

Image sensor module controller

C7557-01

For control of image sensor module and data acquisition

The C7557-01 is a controller designed to drive image sensor modules with analog output. When connected to Hamamatsu image sensor module and a PC, the C7557-01 allows easy control of the module and data acquisition by using dedicated software that comes with the unit. The C7557-01 supports main models of Hamamatsu image sensor modules with built-in CCD/InGaAs image sensors.

The C7557-01 includes a driver/amplifier circuit for operating an image sensor module, a power supply circuit, a temperature stabilizer circuit, an A/D conversion circuit that converts analog signals from the detector head into digital signals, and a data interface.

The software runs on Microsoft® Windows®*1, by simple operation from the menu neatly displayed on the screen. The software includes various DLLs*2 that support efficient software development.

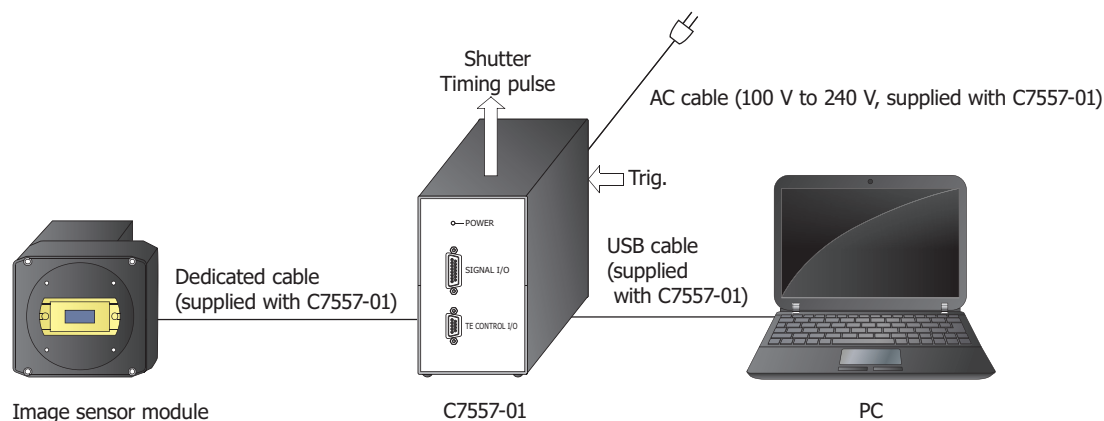
Features

- Easy to control and data acquisition
- The included DLLs allow easy software development.
- Compact configuration

Applications

- Control of image sensor module and data acquisition

Connection example



Note: Shutters are not available.

KACCC0402EG

*1: Microsoft, Windows and Visual C++ are either registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.

*2: DLL is one of useful functions of Windows. It is a library that can freely start up from application software or execute a function procedure. Software development can be made easier with DLL. To use DLL, see the operation manual that comes with the unit. The development environment should be Microsoft® Visual C++®*1 2015 or later, or LabVIEW™*3 2017 SP1 (LabVIEW 2022 Q3 or later for Windows 11) or later.

*3: LabVIEW is a trademark of National Instruments, Inc.

Functions

Parameter	Specification
Data transfer	Transfers data stored in memory to computer.
Exposure time setting	1 ms to 65535 ms (1 ms steps) Minimum exposure time depends on sensor detection level.
External sync signal input	BNC connector input
Trigger mode	Internal sync, external sync
Trigger polarity	Trigger polarity selectable for external sync
Shutter timing pulse output	Outputs timing signal for operating external shutter or external light source via BNC connector. Pulse width, delay and polarity settings are possible.
Video signal output	Outputs video signal sent from head, via BNC connector
Video sync signal output	Outputs sync signal used to observe video signal output with external device such as oscilloscope, via BNC connector
Amplifier gain	1/2, 1, 2, 5, 10, 20, 50, 100*4
Number of channels setting	Compatible with each image sensor module Refer to "Compatible image sensor module"
Cooling control	Cooling start and stop
Cooling temperature readout	Converts analog temperature data from detector into digital signal, and transfers it to computer. (10-bit A/D conversion)

*4: Depending on the drive conditions, normal output may not be obtained if the amplifier gain is set too high. In this case, lower the amplifier gain.

Specifications

A/D converter

Parameter	CCD area image sensor	InGaAs linear image sensor		
A/D converter	16-bits	12-bits	16-bits	
Conversion speed	4 μs/ch	2 μs/ch	8 μs/ch	
Input range	0 to 10 V	-10 to +10 V		
Input method	Differential input			
Nonlinearity	0.1%FS			
A/D conversion signal	External input			

Controller

Parameter	Specification
Clock	20 MHz
Memory	4 MB (1024 ch $\times$ 2048 lines)
Interface	USB 2.0

Equipment

Parameter	Specification
Interface	USB 2.0 Type B connector
Power supply	AC100 V to 240 V $\pm$ 10 %, 50 Hz to 60 Hz
Power consumption	50 V $\cdot$ A typ.
Dimension (W $\times$ H $\times$ D)	92 mm $\times$ 150 mm $\times$ 226 mm
Operating temperature	0 $^{\circ}$ C to 40 $^{\circ}$ C
Storage temperature	-10 $^{\circ}$ C to 50 $^{\circ}$ C
Weight	Approx. 2.5 kg

Software

Parameter	Specification
Compatible OS	Windows 10 (32-bit, 64-bit), Windows 11

■ Prepare a BNC cable in the following cases:

- Measurements by external sync
- Controlling an external shutter or external light source
- Measuring the video signal

■ **Operation method**

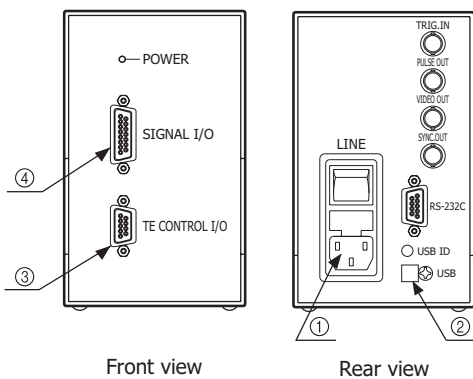
1. Make connections as indicated in ① to ④.

- | | |
|------------------|--|
| ① LINE | Connect to the power cable. |
| ② USB | Connect to a computer through the USB cable. |
| ③ TE CONTROL I/O | Connect to the "TE CONTROL I/O" terminal on the image sensor module with the supplied cable. |
| ④ SIGNAL I/O | Connect to the "I/O SIGNAL" terminal on the image sensor module with the supplied cable. |

2. When all the connections are complete, turn on the power to the C7557-01.

3. Install the MCD USB driver and software.

(For details on the MCD USB driver and software, refer to the operation manual supplied in the package.)



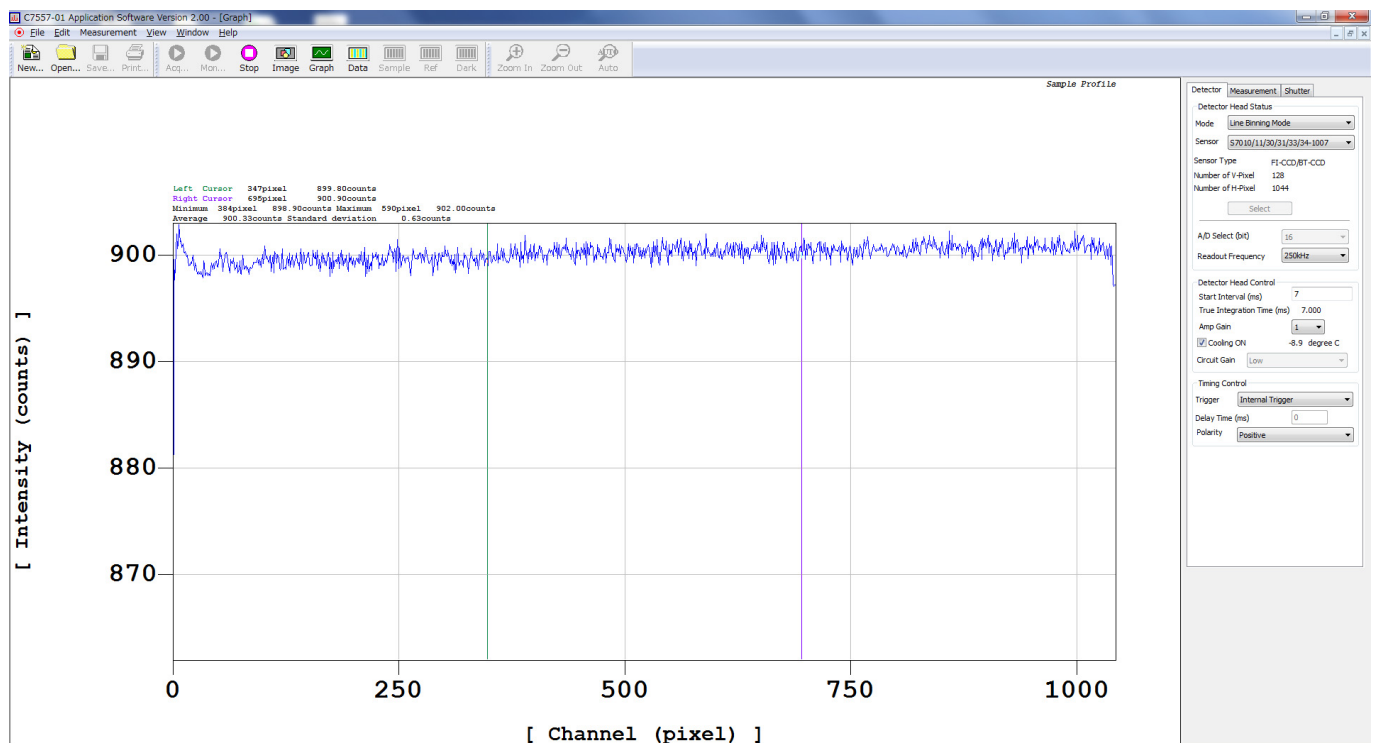
KACCC0403EB

Software functions

From the main screen menu, you can easily set operating conditions for the image sensor module and data acquisition parameters. The measurement screen displayed with this software shows the image sensor channel along the horizontal axis and the output count along the vertical axis. The main screen menu also allows to select the desired operation mode: line binning or area scanning (for CCD image sensors) or line scanning (for InGaAs linear image sensors).

The parameters that can be set on the main screen are as follows:

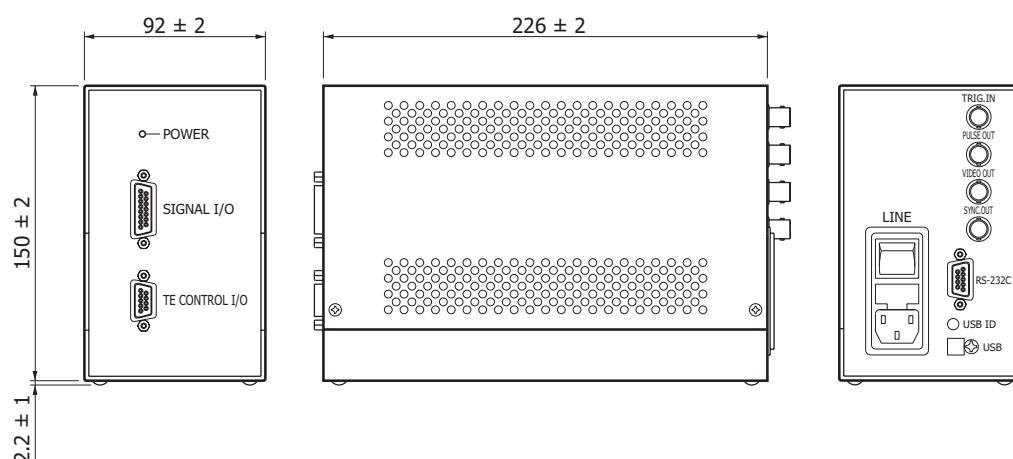
- Exposure time
- Amplifier gain
- Cooling control
- Number of integrations
- Dark correction
- Type of measurement data
- Start or end of measurement
- Module status
- Trigger mode
- Trigger polarity
- Shutter timing pulse width
- Shutter timing pulse delay
- Shutter timing pulse polarity



Compatible image sensor modules

Type no.	Built-in image sensor			Types of sensor
	Type no.	Number of effective pixel	Image size [mm (H) × mm (V)]	
C7040A	S7030-0906	512 × 58	12.288 × 1.392	Back-thinned CCD area image sensor
C7040B	S7030-0907	512 × 122	12.288 × 2.928	
C7040C	S7030-1006	1024 × 58	24.576 × 1.392	
C7040D	S7030-1007	1024 × 122	24.576 × 2.928	
C7040E	S16000-1007	1024 × 122	24.576 × 2.928	
C7041A	S7031-0906S	512 × 58	12.288 × 1.392	
C7041B	S7031-0907S	512 × 122	12.288 × 2.928	
C7041C	S7031-1006S	1024 × 58	24.576 × 1.392	
C7041D	S7031-1007S	1024 × 122	24.576 × 2.928	
C7041E	S16001-1007S	1024 × 122	24.576 × 2.928	
C7044A	S7034-1007S	1024 × 122	24.576 × 2.928	
C10150-01A	S10140-1107-01	2048 × 122	24.576 × 1.464	
C10150-01B	S10140-1108-01	2048 × 250	24.576 × 3.000	
C10150-01C	S10140-1109-01	2048 × 506	24.576 × 6.072	
C10151-01A	S10141-1107S-01	2048 × 122	24.576 × 1.464	
C10151-01B	S10141-1108S-01	2048 × 250	24.576 × 3.000	
C10151-01C	S10141-1109S-01	2048 × 506	24.576 × 6.072	
C8061-01A	G9211-256SB	256	12.8 × 0.25	InGaAs linear image sensor
C8061-01B	G9212-512SB	512	12.8 × 0.25	
C8061-01C	G9213-256SA	256	12.8 × 0.50	
C8061-01D	G9214-512SA	512	12.8 × 0.50	
C8062-01B	G9205-512WB	512	12.8 × 0.25	
C8062-01C	G9206-02B	256	12.8 × 0.25	
C8062-01D	G9206-256WB	256	12.8 × 0.25	
C8062-01E	G9206-512WB	512	12.8 × 0.25	
C8062-01F	G9207-256WB	256	12.8 × 0.25	
C8062-01G	G9208-256WB	256	12.8 × 0.25	
C8062-01H	G9208-512WB	512	12.8 × 0.25	

Dimensional outline (unit: mm)



KACCA0237EA

Accessories

· Spare fuse (2.5 A)*5	1
· AC cable	1
· USB cable	1
· Detector head connection cables (for "SIGNAL I/O" and "TE CONTROL I/O" terminal of image sensor module)	2
· CD-ROM (MCD USB driver, Software, Operation manual)	1

*5: Contained in the holder just above the AC cable connector on the C7557-01 rear panel.

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions

- Disclaimer

Information described in this material is current as of March 2026.

Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use. Copying or reprinting the contents described in this material in whole or in part is prohibited without our prior permission.