

B/W CCD Camera CSCV125BC3 **Operation Manual**

Thank you for purchasing our B/W CCD camera. This operation manual contains many important information such as how to use this product correctly and safely. Please read through this manual carefully. After reading, keep this manual by the side of this product for your future reference

TOSHIBA TELI CORPORATION

BEFORE USE - GENERAL SAFETY INSTRUCTIONS

Read the following safety precautions carefully before using this product. These instructions contain valuable information on safe and proper use that will prevent harm and damage to the operator and other persons. Make sure that you fully understand the following details (indications, graphic symbols) before proceeding to the remaining sections in this manual.

OWNER'S RECORD

Please fill in the blank below the model name and product serial number, which is found on bottom chassis of your device. Keen this number for your record

ndication definition Indication	Meaning
• WARNING	This indicates the existence of a hazard that death or catastrophic bodily injury(*1) may result from improper use.
A CAUTION	This indicates the existence of a hazard that bodily injury (*2) or property damage(*3) may result from improper use.

- *1 Catastrophic bodily injury means loss of eyesight, burns (high and low temperature), shock, fracture, poisoning, etc. which leaves a sequela and require hospitalization or prolonged treatment
- *2 Bodily injury means injuries, burns and electric shock which does not require hospitalization or prolonged treatment
- *3 Property damage means extended harm to home, household effects, domesticated animals, and nets

bol definitions
Meaning
This mark indicates a prohibited action that must not be carried out. The actual prohibited action is indicated in the symbol or nearby graphically or described in text.
This mark indicates a mandatory action that must not be carried out. The actual instruction is indicated in the symbol or nearby graphically or described in text.
ecautions
॒ WARNING
Stop operation immediately when any abnormality or defect occurs.
Use during an abnormal condition; such as emitting smoke, burning odors, damage from
dropping invasion of foreign objects, etc. may cause fire and/or electric shock. Be always sure
to disconnect the connection cable from the camera connector at once and contact your dealer.
Do not operate in places with possibility of becoming wet. This may cause fire and/or electric shock.
Do not repair, disassemble and/or modify by yourself.
This may cause fire and/or electric shock. Be always sure to contact your dealer for internal
repair, check and cleaning of the product.
Don't place things or materials on the unit.
Ingress of foreign materials such as metallic things and liquid into the unit may cause a fire or
an electric shock.
Do not put the product in an unstable, slanting and/or vibrated place.
Drop and/or fail of the product may cause injury.
Do not touch the connection cables during a thunderstorm.
This might cause electric shock.
Use the specified power supply.
Use of an unspecified power supply may result in fire or electric shock.

Do not be handled roughly, damaged, fabricated, bent forcefully, pulled, twisted, bundled,

/ CAUTION

placed under heavy objects or heated the connection cable.

Otherwise, fire or electric shock may result.

not transmit a shock to the camera connector

five years).

	Note the following instructions when installing.
_	-Do not wrap the product in an inflammable material, such as cloth.
	-Do not put the product in a narrow space, since the heat generated from the product may be
•	difficult to emanate.
	If you do not follow the above, the heat generated by the product may cause fire.
	Avoid setting in humid, smoky, vaporized or dusty places. A fire or an electric shock may
$\mid \bigcirc \rangle$	occur in such places.
	This may cause fire and/or electric shock.
	Do not put the product in direct sunshine and/or high temperature.
	The temperature inside the product may cause fire.
	Use the specified connection cable.
	Otherwise, a fire or an electric shock may occur.
	Turn OFF the power in the case of connection.
	Turn OFF the power in the case of connection of cable.
	Otherwise, an electric shock or a malfunction may occur.
	Do not expose its camera head to any intensive light (such as direct sunlight).
	Otherwise, its inner image pickup device might get damaged.
	Avoid short-circuiting signal output.
	Otherwise, a malfunction may occur.
	Avoid giving a strong shock against the camera body.
	It might cause a breakdown or damage.
	If your camera is used in a system where its camera connector is subjected to strong repetitive
	shocks, its camera connector is possible to break down. If you intend to use your camera in

such a situation, if possible, bundle and fix a camera cable in the place near the camera, and do

Ask your dealer to perform a periodical check and internal cleaning (approx. once every

Dust inside the product may cause fire and/or trouble. For check and cleaning cost, please

DISCLAIMER (LIMITED WARRANTY)

We disclaim any responsibility and shall be held harmless for any damages or losses incurred by the user in any of the following cases

- Fire, earthquake or any other act of God; acts by third parties; misuse by the user, whether intentional or accidental; use under extreme operating conditions.
- Malfunction or non-function resulting in indirect, additional or consequential damages, including but not limited to loss of expected income and suspension of business activities.
- Incorrect use not in compliance with instructions in this instruction specifications and manual
- Malfunctions resulting from misconnection to other equipment.
- Repairs or modifications made by the user or caused to be made by the user and carried out by an unauthorized third party
- Notwithstanding the foregoing. Teli's liabilities shall not, in any circumstances, exceed the purchase price of the product.
- About the item which does not have a publication in the specifications and manual of this product, it considers as the outside for a guarantee.

RESTRICTION FOR USE

- Should the equipment be used in the following conditions or environments, give consideration to safety neasures and inform us of such usage:

 1. Use of the equipment in the conditions or environment contrary to those specified, or use outdoors.
- 2. Use of the equipment in applications expected to cause potential hazard to people or property, which
- require special safety measures to be adopted. require special safety measures to be adopted.

 This product can be used under diverse operating conditions. Determination of applicability of equipment or devices concerned shall be determined after analysis or testing as necessary by the designer of such equipment or devices, or personnel related to the specifications. Such designer or personnel shall
- assure the performance and safety of the equipment or devices.
 This product is not designed or manufactured to be used for control of equipment directly concerned with human life (*1) or equipment relating to maintenance of public services/functions involving factors of safety (*2). Therefore, the product shall not be used for such applications.
- (*1): Equipment directly concerned with human life refers to.

 Medical equipment such as life-support systems, equipment for operating theaters.

 - Exhaust control equipment for exhaust gases such as toxic fumes or smoke.
 Equipment mandatory to be installed by various laws and regulations such as the Fire Act or Building Standard Law
- Equipment related to the above. (*2): Equipment relating to maintenance of public services/functions involving factors of safety refers
- - Traffic control systems for air transportations, railways, roads, or marine transportation
 - Equipment for nuclear power generation
 Equipment related to the above

CAUTIONS ON USE

- Carefully handle the units
- Do not drop, or give a strong shock or vibration to the camera. This may cause problems. Treat the camera cables carefully to prevent cable problems, such as cable breakdown and loosened connections
- Operating ambient temperature and humidity Do not use the camera in places where temperature and humidity exceed the specifications. Picture
- quality will lower and internal parts may be damaged.

 Be particularly careful when using in places exposed to direct sunlight. When shooting in hot places, depending on the conditions of the object and the camera (for example when the gain is increased), noise in the form of vertical strips or white dots may occur. This is not a malfunction.
- Restriction for the lens combinate
- This camera might form a ghost to image area depending on the combination of a lens and an illumination with this camera. But this is not a failure of this camera. Therefore, please check the combination of the lens and the illumination with this camera when use.
- When mounting a lens, take extra caution so that the lens is not tilted, nor does flaw exist at the lens-mount-screw part. Also check to confirm that no dirt nor other foreign object is put inside Improper mounting might cause the parts to become locked.
- Do not shoot under intense light
- Avoid intense light such as spot light on part of the screen because it may cause blooming or smears. If intense light falls on the screen, vertical stripes may appear on the screen, but this is not a malfunction.
- Do not expose the camera's image-pickup-plane to sunlight or other intense light directly Its inner CCD (charge-coupled device) might be damaged.
- Moire
- When thin stripe patterns are shot, stripe patterns that are not actually there (moire) may appears as interference stripes. This is not a malfunction
- If the camera or the cables are located near something which emit strong magnetism or near somethins which emit strong electric wave, undesirable noise may appear on the screen. In such a case, try to change the location of the camera or the cable wiring.

 Handling of the protection cap
- When the camera is not in use, put a lens-cap onto the camera head for protection of the image-pickup-plane.
- When not using the camera for a longtime Stop supplying power for safety.
- When cleaning the camera
- Always turn off the power and clean with a piece of soft dry cloth. To remove stubborn stains, use a soft cloth soaked in diluted acid-free detergent. Do not use alcohol,
- benzine, thinner, etc. If used, coating and printed letters may be discolored. In case the image-pickup-plane should be settled with fine dust, dirt, or scratched, ask your dealer for
- Wastes of this product should be separated and discarded in compliance with the various national and

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device accept any interference received, including interference that may cause undesired operation.

ment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at

Following information is only for EU-member states

The use of the symbol indicates that this product may not be treated as household waste. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. For more detailed information about the take-back and recycling of this product, please contact your supplier where you purchased the product.



"This symbol is applicable for EU member states only"

1. PRODUCT DESCRIPTION

CSCV125BC3 is an integrated type B/W CCD camera with a VGA format all-pixel-data readout CCD. The model is suited for high-resolution image processing use. Its compact, light-weight body is ideal for

2. FEATURES

(1) quadruple-speed reading

CSCV125BC3 reads image data 4 times faster than the conventional CCD camera

(2) All-pixel reading

The all-pixel reading system allows the CSCV125BC3 to read all pixels in just 1/125 second. CSCV125BC3 is equipped with a full-frame shutter that allows all-pixel reading even during shutter operations.
(3) Full-frame shutter

Since all pixels are output even by a random trigger shutter operation, high resolution can be achieved, without deteriorating the vertical resolution.

(4) Tetragonal lattice layout

The tetragonal lattice layout of CCD pixels facilitates computation for image processing.

(5) Camera Link interface (power supply type)
By using a Camera Link-capable frame grabber board to which power can be supplied, high-speed transfer of captured images to a PC as well as various types of camera control from the PC are allowed. Power can also be supplied to the camera with only one cable.

(6) Random trigger shutter function

CSCV125BC3 is equipped with a random trigger shutter, which starts exposure synchronized with external trigger signals. Fast-moving objects can thus be captured in place, which ensures accurate image processing.

- (7) Restart-Reset Images can be shot and fetched at arbitrary timing based on external VD signal input.
- (8) Partial scan

Further speed-up is possible because ranges except the range of the image output that the user set are not read

(9) Ultra-compact and lightweight main unit

The space-saving ultra-compact and lightweight camera has excellent resistance against vibration and

impact. (10) RoHS compliant

CSCV125BC3 is complied with EU RoHS.

3. CONFIGURATION

Warnings & Cautions (A4 paper)

(1)Camera-mounting kit

*Contact your dealer / distributor for details of option units *Application software is not supplied as a standard item.

5. INTERFACE

4. OPTION PARTS

video output/controlling/power supply connector: (Camera Link Base Configuration) CAMERA LINK Outputs video signals and VALID, based on the camera link standard LVDS.

This connector is connected to the frame grabber board, image processing device and others

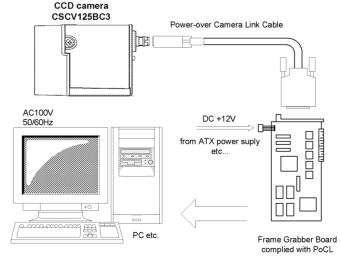
And it is possible to supply the power to the camera, by using an exclusive Camera Link cable and frame grabber board complied with Power over Camera Link standard

Connector model: HDR-EC26FDTG2+ (Manufactured by Honda Connectors)

Pin#	I/O	Signal name	Pin#	I/O	Signal name
1	-	+12V	14	-	GND
2	0	TxOUT0-	15	O	Tx OUT0+
3	О	TxOUT1-	16	О	Tx OUT1+
4	0	TxOUT2-	17	О	Tx OUT2+
5	0	TxCLK OUT-	18	О	Tx CLK OUT+
6	0	TxOUT3-	19	О	Tx OUT3+
7	I	SerTC(RxD)+	20	I	SerTC(RxD)-
8	О	SerTFG(TxD)-	21	О	SerTFG(TxD)+
9	I	CC1(TRIG/VD)-	22	I	CC1(TRIG/VD)+
10	I	CC2+	23	I	CC2-
11	I	CC3-	24	I	CC3+
12	I	CC4+	25	I	CC4-
13	-	GND	26	-	+12V

^{*}Please confirm the power supply of the camera cuts when the connector is connected or pulls out. It causes

6. CONNECTION EXAMPLES



7. FUNCTIONS

By accessing the camera register published on the camera link I/F, you can control/set each function. Since access to the camera register is performed via the frame grabber board, the controlling and setting methods differ depending on the frame grabber board you use. For details, refer to the instruction manual of the relevant frame grabber board or contact our sales representative. This instruction manual describes the specifications in the case where the camera register is directly

connected by serial transmission over the camera link interface For details of the control and setting of functions, refer to "Interface Specification". Please ask your

distributor or a sales representative about "Interface Specification

7-1. Explanation of Each Function

Address: 0x90, Bit: 0, Value:0 to 1

(1) Readout mode Video is output from the camera link connector. The output video can be grabbed by the frame grabber board. The frame rate and resolution of output images that this model supports are as follows:

 All pixel read out 126.2 fps (maximum frame rate) / 648(H)×494(V)

126.2 fps to 395.8fps (depend on Video output width) Partial Scan

Horizontal resolution: 648 (fixed)

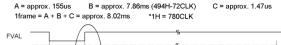
Partial Scan Video Width: 120 to 494

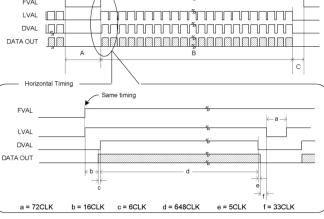
Partial Scan Video Start Line: 0 to 374

(1-1) All pixel read out Address: 0x90, Bit: 0, Value: 0

As all pixels are read out in approx. 1/126.2s, you will get images with the higher V resolution (you have to change the shutter speed to 1/126.2s or shorter).

Vertical Timing (1/125sec Shutter Speed on all Normal Scan mode)

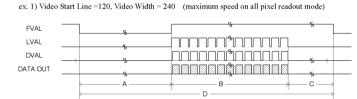


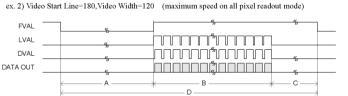


(1-2) Partial Scan Address: 0x90, Bit: 0, Value: 1

Ranges except the range of the image output that the user so Partial scan setting procedure is following:

- Video start line Address: 0xC4, Bit: 0 to 8, Value: 0 to 374 • Video output width Address: 0xC8, Bit: 0 to 8, Value: 120 to 494
- . If you want maximum frame rate, you must shorten the shutter speed





A = approx. 247us B = approx. 3.82ms (240H-72CLK) C = approx. 198us D = approx. 4.26ms

(2) Setup Addition Value Address: 0x70, Bit: 0 to 7, Value: 0 to 255 You can add the offset level to the reference black leve

Setup Addition (calculated value)	Setting Range (a)	Calculation formula	
-50 to +255 [digit]	0x00 to 0x131	+ a [digit]	
(10bit)	(0 to 305)	(10bit)	
-12 to +63 [digit]	0x00 to 0x131	+ a/4 [digit]	
(8bit)	(0 to 305)	(8bit)	

Address: 0x76, Bit: 0 to 6, Value:0 to 120 (3) Gain You can set Gain (video gain

Gain (calculated value)	Setting Range (b)	Calculation formula
-6 to approx. +18dI	3 0x00 to 0xF0 (0 to 240)	0.1dB × b [dB]

Notes on gain setting:

Setting a too high gain value can increase noise. When you adjust the brightness of the shot image, you are responsible for finally confirming the image quality by using the entire machine/equipment.

(4) Electronic shutter

A = approx. 335us

The exposure time has the format (numerator/denominator).

in the pickup device or CCD Camera itself

The numerator and denominator can be set separately in respective registers. 1 frame length depends on the shutter speed.

Address: 0xA4, Bit: 0 to 7, Value: 1 to 255 Address: 0xA0, Bit: 0 to 14, Value: 1 to 100000

Denominator *When you set the exposure time longer than approximately 1 second, white spots and the unevenness in highlight portion might occasionally be observed on screen. This phenomenon is due to the characteristics of the CCD image-pickup device, and do not reflect performance error

D3004606B

D = approx. 2.53ms

(5) Random trigger shutter Address: 0x91, Bit: 0, Value:1

In the random trigger shutter mode, you can shoot and grab an image at an arbitrary timing by trigger signal input from the external.

• External trigger signals can be input from the camera link I/F CC1.

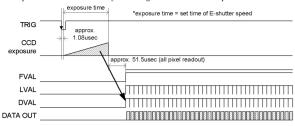
If polarity is set to negative polarity, exposure starts at the falling edge of the trigger.

Address: 0x93, Bit: 0, Value:0 is Negative Polarity, Value:1 is Positive Polarity

• The random trigger shutter of this camera can be operated in two types of mode: fixed mode and pulse width mode. How to determine the exposure time differs depending on the mode.

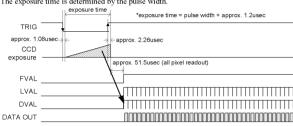
(5-1) Fixed mode Address: 0x92, Bit: 0, Value: 0

The exposure time is determined by the setting value for the shutter speed.



(5-2) Pulse width mode Address: 0x92, Bit: 0, Value: 1

The exposure time is determined by the pulse width.

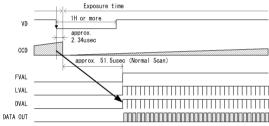


(6) Restart Reset Address: 0x91, Bit: 0 to 1, Value:2

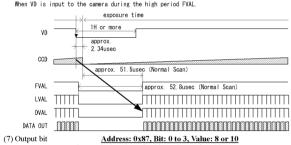
The restart / reset function is available with the ext. VD signal. You can get an arbitrary slower shutter speed than normal shutter and random trigger shutter.

- External VD signals can be input from the camera link I/F CC1.
- If polarity is set to negative polarity, exposure starts at the falling edge of the trigger
- Address: 0x93, Bit: 0, Value:0 is Negative Polarity, Value:1 is Positive Polarity • The shutter speed (exposure time) is determined by ext. VD signal interval.

When VD is input the camera during the low period FVAL



When VD is input to the camera during the high period FVAL



You can set gray scale per pixel. Value:8 is 8bit, Value:10 is 10bit

7-2. Command Communication Protocol

The command communication protocol is the teli standard method (method in which parameters are set in the registers in the camera). In command send/receive operation, hexadecimal address and data are converted to ASCII data

All ASCII alphabetic characters used are uppercase characters.

(1) Writing to the register

To write data in a register, send a command, as follows. (Address' max-length is 2 bytes, and Data's max-length is 8 bytes)

| Midress | Midress | ... | Data | Da

For example, to write data 0x38 to address 0x76, send a command, as follows

(0x37) (0x36) (0x2C) (0x33) (0x38) (0x38) (0x0D)

The camera responds to the write command with No Error (ACK) or Error (NAK), as follows: No Error (ACK):

[ACK] (0x00) (0x00) Error (NAK): (0x15) (0x00)

(2) Reading the register

To read data from a register, send ', (comma)', 'R', 'Q' and [CR] code following the address. For example, to read data in address 0x91, send a command, as follo

 $\begin{array}{c|c} \hline & g' & 1' & R' \\ \hline & (0x39) & (0x31) & (0x20) & (0x52) & (0x51) & (0x00) \\ \hline \end{array}$

The camera responds to the read request, as follows (Data's max-length is 8 bytes):

Actually, the camera responds to the read request as minimum data length: For example, to read data 0x10 to address 0x91, the camera responds as follows:



7-2. Error Status

If NAK is returned to the sent command, you can obtain detailed information on the error by accessing the status register (Address:0x69) and the expansion status register (Address:0x6A).

Error type	Status [0x69]	Expansion Status [0x6A]	tatus Contents of error Status Contents of		Contents of error	
No error	0x00					
		0x01	The command format is illegal.	0x09	The data is illegal.	
		0x04	The command is uncertain.	0x0A	The small letter was input to the command.	
Protocol	0x03	0x05 0x06	There is no comma. There is no addressing.	0x0B	The character and the sign were input to the address	
		0x07	There is no data specification.			
		0x08	The address is illegal.	0x0C	The error is uncertain.	
		0x01	The address is invalid.	0x06	Reading is impossible.	
Register	0x04	0x02	The data is invalid. The data has exceeded the	0x07	Writing is impossible.	
		0x03	register.	0x0C	The error is uncertain.	
		0x01	The preservation data is none.	0x04	The bank number is outside the range.	
Memory bank	0x0A	0x02	It failed in reading.		_	
		0x03	It failed in initialization.	0x05	The error is uncertain.	
Digital process	0x0B	0x01	The setup is outside a set range.	0x06	The number of output bits is outside a set range.	
		0x03	The gain is outside a set range.			
		0x05	The output control is outside a set range.	0x19	The error is uncertain.	
Scan mode	0x0C	0x01	The scan mode is outside a set range.	0x02	The error is uncertain.	
Shutter mode	0x0D	0x01	The shutter mode is outside a set range.	0x05	The numerator of electronic shutter is outside a set range.	
		0x02	The random trigger shutter mode is outside a set range.	0x06	The electronic shutter is outside a set range.	
		0x03	The polarity of trigger is outside a set range.			
		0x04	The denominator of electronic shutter is			
			outside a set range.	0x15	The error is uncertain.	
Partial Scan	0x0F	0x01	It failed in the update.	0x09	The partial scan update is outside a set range.	
		0x04	The video start line is outside a set range.	0x0A	The total of the video start line and video output width	
		0x06	The video output width is outside a set range.	VA-0/1	has overflowed.	
		0x07	It is possible to set it only in the partial scan			
			mode.	0x0F	The error is uncertain.	

8. SPECIFICATIONS

[Basic specification] all-pixel-data-readout interline transfer CCD

692(H) × 504(V) Total pixels Active pixel 659(H) v 494(V) Video output pixels 648(H) × 494(V) 4.88mm(H) × 3.66mm(V) Scanning area (= Equivalent to 1/3" type CCD size) 7.40µm(H) × 7.40µm(V) Unit cell size (2) Scan method Non-interlace

(3) Synchronization method Internal synchronization (4) Aspect ratio (5) Video Output Compliant with CameraLink standard version 1.2

10 / 8 bit switching (factory default: 8bit) Readout mode All pixel readout (default): 648(H) × 494(V) [126fps]

648(H) × 120(V) [395fps] (MAX) 648(H) × 240(V) [234fps] (MAX) (ex.2) m video output lines: 120, minimum step: 1 line

(6) Sensitivity 850 lx, F5.6 (7) Minimum subject illumi 8lx F1.4 (GAIN:10dB, video level 50 %) -6 to Approx. +18 dB [factory default:0dB] (8) Gain

(9) Setup Level (factory default) 10 ± 5 [digit] (8bit) (addition value) -12 to +63 [digit] (8bit) (10) Gamma correction

(11) Power supply voltage $DC12V \pm 10\% \ (ripple \ 50mV_{P\text{-}P} \ or \ less)$ (12) Power consumption 1.83W (MAX)

[Electrical shutter specification

Partial Scan (ex.1)

(1) Shutter Speed 8/1 to 1/100,000 [sec]

(2) Random Trigger Shutter ON / OFF switching (factory default: OFF)
The exposure time depends on the shutter speed setting Fixed mode Pulse width mode The exposure time depends on the pulse width ON / OFF switching (factory default: OFF) (3) Restart-Reset The exposure time depends on the period of Ext. VD

[Internal sync signal specification]

(1) Driving frequency 49.090902 MHz (1 CLK) ±100ppm

(2) Horizontal sync frequency $62.937 \, \text{kHz} \, (1H = 780 \, \text{CLK})$ 126.26 Hz (maximum frequency on all pixel readout mode)

(3) Vertical sync frequency

[Input signal specification]

Camera Link interface input: CC1

Positive/Negative switching (factory default: negative) Pulse width 2us (MIN)

Notes of trigger mode or Restart Reset mode.

When the trigger signal(TRIG/VD) is noisy, there is a possibility of causing the malfunction. In this case, please input a proper trigger signal(TRIG/VD).

(1) Lens mount

*Depending on the lens you use the performance of the camera may not be brought out fully due to the deterioration in resolution and brightness in the peripheral area, occurrence of the ghost, aberration and others. When you check the combination between the lens and camera, be sure to use the lens you

*Install a lens, its dimension of protrusion from flange is equal to or less than 7.9 mm. If a lens does not stand to this condition, it might not be installed to this camera.

(2) Flange back 17.526 mm

(3) Dimensions 29mm(W) × 29mm(H) × 26.5mm(D)

* Not including protrusion (4) Mass

(5) Camera body grounding:

Approx. 40g Conductive between circuit GND and camera body

0°C to +40°C (1) Performance assurance Temperature:

10% to 90% (no condensation Humidity: (2) Operation guaranteed Temperature: -5°C to +45°C 90% or less (no cond (3) Storage Temperature: -20°C to +60°C

95% or less (no con Humidity:

(4) EMC conditions (Electro-Magnetic Compatibility)

EMI (Electro-Magnetic Interference): EN61000-6-4 (Conformity) EMS (Electro-Magnetic Susceptibility): EN61000-6-2 (Conformity)

FCC Part 15 Subpart B class A (Conformity)

*About the conformity of EMC standard of this machine, it has guaranteed in the conditions combined with our system condition. When used combined parts other than specification of our company, I ask you to have final EMC conformity checked of a visitor with a machine and the whole equipment.

9600 bps (fixed) (1) Communication speed

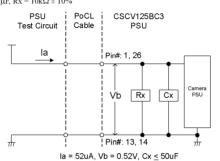
(2) Start bit (3) Data bit

(4) Parity (5) Stop bi

(6) Handshake

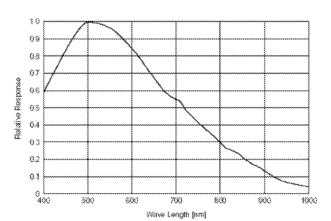
[Camera PSU input impedance

 $Ci \le 57\mu F$, $Rx = 10k\Omega \pm 10\%$



[Typical Spectral Response]

*The lens characteristics and light source characteristics are not reflected in table.



9. BEFORE DETERMINING IT AS BEING A FAULT

If the trouble persists, contact your distributor or our sales representatives

Phenomena	Check item			
Cannot tum on power	Check the connecttion of the CameraLink(PoCL) frame grabber board and CameraLink			
Shooting image is not	Check the connecttion of the CameraLink(PoCL) frame grabber board and CameraLink			
display ed	Check that the camera register are correct.			
	Check that lens aperture is not closed.			
	Check that the CameraLink(PoCL) grabber board is installed and set up correctly.			
Frame drop pecurs on	If more than one boards are installed in the PCI slots, remove the other boards.			
shooting image				
Shooting image	Check that the camera is not in the random trigger mode.			
remains still	Check the setting of the CameraLink(PoCL) grabber board.			
	Check the connecttion of the CameraLink(PoCL) frame grabber board and CameraLink			
Cannot control camera	Check the connection of the CameraLink cable.			
from PC	Check that the CameraLink(PoCL) grabber board is installed and set up correctly.			

10. Guarantee

The term of guarantee is one year after the product delivery. If by any chance trouble by responsibility of our company occurs before an above period. TELI repairs it free

-During terms of a guarantee, when the trouble cause is the case of below, TELI charges the repair costs

(1) Troubles and the damages that causes by misuse, unsuitable repair of remodeling

(2) Distribution hazards like drops and vibrations after purchase. Troubles and damages by transportation (3) Troubles and damages by fire, natural calamity (earthquake, storm and flood damage, thunderbolt),

damages from salty breeze, gas harm, abnormal voltage,

11. Repair

(1) Condition for repair

Basically, has to return it to our company when the user requests us to repair product.

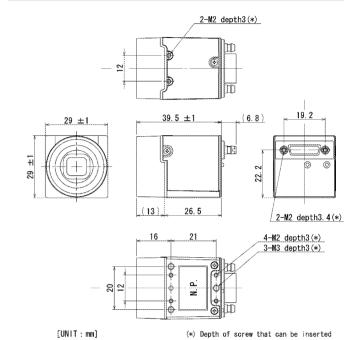
Beside that, customer should pay these expenses (travel expenses, camera disassembly technology costs) of both customer and end user. Also customer should pay in themselves costs for return camera to us.

(2) The period of repairing product - Repair free of charge

Refer to Clause 10.

- Charged repair Basically, repair period is 7 years after the last production end of products

12. EXTERNAL VIEW DRAWING





环保使用期限标识,是根据电子信息产品污染控制管理办法以及,电子 信息产品污染控制标识要求(SJ/T11364-2006)、电子信息产品环保使用 期限通则,制定的适用于中国境内销售的电子信息产品的标识。 电子信息产品只要按照安全及使用说明内容,正常使用情况下,从生产 引期算起,在此期限内,产品中含有的有毒有害物质不致发生外泄或突 变,不致对环境治成严重污染或对其人身、财产治成严重损害。

"品正常使用后,要废弃在环保使用年限内或者刚到年限的产品时,请 根据国家标准采取适当的方法进行处置。

另外,此期限不同于质量/功能的保证期限。

The Mark and Information are applicable for People's Republic of hina only.

<产品中有毒有害物质或元素的名称及含量>

	有毒有害物质或元素					
部件名称	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cx(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
1-1-11			_	((1(1)))	((dd1)	(FDDE)

〇:表示该有毒有害物质在该部件所有均质材料中的含量均在电子信息产品中有毒有害物质 的限量要求标准规定的限量要求(ST/T11363-2006)以下

This information is applicable for People's Republic of China only.

表示该有毒有害物质至少在该部件的某一均质材料中的含量超出电子信息产品中有毒有 害物质的限量要求标准规定的限量要求(ST/T11363-2006)

有关再利用的信息(包装物)

Information on recycling of wrapping composition



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The design and specification is subject to change without notice

