC0209EA

■ Dimensional outline (unit: mm)



KACCA0132EA

■ Pin connection for CCD multichannel detector head (MDR, 50-pin half pitch connector)

Pin No.	Terminal name	Pin No.	Terminal name
1	RXD	26	RTS
2	TXD	27	CTS
3	GND	28	GND
4	VSYNC+	29	VSYNC-
5	HSYNC+	30	HSYNC-
6	PCLK+	31	PCLK-
7	TRIGGER OUT+	32	TRIGGER OUT-
8	IN0+	33	IN0-
9	OUT0+	34	OUT0-
10	Data A0+ (LSB)	35	Data A0- (LSB)
11	Data A1+	36	Data A1-
12	Data A2+	37	Data A2-
13	Data A3+	38	Data A3-
14	Data A4+	39	Data A4-
15	Data A5+	40	Data A5-
16	Data A6+	41	Data A6-
17	Data A7+ (MSB)	42	Data A7- (MSB)
18	Data B0+ (LSB)	43	Data B0- (LSB)
19	Data B1+	44	Data B1-
20	Data B2+	45	Data B2-
21	Data B3+	46	Data B3-
22	Data B4+	47	Data B4-
23	Data B5+	48	Data B5-
24	Data B6+	49	Data B6-
25	Data B7+ (MSB)	50	Data B7- (MSB)

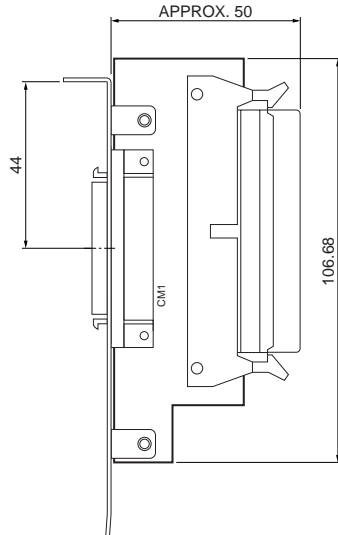
■ Pin connection for trigger input (BNC connector)

Pin No.	Terminal name	Pin No.	Terminal name
1	TRIGGER-IN	F	GND

Extended panel A9414 (optional)

■ Dimensional outline (unit: mm)

A9414 is a connector board designed to convert the on-board connector of C8940 series to a PCI panel connector. Please purchase this board separately when using C8940 series as a 32-bit interface.

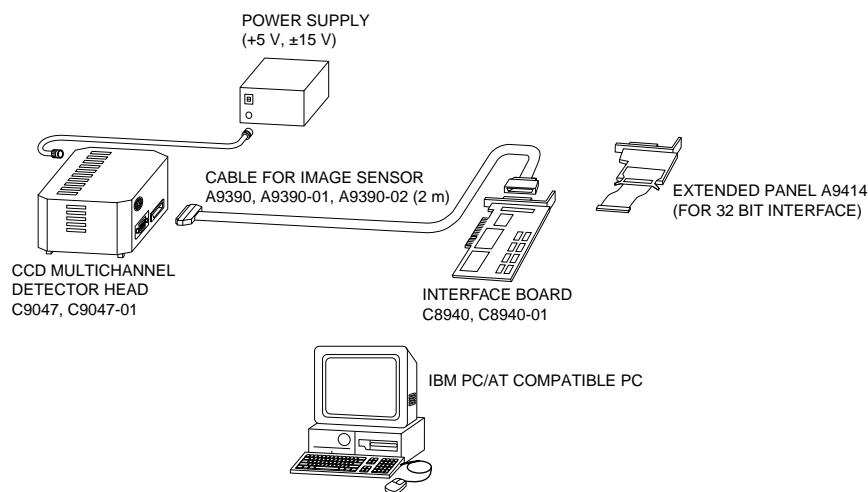


KACCA0133EA

■ Pin connection (A9414) for CCD multichannel detector head (MDR, 50-pin half pitch connector)

Pin No.	Terminal name	Pin No.	Terminal name
1	NC	26	NC
2	NC	27	NC
3	GND	28	GND
4	NC	29	NC
5	NC	30	NC
6	NC	31	NC
7	OUT1+	32	OUT1-
8	NC	33	NC
9	OUT2+	34	OUT2-
10	Data C0+ (LSB)	35	Data C0- (LSB)
11	Data C1+	36	Data C1-
12	Data C2+	37	Data C2-
13	Data C3+	38	Data C3-
14	Data C4+	39	Data C4-
15	Data C5+	40	Data C5-
16	Data C6+	41	Data C6-
17	Data C7+ (MSB)	42	Data C7- (MSB)
18	Data D0+ (LSB)	43	Data D0- (LSB)
19	Data D1+	44	Data D1-
20	Data D2+	45	Data D2-
21	Data D3+	46	Data D3-
22	Data D4+	47	Data D4-
23	Data D5+	48	Data D5-
24	Data D6+	49	Data D6-
25	Data D7+ (MSB)	50	Data D7- (MSB)

■ Connection example of CCD multichannel detector head to peripheral devices



KACCC0210EB

Cable for image sensor (option)

A9390: 50-50-pin cable (2 m)

A9390-01: 50-36-pin cable (2 m)

A9390-02: 50-pin one end not connectorized cable (2 m)