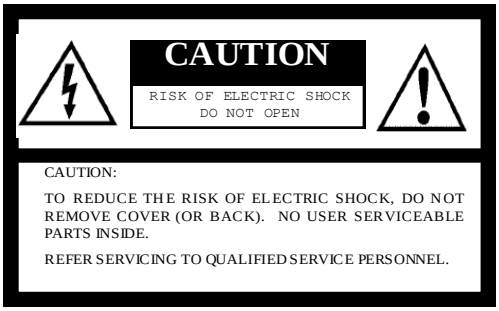
SENTECH

STC-N63
STC-P63
Product Specifications

Compact Color CCD Cameras

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.

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.

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 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 he 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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Contents

I. Features

- Compact high performance color camera
  - Simple one board configuration for the base module.
  - Two-board configuration models for additional robust functions.
  - Board Size: 32mm x 32mm
  - Case Size: 36mm x 42.5mm x 54.5mm
- Push-To-Set White Balance function and Auto White Balance
- Mirror Image selectable
- User Programmable DSP software
- Both board types and case types available

II. Specifications

Signal Format	NTSC (N63)	PAL (P63)
Image Sensor	1/3 inch Interline CCD NTSC: ICX408AK	PAL: ICX409AK
Effective Picture Element	NTSC: 768(H) x 494(V)	PAL: 752(H) x 494(V)
Chip Size	NTSC: 5.59mm(H) x 4.69mm(V)	PAL: 5.59mm(H) x 4.68mm(V)
Unit Cell Size	NTSC: 6.35µm(H) x 7.4µm(V)	PAL: 6.50µm(H) x 6.25µm(V)
Pixel Clock Frequency	NTSC: 14.318MHz	PAL: 14.187MHz
Horizontal Frequency	NTSC: 15.734KHz	PAL: 15.625KHz
Vertical Frequency	NTSC: 59.94Hz	PAL: 50.00Hz
Scanning Systems	2:1 Interlace	
Video Output Level	1.0Vp-p / 75Ω	
Horizontal Resolution	480TV Lines	
Minimum Scene Illumination	0.17 Lux with F1.2 lens	
S/N Ratio	More than 48dB	
γ correction	0.45	
White Balance	**EL, BJ, BT**: AWB (Auto White Balance) mode only **L, CS, BCS**: AWB and White Balance lock modes **CL, CCS, CJ, CT**: AWB, White Balance lock, PWB modes	
Aperture Correction	ON	
AGC	ON	
Pixel Blemish Correction	ON	
Flicker Compensation	ON/OFF (DIP SW selectable)	
Mirror Image	ON/OFF (DIP SW selectable)	
Back Light Compensation	ON/OFF (DIP SW selectable)	
Shutter Functions	1/60 (NTSC) or 1/50 (PAL), Electronic Iris (DIP SW selectable)	
Electronic Iris	1/60 – 1/100,000 sec (**NTSC**)	1/50 – 1/100,000 sec (**PAL**)
External Sync. Method	L, CS, BCS, BJ, BT, CJ, CT: None CL, CCS: HD/VD and VS EL: VS	
DSP Communication	12C (Requires USB adapter Jig)	
Auto Iris Lens Driver	DC Drive (BCS, BJ, BT Type Only)	
Power Input Voltage	8.0 – 13.2Vdc (L, CS Type) 10.5 – 14.0Vdc (BCS, CL, CCS, EL, BJ, BT, CJ, CT Type)	
Power Consumption	130mA at 12Vdc (L, CS Type) 150mA at 12Vdc (BCS, EL, BJ, BT Type) 180mA at 12Vdc (CL, CCS, CJ, CT Type)	
Dimensions	Board Type: 32mm(W) x 32mm(H) Case Type: 35mm(W) x 42.5mm(H) x 54.5(D)	

III. Product Variations

The following chart shows the basic functions of all the products of the series.
All N63 series models are NTSC and all P63 series models are PAL models.

Model Number			Number of Board	Lens Type	Iris Lens Driver	Output Format	External Sync.	White Balance	Power Connection
Board Type	N63	P63	1	No lens-	-	VBS	None	Auto, WB-Lock	-
	N63L	P63L		Fixed Lens					
	N63CS	P63CS		CS Mount					
	N63BCS	P63BCS	2	CS Mount	DC Iris	VBS	None	Auto, WB-Lock	
	N63CL	P63CL	2	Fixed Lens	-	VBS & Y/C	HD/VD or VS	Auto, WB-Lock, P.W.B.	
	N63CCS	P63CCS		CS Mount					
	N63EL	-	2	Fixed Lens	-	VBS	VS	Auto	
Cased Type	N63BJ	P63BJ	2	CS Mount	DC Iris	VBS	None	Auto	Jack
	N63BT	P63BT							Terminal
	N63CJ	P63CJ	3		-	VBS & Y/C	None	Auto, WB-Lock, P.W.B.	Jack
	N63CT	P63CT							Terminal

IV. DIP Switch Operation

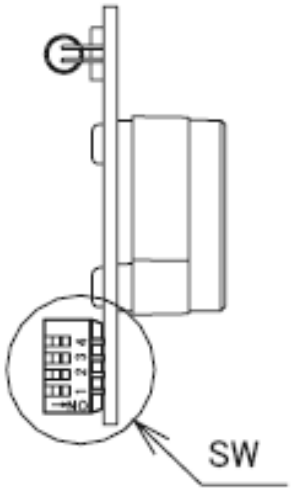


Figure 4-1: Basic Board Type

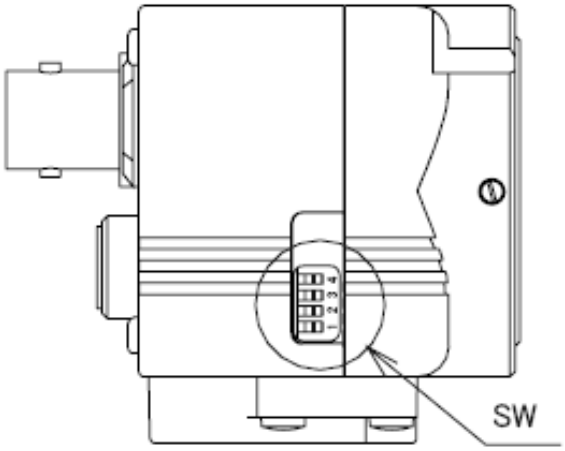
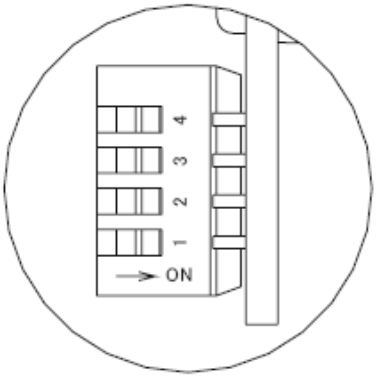


Figure 4-2: Cased Type Camera

There are 4 DIP switches located on the camera (See figure 4-1 and 4-2). Figure 4-3 shows the function of each DIP switch.



	OFF Position	ON Position
(4)	Back Light Compensation: OFF	Back Light Compensation: ON
(3)	Flicker Compensation: OFF	Flicker Compensation: ON
(2)	Electronic Iris [1/60(1/50) to 1/100,000]	Fixed Shutter [1/60(NTSC), 1/50(PAL)]
(1)	Normal Image	Mirror Image

Figure 4-3: Table of the DIP Switch Functions

V. White Balance Operations

These series of cameras have a very powerful and convenient White Balance mode switching function. These are set by switches (cased version) or by shorting wires from the main wiring connector.

A. EL, BJ and BT types

Only AWB (Auto White Balance) mode is available and the camera operates in AWB mode all the time.

B. L, CS and BCS types

White Balance Mode is controlled by shorting or opening "WB-Lock" and "GND" wires (See figure 6-1 and 6-2).
As long as "WB-Lock" and "GND" wires are opened, the camera will operate in AWB mode continuously. Then the White Balance will be locked when these wires are shorted together. As long as the wires are continuously shorted, the White Balance is locked until the power is turned off.

Notes:

- If the camera power is turned off while the white balance is fixed ("WB-Lock" (Pin-7) and "GND" (Pin-8) are shorted)), the camera does not retain the white balance value.
- If "WB-Lock" (Pin-7) and "GND" (Pin-8) are shorted and the camera power is turned on, the camera will operate in the auto white mode for a few seconds and will then fix and retain the white value.

C. CL and CCS type

Like the CS and BCS type, the White Balance Mode is controlled by shorting or opening "WB-Lock" and "GND" wires (See figure 6-4).
As long as "WB-Lock" and "GND" wires are opened, the camera operates in AWB mode continuously. Then the White Balance will be locked when these wires are shorted together. After this, as long as the wires are continuously shorted, the White Balance is continuously locked until power is turned off.
While "WB-Lock" and "GND" wires are shorted together (this means the camera is in WB lock mode), if you short "P.W.B" to "GND" wire, the camera goes back to AWB while these two wires are shorted together. Then the White Balance will be locked again when the "P.W.B." wire is opened from "GND". We call this function "Push to set White Balance".

Notes:

- If the camera power is turned off while the white balance is fixed ("WB-Lock" (Pin-7) and "GND" (Pin-8) are shorted), the camera does not retain the white balance value.
- If "WB-Lock" (Pin-7) and "GND" (Pin-8) are shorted and the camera power is turned on, the camera will operate in the auto white mode for a few seconds and then will fix and retain the white value.

D. CJ and CT type

The White Balance operation is exactly the same as CS and BCS types. However, in the case of CJ and CT types, the wire connections of "WB-Lock" and "P.W.B." mentioned above are provided as a "WB" (White Balance Mode) switch and a "PUSH" (Push to Set White) switch respectively (See figure 6-5).
By setting "WB" switch to AUTO, the camera continuously operates in AWB (Auto White Balance) mode and the "PUSH" switch operation is ignored. However as soon as "WB" switch is turned to up side ("PUSH" switch side), then White Balance is locked at the exact state of that moment. In this "WB" switch position, the "PUSH" switch is pushed and held, the camera will go back to AWB mode only when the "PUSH" switch is held in. This operation is called "Push to Set White Balance" and typical applications of this mode are as follows:

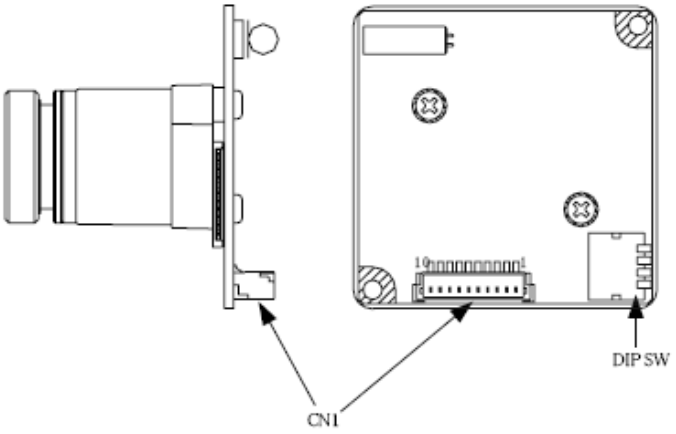
- Provide white surface (i.e. white paper) and aim the camera toward the white surface. Make certain the white surface covers entire viewing area of the camera.
- Use the light source you are going to use for the camera operation.
- Turn the "WB" switch upward ("PUSH" switch side).
- Push and hold "PUSH" switch until the screen becomes as desired white and then release it.
- Use the camera to capture the images from the objects.

Notes:

- If the camera power is turned off while the "WB" switch is turned to up side ("PUSH" switch side), the camera does not retain the white balance value.
- If the "WB" switch is turned to up side ("PUSH" switch side), and the camera power is turned on, the camera will operate in the auto white mode for a few seconds and then will fix and retain the white value.

VI. Connector Pin Assignment

A. “L” and “CS” type connector pin assignment

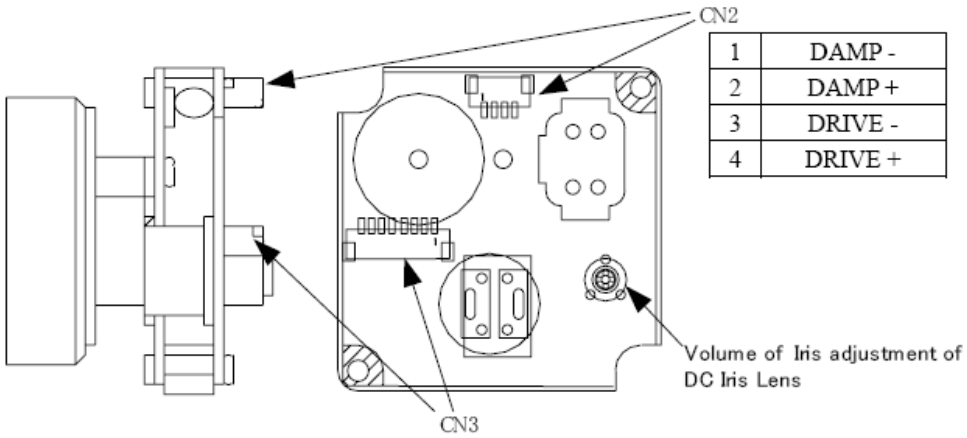


CN1 Pin Assignment

1	GND
2	DC+12V
3	GND
4	VIDEO
5	I2C (SDA)
6	I2C (SCL)
7	WB-LOCK
8	GND
9	NC
10	NC

Figure 6-1: “L” and “CS” type connector pin assignment

B. “BCS” type connector pin assignment

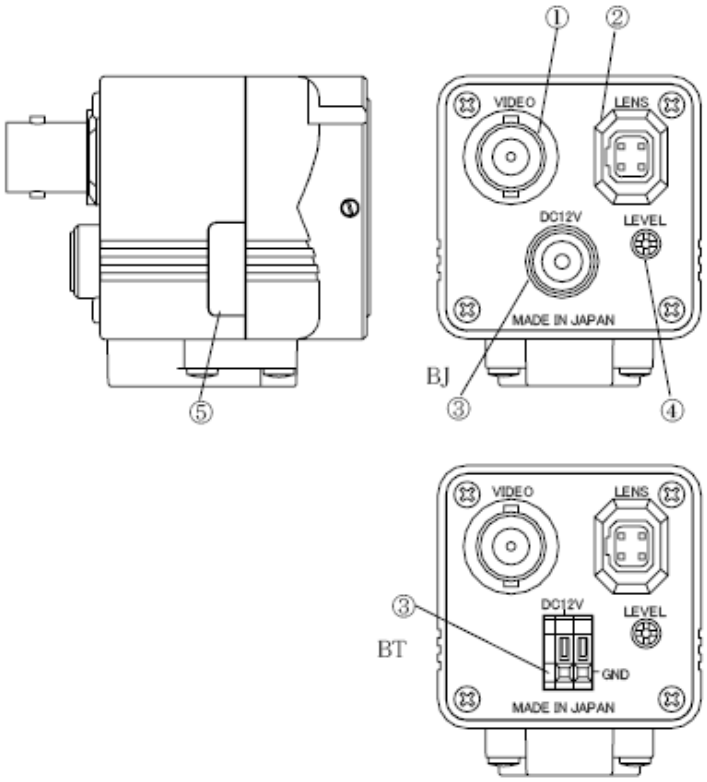


1	DAMP -
2	DAMP +
3	DRIVE -
4	DRIVE +

1	GND
2	DC+12V
3	GND
4	VIDEO
5	I2C (SDA)
6	I2C (SCL)
7	WB-LOCK
8	GND

Figure 6-2: “BCS” type connector pin assignment

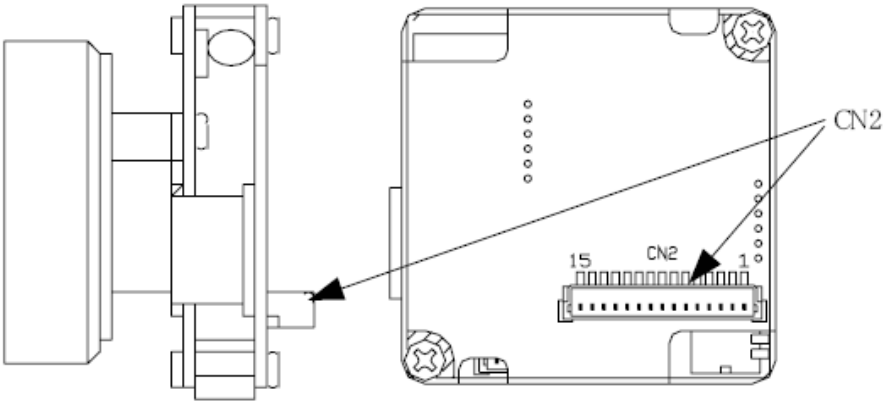
C. “BJ” and “BT” type connector pin assignment



(1) VIDEO Output
(2) Connector of DC Iris
(3) DC+12V Input
(4) Volume of Iris adjustment of DC Iris Lens
(5) Switch Cover

Figure 6-3: “BJ” and “BT” type connector pin assignment

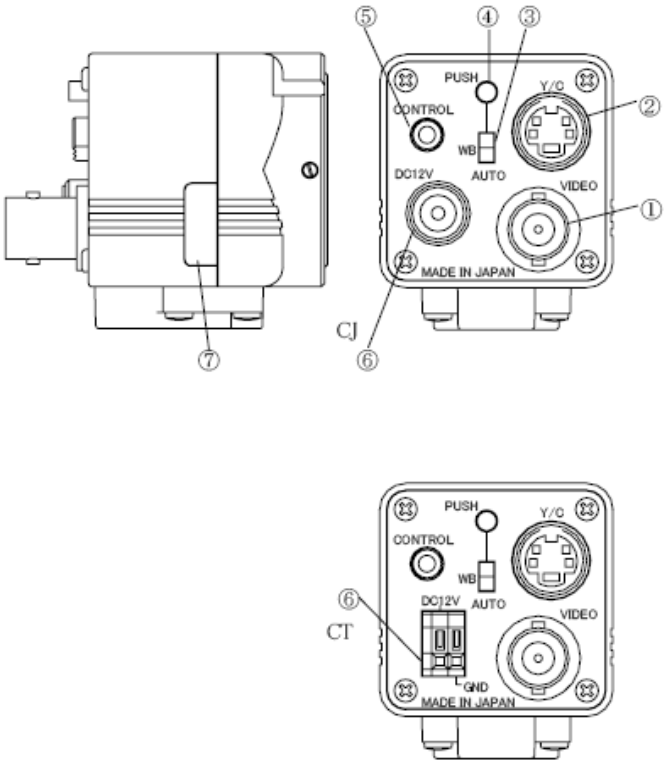
D. “CL” and “CCS” type connector pin assignment



1	GND
2	DC+12V
3	GND
4	VIDEO
5	I2C (SDA)
6	I2C (SCL)
7	WB-LOCK
8	GND
9	Y
10	GND
11	C
12	P.W.B
13	GND
14	EXT_HD/VBS IN
15	EXT_VD IN

Figure 6-4: “CL” and “CCS” type connector pin assignment

E. “CJ” and “CT” type connector pin assignment

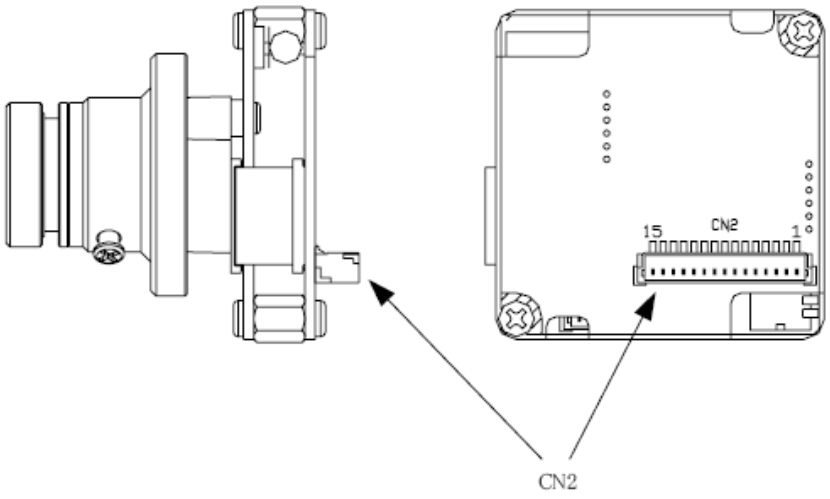


①VIDEO Output
②Y/C Output
③White Balance Auto/Lock select Switch
④Push Switch of Push to set White Balance
⑤PC Communications Terminal (I2C)
⑥DC+12V Input
⑦Switch Cover

(Note)
To achieve DSP set up communication, USB adapter, sold separately, is required.

Figure 6-5: “CJ” and “CT” type connector pin assignment

F. “EL” type connector pin assignment

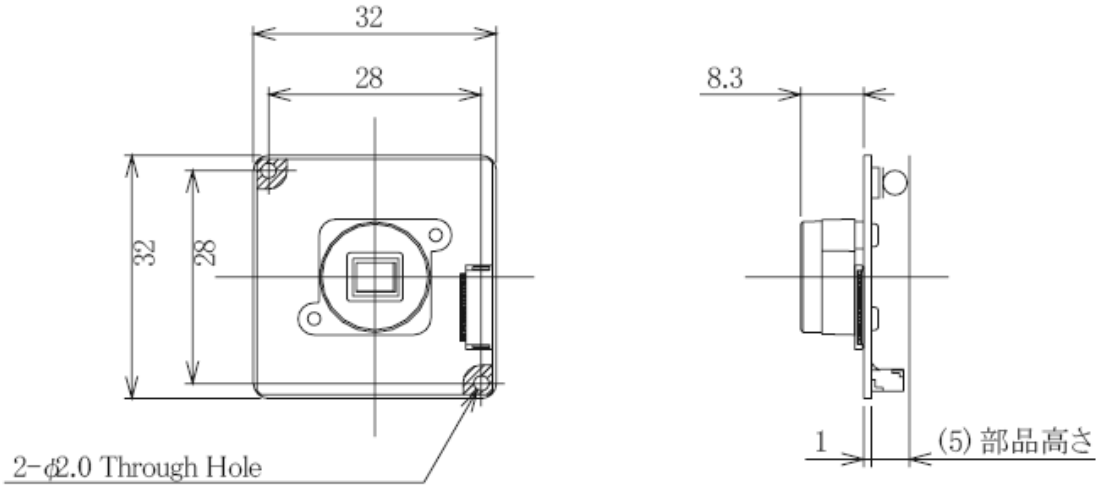


1	GND
2	DC+12V
3	GND
4	VIDEO
5	I2C (SDA)
6	I2C (SCL)
7	NC
8	GND
9	NC
10	GND
11	NC
12	NC
13	GND
14	VBS IN
15	NC

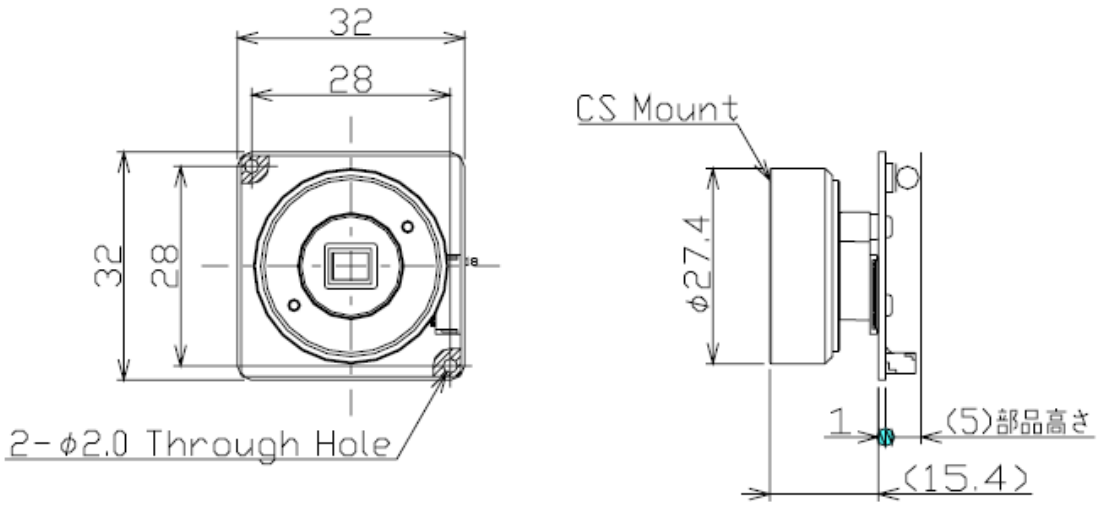
Figure 6-6: “EL” type connector pin assignment

VII. Dimensions

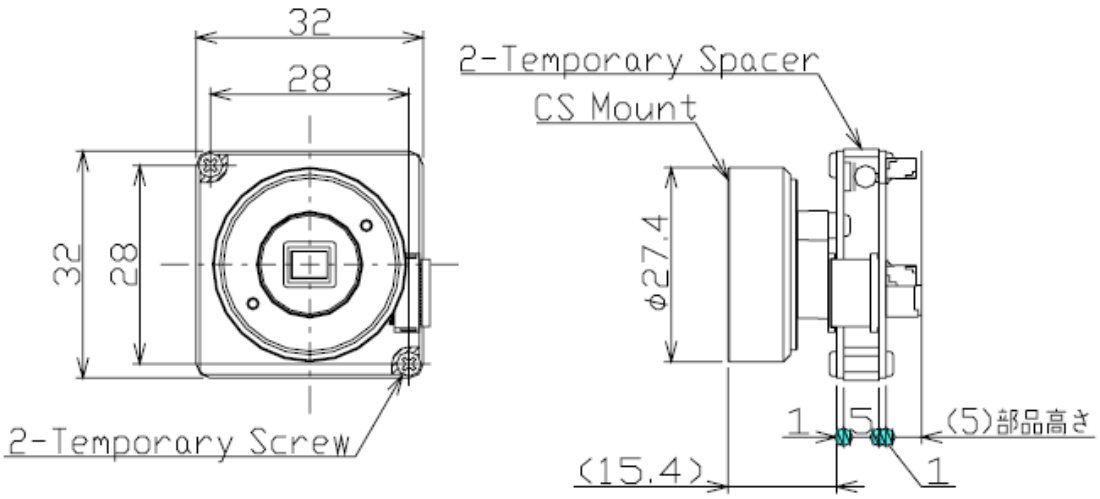
A. STC-N63, STC-P63



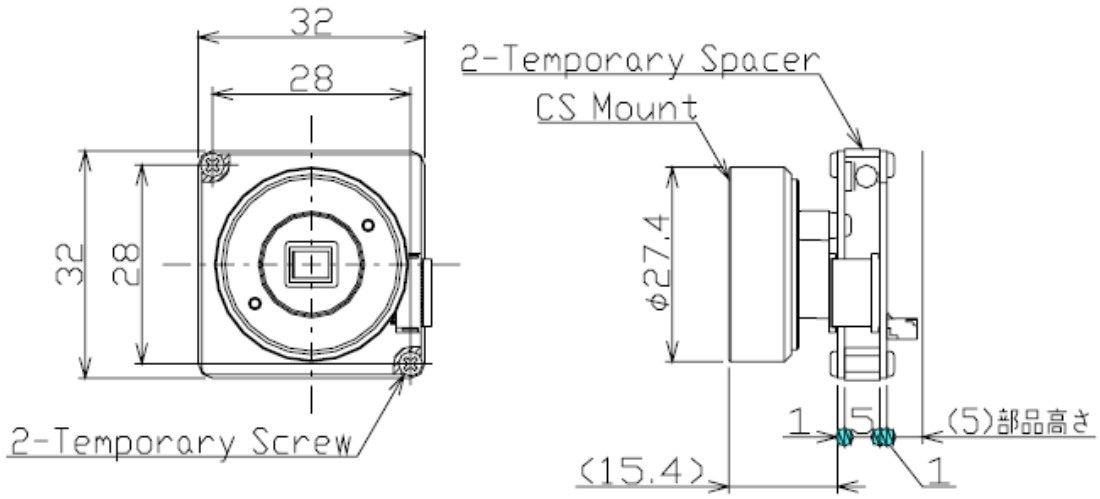
B. STC-N63CS, STC-P63CS



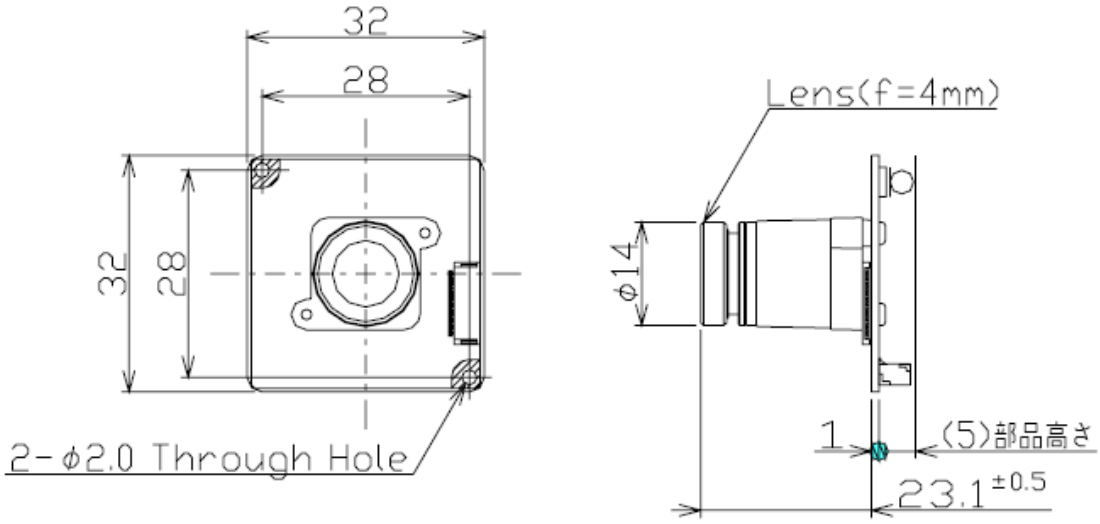
C. STC-N63BCS, STC-P63BCS



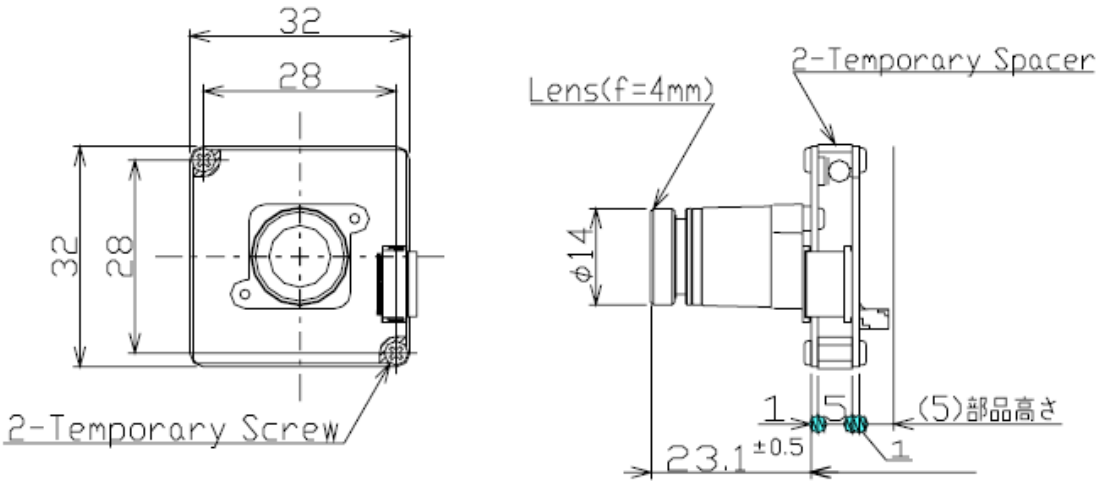
D. STC-N63CCS, STC-P63CCS



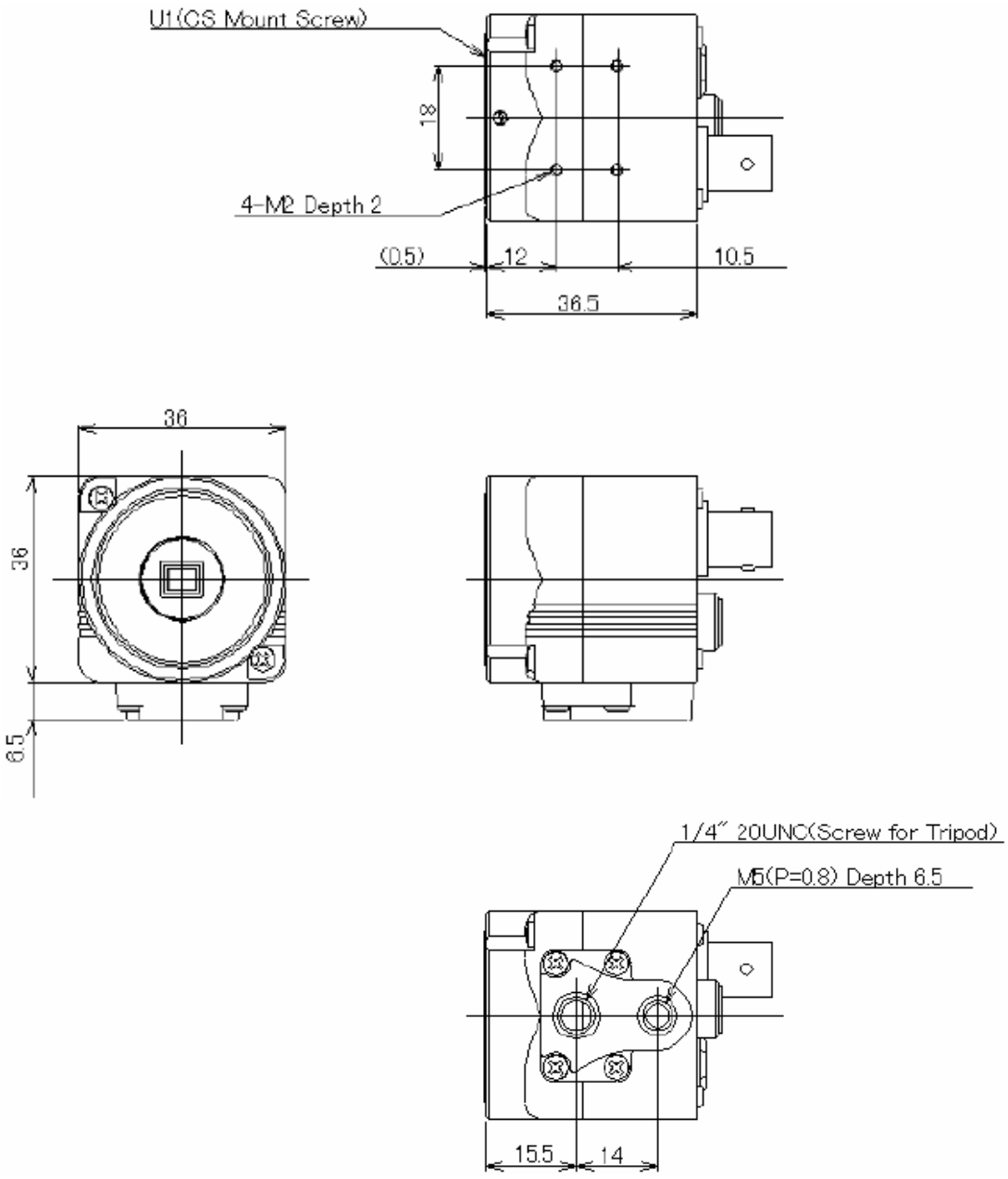
E. STC-N63L4, STC-P63L4



F. STC-N63CL4, STC-P63CL4



G. STC-N63BJ, STC-P63BJ



Revisions

Rev	Date	Changes	Notes
1.0	July 28, 2008	Changed exiting doc to fit standard document format	

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