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		APPLICABLE DIVISION
		<b>YAO PLANT</b> APPLIANCE SYSTEMS GROUP

**SPECIFICATION FOR CCD CAMERA MODULE**

Model No.  
**YH-7C12 ; NTSC**

CUSTOMER'S APPROVAL

DATE \_\_\_\_\_

BY \_\_\_\_\_

PRESENTED

BY *J. Aoki*

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SHARP CORPORATION



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## 1. Application

This document describes the specifications of Color CCD Camera to be supplied to \_\_\_\_\_.

All figures described in this document are based on the conditions that the camera is used under \*normal operating temperature, normal operating humidity.

\*Normal operating temperature ; +20 ~ +25°C

\*Normal operating humidity ; 65 ± 5%RH

The monitor to be used shall be standard monitor.

Model No.	TV system	Output signal	Iris control	Lens
YH-7C12	NTSC	Y/C	EE, 1/100 sec.(fixed)	○

Electronic Exposure (EE)

## 2. General Description

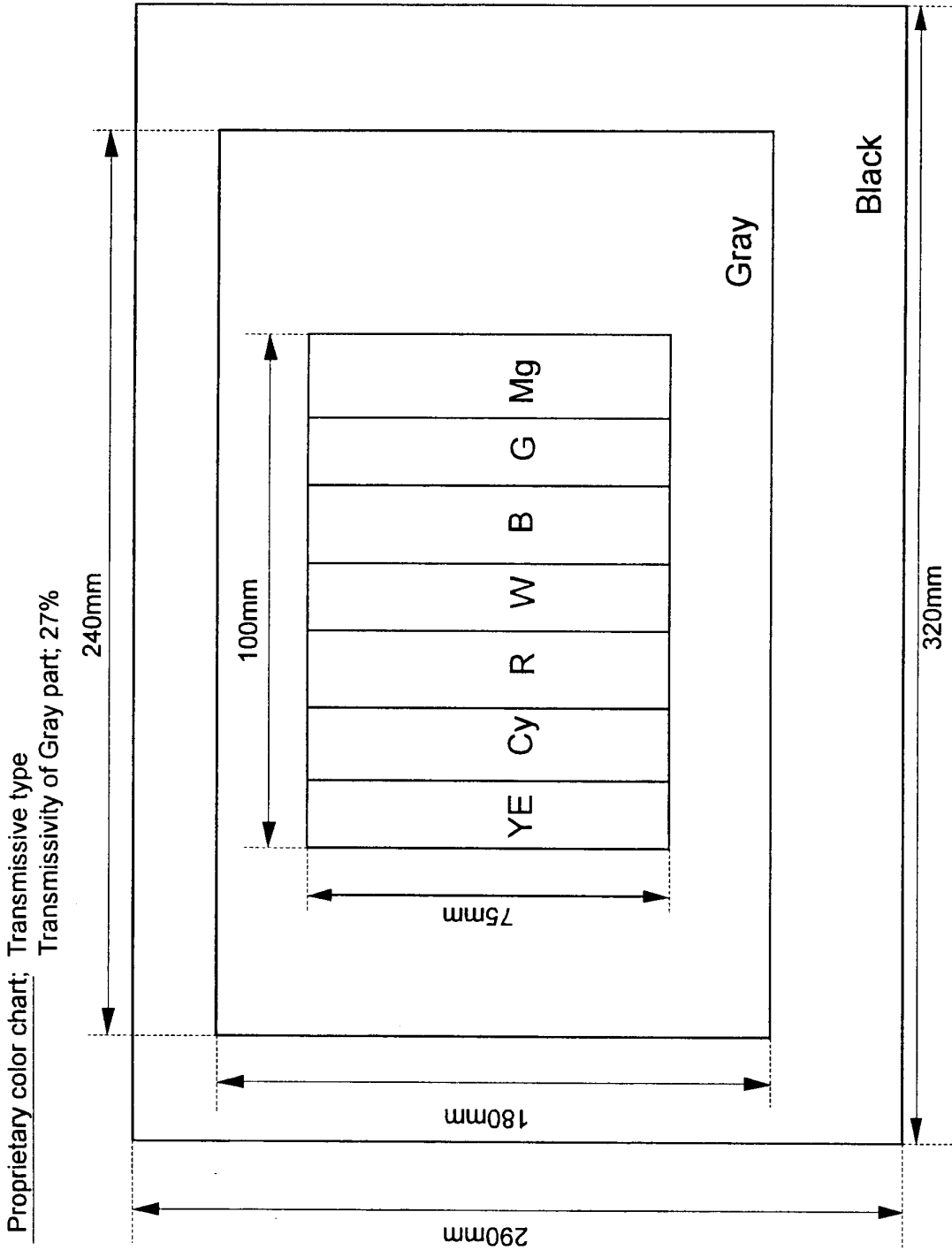
These color CCD camera modules incorporate 1/4-inch CCD whose characteristics;

- 1) TV system ; NTSC
- 2) Output signal ; Y/C
- 3) Iris control ; EE type
- 4) White balance
  - Auto ; TTL auto tracing white balance
- 5) Contrast control; Adjustable contrast (up/down), Backlight compensation
  - When power on, contrast level comes to factory preset level.  
(NTSC;714mV)
- 6) Built-in compact lens specially designed for the module.
- 7) Connecting cable between CCD board and signal processing board
  - FFC(Flexible Flat Cable)
  - Separable signal processing board and CCD board(up to max.150mm)
- 8) 5V single operation

## 3. Specifications

TV system	NTSC
Image sensor	1/4" Inter-line transfer CCD
Total pixels	542(H)×492(V)(Total;270K)
Effective pixels	512(H)×492(V)(Total;250K)
Resolution Horizontal Vertical	310 TV lines 280 TV lines
Distance from chart to camera : 70cm	
S/N ratio	$\geq 46\text{dB}$ Condition: AGC off High pass filter 10KHz Fsc trap Weighting filter on Low pass filter(NTSC;4.2MHz) Light shield
Minimum illumination	$\leq 20\text{ lx}$ Condition: ITE gray scale chart(Gamma=1.0) Y signal amplitude 350mV
White balance	TTL auto tracing white balance, Range; 2,800 to 6,800° K
Iris control	EE, 1/100 sec. (fixed)
Gamma correction	approx. 0.6
Auto gain control	Yes Backlight compensation, Switch selectable
Sub-carrier frequency	3.579545MHz $\pm$ 200Hz
Sync. system	Internal only
Output video signal	
Y signal	1.0Vp-p/75 $\Omega$
• Y signal amplitude	714mV $\pm$ 100mV
*(Condition 1)	
• Sync. amplitude	286mV $\pm$ 80mV
C signal*(Condition 2)	Impedance 75 $\Omega$
R amplitude	88.25 IRE $\pm$ 25%
R phase	103.4° $\pm$ 15°
B amplitude	62.2 IRE $\pm$ 25%
B phase	347.1° $\pm$ 15°
• Burst amplitude	286mV $\pm$ 90mV
Lens	
focal length	approx. 4.3mm (fixed)
F number	approx. 2.4
viewing angle	
Horizontal	approx. 46°
Vertical	approx. 35°
Focus	manual adjustable (50mm to infinity)
TV distortion	approx. 2%
Power supply	DC 4.5V - DC 7.0V, $\leq 2\text{W}$
Operating temperature	-10 to +50° C
Storage temperature	-20 to +60° C
Dimension	
CCD board	20(H) × 20(V) × 38(D) mm
Signal processing board	55(H) × 43(V) × 16(D) mm

- \*Condition 1: ITE gray scale chart(Gamma=1.0)
- \*Condition 2: Exclusive color chart (YH-7C12-01-4)
  - Line select ; 141 lines (NTSC)
  - Y (white) amplitude ; 714mV (NTSC)
  - Color temp ; 5,100°K



#### 4.Connector

##### 4-1. CN102(Signal processing board)

- 1) Power input , Signal output , Video signal control
- 2) Pin assignment

No.	Name
1	Video signal level control input (GND)
2	Video signal level up control input
3	Video signal level down control input
4	Y signal
5	C signal
6	GND
7	Power input (Vdd)

3) Connector used in the module                    Molex 53398 - 0710

4) Mating connector                                    Molex 51021 - 0700

##### 4-2. CN101 (Signal processing board)

- 1) Connection between Signal processing board and CCD board

2) Connector used in the module                    Molex 52559 - 1690

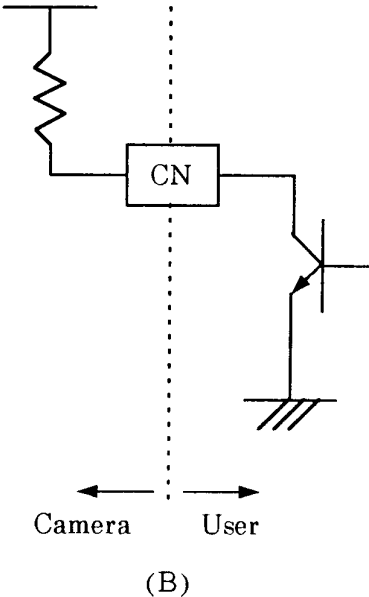
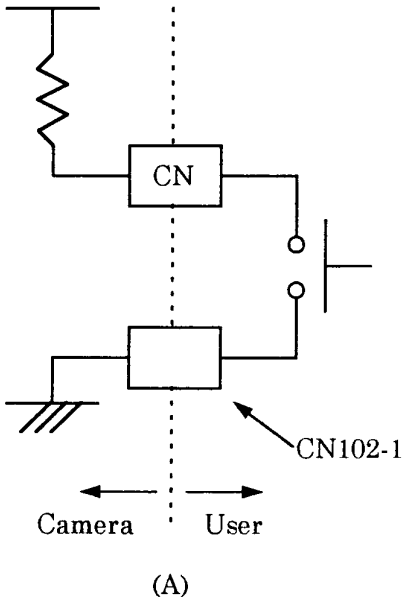
##### 4-3. CN1 (CCD board)

- 1) Connection between Signal processing board and CCD board

2) Connector used in the module                    Molex 52559 - 1490



5. Video control (CN102)  
 1) Interface  
 Either (A) or (B)



2) Input level      Hi : more than 4.3V  
                           Low : less than 0.5V

3) Video signal (contrast) level  
 When power on , video signal (contrast) level comes to factory preset level.

Pin No.	3	2	Video signal level
Input level	L	L	no change
	L	H	down
	H	L	up
	H	H	no change

## 6. Reliability Tests

Unless otherwise stated, the following reliability tests are conducted (sampling base) to confirm the reliability of the module in the testing room kept in normal temp. and humidity.

### 1) Low temp. storage test

To prove that the module shows no abnormal operation and function after it is stored at ambient temp. of  $-20^{\circ}\text{C}$  for 24H and then left at room temp. for 2H min.

### 2) Low temp. operation test

To prove that the module normally operates for continuously 5H at ambient temp. of  $-10^{\circ}\text{C}$ .

### 3) High temp. storage test

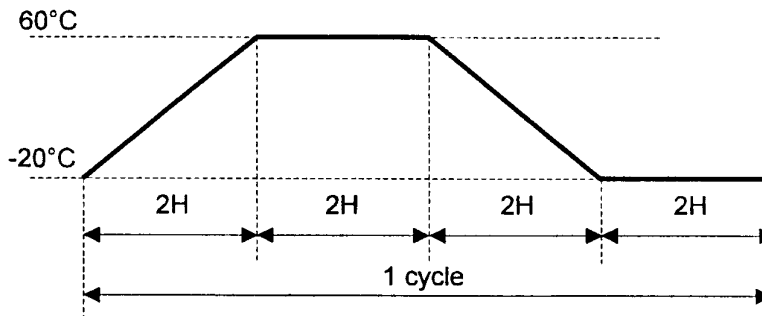
To prove that the module shows no abnormal operation and function after it is stored at ambient temp. of  $60^{\circ}\text{C}$  for 24H and then left at room temp. for 2H min.

### 4) High temp. operation test

To prove that the module normally operates for continuously 5H at ambient temp. of  $50^{\circ}\text{C}$ .

### 5) Temp. cycle test

To prove that the module shows no abnormal operation and function during 5 cycles as stipulated in the following pattern and, then 2H storage at room temp.



### 6) High humidity test

To prove that the module shows no abnormal operation and function after the module has been operated for 24H at ambient temp. of  $30^{\circ}\text{C}$  and relative humidity of 90%RH, and take out from test chamber with water drop removed.

### 7) Vibration test

To prove that the module shows no abnormal operation and function after vibration test under the condition of  $10\sim 55\sim 10\text{Hz/min}$ . at acceleration speed 3.6G and up/down for 4H and left/right for 2H and back/forward for 2H.

### 8) Shock test

Three successive shocks shall be applied in both direction of 3 mutually perpendicular axes ( a total of 18 shocks).

Peak acceleration : 50G , Duration of pulse : 10msec

7. Pixel Defect

Number of defective pixels	not more than 10
Condition:	Temperature 25°C Light shield AGC off Standard monitor (NTSC/PAL)

\*10 pixels in both horizontal edges and 9 pixels in both vertical edges shall be disregarded as a void area.

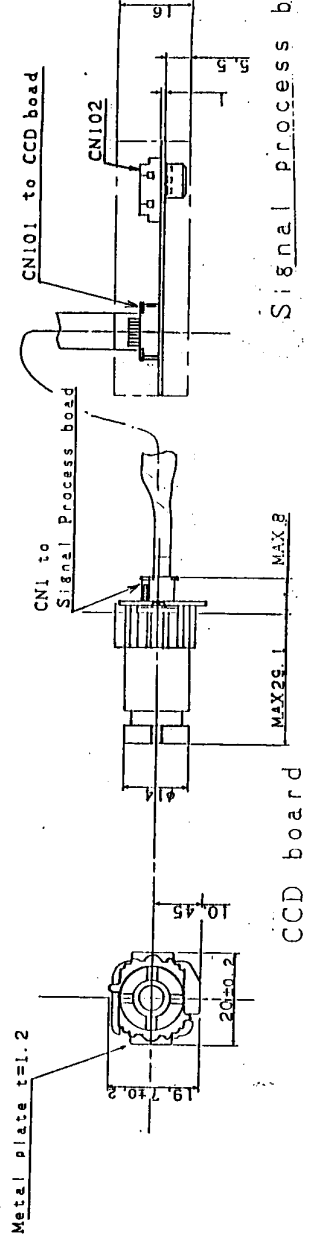
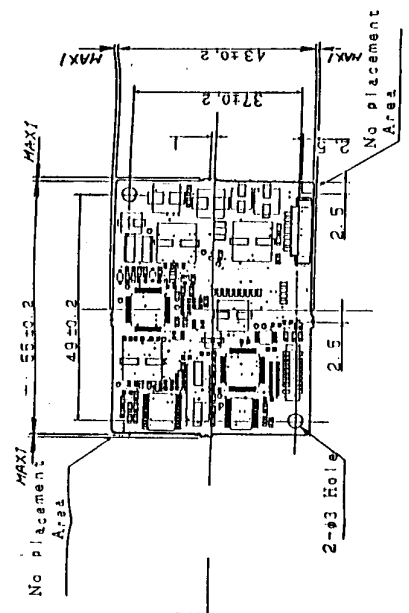
8. Precautions & Notes

- 1) Since EMI is system dependent , agency approval is to be obtained by customer.
- 2) Series regulator is recommended.  
In case of using the switching regulator , make sure that regulator does not cause display noise.
- 3) The CCD board and signal processing board contained in each individual carton shall always be used together in the same equipment since the performance of the camera module is factory-tuned on the pair.
- 4) Care shall be used not to damage the components during installation or removal of the cables.
- 5) Never shoot at direct sunlight , since color filters of CCD will be discolored.  
The display picture disappears in case of shooting at direct sunlight.
- 6) An earth band or conductive mat shall be used to avoid the generation of static electricity that easily damages the CCD sensors.
- 7) These products are made specifically for indoor use.  
(Office and ordinary home-use environment.)

Please note that Sharp cannot guarantee the performance and quality under any use other than the conditions stated above, such as circumstances where vibrations are constant as in a moving vehicle, where shocks may occur as in a moving vehicle or where shocks exceed ordinary house-hold or office use.

品名	YH-7C12-01-9
部品名	基板
規格	
製造工程	
検査工程	
組立工程	
出荷工程	
備考	

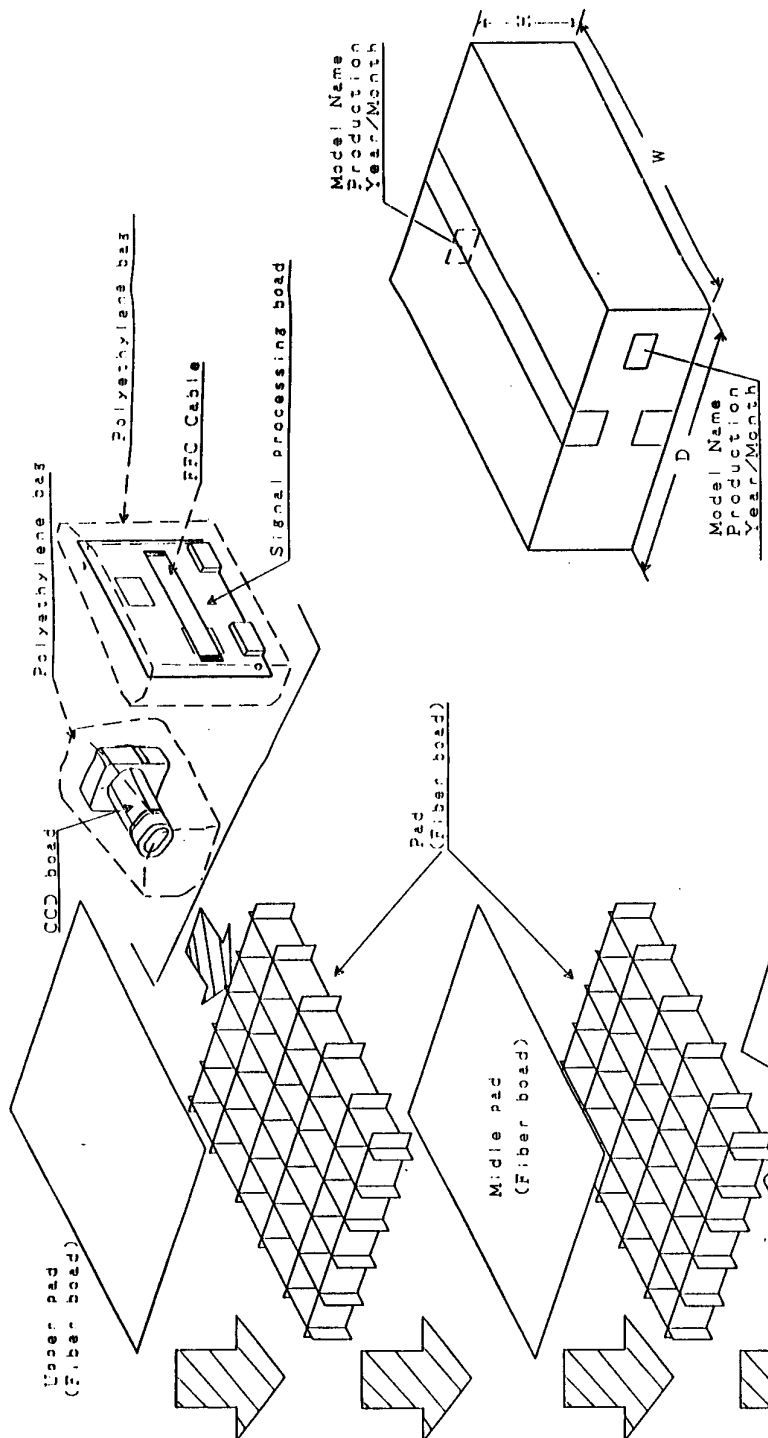
SHARP	19
発行	3行
検査	10
部品	0
材料	0
加工	0
組立	0
検査	0
出荷	0



品名	YH-7B Series
部品名	基板
規格	
製造工程	
検査工程	
組立工程	
出荷工程	
備考	
設計	Y. Kumaji
承認	
検査	
組立	
出荷	
発行	1996.1.30
検査	
部品	
材料	
加工	
組立	
検査	
出荷	

SHARP CORPORATION 電機システム事業本部  
YH-7B Series  
SHARP CORPORATION 電機システム事業本部  
YH-7B Series

# PACKAGE SPECIFICATION (Color CCD camera module)



### Master cation

- A-1 type (Regular Slotted Container)
- I-Seal (Double wall corrugated fiberboard)
- Weight : approx. kg
- Size : 487(W) X 337(D) X 171(H) mm
- Quantity : 50 pieces/CTN

PARTS CODE		PROCESS		PIECE		MATERIAL		FINISH		NAME	
DATE	NO.	REVISE	APPROVE	CHECK	SECTION	DRAW	CHARGE				
DATE 29. FEB 1985	1										
DATE 29. FEB 1985 BUSINES Promotion Dept. DRAWING NO. YH-TC12/28312 CUSTOMER NO.											

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CCD, module, NTSC, YH7C12