

# Hardware & Software Trigger USB2.0 Color / Monochrome UXGA CCD Camera

STC-TC202USB-AH  
STC-TB202USB-AH

Product Specifications

Sensor Technology Co., Ltd

## Caution for the PC with the Intel Core i3, i5 or i7

When use the USB camera with some PC, which has the Intel Core i3, i5 or i7, may occur following issue:

CANNOT get any image from the USB camera.

Frame drops frequently

(This issue may occurred for the other manufacture USB camera too)

Cause of this issue:

The image data cannot transfer to the PC because the Intel Core i3, i5 or i7 CPU switch to the power save mode frequently while the image is transferring.

Solution for this issue:

1. Disable the power save mode with the Sentech PC power management software.

The power save mode can disable with the Sentech PC power management software "StPowerCtrl".

Please contact to the Sales representative about this software.

The power consumption and the heat of the PC are increased when disable the power save mode. Please understand and accept this before disable the power save mode.

2. Disable the power save mode with change the BIOS settings.

Please change BIOS setting with your responsibility.

The power consumption and the heat of the PC are increased when disable the power save mode. Please understand and accept this before disable the power save mode.

3. Change the camera clock from "Normal" to "1/2" or "1/4". (Reduce the frame rate)

Note.

All specifications are subject to change without prior notice.

#### Revisions

Rev	Date	Changes	Note
1.0	2009/05/15	New document	
1.1	2009/08/07	Update Page number	
1.2	2009/08/31	Update Electronic specification (Input /output) (Add "Mini B USB) Input / output signal specification (Add the description for input signal)	
1.3	2010/01/15	Update Input / output signal specifications (Change the input / output impedance) Electronic specification (Delete effective picture elements) Electronic specification (Add active picture elements)	
1.4	2010/06/25	Update Mechanical specification (Change the weight)	
1.5	2010/08/16	Update Add the caution for the USB device	
1.6	2010/10/04	Update Electronic specifications (Add clock speed (1/2 and 1/4 clock)) Environmental specifications (Delete humidity) Input / Output signals specifications (Board type) (Add time for the pulse width)	
1.7	2010/11/05	Update Electronic specifications (Add shutter speed range)	
1.8	2011/03/02	Update Add the Caution for the PC with the Intel Core i series chipset Add the spectral sensitivity characteristics	
1.9	2011/06/17	Update Change the Caution for the PC with the Intel Core i3, i5 and i7 Add the I/O circuits	

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## Specifications

### Electronic specifications / Mechanical specifications / Environmental specifications

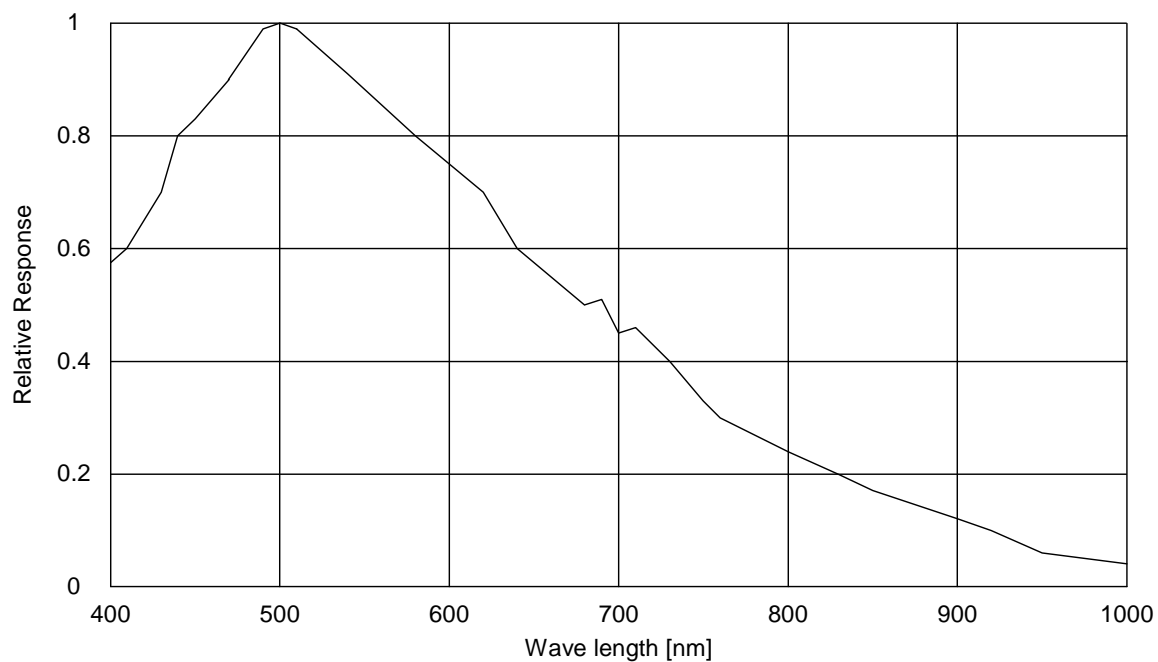
Product		STC-TC202USB-AH	STC-TB202USB-AH
Electronic Specifications	Imager	1/1.8" interline UXGA color progressive CCD: ICX274AQ	1/1.8" interline UXGA monochrome progressive CCD: ICX274AL
	Total picture elements	1688 (H) x 1248 (V)	
	Active picture elements	1600 (H) x 1200 (V)	
	Chip size	8.50 (H) x 6.80 (V) mm	
	Cell size	4.40 (H) x 4.40 (V) $\mu$ m	
	Scanning system	Progressive	
	Scanning methods	Full scanning, 1/1 partial scanning, 1/2 partial scanning, 1/4 partial scanning, Variable partial scanning	Full scanning, 1/1 partial scanning, 1/2 partial scanning, 1/4 partial scanning, Variable partial scanning, Binning, Binning 1/1 partial scanning, Binning 1/2 partial scanning, Binning 1/4 partial scanning, Binning variable partial scanning
	Pixel frequency	36.8181 MHz (Normal) / 18.4090 MHz (1/2 clock) / 9.20453 MHz (1/4 clock)	
	Maximum framer rate	Full scanning	15.32 fps (Normal) / 7.66 fps (1/2 clock) / 3.83 fps (1/4 clock)
		1/2 partial	30.63 fps (Normal) / 15.31 fps (1/2 clock) / 7.65 fps (1/4 clock)
		1/4 partial	61.27 fps (Normal) / 30.63 fps (1/2 clock) / 15.31 fps (1/4 clock)
	Resolution	1600 (H) x 1200 (V) (Full scanning) 1600 (H) x 544 (V) (1/2 partial scanning) 1600 (H) x 208 (V) (1/4 partial scanning)	
	S/N Ratio (Standard deviation)	<= 10 digit (Factory default gain setting)	
	Minimum scene illumination	1.39 Lux at F1.2	0.11 Lux at F1.2
	Sync. System	Internal	
	Electronic shutter	Auto / Manual (software selectable)	
	Normal	1/36,818,182 to 1/15.32 seconds	
		1/18,409,091 to 1/7.66 seconds	
		1/9,204,545 to 1/3.83 seconds	
	Gain	Auto / Manual (software selectable)	
	Gamma	Manual (software selectable)	
	White balance	Auto / Manual / One shot (software selectable)	-
Mechanical Specifications	Trigger mode	Free-run / Edge preset trigger / Pulse width trigger / Start & stop trigger (software selectable)	
	Input/output	USB2.0 High speed (Mini B USB)	
	Power	+5 V through USB connector or 12Pin connector	
		Less than 500 mA	
	Dimensions	50 (W) x 50 (H) x 40.8 (D) mm	
	Lens mount	C mount	
Environmental Specifications	Input/Output connector	12Pin connector (Hiroese) / 2.5mm pin jack	
	Tripod	1/4"-20UNC depth 7 screw hole on top and bottom case, 4-M4 depth 4 screw holes on top and bottom case, 2-M4 depth 4 screw holes on both side of case	
	Weight	Approximately 115 g	
	Operational temperature	0 to 40 deg. C	
	Storage temperature	-30 to 65 deg. C	
	Vibration	20Hz to 200Hz to 20Hz (5min./cycle), acceleration 10G, 3 directions 30 min. each	
	Shock	Acceleration 70G, half amplitude 6ms, 3 directions 3 times each	
	Standard compliancy	EMS: EN61000-6-2, EMI: EN61000-6-3 (Class B)	
	RoHS	RoHS compliance	

#### (Caution)

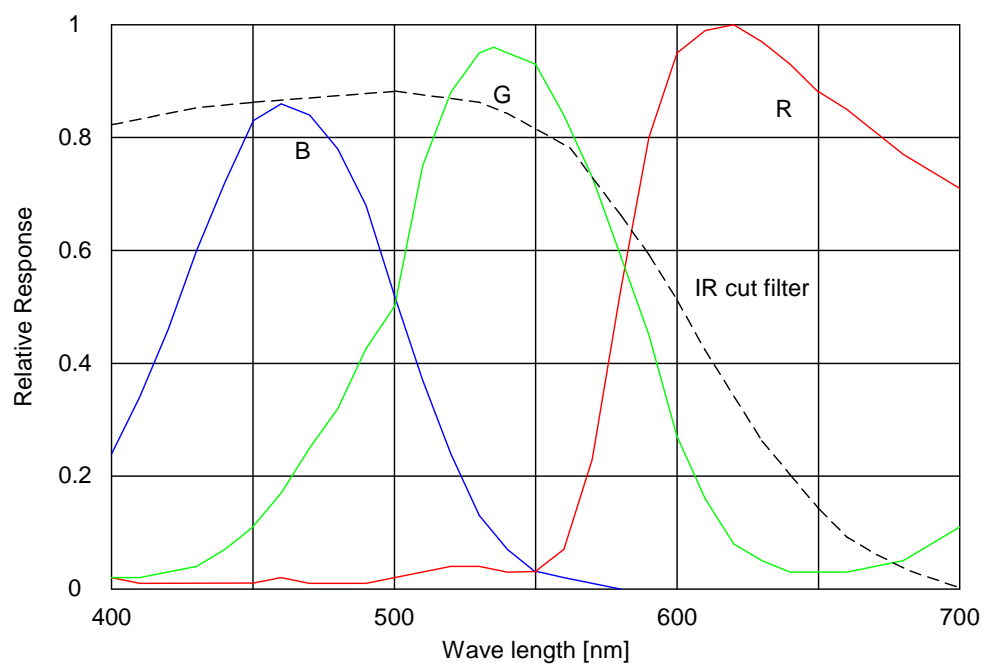
Please DO NOT connects or disconnect any USB devices including USB memory while use this USB camera.  
Its possibility to the USB camera DOES NOT recognize after connect or disconnect USB devices.

## Spectral Sensitivity Characteristics

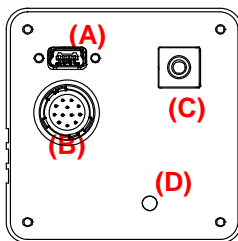
STC-TB202USB-AH



STC-TC202USB-AH (with IR cut filter)



## Connector specifications

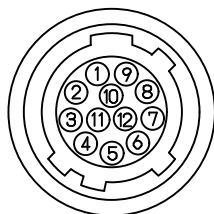


A USB connector (Mini B USB connector)

Please connect USB cable to this connector.

**Note.1: It is possible to connect the cable that has screws for lock the case and the cable.**

B 12Pin connector: HR10A-10R-12PB (Hirose)



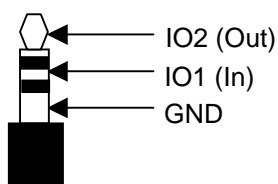
No.	Signal type	In / Out
1	GND	
2	+5V DC	
3	N.C.	
4	N.C.	
5	IO0 GND	
6	IO0	In
7	IO3	Out
8	IO3 GND	
9	IO1 GND	
10	IO1	In
11	IO2	Out
12	IO2 GND	

Please set up for input (IO0 / IO1) and output (IO2 / IO3), which signal input and output through these pins with the software.

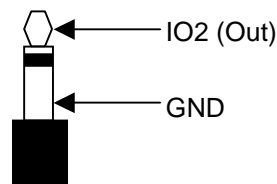
IO1 and IO2 also are connects to the Input / output connector.

C Input / output connector (2.5mm pin jack)

Please set up for the IO1 and IO2, which signal input and output through this connection with the software.



Stereo pin jack



Mono pin jack

D LED

Red light is on then put the lights out shortly after power on the camera. The color of LED is change to Red, orange then green

Green light is on when the camera works.

## Input / Output Signals specifications

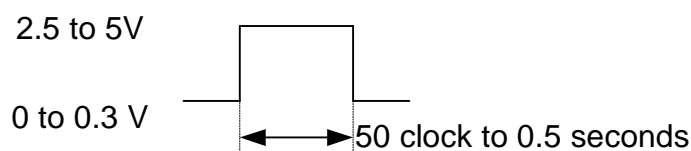
### A. Input signals specifications

Input signal pins (IO 0 and IO1) can be configured with "Trigger Input" or "Readout Request" through the software.

#### a. Trigger input signal requirements

In the trigger operation, the exposure can control by this input signal.

1. Input signal level: High: 2.5 to 5 V  
Low : 0 to 0.3 V
2. Input impedance: High-impedance
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width: 50 clock to 0.5 seconds  
Normal clock: 1.35803 useconds to 0.5 seconds  
1/2 clock: 2.71607 useconds to 0.5 seconds  
1/4 clock: 5.43210 useconds to 0.5 seconds

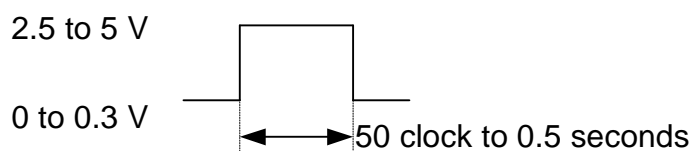


#### b. Read out request input signal requirements

In the trigger operation, the read out the image can control by this input signal.

(It is necessary to setup trigger mode as the trigger with read out)

1. Input signal level: High: 2.5 to 5 V  
Low : 0 to 0.3 V
2. Input impedance: High-impedance
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width: 50 clock to 0.5 seconds  
Normal clock: 1.35803 useconds to 0.5 seconds  
1/2 clock: 2.71607 useconds to 0.5 seconds  
1/4 clock: 5.43210 useconds to 0.5 seconds



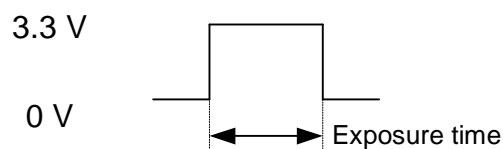


## B. Output signals specifications

Output signal pins (IO2 and IO3) can be configured with “Strobe signal output”, “Trigger output”, “End of exposure” or “End of Transfer” through the software.

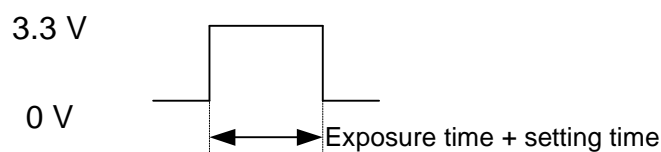
### a. Strobe (Exposure time) output signal specifications

1. Output signal level: 3.3 Vp-p
2. Output impedance: 100 Ohm
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width: Exposure time



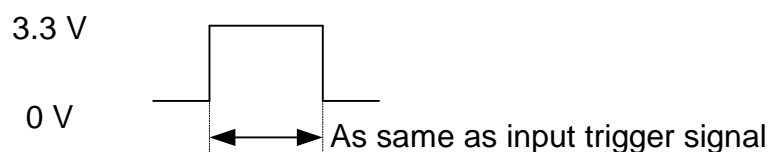
### b. Strobe (strobe signal setting) output signal specifications

1. Output signal level: 3.3 Vp-p
2. Output impedance: 100 Ohm
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width: Exposure time + setting time



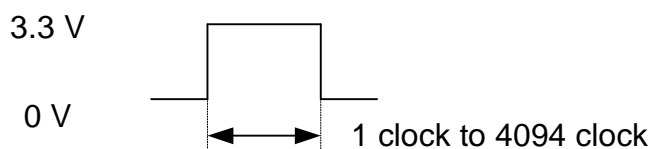
### c. Trigger (through) output signal specifications

1. Output signal level: 3.3 Vp-p
2. Output impedance: 100 Ohm
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width: As same as input trigger signal



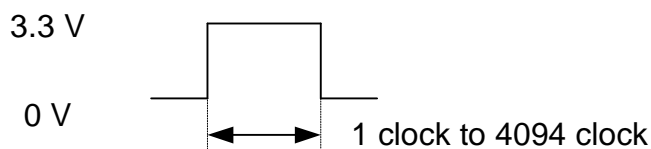
#### d. Trigger output signal specifications

1. Output signal level: 3.3 Vp-p
2. Output impedance: 100 Ohm
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width:  
1 clock to 4094 clocks (selectable by the software)  
Normal clock: 27.1606 nseconds to 111.196 useconds  
1/2 clock: 54.3213 nseconds to 222.391 useconds  
1/4 clock: 108.642 nseconds to 444.780 useconds



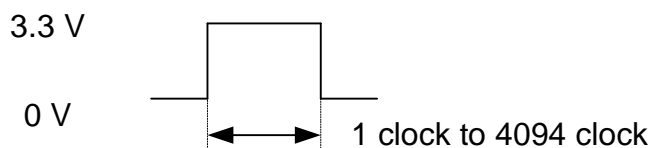
#### e. End of exposure output signal specifications

1. Output signal level: 3.3 Vp-p
2. Output impedance: 100 Ohm
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width:  
1 clock to 4094 clocks (selectable by the software)  
Normal clock: 27.1606 nseconds to 111.196 useconds  
1/2 clock: 54.3213 nseconds to 222.391 useconds  
1/4 clock: 108.642 nseconds to 444.780 useconds

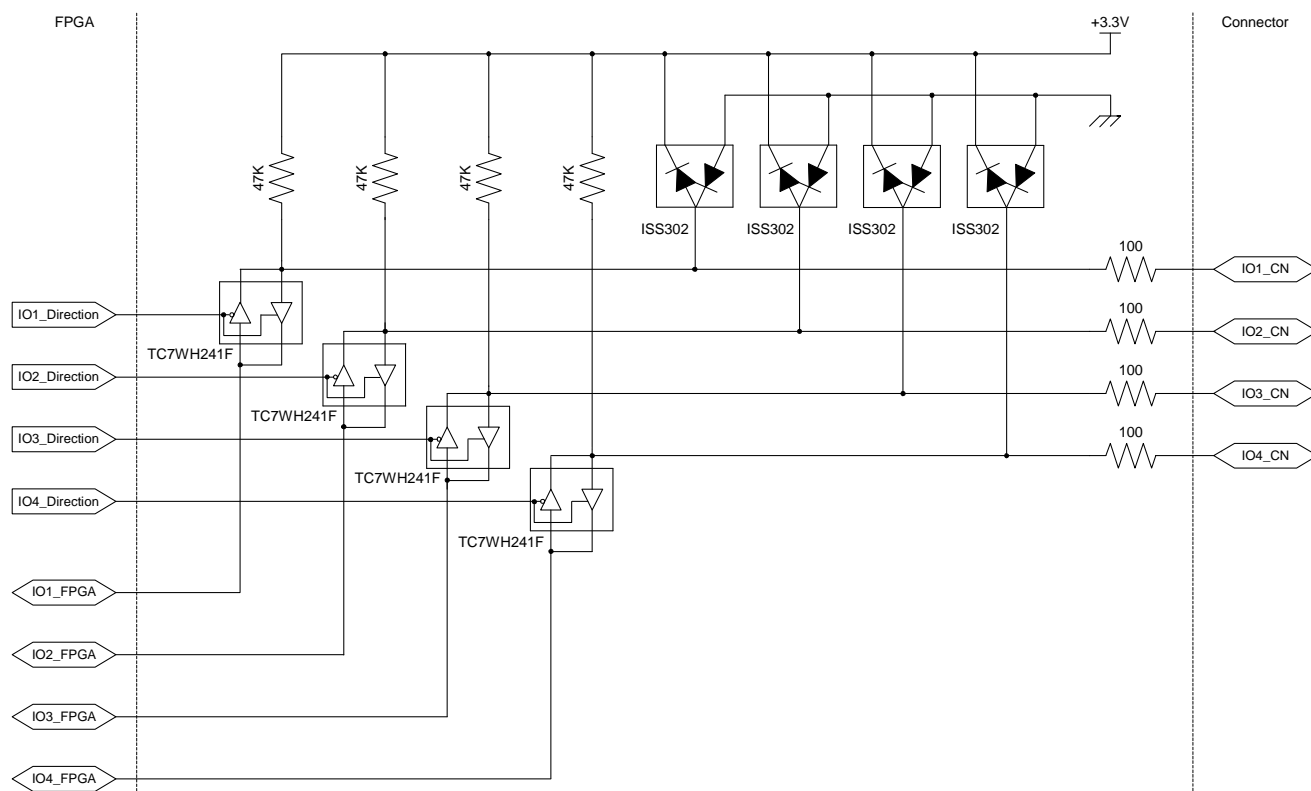


#### f. End of transfer output signal specifications

1. Output signal level: 3.3 Vp-p
2. Output impedance: 100 Ohm
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width:  
1 clock to 4094 clocks (selectable by the software)  
Normal clock: 27.1606 nseconds to 111.196 useconds  
1/2 clock: 54.3213 nseconds to 222.391 useconds  
1/4 clock: 108.642 nseconds to 444.780 useconds



## C. IO circuits



## Cautions

### A. Trigger input signal cycle time

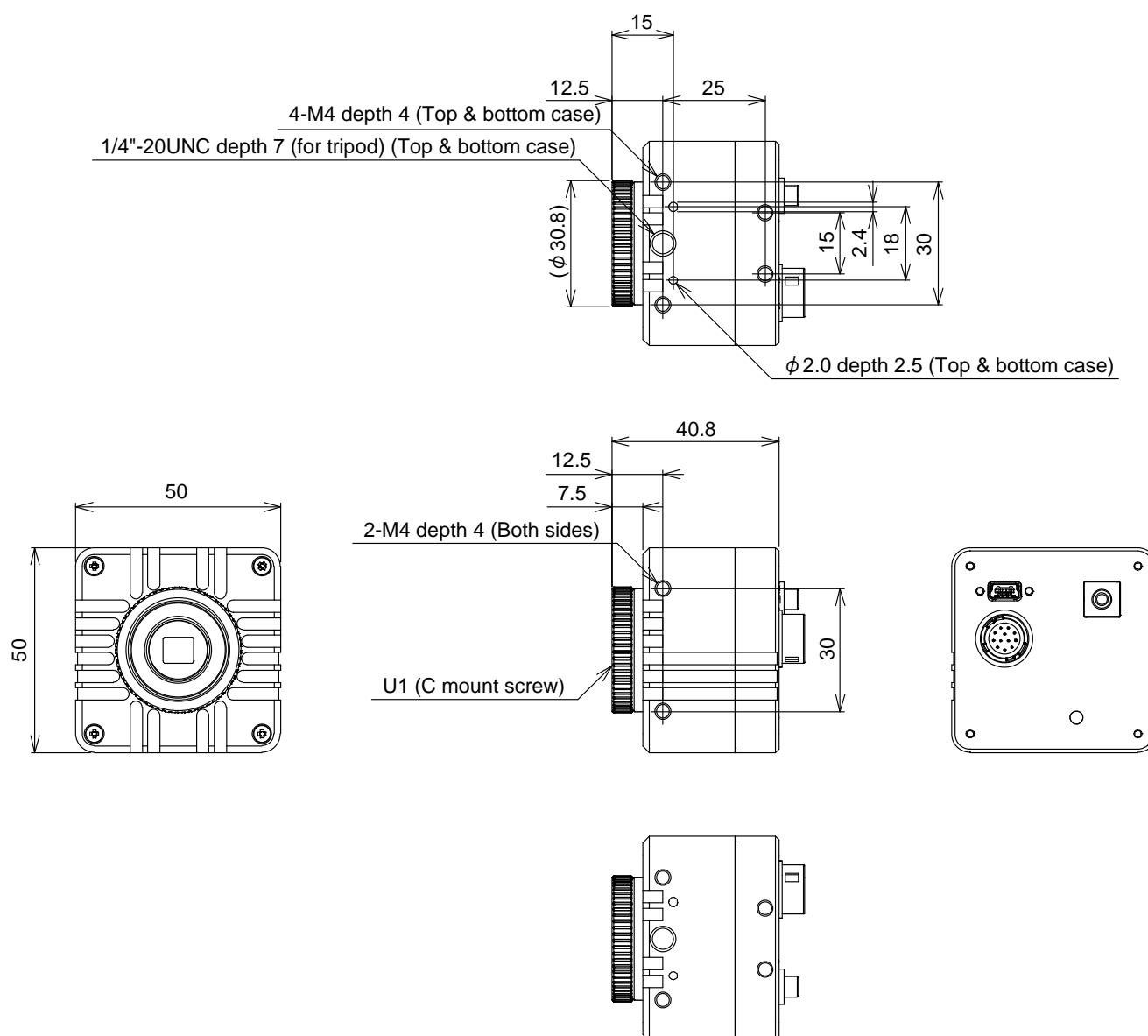
Set the trigger signal input cycle time to be more than (the exposure time + video output), otherwise the following phenomenon may occur.

- Double images
- Excess or abnormal noise
- No video image.

### B. The status of the input signal pins at power up

All input pins must be set at “low” status when power is turned on. Otherwise the camera may not operate properly.

## Dimensions



Unit: mm

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