

SENTECH

GigE Vision Sony Sensor Product Specifications



Features

- GigE Vision Compatibility
- 2.3 MP Sony Pregius Sensor
- 45 FPS
- Power over Ethernet or 6 Pin

Product Precautions

- **Handle the camera with care. Do not abuse the camera. Avoid striking or shaking it. Improper handling or storage could damage the camera.**
- **Do not pull or damage the camera cable.**
- **During camera use, do not wrap the unit in any material. This will cause the internal temperature of the unit to increase.**
- **Do not expose the camera to moisture, or do not try to operate it in wet areas.**
- **Do not operate the camera beyond its temperature, humidity and power source ratings.**
- **While the camera is not being used, keep the lens or lens cap on the camera to prevent dust or contamination from getting in the Sensor or filter area and scratching or damaging this area.**
- **Do not keep the camera under the following conditions:**
 - **In wet, moist, and high humidity areas**
 - **Under hot direct sunlight**
 - **In high temperature areas**
 - **Near an object that releases a strong magnetic or electric field**
 - **Areas with strong vibrations**
- **Apply the power that satisfies the requirements specified in this document to the camera.**
- **Use a soft cloth to clean the camera. Use pressured air spray to clean the surface of the glass. DO not scratch the surface of the glass.**
- **The camera is a general-purpose electronic device; using the camera for the equipment that may threaten human life or cause dangers to human bodies directly in case of failure or malfunction of the camera is not guaranteed. Use the camera for special purposes at your own risk.**

Contents

1	INTRODUCTION	4
1.1	Features	4
1.2	Naming Method	4
2	SPECIFICATIONS	5
2.1	Electronic Specifications	5
2.1.1	STC-SCS241POE / STC-SBS241POE	5
2.2	Spectral Sensitivity Characteristics	6
2.2.1	STC-SBS241POE	6
2.2.2	STC-SCS241POE (Sensor spectral response, without IR cut filter)	6
2.1	Mechanical Specifications	7
2.2	Environmental Specifications	7
3	CONNECTOR SPECIFICATIONS	8
3.1	RJ45 Connector.....	8
3.2	Power and Control Signal Connector.....	9
3.2.1	Equivalent Circuit for the Input Pin of the I/O Connector	11
3.2.2	Typical Input Circuit	12
3.2.3	Typical Output Circuit	13
3.2.4	Input and Output Signal Timing (Hardware Trigger)	14
3.2.5	Input and Output Signal Timing (Software Trigger)	15
3.2.6	Trigger Signal Processing Process.....	17
4	DIMENSIONS	18
4.1	STC-SBS241POE.....	18
4.2	STC-SCS241POE.....	19
5	REVISION HISTORY	20

1 Introduction

This document describes the specification of the following cameras:

STC-SCS241POE	(2.3MP Color)
STC-SBS241POE	(2.3MP Monochrome)

1.1 Features

- CMOS (Global Shutter)
- GigE Interface
- Power over Ethernet or 6 Pin
- The maximum allowed frame rate is 45 fps (8bit)

1.2 Naming Method

STC-SxS241POE



B: Monochrome
C: Color

Figure 1: Naming Method

2 Specifications

2.1 Electronic Specifications

2.1.1 STC-SCS241POE / STC-SBS241POE

製品		STC-SCS241POE	STC-SBS241POE
Imager		1/1.2" 2.3MP color progressive CMOS (Sony: IMX174)	1/1.2" 2.3MP monochrome progressive CMOS (Sony: IMX174)
Shutter Type		Global Shutter	
Active Picture Elements		1920 (H) x 1200 (V)	
Cell Size		5.86 (H) x 5.86 (V) μm	
Scanning System		Progressive	
Scanning mode		Full scanning (Full resolution) / ROI	
Frame rate		45 Hz at full resolution Maximum frame rate is 1628.29 Hz when ROI setting is 16 x 2	
ADC bit depth		12bit	
Video Output Format		8/10/12 bit Raw, BayerGR8, BayerGR10, BayerGR10Packed, BayerGR12, BayerGR12Packed, RGB8Packed (Default: 8bit Raw)	8/10/12 bit Raw (Default: 8bit Raw)
Noise Level	@ 8bit output	≤ 1.3 Digit (Gain 0 dB)	
	@ 10bit output	≤ 5.5 Digit (Gain 0 dB)	
	@ 12bit output	≤ 22 Digit (Gain 0 dB)	
Sensitivity		TBD	TBD
Minimum Scene Illumination		TBD	TBD
ALC		Auto shutter / Auto gain (AGC) / Manual (Default: Auto shutter OFF, AGC OFF)	
Electronic Shutter		30 useconds to 16,777,215 useconds	
Gain	Analog	0 to 24 dB (Default: 0dB)	
	Digital	0 to 6 dB (Default: 0dB)	
ROI		Horizontal: 16 to 1920 pixels / Vertical: 2 to 1200 pixels (Default: 1920 x 1200) Adjustable steps for the image size: 8 pixels in horizontal direction and 2 lines in vertical direction Adjustable steps for the offset: 8 pixels in horizontal direction and 2 lines in vertical direction	
Gamma		Gamma 1.0 or uploadable gamma table (Default: 1.0)	
Binning Function		Not supported	
Decimation Function		Individual x2 Horizontal, Vertical decimation	
Mirror image		Horizontal / Vertical / Horizontal and vertical / Off (Default: Off)	
ROI Function		Variable ROI setting through the communication	
White Balance		Auto / Manual / Push to Set (Default: Manual)	N/A
Operational Mode		Free-run / Edge preset trigger / Pulse width trigger (Default: Free-run)	
Communication		UART communication through Ethernet port	
Interface		IEEE802.3af CLASS2 (1000BASE-T)	
Protocol		GigE Vision® 1.2 and GenICam™ Standard Version 2.1 (SFNC 1.4)	
I/O		One opt-isolated input and two open collector outputs	
Power	Input Voltage	+10.8 to +26.4 Vdc	
	Consumption (Max/Default)	TBD (+12V: 3.0W, +24V: 3.6W, PoE: 3.0W)	

Table 1: Electronic Specifications of STC-SCS241POE/ STC-SBS241POE

2.2 Spectral Sensitivity Characteristics

2.2.1 STC-SBS241POE

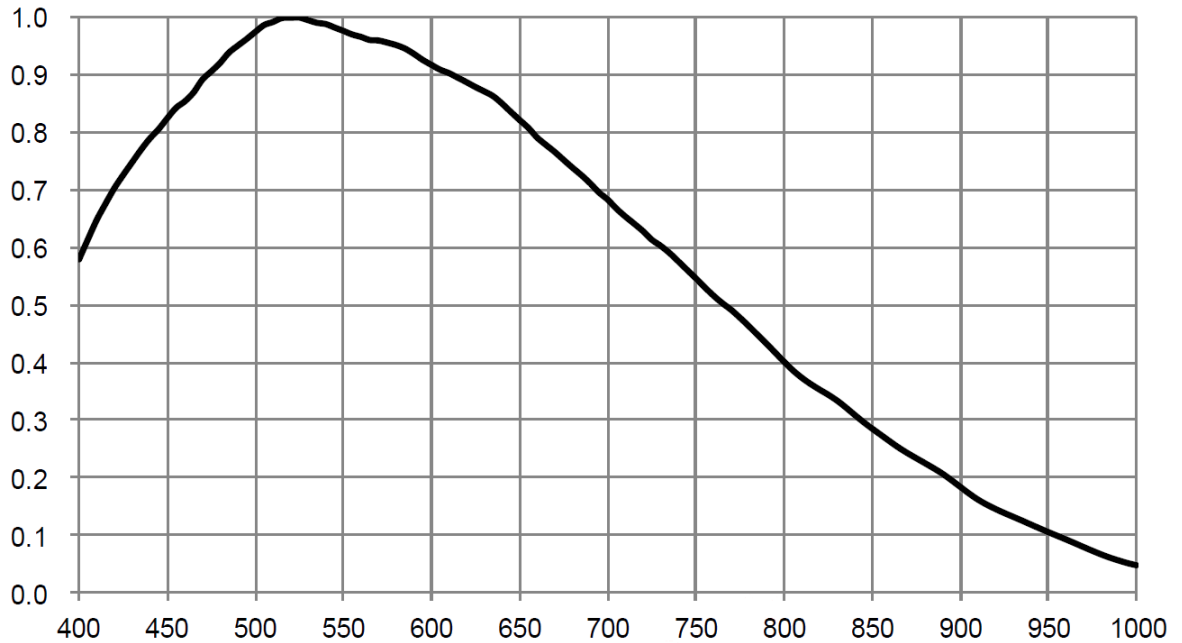


Figure 2: Spectral Response (Mono)

2.2.2 STC-SCS241POE (Sensor spectral response, without IR cut filter)

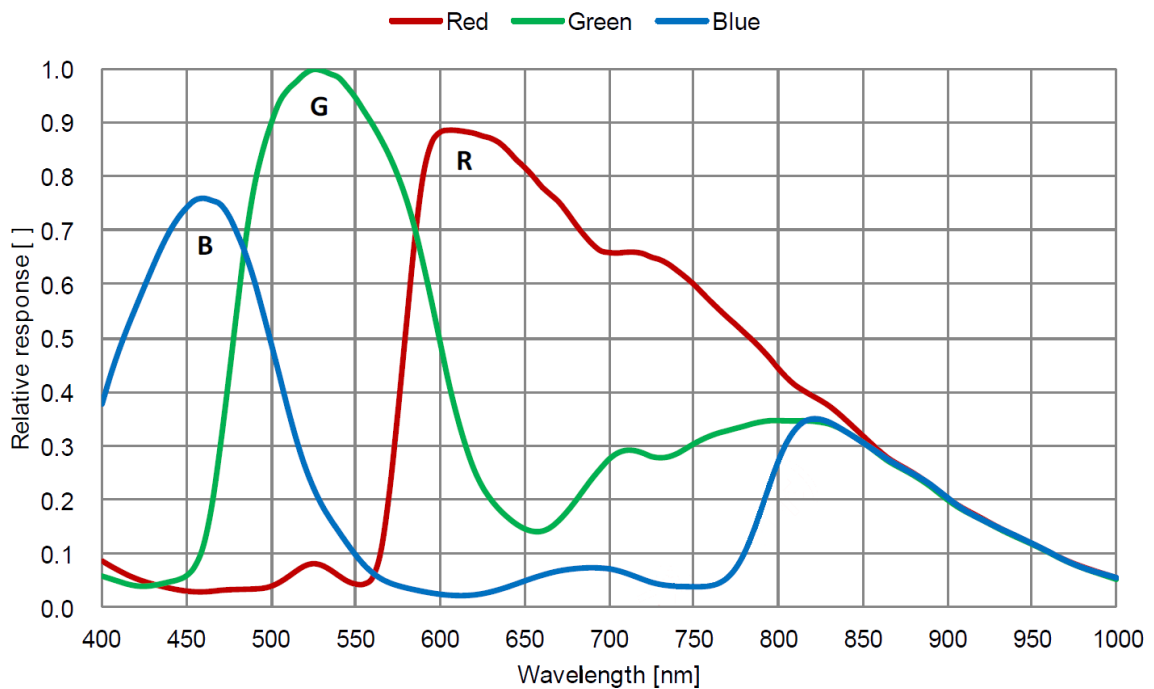


Figure 3: Spectral Response (Color)

2.1 Mechanical Specifications

Model Number	STC-SCS241POE	STC-SBS241POE
Dimensions	35 (W) x 35 (H) x 53.4 (D) mm (excluding connectors)	35 (W) x 35 (H) x 53.7 (D) mm (excluding connectors)
Optical Filter	IR cut filter	No Filter
Optical Center Accuracy	Positional accuracy in Horizontal and Vertical directions:: ± 0.3 mm Rotational accuracy of Horizontal and Vertical: ± 1.5 deg.	
Material	Aluminum Alloy(AC)	
Lens Mount	C mount	
Connectors	RJ45 connector Power- I/O connector: HR10A-7R-6PB (Hirose) or equivalent	
Camera Mount Screws	Two 1/4" Tripod screw holes: (One on each top and bottom plate), Twelve M4 screws holes: (Four on each top and bottom plate, two on each side plate)	
Weight	Approx. 100 g	

Table 2: Mechanical Specifications

2.2 Environmental Specifications

Model Number		STC-SCS241POE / STC-SBS241POE
Operational Temperature	Minimum	Environmental Temperature -5°C
	Maximum	Camera housing temperature (top plate) shall not exceed 60°C (This corresponds to an environmental temperature of approximately 43°C)
Storage temperature		Environmental Temperature: -20°C to 65°C
Storage humidity		Less than 85%
Vibration		20Hz to 200Hz to 20Hz (5min./cycle), acceleration 10G, XYZ 3 directions, 30 min. each)
Shock		Acceleration 38G, half amplitude 6ms, XYZ 3 directions, 3 times each
Standard Compliancy		EMS: EN61000-6-2, EMI: EN55011
RoHS		RoHS Compliance

Table 3: Environmental Specifications

Note: When the camera is used in temperatures that exceed 43°C , please make sure that the camera is set up to properly radiate heat (maintaining the camera's top case plate's temperature to be less than 60°C).

Taking these steps will maintain the heat rating of the electronic components of the camera.

3 Connector Specifications

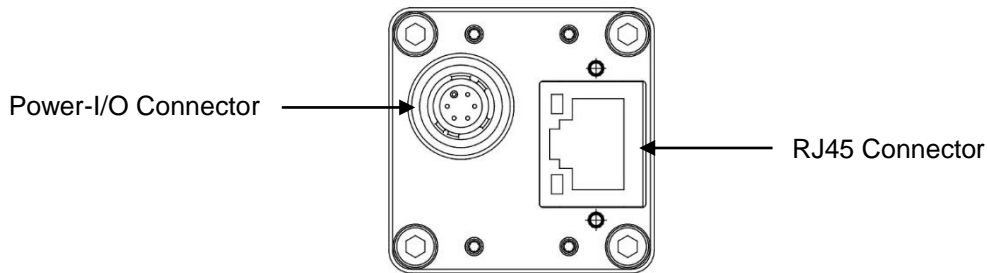


Figure 4: Camera Connector

3.1 RJ45 Connector

This product is PoE compliant.

Please supply power (+10.8 to +26.4Vdc) through the power-I/O connector when using a non-PoE-compliant NIC.

Pin Assignment

Pin No.	Signal Name
1	TA+
2	TA-
3	TB+
4	TC+
5	TC-
6	TB-
7	TD+
8	TD-

LED

Green LED	Orange LED	Status
Green Light ON	Orange Light ON	Power ON(1GB NIC)
Green Light OFF	Orange Light OFF	Power ON(100MB NIC)
Green Light ON	Orange Light Blinking	1Gb Transferring
Green Light OFF	Orange Light Blinking	100 Mb Transferring

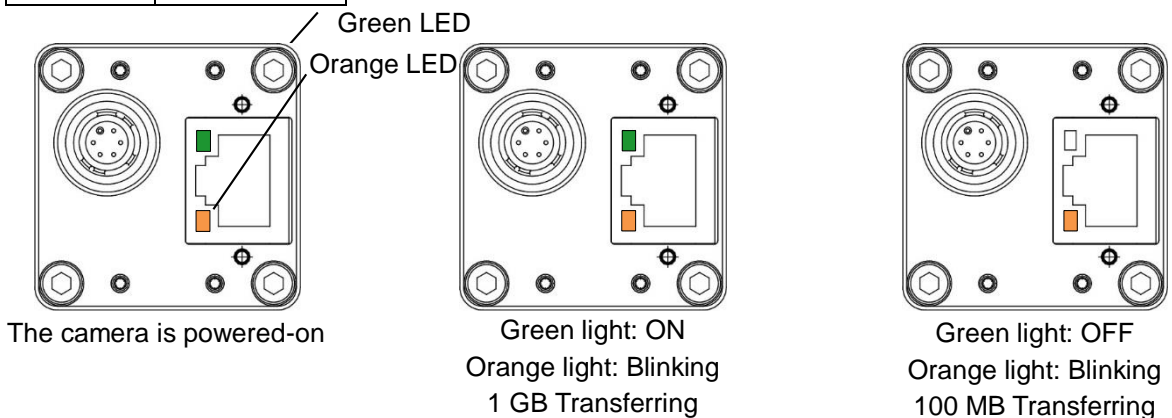


Figure 5: LED Information (on 1GB NIC)

Please use a 1GB supported NIC, NetWork Switcher and LAN cable. Check that the NIC and NetWork Switcher being used is "1GB transferring".

For further details on the connection, please see "System Configurations (Example Connections)".

3.2 Power and Control Signal Connector

- HR10A-7R-6PB (Hirose) or equivalent
- This connector is for the power supply and input /output signals.
This connector is the priority power for the camera. This means that if power is run through this connector and the PoE connector, this connector will supply the power.
- Use HR10A-7P-6S (Hirose) or equivalent for the cable side.

Pin No.	Signal Name	IN / OUT	Voltage
1	GND	IN	0V
2	I/O-1	OUT	+3.3V Open Collector
3	I/O-2	OUT	+3.3V Open Collector
4	TRG_In- (Opt. Isolated -)	IN	Low: Smaller than +1.0V High: +3.0 to +26.4V *potential difference between TRG_In- and TRG_In+
5	TRG_In+ (Opt. Isolated +)	IN	
6	POWER IN	IN	+10.8 to +26.4 Vdc

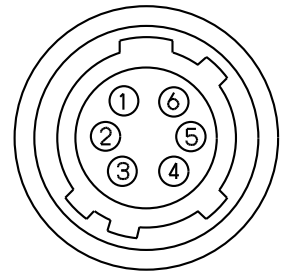


Table 4: Pin Assignment (Power –I/O Connector)

- Output signals can be assigned through the camera setting communication.
(Device Code = 00H, Command = F0H and F1H)

Configuration of I/O-1 (Pin No.2) and I/O-2 (Pin No.3)

Output pin can be assigned through register setting or GenICam Command.

Command No.				GenICam command
F0H[3..0]	F1[3]	F0H[7..4]	F1[4]	I/O-1 (Pin No.2) / I/O-2 (Pin No.3)
For I/O-1 (Pin No. 2)		For I/O-2 (Pin No.3)		
0H (initial setting)	-	0H	-	FrameTriggerWait (initial setting for I/O-1)
1H	Set Value	1H	Set Value	UserOutput
2H	-	2H (initial setting)		ExposureActive (initial setting for I/O-2)
3H	-	3H	-	TriggerAuxiliary
4H	-	4H		TriggerInternal
5H	-	5H		SensorReadOut
6H	-	6H		StrobeSignal
7H-FH	-	7H-FH	-	For Test Use Only

Table 5: IO port Command List

- ※ Note: I/O-1 can be assigned only by F0H[3..0] and F1[3], and I/O-2 can be assigned only by F0H[7..4] and F1[4].

1) FrameTriggerWait

The user can check the camera condition (camera exposure and image output processing by the trigger signal with this FrameTriggerWait signal).

This signal is LOW for the period from the trigger input signal to the image output.

- a) High status (3.3V): No processing by the trigger signal. The camera accepts the trigger signal.
- b) Low status (0V): The camera is exposed and the image output processes by the trigger signal.

The camera default setting is the input trigger signal is INVALID while at the low status of this signal. When the exposure starts while the image output by the next trigger signal, please change the camera setting (Device code: 00H, Command No. :13H) to accept the trigger signal while the image outputs.

The noise appears on the image when the exposure begins while the image is output. The noise appears on the image when the start exposure while the image is output. In this case, please change the "H reset" for the exposure start mode (Device code: 00H, Command No. : 12H) to change the exposure start point to the next HD timing.

2) UserOutput

The status of the UserOutput signal can change with the "UserOutputValue".

3) ExposureActive

The user can check the exposure time with the ExposureActive signal.

4) TriggerAuxiliary

The TriggerAuxiliary signal is the input trigger signal.

5) TriggerInternal

The TriggerInternal signal is the input trigger signal with the trigger delay time.

6) SensorReadOut

The SensorReadOut signal is the FVAL signal, which is the image output period of the time.

7) StrobeSignal

The StrobeSignal signal is the strobe control signal.

3.2.1 Equivalent Circuit for the Input Pin of the I/O Connector

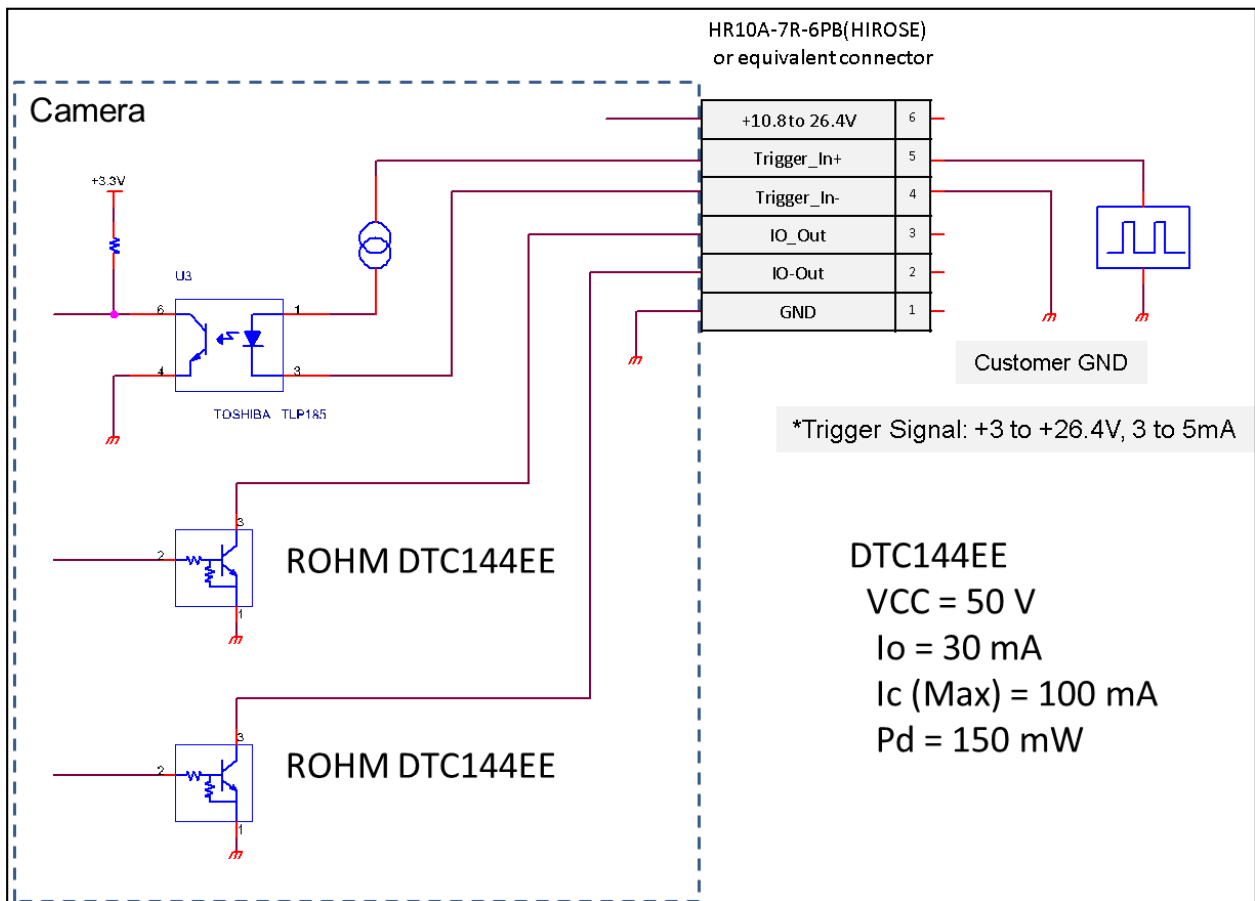
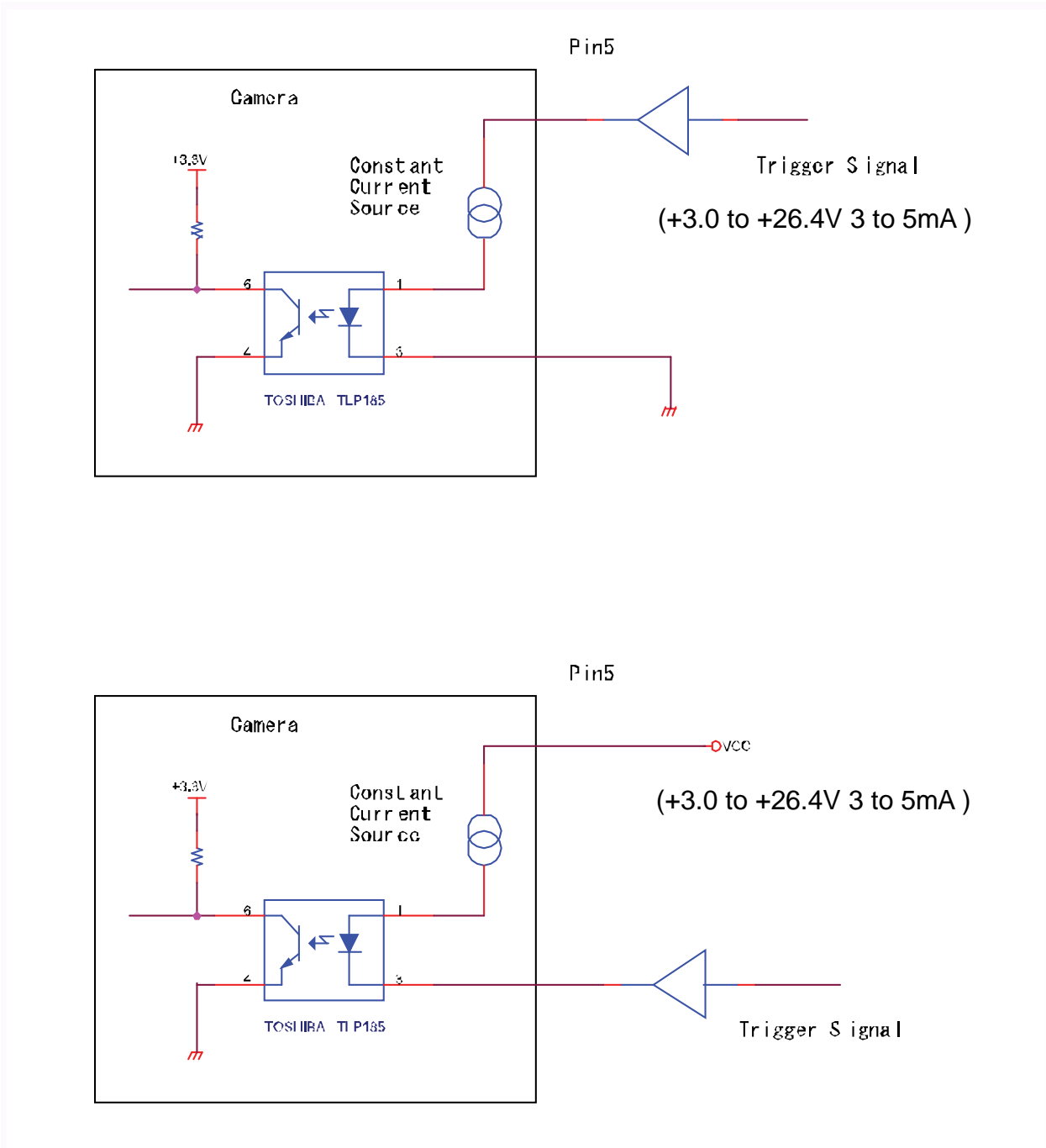
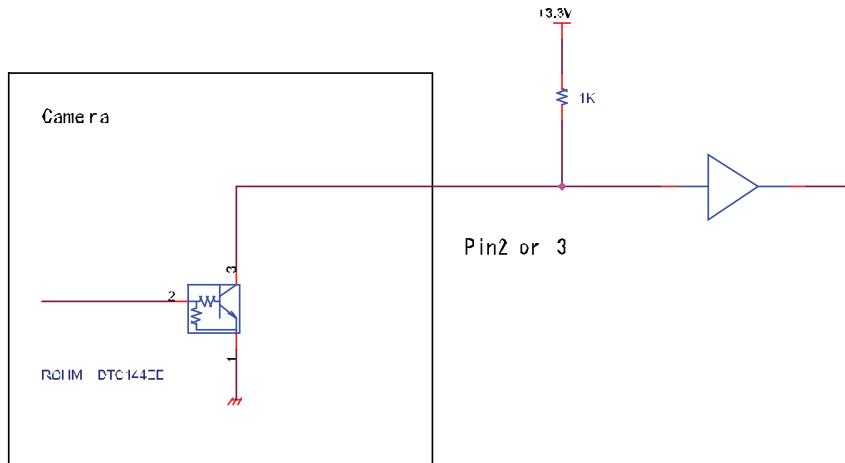


Figure 6: Input / Output Circuit

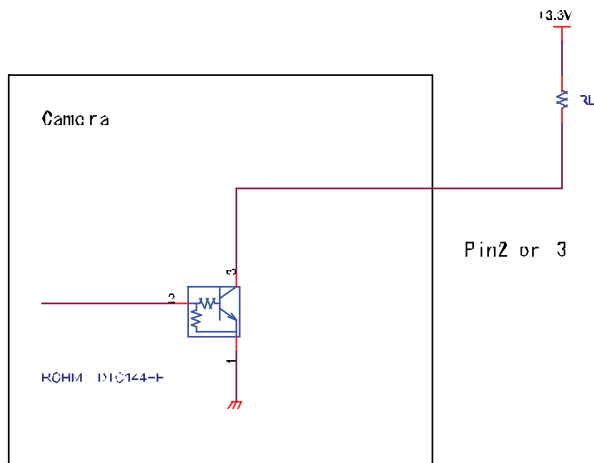
3.2.2 Typical Input Circuit



3.2.3 Typical Output Circuit



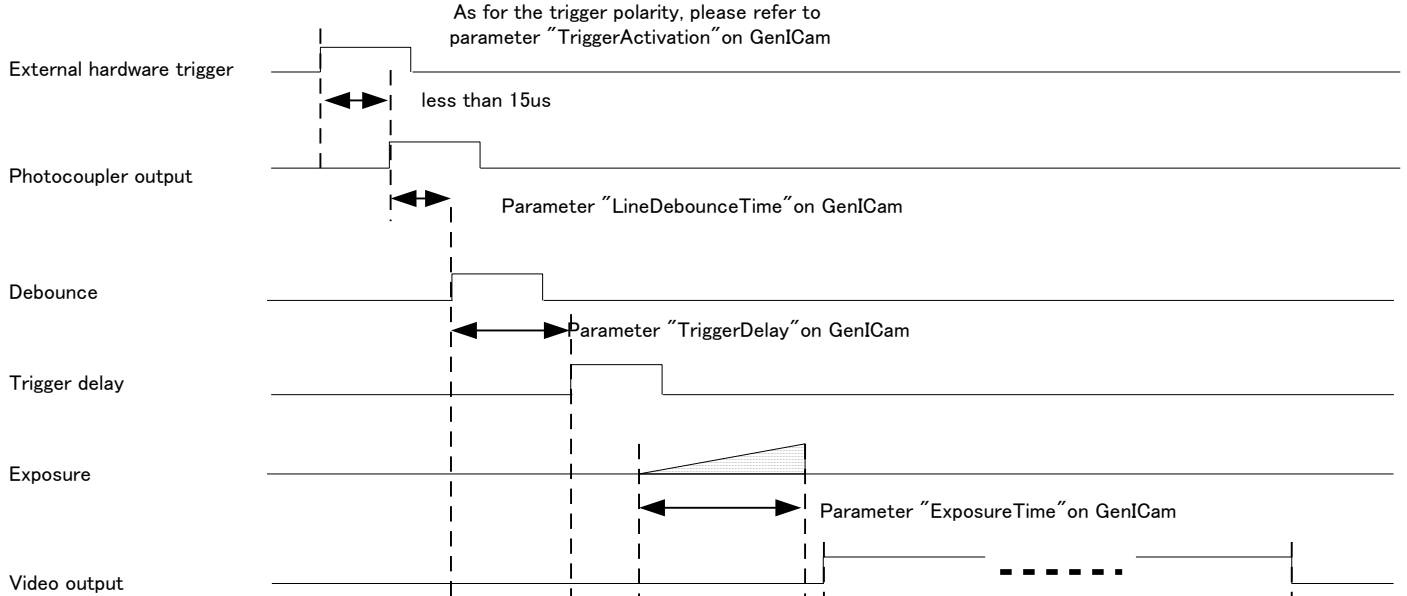
Note:
Value of Vcc and Pull up register can be set within the spec of transistor



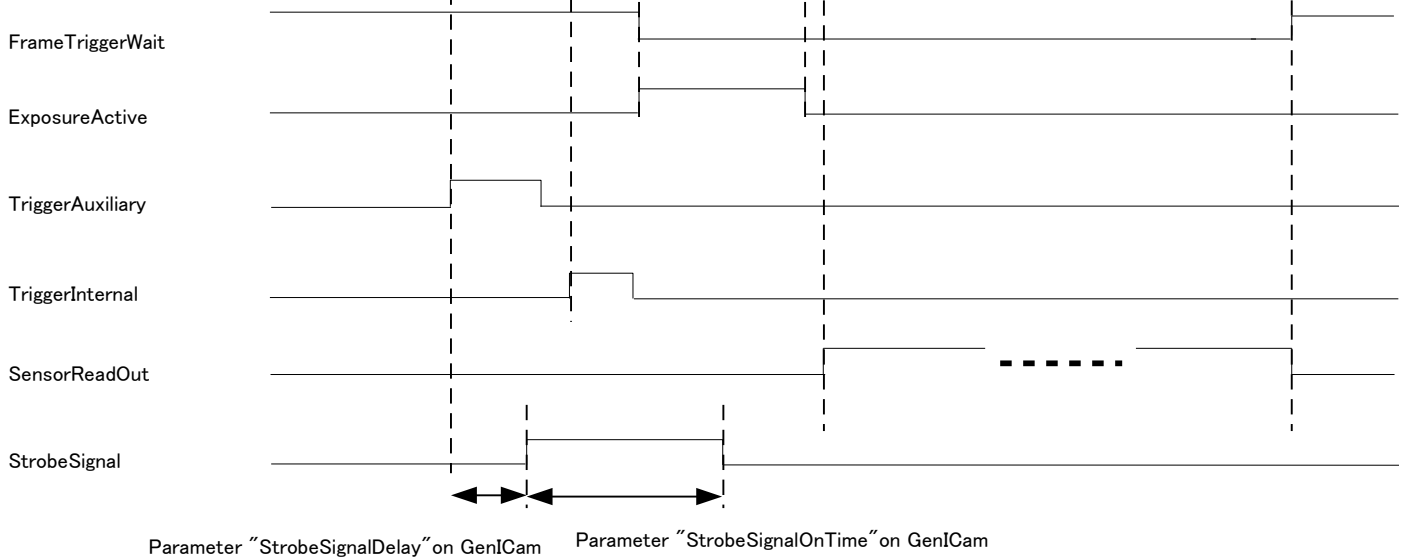
3.2.4 Input and Output Signal Timing (Hardware Trigger)

Example of "External Hardware Trigger", "Positive Edge Trigger", "Edge Preset Exposure",

Camera internal processing

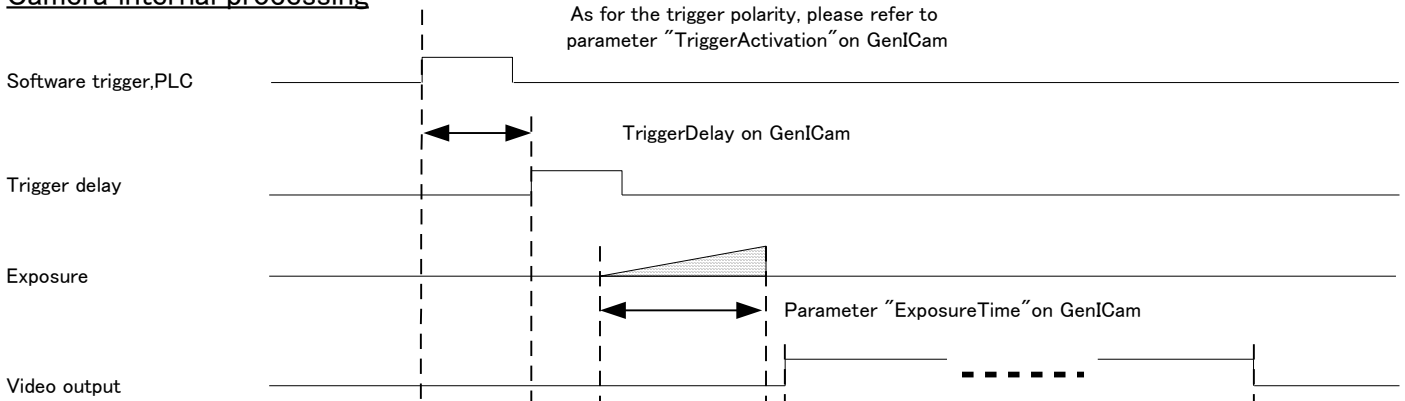


Output Signal

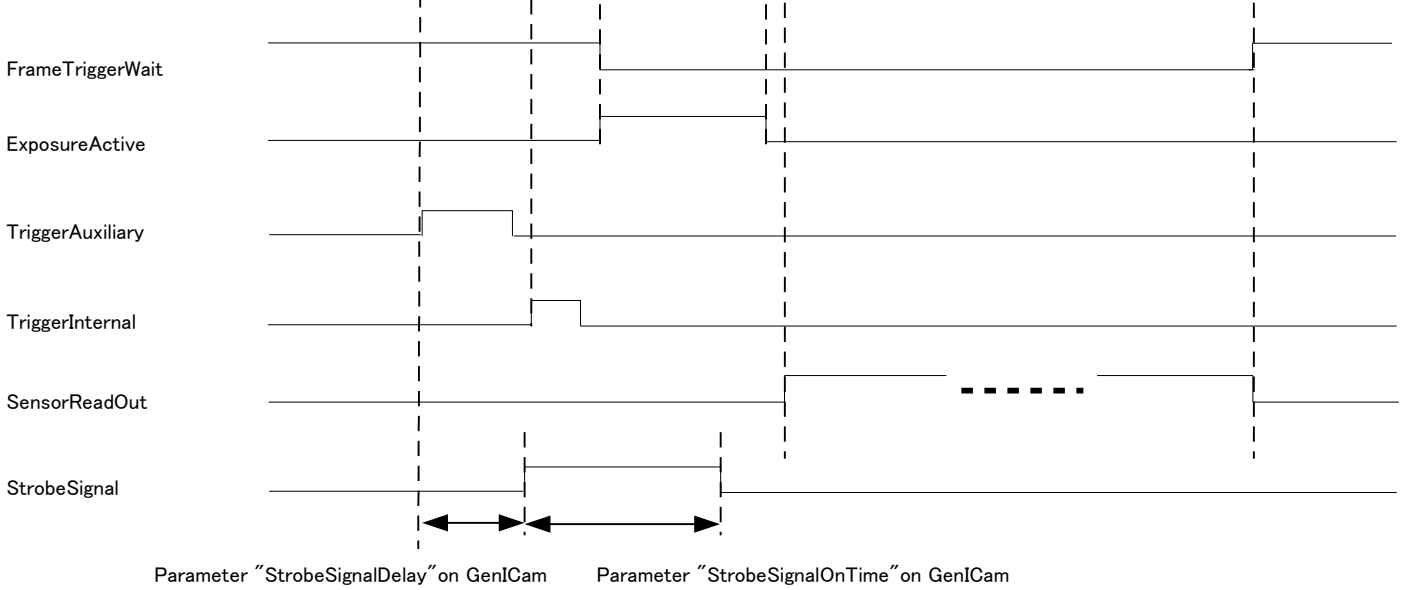


3.2.5 Input and Output Signal Timing (Software Trigger) Example of "Software Trigger", "Positive Edge Trigger", "Edge Preset Exposure",

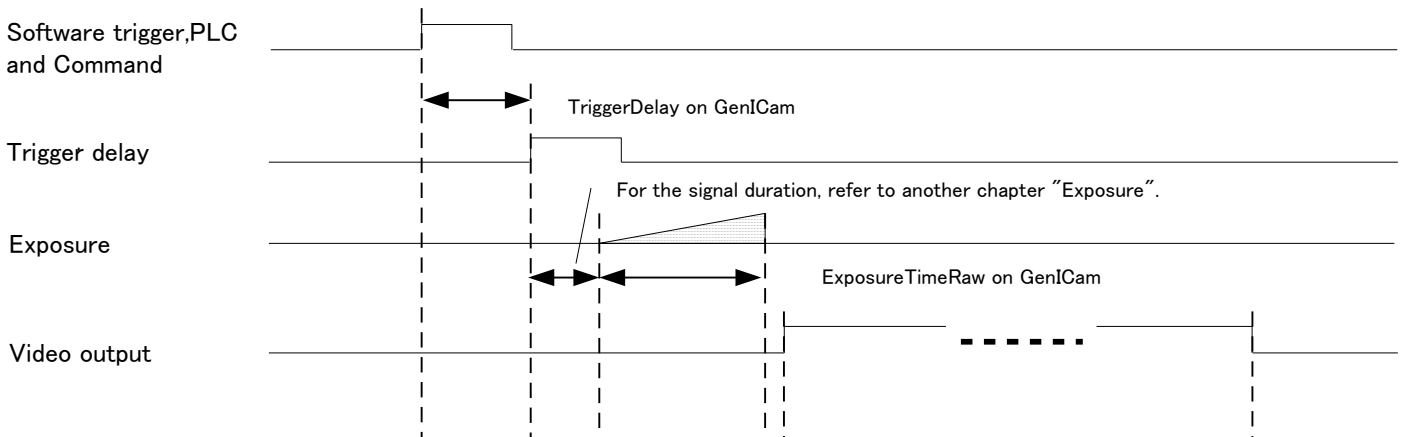
Camera internal processing



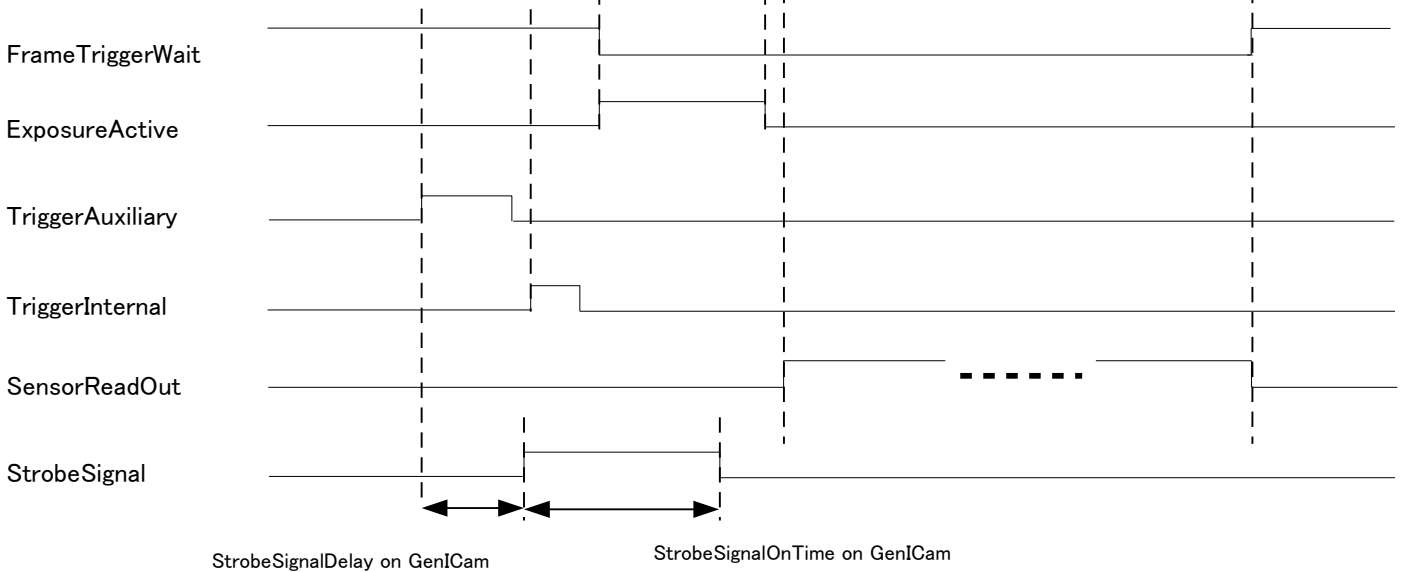
Output Signal



Camera internal processing

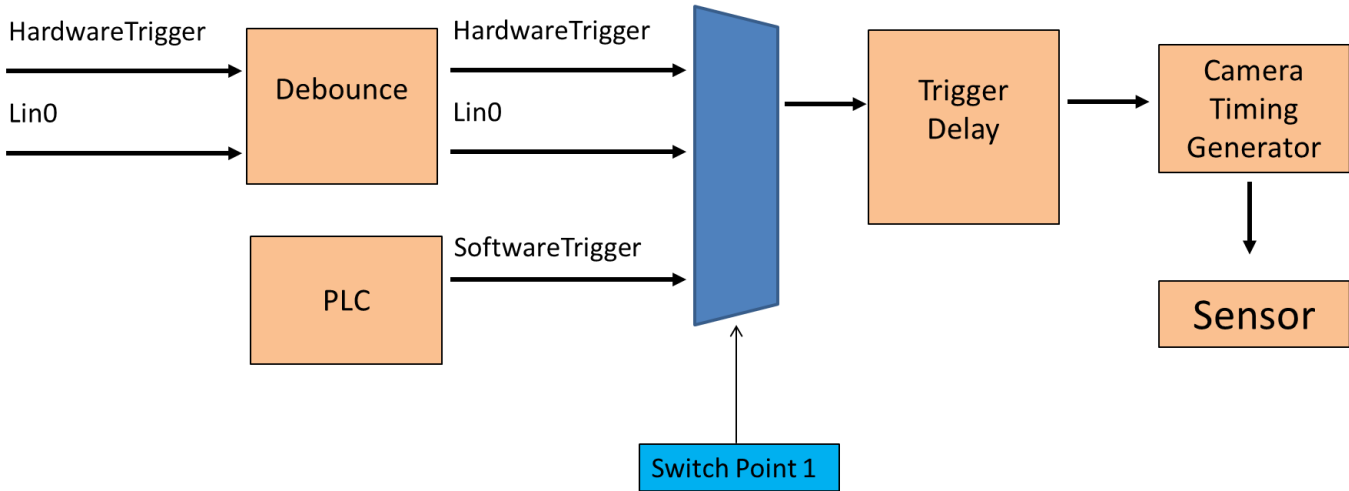


Output Signal



3.2.6 Trigger Signal Processing Process

External Hardware Trigger or Software Trigger input the camera's internal process as follows.



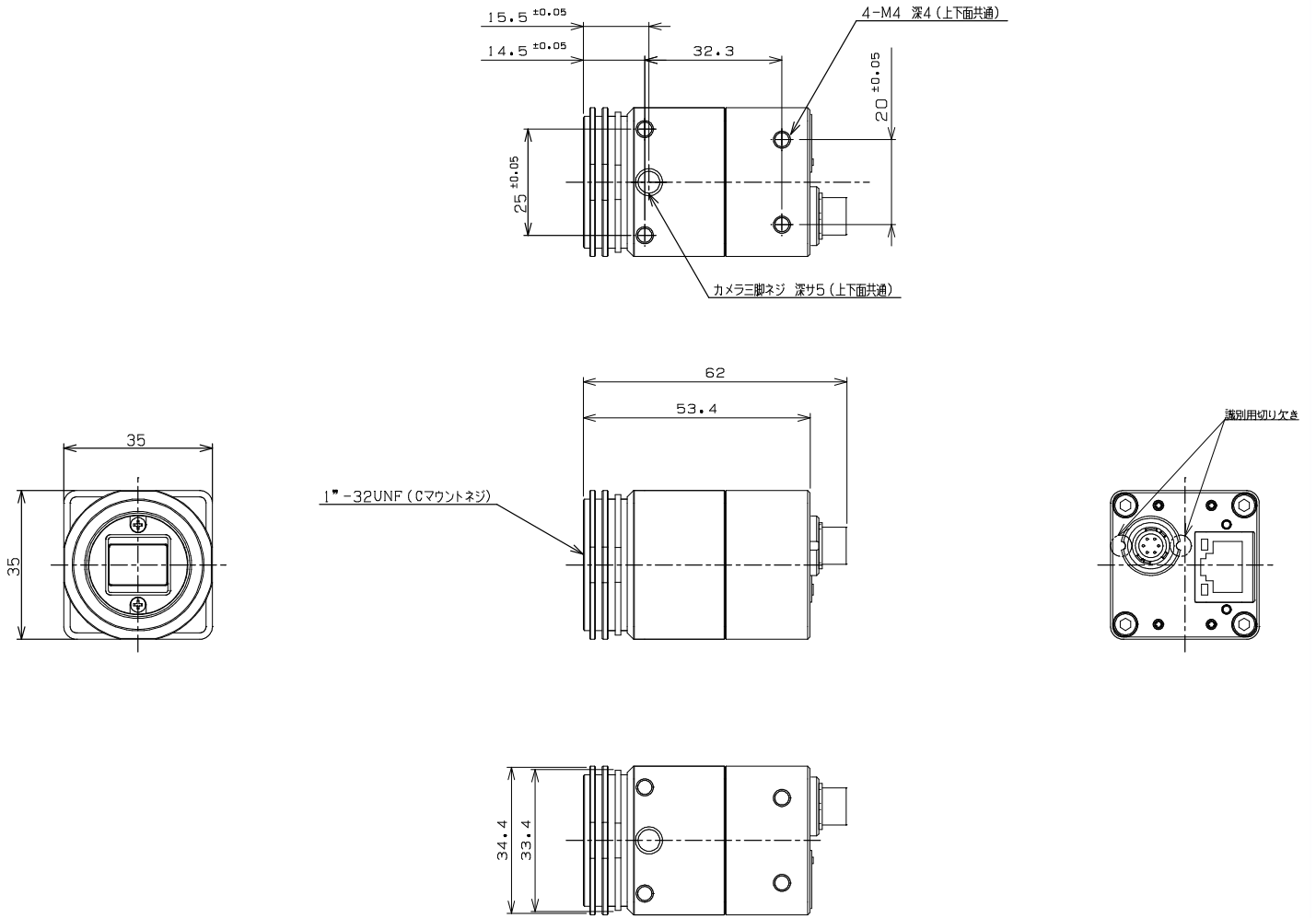
Switching Trigger can be done through register access or GenICam commands

Switching point 1: Switch to Hardware Trigger and Software Trigger

- TriggerSource=Software on GenICam
- TriggerSource=Hardware on GenICam
- TriggerSource=Line0 on GenICam

4 Dimensions

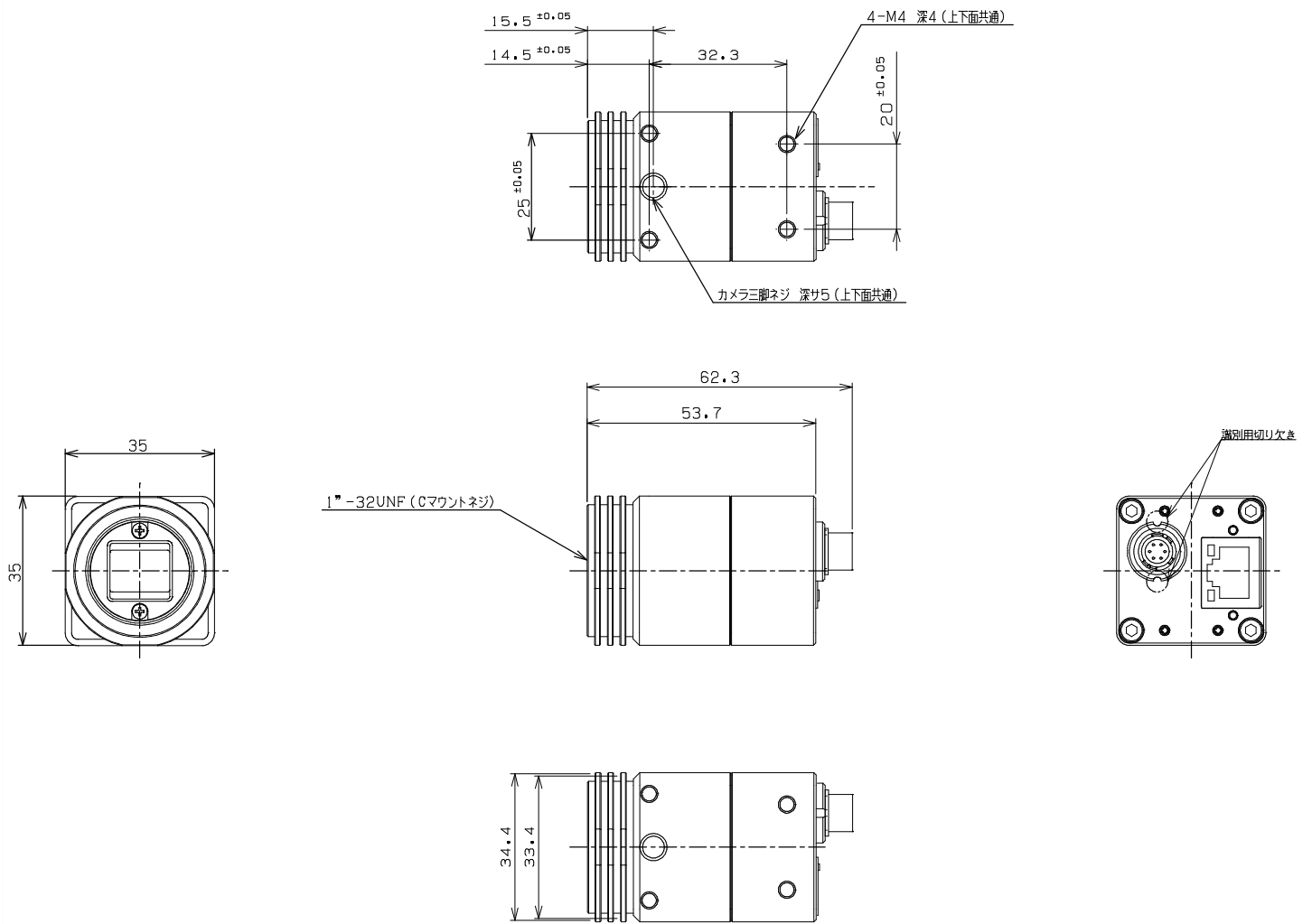
4.1 STC-SBS241POE



Unit: mm

Figure 4: Mechanical Dimensions

4.2 STC-SCS241POE



Unit: mm

Figure 5: Mechanical Dimensions

5 Revision History

Rev	Date	Changes	Note
ES00	2015/04/27	● New Document	

Sentech Co.,Ltd

7F, Harada center building
9-17, Naka cho 4 chome
Atsugi-city, Kanagawa
243-0018 Japan
TEL 81-46-295-7061 FAX 81-46-295-7066
URL <http://www.sentech.co.jp/>