

## 1. PRODUCT DESCRIPTION

Model CS86xxBi is a miniature camera series featuring its ultra-small light-weight body. The CS86xxBi camera series is designed mainly for factory automation, machine vision, and image measurement application.

## 2 FEATURES

### (1) High resolution

The 380,000 pixel CCD realizes the horizontal resolution of 570TV lines.

High-density images with minimum moire-fringes & beatings are obtained. (CCIR: 440,000 pixels, 560TV lines)

### (2) Ultra-compact & light-weight body

The camera features its ultra-small light-weight body. Its super-small body will free you from much of your space restriction problem. The camera is driven by DC12V.

### (3) Electronic shutter

The built-in electronic shutter allows this camera to capture a fast-moving object clearly and sharply.

### (4) AGC (Automatic Gain Control)

This series is equipped with AGC function. With the AGC, the camera obtains optimal images constantly even when the amount of incoming light fluctuates.

### (5) Restart/Reset

When the restart/reset function set ON, the camera captures images at any timing given by R.R. pulse input (VD input).

Remark : CS8620BHi, CS8620BHCi are possible for a restart/reset operation only at the field integration mode.

### (6) SS (Special shutter) & RTS (Random trigger shutter)

This camera is fitted with special shutter and random trigger shutter function, which allows the camera to capture images cued by external trigger input.

### (7) Near-infrared region sensitivity (Model -----H type only)

The CCD integrated in the model CS8620BHi and CS8620BHCi has a near-infrared-region sensitivity. These models capture clear images even under near-IR shooting condition.

**CS8600Bi Series Spec Lookup Table**

Model name	Image size	TV format	Near IR	SS / RTS	R.R.
CS8620Bi	1/2 type	EIA	×	○	○
CS8620BHi	1/2 type	EIA	○	○	○
CS8630Bi	1/3 type	EIA	×	○	○
CS8620BCi	1/2 type	CCIR	×	○	○
CS8620BHCi	1/2 type	CCIR	○	○	○
CS8630BCi	1/3 type	CCIR	×	○	○

### 3. CONFIGURATION

(1) Camera body .....	1
(2) Accessory	
Manual .....	1

### 4. SPECIFICATION

(1) TV system	(EIA)	Based on EIA standard
	(CCIR)	Based on CCIR standard
(2) Image sensor		Interline CCD
• Total pixel counts		
	(EIA)	811(H) × 508(V)
	(CCIR)	795(H) × 596(V)
• Active pixel counts		
	(EIA)	768(H) × 494(V)
	(CCIR)	752(H) × 582(V)
• Video output pixel counts		
	(EIA)	756(H) × 485(V)
	(CCIR)	742(H) × 575(V)
• Cell size		
	(CS8620Bi, CS8620BHi)	8.4 × 9.8 μm
	(CS8620BCi, CS8620BHCi)	8.6 × 8.3 μm
	(CS8630Bi, CS8630BH)	6.35 × 7.4 μm
	(CS8630BCi)	6.5 × 6.25 μm
• Scanning area		
	(CS8620Bi, CS8620BCi, CS8620BHi, CS8620BHCi)	6.5 × 4.85mm (type-1/2)
	(CS8630Bi, CS8630BCi)	4.8 × 3.6mm (type-1/3)
• H drive frequency (Internal sync)		
	(EIA)	14.31818MHz ± 100ppm
	(CCIR)	14.18750MHz ± 100ppm
(3) Scanning lines		
	(EIA)	525 lines
	(CCIR)	625 lines
(4) Scanning format		2 : 1 interlace
(5) Sync System		Internal/External (automatic change over)

(6) Scanning frequencies (internal synchronization mode)

Horizontal drive (H)

(EIA) 15.734kHz  $\pm 100$ ppm

(CCIR) 15.625kHz  $\pm 100$ ppm

Vertical drive (V)

(EIA) 59.94Hz  $\pm 100$ ppm

(CCIR) 50.0Hz  $\pm 100$ ppm

(7) Aspect ratio 4:3

(8) Sensitivity

• Standard (GAIN:MGC,  $\gamma = 1.0$ )

(CS8620Bi, CS8620BCi) 200 lx, F5.6 (3100K)

CS8630Bi, CS8630BCi)

(CS8620BHi, CS8620BHci) 400 lx, F11 (3100K)

• Minimum (GAIN:MAX,  $\gamma = 0.45$ )

(CS8620Bi, CS8620BCi) 0.2 lx, F1.4

(CS8630Bi, CS8630BCi) 0.2 lx, F1.4

(CS8620BHi, CS8620BHci) 0.1 lx, F1.4

(9) Video output VS: 1.0V(p-p) / 75  $\Omega$

VS (Video + SYNC)

(10) Resolution

Horizontal

(EIA) 570 TV lines

(CCIR) 560 TV lines

Vertical

(EIA) 485 lines (350 TV lines)

(CCIR) 575 lines (410 TV lines)

(11) S/N 60dB(p-p)/rms (typical)

(GAIN:MGC,  $\gamma = 1.0$ )

(12) Input signal

① External sync pulses

HD • VD / SYNC / VS

• Pulse level

HD, VD, SYNC: 2 ~ 6V(p-p)

VS: 1.0(SYNC 0.3)V(p-p)

• Input impedance

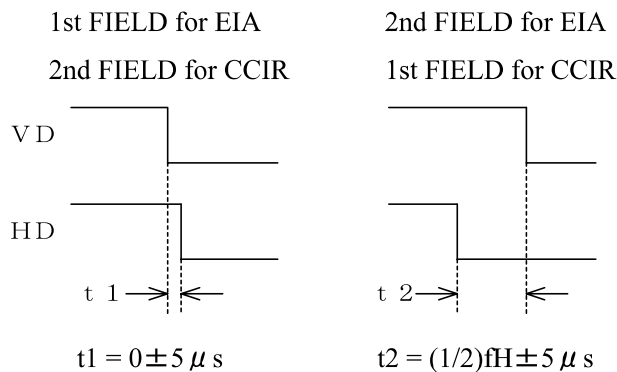
75  $\Omega$  / High Switch-able by the panel SW

(Initial factory setting: High)

• Scanning system

2 : 1 interlace

•Polarity	Negative
•Pulse width	HD: $6.4 \pm 3 \mu s$ VD: $150 \sim 800 \mu s$
•Frequency	
Horizontal (fH)	
(EIA)	fH= $15.734\text{kHz} \pm 2\%$
(CCIR)	fH= $15.625\text{kHz} \pm 2\%$
Vertical (fV)	
(EIA)	fV= $2fH/525$
(CCIR)	fV= $2fH/625$
•Scanning lines	
(EIA)	525 lines
(CCIR)	625 lines
•Phase different	The difference in phase between the falling edge of VD and that of HD is shown in the figure below.



## ②Shutter trigger (TRG)

•Pulse level	VL= $0 \sim 0.5V$ VH= $2 \sim 5V$
•Input impedance	High impedance
•Polarity	Positive
•Pulse width	$2 \mu s \sim 1/4s$

## (13) Output signal

### ①HD/VD pulses

	Under internal sync operation, output available by the panel SW selection (Initial factory setting: IN)
•Output level	HD: $4.5 \pm 0.5V(p-p)$
(high impedance)	VD: $5.0 \pm 0.5V(p-p)$
•Scanning system	2 : 1 interlace
•Polarity	Negative
•Pulse width	
(EIA)	HD: $6.36 \pm 1 \mu s$ , VD: $572 \pm 10 \mu s$
(CCIR)	HD: $6.41 \pm 1 \mu s$ , VD: $480 \pm 10 \mu s$

- Frequency
  - Horizontal (fH)
    - (EIA)  $fH=15.734\text{kHz} \pm 100\text{ppm}$
    - (CCIR)  $fH=15.625\text{kHz} \pm 100\text{ppm}$
  - Vertical (fV)
    - (EIA)  $fV=2fH/525$
    - (CCIR)  $fV=2fH/625$
- Scanning lines
  - (EIA) 525 lines
  - (CCIR) 625 lines

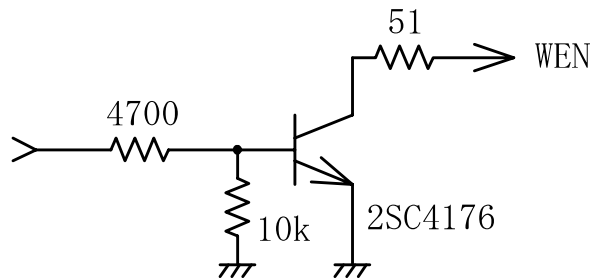
## ② Clock pulse

- Output level  $2.0 \pm 0.3\text{V(p-p)}$  (high impedance)
- Frequency (Under internal synchronization)
  - (EIA)  $14.31818\text{MHz} \pm 100\text{ppm}$
  - (CCIR)  $14.18750\text{MHz} \pm 100\text{ppm}$

## ③ WEN

Under random trigger shutter operation, WEN is output during the period starting from the VIDEO OUT START VD falling edge through the VIDEO OUT END VD falling edge.

- Polarity Positive
- Diagram The circuit is shown in the figure below.



- (14) Sensitivity setting
  - Mode selection via panel SW (Initial factory setting: MGC)
  - AGC(Automatic Gain Control)
  - MGC (Manual Gain Control)
- (15) MGC
  - Manual sensitivity adjustment available
- (16) Gamma
  - 1.0 / 0.45 selectable via rear panel DIP switch
  - (Initial factory setting: 1.0)
- (17) White clip
  - Clip-level:  $820 \pm 40\text{mV(p-p)}$  (Excluding SYNC)
- (18) Electronic shutter
  - Normal shutter
  - The following shutter speed setup is possible by rear panel DIP switch selection.
  - Normal, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000s, and Flicker-less (Initial Factory setting: Normal)

### Slow-speed shutter

1FLD,2FLD, 4FLD, 6FLD,8FLD, and 10FLD

#### (19) Random trigger shutter

RTS Mode selection available

1	Shutter-speed Switch Setting	Internal sync	SYNC Non-reset
2	Shutter-speed TRIG Pulse-width Setting	Internal sync	SYNC Non-reset
3	Shutter-speed Switch Setting	Internal sync	SYNC Reset
4	Shutter-speed TRIG Pulse-width Setting	Internal sync	SYNC Reset
5	Shutter-speed Switch Setting	HD / VD IN (*1)	SYNC Non-reset
6	Shutter-speed TRIG Pulse-width Setting	HD / VD IN (*1)	SYNC Non-reset
7	Shutter-speed Switch Setting	HD / VD IN (*2)	SYNC Non-reset
8	Shutter-speed TRIG Pulse-width Setting	HD / VD IN (*2)	SYNC Non-reset

\*1: Consecutive HD / Consecutive VD IN

\*2: Consecutive HD / Single VD IN

#### (20) Special shutter

User-defined shutter-timing and shutter-speed cued and timed by shutter trigger and restart / reset pulse input ON / OFF selectable via rear panel DIP SW (Initial factory setting: OFF)

#### (21) CCD integration mode

Field / Frame storage(integration)

Switch-able by rear panel DIP Switch Selection (Initial factory setting : frame integration)

#### (22) Restart/Reset

Restart / Reset function available via rear panel DIP-SW selection (Initial factory setting: OFF)

Remark : CS8620BHi, CS8620BHCi are possible for a restart/reset operation only at the field integration mode.

#### (23) Power source

DC12V  $\pm$  10%[Ripple level : Less than 10mV(p-p)]

#### (24) Power consumption

approx. 1.3W

#### (25) Ambient condition

• Performance assurance	Temperature	0°C~40°C
	Humidity	20~80% (No condensing)
• Operation assurance	Temperature	-10°C~50°C
	Humidity	20~80% (No condensing)
• Storage	Temperature	-20°C~60°C
	Humidity	20~95% (No condensing)

#### (26) Lens mount

C-mount

#### (27) Flange back

17.526mm

#### (28) Dimensions

29(W)×29(H)×31(D)mm (Excluding protruding part)

#### (29) Mass

Approx. 42g

#### (30) Option unit

• Power adapter CA130D (AC100V)

•Power / Video connector (Maker : Hirose denki)

HR10A-10P-12S

•Camera cable

CPRC3700 (2m,3m, 5m, 10m)

•Tripod adapter

•IR cut filter

**\* Conformity of EMC conditions**

About the conformity of the EMC standard of this machine, it has guaranteed in the conditions combined with the recommended parts.

When used combining 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.

(31) Connector Pin Assignment

Compatible plug: HR10A-10P-12S (Manufactured by HIROSE ELEC.)

Pin No.	External sync.			Internal sync.
	HD VD	VS/SYNC	R.R.	
1	GND	GND	GND	GND
2	+12V	+12V	+12V	+12V
3	GND	GND	GND	GND
4	VIDEO OUT	VIDEO OUT	VIDEO OUT	VIDEO OUT
5	GND	GND	GND	GND
6	HD IN	-----	HD IN	HD OUT*
7	VD IN	VS/SYNC IN	R.R. IN	VD OUT*
8	GND	GND	GND	GND
9	CLOCK OUT	CLOCK OUT	CLOCK OUT	CLOCK OUT
10	WEN OUT	WEN OUT	----	WEN OUT
11	TRIG IN	TRIG IN	TRIG IN	TRIG IN
12	GND	GND	GND	GND

\* HD VD output is available via inner SW selection under internal sync operation.

## 5. 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 of charge.

-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 or 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.

## 6. 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 5.
- Charged repair             Basically, repair period is 7 years after the last production end of products.

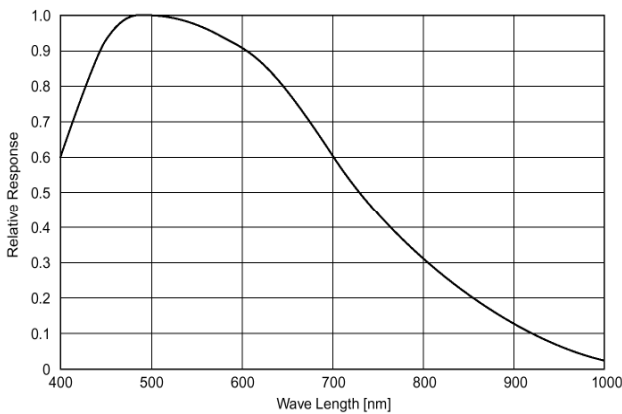


# 7. Appearance

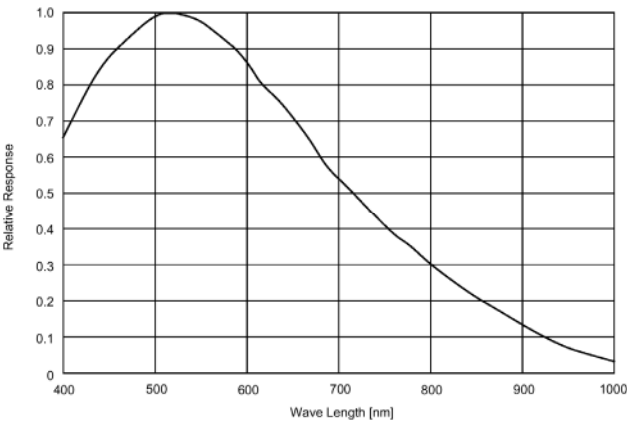
Typical spectral response

[The lens characteristics and light source characteristics is not reflected in the table.]

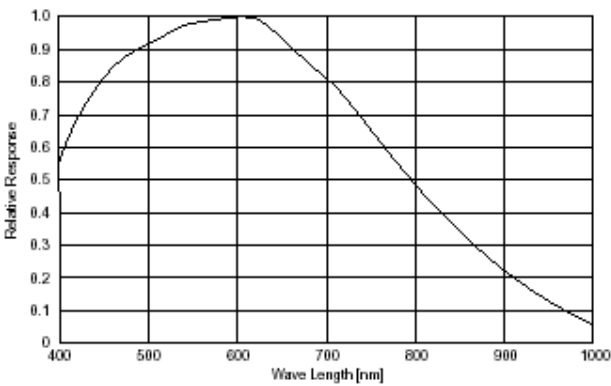
CS8620Bi, CS8620BCi



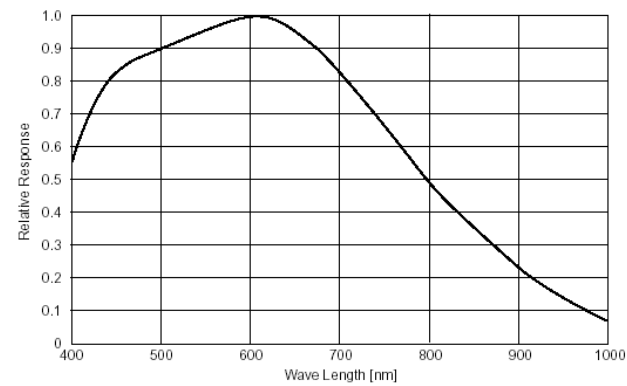
CS8630Bi, CS8630BCi



CS8620BHi

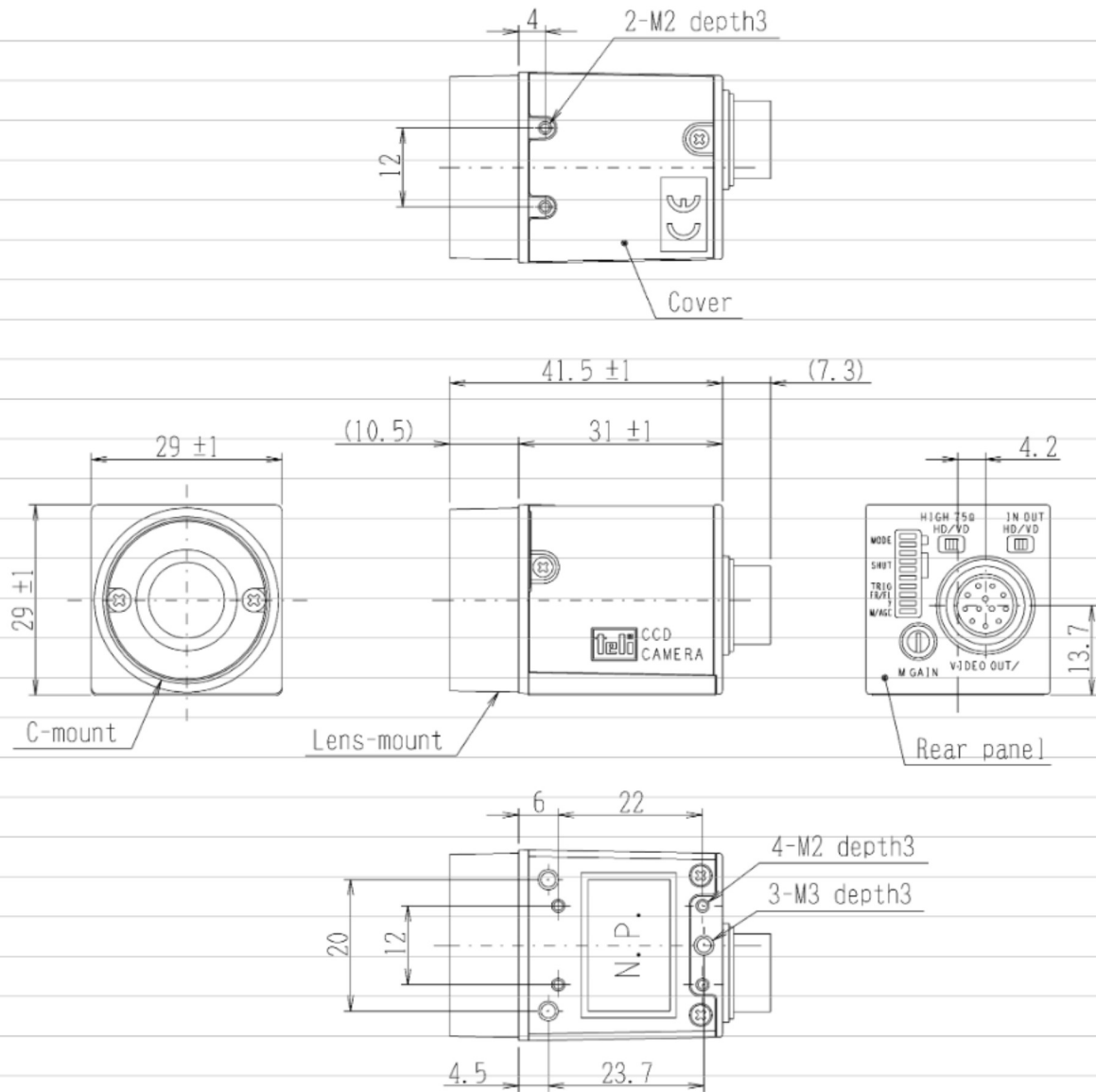


CS8620BHCi



## DRAWINGS

CS8620Bi series



### Specifcatin

#### Material

Lens-mount, Rear panel : Aluminum die-cast

Cover : Anticorrosion aluminum alloy

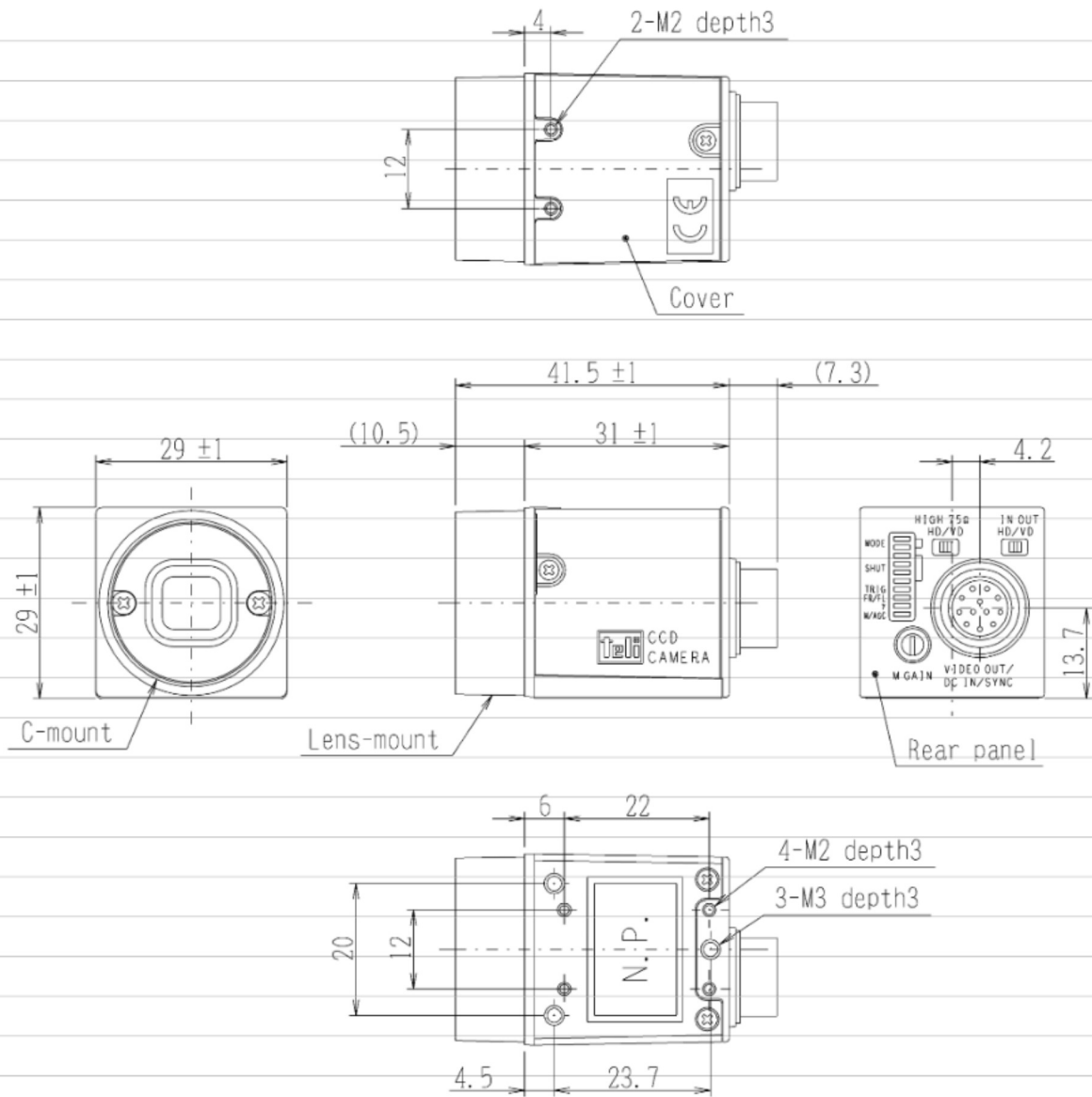
#### Processing

Lens-mount, Rear panel : Cation coating

Cover : Leather satin coating (Black)

## DRAWINGS

### CS8630Bi series



#### Specifcatin

##### Material

Lens-mount, Rear panel : Aluminum die-cast

Cover : Anticorrosion aluminum alloy

##### Processing

Lens-mount, Rear panel : Cation coating

Cover : Leather satin coating (Black)