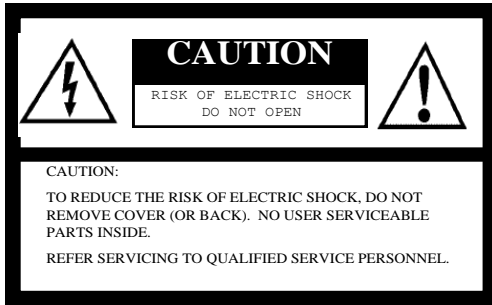




STC-TC33USB-ASH STC-TB33USB-ASH Product Specification

**Hardware & Software Trigger USB 2.0
Color / Monochrome VGA CCD Camera**

Safety Precautions



For U.S.A.

Warning:

This equipment generates and uses radio frequency energy and if not installed and used properly, I.e., in strict accordance with the instruction manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

For Canada

Warning:

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

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 CCD 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
- 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.

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Content

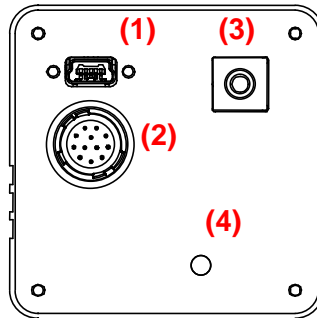
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I. Specifications

A. Electronic Specifications / Mechanical Specifications / Environmental Specifications

Product		STC-TC33USB-ASH	STC-TB33USB-ASH	
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)		
	Active Picture Elements	640 (H) x 480 (V)		
	Chip Size	5.79 (H) x 4.89 (V) mm		
	Cell Size	7.40 (H) x 7.40 (V) μ m		
	Scanning System	Progressive		
	Scanning Methods	Full Scanning, 1/1 Partial Scanning, 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		
	Maximum Frame Rate	Full Scanning	59.94 fps	
		1/2 Partial	120.11 fps	
		1/4 Partial	240.22 fps	
	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)		
	S/N Ratio (Standard Deviation)	\leq 10 digit (Factory Default Gain Setting)		
	Minimum Scene Illumination	2.24 Lux at F1.2	0.08 Lux at F1.2	
	Sync. System	Internal		
	Electronic Shutter	Auto / Manual (Software Selectable)		
	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 (Mini B USB)			
Power	Input Voltage	+5V through USB connector or 12Pin connector		
	Consumption	Less than 350 mA		
Mechanical Specifications	Dimensions	50 (W) x 50 (H) x 35.8 (D) mm		
	Lens Mount	CS Mount		
	Input / Output Connector	12 Pin Connector (Hirose) / 2.5 mm 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 sides of case		
	Weight	Approximately 115 g		
Environmental Specifications	Operational Temperature	Temperature: 0 to 40°C; Relative Humidity: 0 to 85% (No condensation)		
	Storage Temperature	Temperature: -30 to 65°C; Relative Humidity: 0 to 85% (No condensation)		
	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 Compliant		

B. Connector Specifications



1. USB Connector (Mini B USB Connector)

Please connect the USB cable to this connector **only** while using the software trigger function or while using this camera without the trigger function.

If the hardware trigger function is used with the camera including any signal output, please connect the cable to the 12 pin connector.

Note 1: DO NOT connect the USB cable to its connector when the USB signals in the 12 pin connector are in use.

Note 2: It is possible to connect lock together in the cable and case with screws.

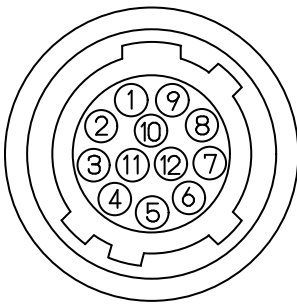
2. 12 Pin Connector: HR10A-10R-12PB (Hirose)

CAUTIONARY NOTE:

- a. When the USB signals in the 12 pin connector are in use
 - 1) Please make sure that the cable which connects to the 12 pin connector is an authorized USB2.0 cable. Do not use a cable that is not certified as a standard USB 2.0 cable.
 - 2) Please DO NOT use the USB signal in the 12 pin connector and the USB connector at the same time. Therefore, DO NOT connect a Mini USB cable to the Mini USB Connector, unless the USB connection of the 12 pin is disabled (Pin 3 and 4).

CAUTIONARY NOTE:

- b. When NOT using the USB signals in the 12pin connector
 - 1) Make sure that the cable which connects to the 12 pin connector does not have a USB signal connection at pin no. 3 and 4.



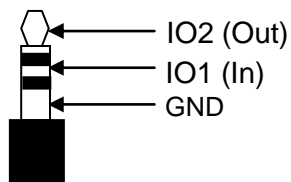
No.	Signal Type	In / Out
1	GND	
2	+5V DC	
3	USB D-	
4	USB D+	
5	IO 0 GND	
6	IO 0	In
7	IO 3	Out
8	IO 3 GND	
9	IO 1 GND	
10	IO 1	In
11	IO 2	Out
12	IO 2 GND	

With the software, please set up pins for input (IO0 / IO1) and output (IO2 / IO3).

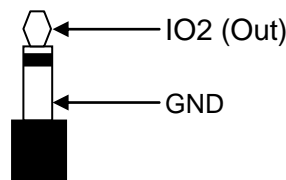
Depending on the jack type, IO1 and IO2 are connected to the Input / Output power connector.

3. Input / Output Connector (2.5 mm 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

4. LED

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

C. Input / Output Signals Specifications

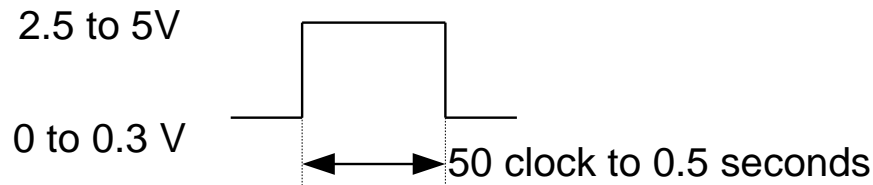
1. Input Signals Specifications

Input signal pins (IO 0 and IO 1) can be configured with “Trigger Input” or “Readout Request” through the software.

a. Trigger Input Signal Requirements

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

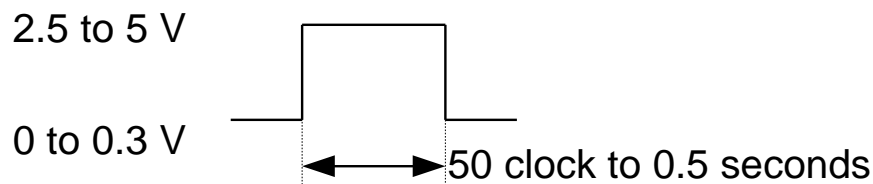
- 1) Input Signal Level: High: 2.5 to 5V
Low: 0 to 0.3 V
- 2) Input Impedance: High-impedance
- 3) Pulse Polarity: Positive or Negative (selectable by software)
- 4) Pulse Width: 50 clock to 0.5 seconds



b. Read out request Input Signal Requirements

In the trigger operation, the image readout can be controlled by this input signal. (It is necessary to setup the trigger mode as the trigger with readout)

- 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

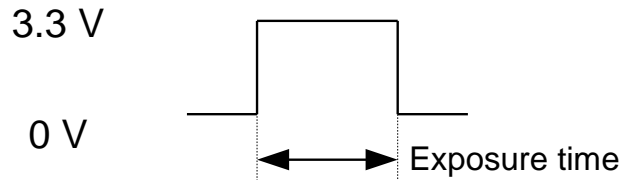


2. Output Signals Specifications

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.

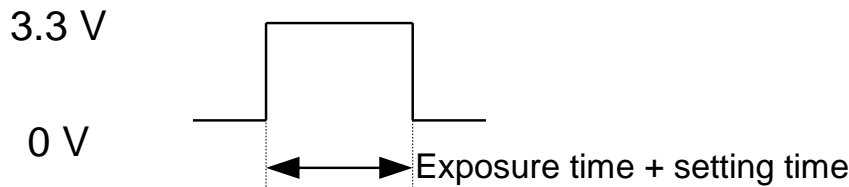
a. Strobe (Exposure Time) output signal specifications

- 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



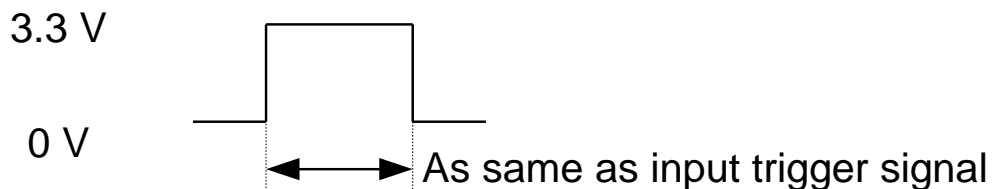
b. Strobe (strobe signal setting) output signal specifications

- 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



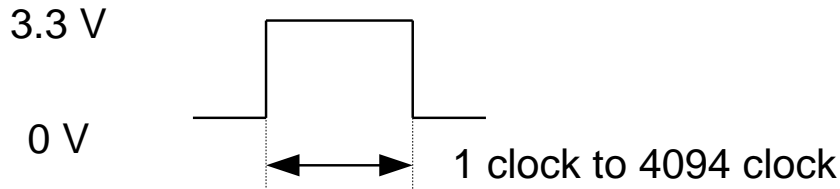
c. Trigger (through) output signal specifications

- 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



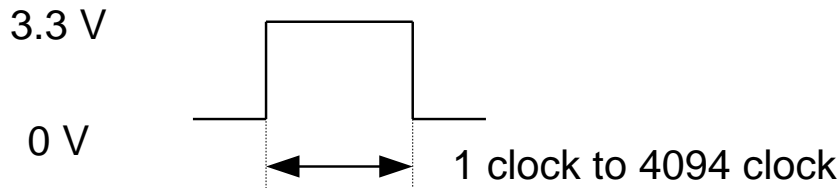
d. Trigger output signal specifications

- 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)



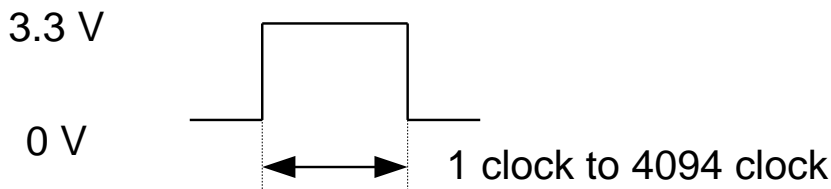
e. End of exposure output signal specifications

- 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)



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)



II. Cautions

A. Trigger Input Signal Cycle Time

Set the trigger signal input cycle time to be more than the **sum** of the exposure time and the video output, otherwise the following phenomenon may occur:

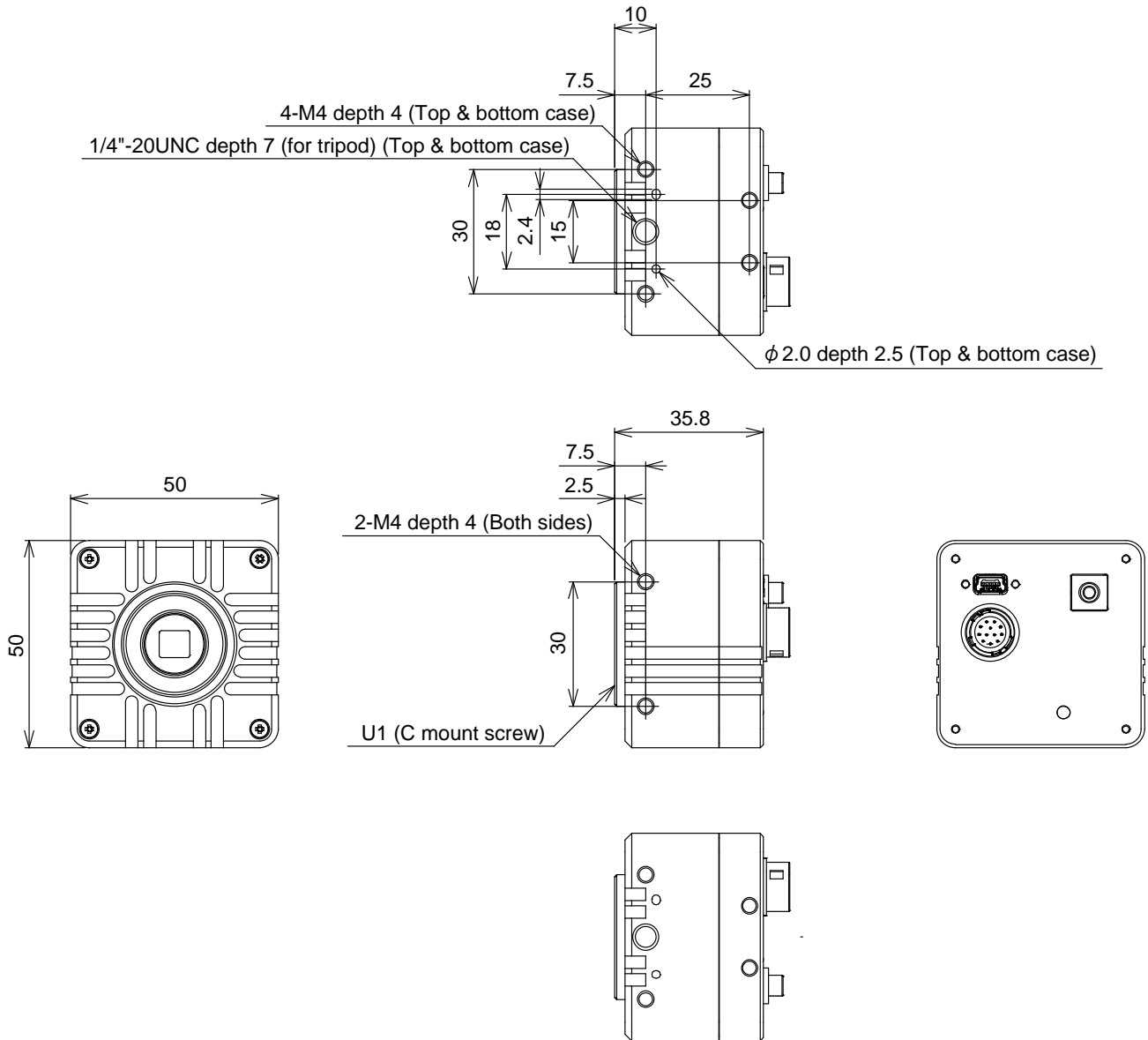
- Double images
- Excess or abnormal noise
- No video image.

B. Status of the Input Signal Pins at Power-up

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

III. Dimensions

Unit: mm



Revisions

Rev	Date	Changes	Note
1.0	2008/11/28	New document	
1.1	2009/03/13	Update Add the caution of the 12pin connector Add the S/N ratio (Standard deviation) Change the weight	
1.2	2009/05/08	Update Electronic specifications (Change the minimum illumination)	
2.0	2009/05/15	Update Change the case	
2.1	2009/08/07	Update Page number	
2.2	2009/08/31	Update Electronic specification (Input /output) (Add "Mini B USB) Input / output signal specification (Add the description for input signal)	
2.3	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)	

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