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InGaAs multichannel detector heads

C11512 series

Near infrared camera, supports CameraLink

The C11512 series is a multichannel detector head developed for use with an InGaAs area image sensor (G11097-0606S, G12460-0606S, G12242-0707W). This multichannel detector head contains a signal processing circuit and a temperature control circuit for image sensors. The signal processing circuit consists of an image sensor driver, an analog video signal processor (16-bit + ADC), a digital controller, an interface, and a power supply. It processes analog video signals from an image sensor and outputs them as digital signals. The CameraLink interface allows connection to a PC to make various settings, control the detector head, and acquire data.
This product comes with application software (DCam-CL) that runs on Microsoft® Windows® 10 (64-bit). It can be used to easily operate the C11512 series from the PC connected via CameraLink interface. This product also includes DLLs that the user can use to create original control programs.

Features

- **Compact size**
- **Designed for InGaAs area image sensor**
  C11512: for G11097-0606S, G12460-0606S
  C11512-02: G12242-0707W
- **Supports C-mount lenses**
- **CameraLink interface**

Applications

- **Thermal imaging**
- **Laser beam profiler**
- **Image detection**
- **Foreign object screening**

Note: Microsoft, Windows and Visual Studio are either registerd trademarks or trademarks of Microsoft Corporation in the United States and other countries.

The table below shows InGaAs area image sensors applicable for the C11512 series (sold separately).

Type no.	InGaAs area image sensor						
	Type no.	Spectral response range (µm)	Number of pixels	Pixel size (µm)	Pixel pitch (µm)	Image size (mm)	Cooling
C11512	G11097-0606S	0.95 to 1.7	64 × 64	50 × 50	50	3.2 × 3.2	One-stage TE-cooled
	G12460-0606S	1.12 to 1.9					
C11512-02	G12242-0707W	0.95 to 1.7	128 × 128	20 × 20	20	2.56 × 2.56	Two-stage TE-cooled

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

Parameter	Condition	C11512	C11512-02	Unit
Video data rate		5		MHz
Frame rate		1000 max.	258 max.	frames/s
A/D conversion resolution	65535 ADU	16		bit
Conversion gain	Gain 1	30.52	15.26	μV/ADU
Noise	Gain 1	22	40	ADU
Dynamic range		1 : 2800	1 : 1600	-
Interface		CameraLink (Base configuration)		-
Lens mount adapter		C-mount*2		-
Cooling temperature	Chip temperature, naturally air-cooled	-10 to +20*3		°C
Supply voltage*1		+4.75 to +5.25		V
Operating temperature	No condensation	+10 to +30		°C
Storage temperature		-20 to +70		°C
Dimensions	Excluding projecting parts	50.5 (L) × 90 (W) × 100 (H)	52.9 (L) × 90 (W) × 100 (H)	mm
Weight		500		g

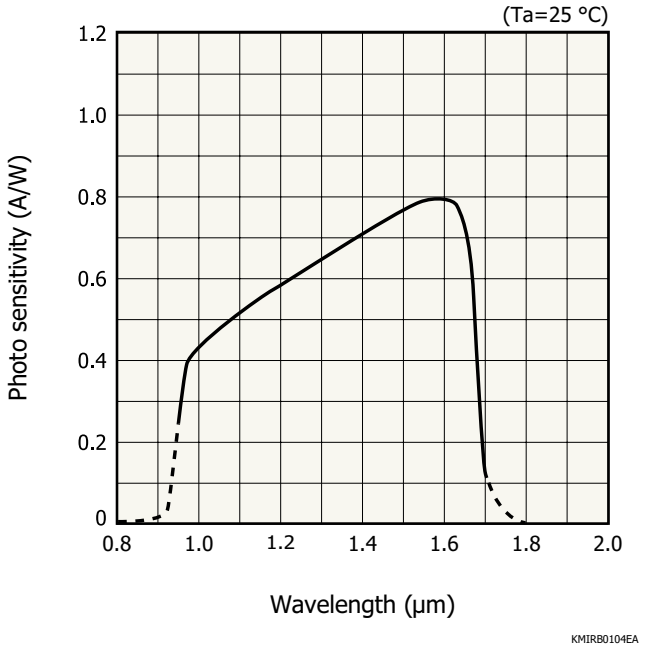
*1: Supplied with an DC cable
*2: CS-mount is available by removing the CS-to-C-mount converter.
*3: It cannot be cooled to -10 °C depending on the operating environment.

Functions

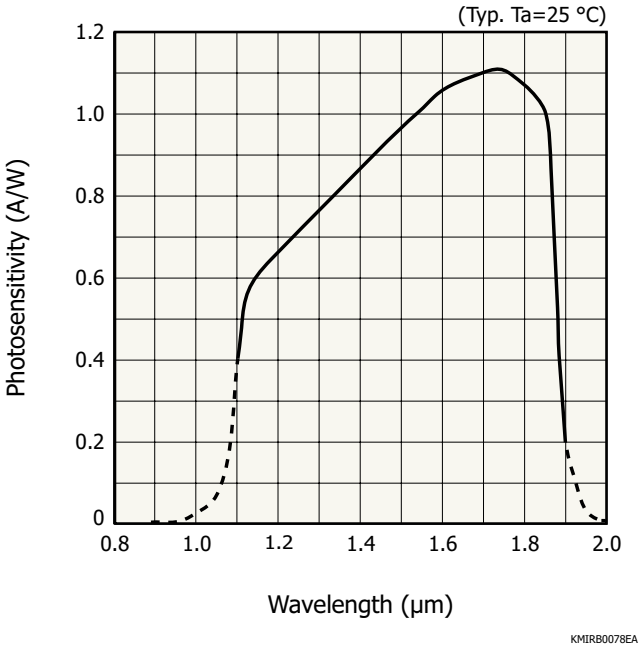
Parameter		Specification
Data acquisition mode	Internal synchronous mode	Acquires data at the trigger timing set by application software
	External synchronous mode	Controls the start of acquired data integration, integration time, and the number of frames by the input pulse to the TRIGGER IN connector
Gain adjustment		Adjusts the gain in the range from 1 to 5 in 1 step. Default setting is "1".
Offset adjustment		Adjusts the offset in the range from -255 to +255 in 1 step. The actual offset value is obtained by multiplying the "coefficient of about 19.3 counts" to this value. (This coefficient is for when the gain is 1. It is different for other gains.) Default setting is "10".
Pulse output setting		Sets the pulse signals that are output from the PULSE_OUT connector (output ON/OFF, signal polarity, delay time and pulse width) This signal is output in sync with the start of the integration time of the InGaAs image sensor. The signal output level is H-CMOS compatible.
Temperature control		Controls the thermoelectric cooler mounted within the InGaAs image sensor package to keep the image sensor temperature constant. Temperature can be set in the range from -10 to +20 °C in 1 °C step. Default setting is "+10 °C".
Save settings		Stores the settings used during data acquisition in the internal memory of the detector head
GS/RS mode (C11512-02)	GS mode	Abbreviation for global shutter mode. Integration is performed on all pixels simultaneously over the same time period. The integration time in this mode is set with the low level period of the image sensor's control signal (MSP).
	RS mode	Abbreviation for rolling shutter mode. Integration of pixels on the same horizontal line is performed over the same time period, but the integration start time of the adjacent horizontal line is shifted by one horizontal line readout period. The integration time length is the same for all pixels. The integration time in this mode is equal to the readout time of a single frame.

Spectral response

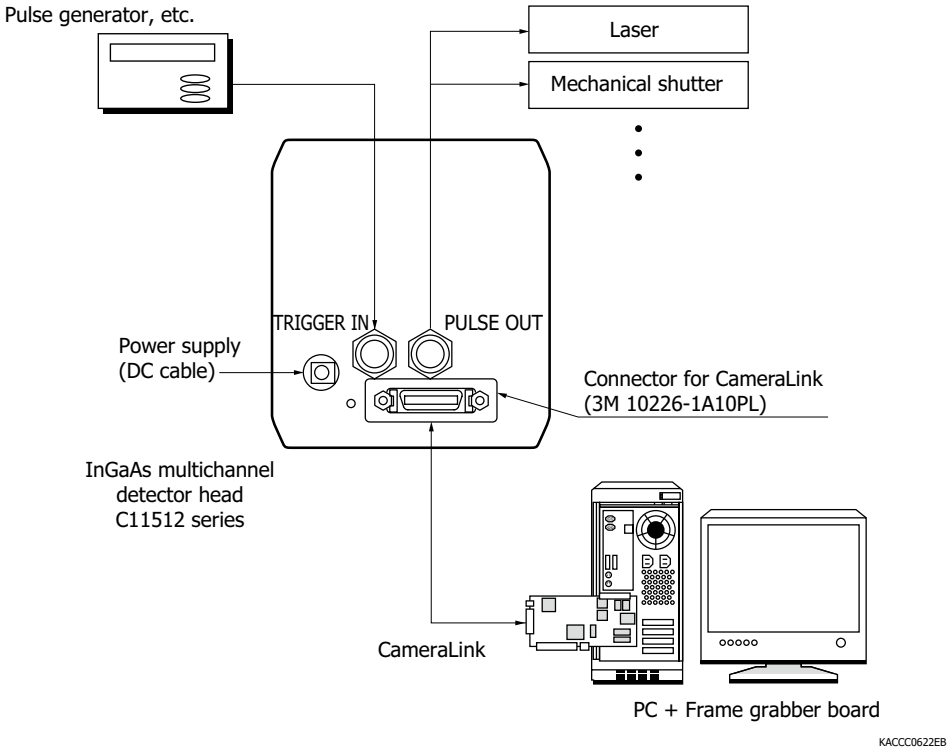
G11097-0606S, G12242-0707W



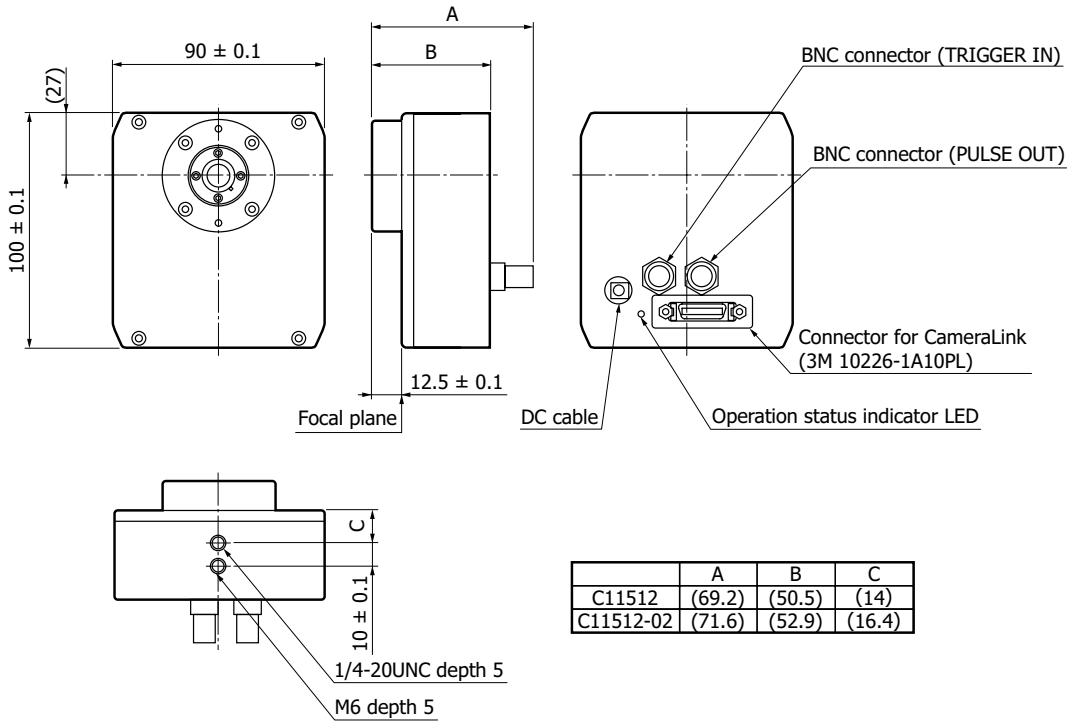
G12460-0606S



Connection example



Dimensional outline (unit: mm)



	A	B	C
C11512	(69.2)	(50.5)	(14)
C11512-02	(71.6)	(52.9)	(16.4)

Accessories

· Application software (DCam-CL)
· SDK
· DC cable
· Ferrite core

Note: A National Instruments frame grabber board and NI-IMAQ are required to use the supplied application software (DCam-CL) and SDK. Operation of the following frame grabber boards has been verified. Please contact each frame grabber board to the manufacturer.

Manufacturer	Model No.	Supported OS	Driver
National Instruments	PCIe-1427	Windows® 10 (64-bit)	National Instruments tool (supplied with NI-IMAQ)
	PCIe-1433		

Related information

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

■ Precautions
· Disclaimer

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