

Software Trigger USB2.0

Color / Monochrome VGA CCD Camera

STC-TC33USB-AT/AS/BT/BS

STC-TB33USB-AT/AS/BT/BS

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	2008/01/24	New document	
1.1	2008/03/26	Update Specifications update (Scanning methods) Add Binning and binning partial (1/1, 1/2, 1/4, variable) for the monochrome type	
1.2	2009/03/31	Update Specifications update (Trigger mode) Add Pulse width trigger for the trigger mode Add Start & stop trigger for the trigger mode Specifications update (Mechanical specifications of board type) Add Interface connector Add Connector specifications (Board type) Add Input/Output signals specifications (Board type)	
1.3	2009/05/08	Update Electronic specifications (Change the minimum illumination)	
1.4	2009/08/07	Update Page number	
1.5	2010/08/06	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

(STC-TC33USB-AT/TC33USB-AS/TB33USB-AT/TB33USB-AS: case type)

Product		STC-TC33USB-AT		STC-TC33USB-AS		STC-TB33USB-AT		STC-TB33USB-AS		
Electronic Specifications	Imager		1/3" interline VGA color progressive CCD: ICX424AQ				1/3" interline VGA monochrome progressive CCD: ICX424AL			
	Total picture elements		692 (H) x 504 (V)							
	Effective picture elements		659 (H) x 494 (V)							
	Chip size		5.79 (H) x 4.89 (V) mm							
	Cell size		7.40 (H) x 7.40 (V) μm							
	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		24.5454 MHz (Normal) / 12.2727 MHz (1/2 clock) / 6.13635 MHz (1/4 clock)							
	Maximum framer rate	Full scanning	59.94 fps (Normal) / 29.97 fps (1/2 clock) / 14.98 fps (1/4 clock)							
		1/2 partial	120.11 fps (Normal) / 60.05 fps (1/2 clock) / 30.02 fps (1/4 clock)							
		1/4 partial	240.22 fps (Normal) / 120.11 fps (1/2 clock) / 60.055 fps (1/4 clock)							
	Resolution		640 (H) x 480 (V) (Full scanning) 640 (H) x 224 (V) (1/2 partial scanning) 640 (H) x 80 (V) (1/4 partial scanning)							
	Minimum scene illumination		2.24 Lux at F1.2				0.08 Lux at F1.2			
	Sync. System		Internal							
	Electronic shutter		Auto / Manual (software selectable)							
		Normal	1/24,545,455 to 1/59.94 seconds							
		1/2 clock	1/12,272,727 to 1/29.97 seconds							
		1/4 clock	1/6,136,364 to 1/14.99 seconds							
		Gain	Auto / Manual (software selectable)							
	Gamma		Manual (software selectable)							
	White balance		Auto / Manual / One shot (software selectable)				-			
	Trigger mode		Free-run / Edge preset trigger / Pulse width trigger / Start & stop trigger (software selectable)							
	Input/output		USB2.0 High speed							
	Power	Input voltage	+5 V through USB connector							
		Consumption	Less than 350 mA							
Mechanical Specifications	Dimensions		51 (W) x 51 (H) x 41.6 (D) mm		51 (W) x 51 (H) x 44.3 (D) mm		51 (W) x 51 (H) x 41.6 (D) mm		51 (W) x 51 (H) x 44.3 (D) mm	
	Lens mount		CS mount							
	Tripod		2 screws on the bottom plate							
	Weight		Approximately 145g							
Environmental Specifications	Operational temperature		0 to 40 deg. C							
	Storage temperature		-30 to 65 deg. C							
	Vibration		20Hz to 200Hz to 20Hz (5min./cycle), acccelaration 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							

Please use the hardware trigger type USB camera (STC-TC/TB33USB-AH) when the input / output signals including the trigger signal and the strobe signal are required in the system.

(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.

(STC-TC33USB-BT/TC33USB-BS/TB33USB-BT/TB33USB-BS: board type)

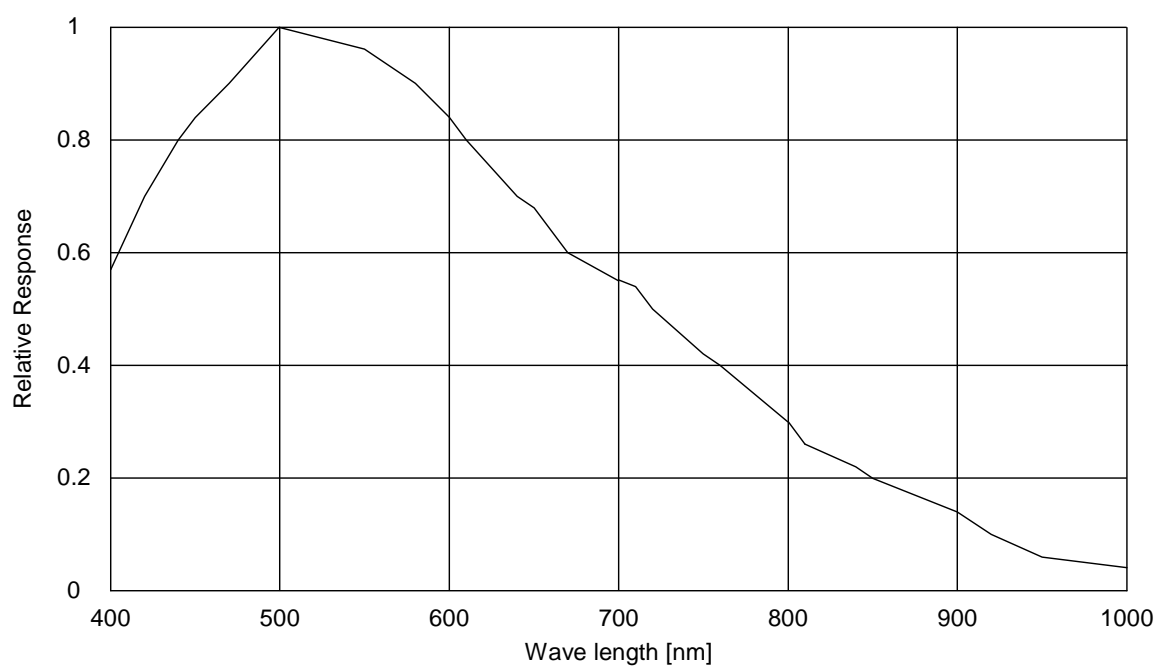
Product			STC-TC33USB-BT	STC-TC33USB-BS	STC-TB33USB-BT	STC-TB33USB-BS
Electronic Specifications	Imager		1/3" interline VGA color progressive CCD: ICX424AQ		1/3" interline VGA monochrome progressive CCD: ICX424AL	
	Total picture elements		692 (H) x 504 (V)			
	Effective picture elements		659 (H) x 494 (V)			
	Chip size		5.79 (H) x 4.89 (V) mm			
	Cell size		7.40 (H) x 7.40 (V) μm			
	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		24.5454 MHz (Normal) / 12.2727 MHz (1/2 clock) / 6.13635 MHz (1/4 clock)			
	Maximum framer rate	Full scanning	59.94 fps (Normal) / 29.97 fps (1/2 clock) / 14.98 fps (1/4 clock)			
		1/2 partial	120.11 fps (Normal) / 60.05 fps (1/2 clock) / 30.02 fps (1/4 clock)			
		1/4 partial	240.22 fps (Normal) / 120.11 fps (1/2 clock) / 60.055 fps (1/4 clock)			
	Resolution		640 (H) x 480 (V) (Full scanning) 640 (H) x 224 (V) (1/2 partial scanning) 640 (H) x 80 (V) (1/4 partial scanning)			
	Minimum scene illumination		2.24 Lux at F1.2		0.08 Lux at F1.2	
	Sync. System		Internal			
	Electronic shutter		Auto / Manual (software selectable)			
		Normal	1/24,545,455 to 1/59,94 seconds			
		1/2 clock	1/12,272,727 to 1/29.97 seconds			
		1/4 clock	1/6,136,364 to 1/14.99 seconds			
	Gain		Auto / Manual (software selectable)			
	Gamma		Manual (software selectable)			
	White balance		Auto / Manual / One shot (software selectable)		-	
	Trigger mode		Free-run / Edge preset trigger / Pulse width trigger / Start & stop trigger (software selectable)			
	Input/output		USB2.0 High speed			
Power	Input voltage	+5 V through USB connector				
	Consumption	Less than 350 mA				
Mechanical Specifications	Dimensions		45 (W) x 45 (H) x ** (D) mm			
	Lens mount		CS mount / fixed lens			
	Interface connector		BM08B-SRSS-TB (JST)			
	Weight		Approximately 45g			
Environmental Specifications	Operational temperature		0 to 40 deg. C			
	Storage temperature		-30 to 65 deg. C			
	RoHS		RoHS compliance			

(Caution)

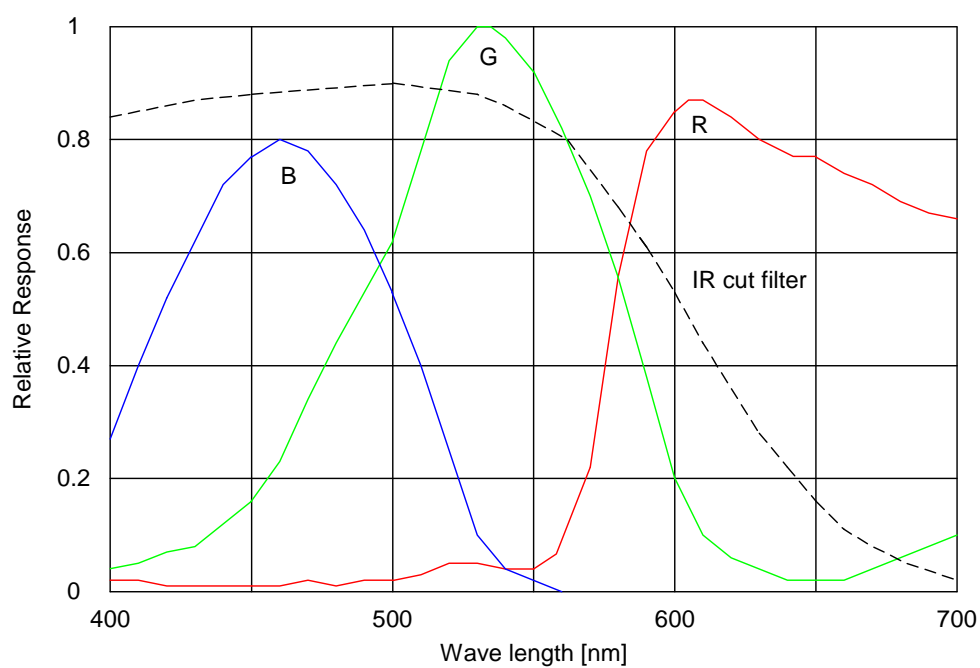
Please DO NOT connects or disconnect any USB devices including USB memory while use this USB camera.
Its possibility to the USB camera DOES NOT recognize after connect or disconnect USB devices.

Spectral Sensitivity Characteristics

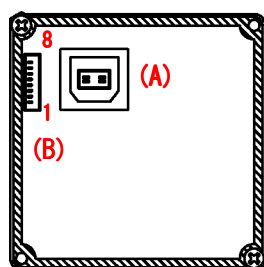
STC-TB33USB-AT/AS/BT/BS



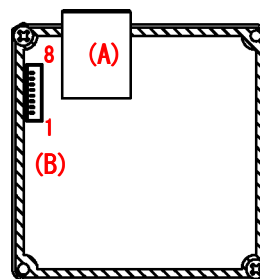
STC-TC33USB-AT/AS/BT/BS (with IR cut filter)



Connector specifications (Board type)



Straight type



Right-angle type

- A USB Connector
Please connect the USB cable to this connector.
- B Input / output signal connector: BM08B-SRSS-TB (JST)
Pin assignment

No.	Signal	I/O
1	+5V DC	
2	GND	
3	N.C.	
4	N.C.	
5	IO0	IN
6	IO1	IN
7	IO2	OUT
8	IO3	OUT

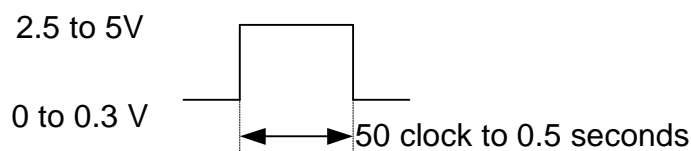
Input / Output Signals specifications (Board type)

A. Input signals specifications

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

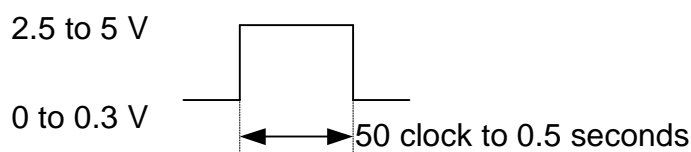
a. Trigger input signal requirements

1. Input signal level: High: 2.5 to 5 V
Low : 0 to 0.3 V
2. Input impedance: 10 k Ohm
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width: 50 clock to 0.5 seconds
Normal clock: 2.03704 useconds to 0.5 seconds
1/2 clock: 4.07409 useconds to 0.5 seconds
1/4 clock: 8.14815 useconds to 0.5 seconds



b. Read out request input signal requirements

1. Input signal level: High: 2.5 to 5 V
Low : 0 to 0.3 V
2. Input impedance: 10 k Ohm
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width: 50 clock to 0.5 seconds
Normal clock: 2.03704 useconds to 0.5 seconds
1/2 clock: 4.07409 useconds to 0.5 seconds
1/4 clock: 8.14815 useconds to 0.5 seconds

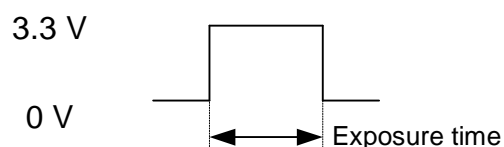


B. Output signals specifications

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.

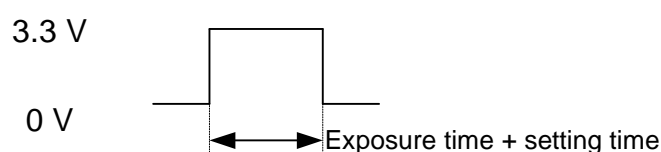
a. Strobe (Exposure time) output signal specifications

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



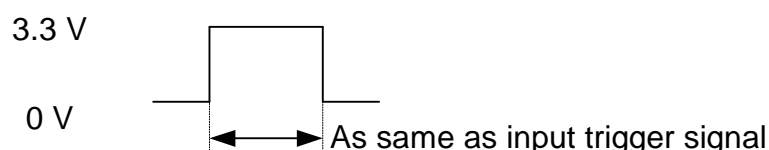
b. Strobe (strobe signal setting) output signal specifications

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



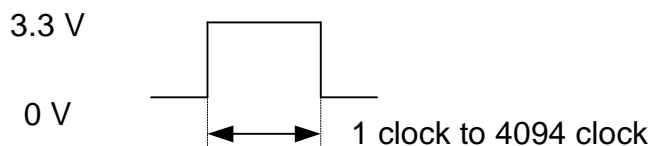
c. Trigger (through) output signal specifications

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



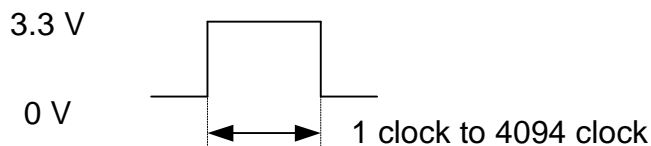
d. Trigger output signal specifications

1. Output signal level: 3.3 Vp-p
2. Output impedance: High-impedance
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width:
1 clock to 4094 clocks (selectable by the software)
Normal clock: 40.7408 nseconds to 166.793 useconds
1/2 clock: 81.4817 nseconds to 333.586 useconds
1/4 clock: 162.963 nseconds to 667.171 useconds



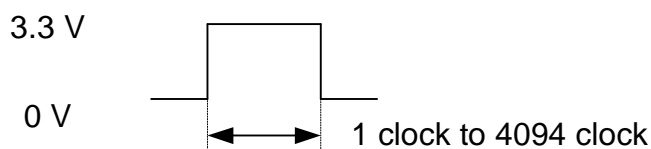
e. End of exposure output signal specifications

1. Output signal level: 3.3 Vp-p
2. Output impedance: High-impedance
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width:
1 clock to 4094 clocks (selectable by the software)
Normal clock: 40.7408 nseconds to 166.793 useconds
1/2 clock: 81.4817 nseconds to 333.586 useconds
1/4 clock: 162.963 nseconds to 667.171 useconds

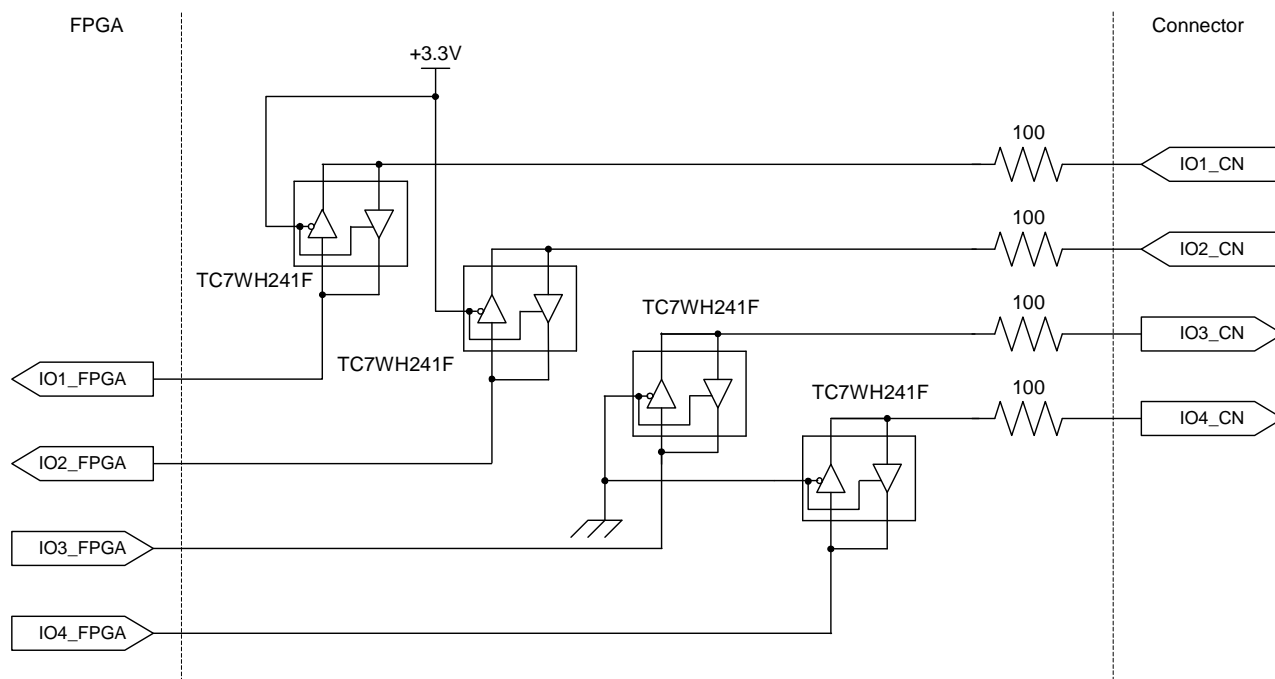


f. End of transfer output signal specifications

1. Output signal level: 3.3 Vp-p
2. Output impedance: High-impedance
3. Pulse polarity: Positive or Negative (selectable by the software)
4. Pulse width:
1 clock to 4094 clocks (selectable by the software)
Normal clock: 40.7408 nseconds to 166.793 useconds
1/2 clock: 81.4817 nseconds to 333.586 useconds
1/4 clock: 162.963 nseconds to 667.171 useconds

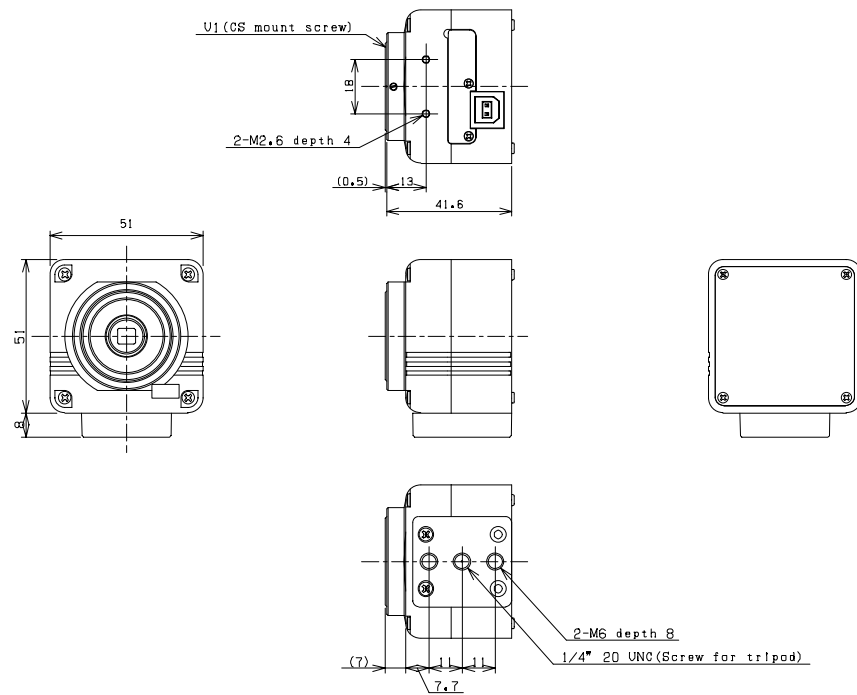


C. IO circuits



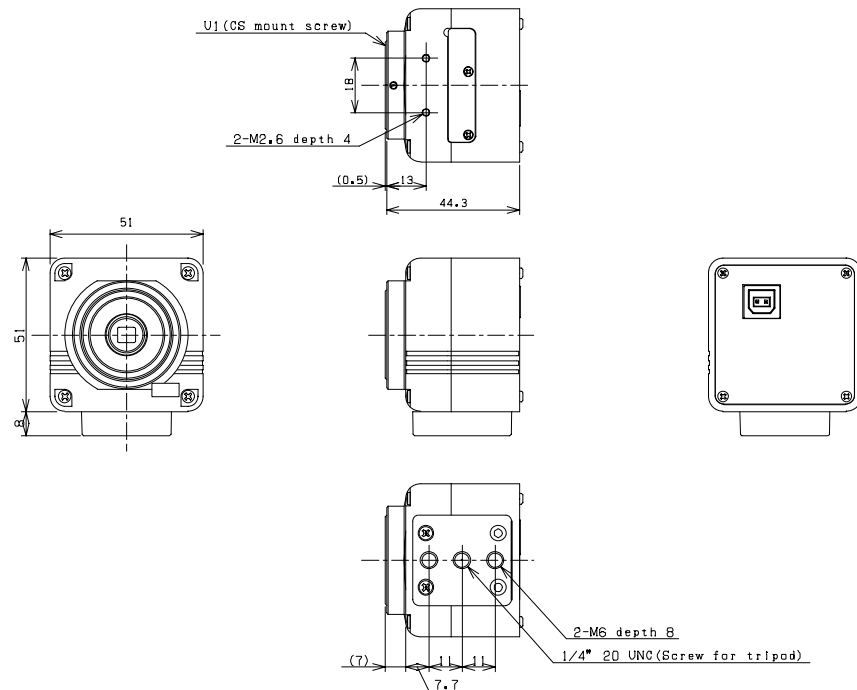
Dimensions

Dimensions (STC-TC33USB-AT: Color / right-angle / case type)



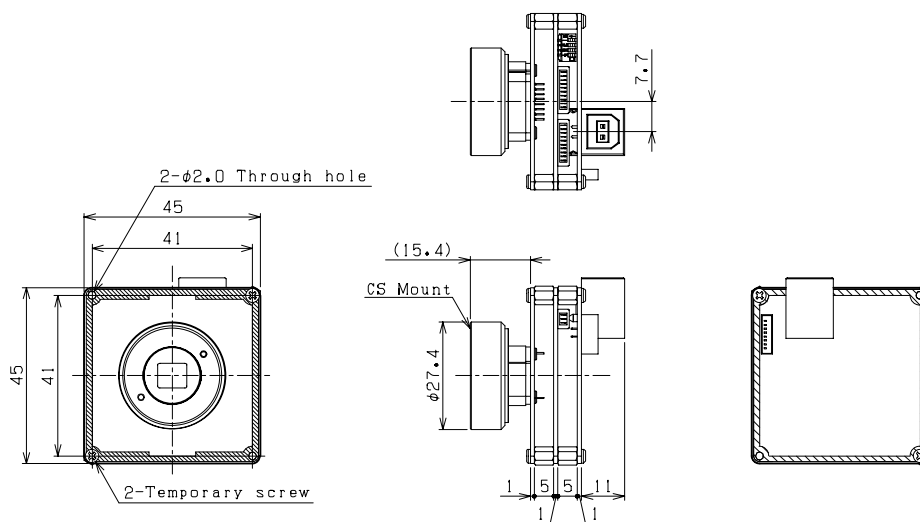
Unit: mm

Dimensions (STC-TC33USB-AS: Color / straight / case type)

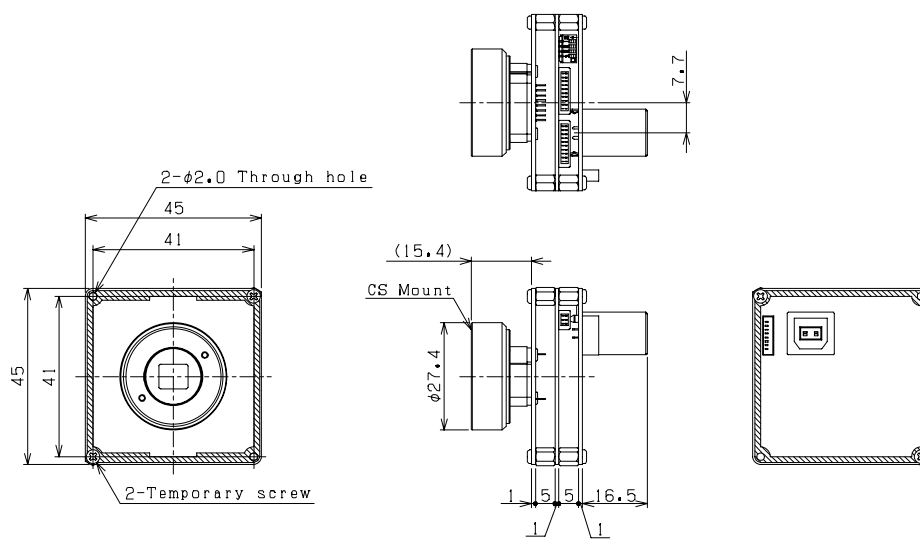


Unit: mm

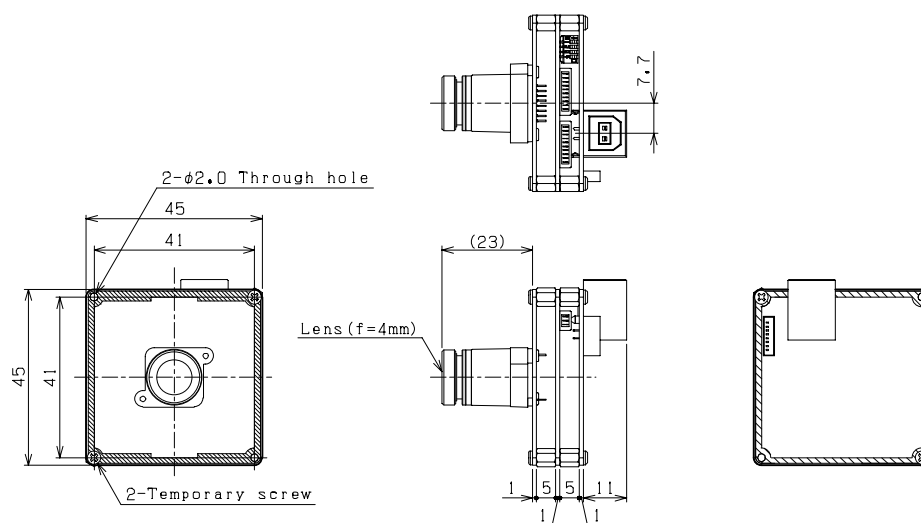
Dimensions (STC-TC33USB-BTCS: Color / right-angle / CS mount / board type)



Dimensions (STC-TC33USB-BSCS: Color / stright / CS mount / board type)

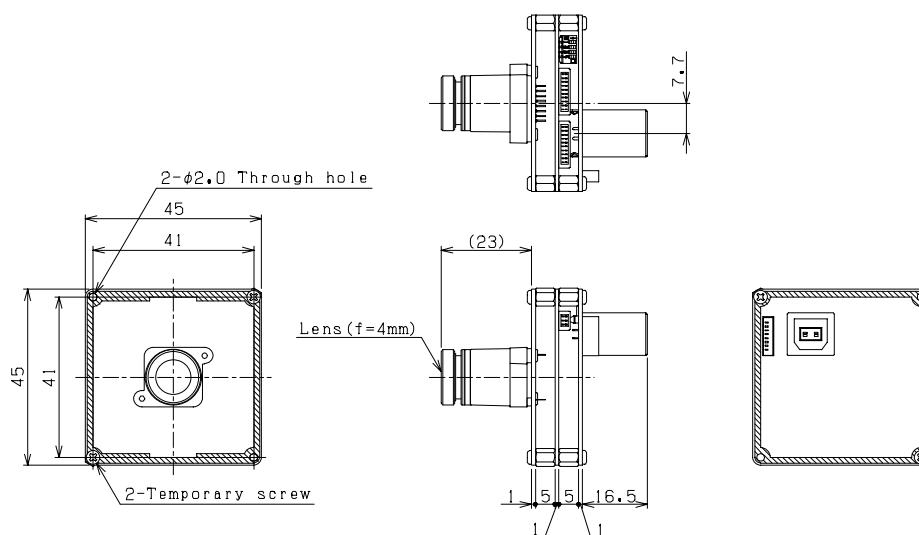


Dimensions (STC-TC33USB-BTL: Color / right-angle / fixed lens / board type)



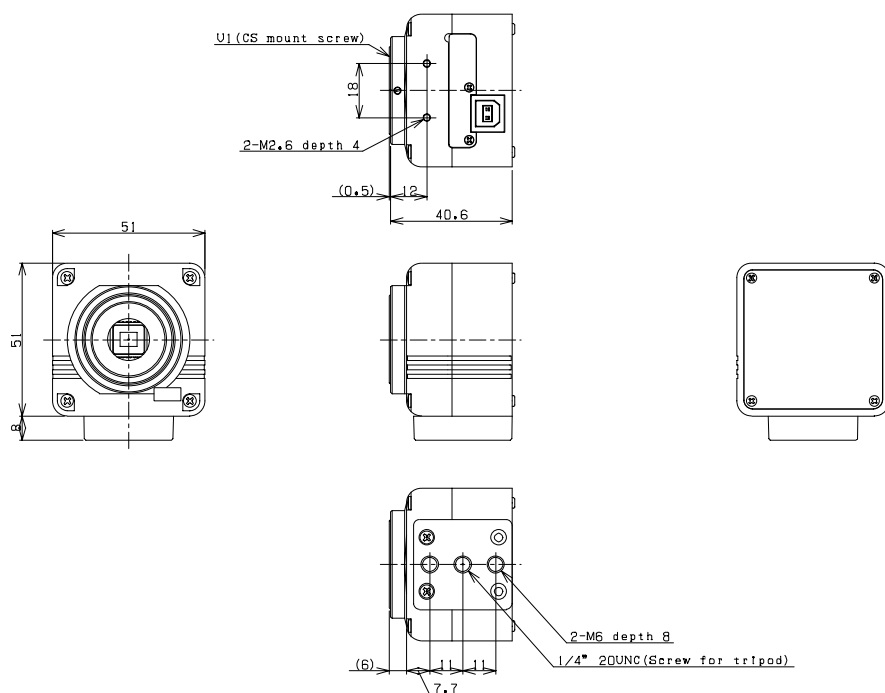
Unit: mm

Dimensions (STC-TC33USB-BSL: Color / straight / fixed lens / board type)



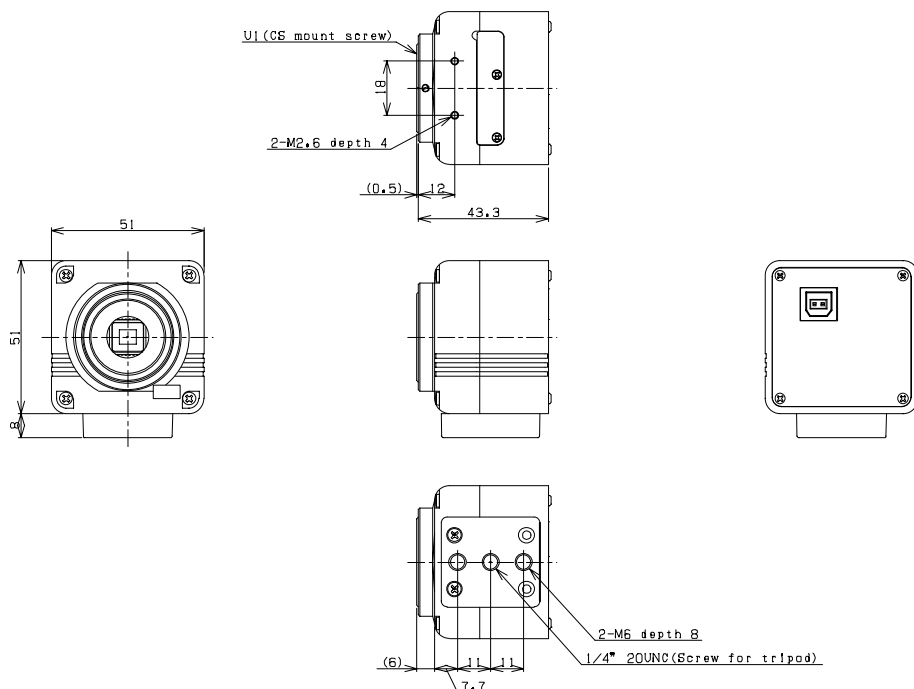
Unit: mm

Dimensions (STC-TB33USB-AT: Monochrome / right-angle / case type)



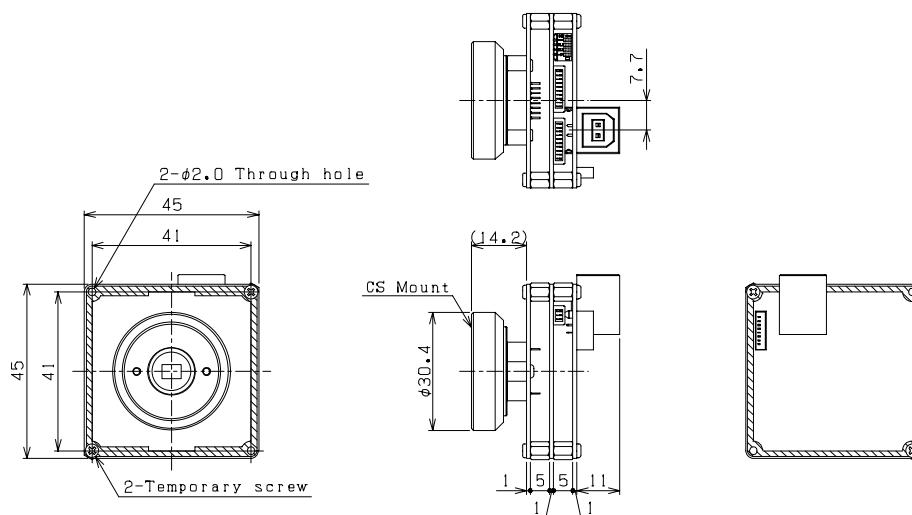
Unit: mm

Dimensions (STC-TB33USB-AS: Monochrome / straight / case type)



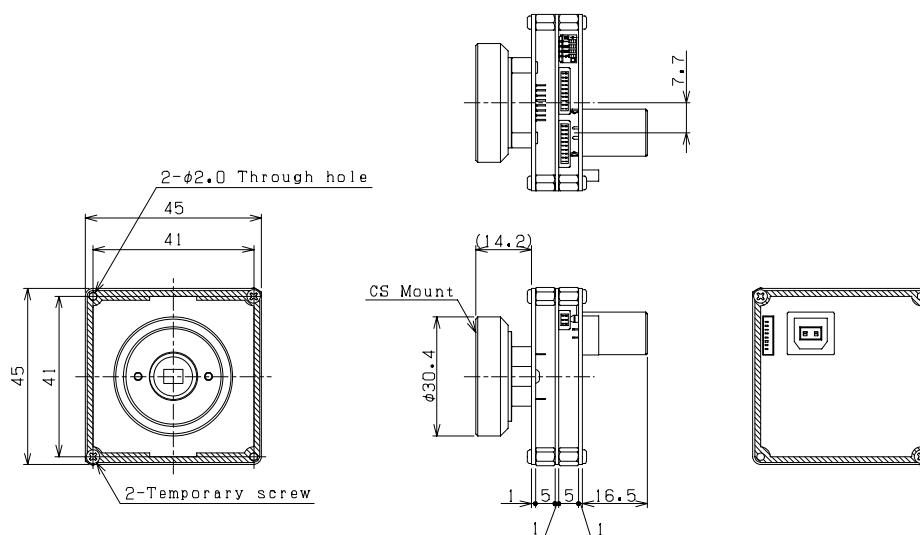
Unit: mm

Dimensions (STC-TB33USB-BTCS: Monochrome / right-angle / CS mount / board type)



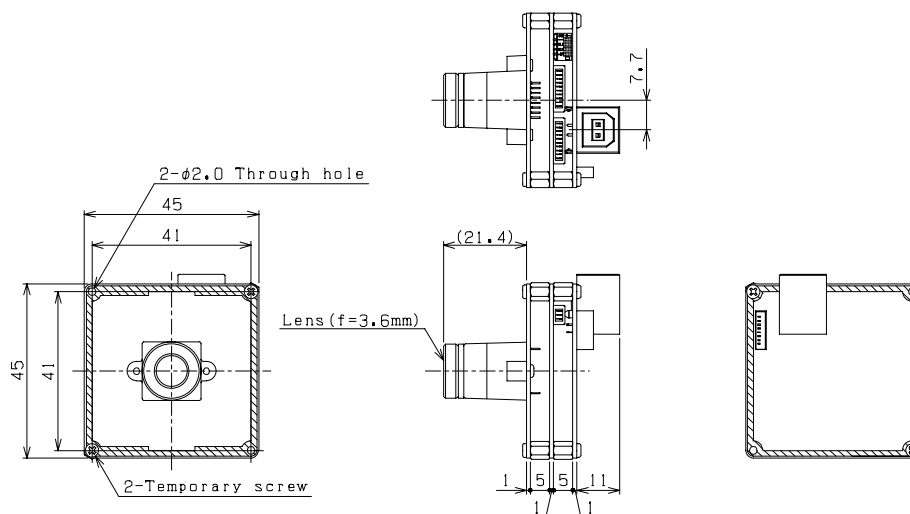
Unit: mm

Dimensions (STC-TB33USB-BSCS: Monochrome / straight / CS mount / board type)



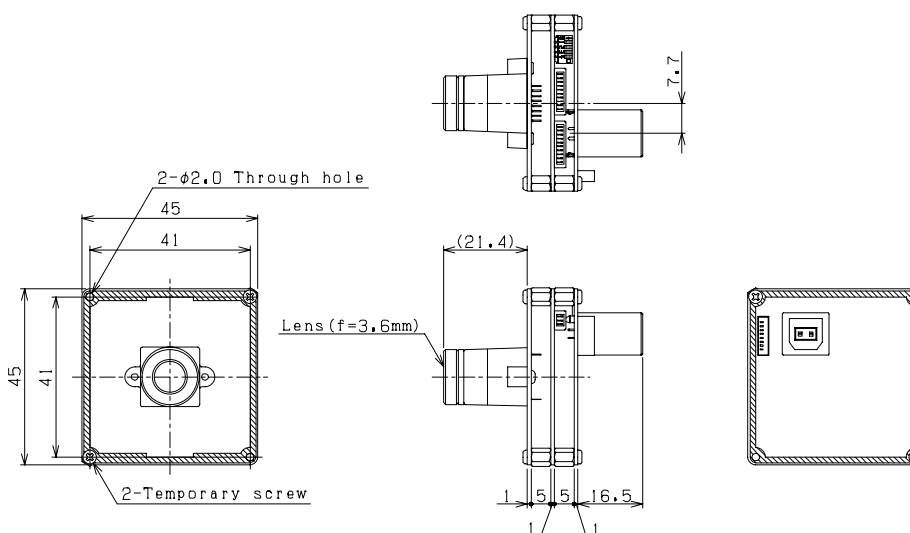
Unit: mm

Dimensions (STC-TB33USB-BTL: Monochrome / right-angle / fixed lens / board type)



Unit: mm

Dimensions (STC-TB33USB-BSL: Monochrome / straight / fixed lens / board type)



Unit: mm

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