

PREPARED BY: _____	DATE: _____	<h1>SHARP</h1> <p>APPLIANCE SYSTEMS GROUP</p> <p>SHARP CORPORATION</p> <h2>SPECIFICATION</h2>	No. YH-7282 -01
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			APPLICABLE DIVISION
			YAO PLANT APPLIANCE SYSTEMS GROUP

PRELIMINARY

SPECIFICATION FOR CCD CAMERA MODULE

 Model No.
YH-7B12
YH-8B12

CUSTOMER'S APPROVAL

DATE _____

BY _____

PRESENTED BY *H. Madono*

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1. Application

This document describes the specifications of Color CCD Camera Module to be supplied to _____.

All figures described in this document are based on the conditions that the module 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-7B12	NTSC	Composite	Electronic Exposure (EE)	○
YH-8B12	PAL			

2. General Description

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

- 1)TV system; NTSC, PAL
- 2) Output signal; Composite
- 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, PAL;700mV)
- 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(1)

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TV system	NTSC	PAL
Image sensor	1/4" Inter-line transfer CCD	
Total pixels	542(H) x 492(V) (Total;270K)	542(H) x 582(V) (Total;320K)
Effective pixels	512(H) x 492(V) (Total;250K)	512(H) x 582(V) (Total;300K)
Resolution		
Horizontal	300 TV lines	300 TV lines
Vertical	280 TV lines	350 TV lines
Distance from chart to camera:70cm		
S/N ratio	≥ 46 dB Condition : AGC off High pass filter 10KHz Fsc trap Weighting filter on Low pass filter(NTSC;4.2MHz.PAL;5.0MHz) Light shield	
Minimum illumination	≤ 17 lx Condition : ITE gray scale chart(Gamma = 1.0) Y signal amplitude 350mV	
Maximum illumination	$\geq 20,000$ lx	
White balance	TTL auto tracing white balance, Range; 2,800 to 6,800°K	
Iris control	EE type	
Gamma correction	approx. 0.6	
Auto Gain Control	Yes Backlight compensation, Switch selectable	
Sub-carrier frequency	3.579545MHz ± 200 Hz	4.43361875MHz ± 200 Hz
Sync. system	Internal only	
Output video signal		
Composite type	1.0Vp-p/75 Ω	1.0Vp-p/75 Ω
•Y signal amplitude *(condition 1)	714mV ± 100 mV	700mV ± 100 mV
•Color signal*(condition 2)		
R amplitude	88.25 IRE $\pm 25\%$	94.8 IRE $\pm 25\%$
R phase	103.4° $\pm 15^\circ$	103.4° $\pm 15^\circ$
B amplitude	62.2 IRE $\pm 25\%$	67.2 IRE $\pm 25\%$
B phase	347.1° $\pm 15^\circ$	347.1° $\pm 15^\circ$
•Sync. amplitude	286mV ± 80 mV	300mV ± 80 mV
•Burst amplitude	286mV ± 90 mV	300mV ± 90 mV
Lens		
focal length	approx. 4.3 mm(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 V, ≤ 500 mA	
Operating temperature	-10 to +50°C	
Storage temperature	-20 to +60°C	
Dimension		
CCD board	20(H) x 20(V) x 38(D) mm	
Signal processing board	70(H) x 43(V) x 16(D) mm	

*

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Condition 1; ITE gray scale chart (Gamma = 1.0)

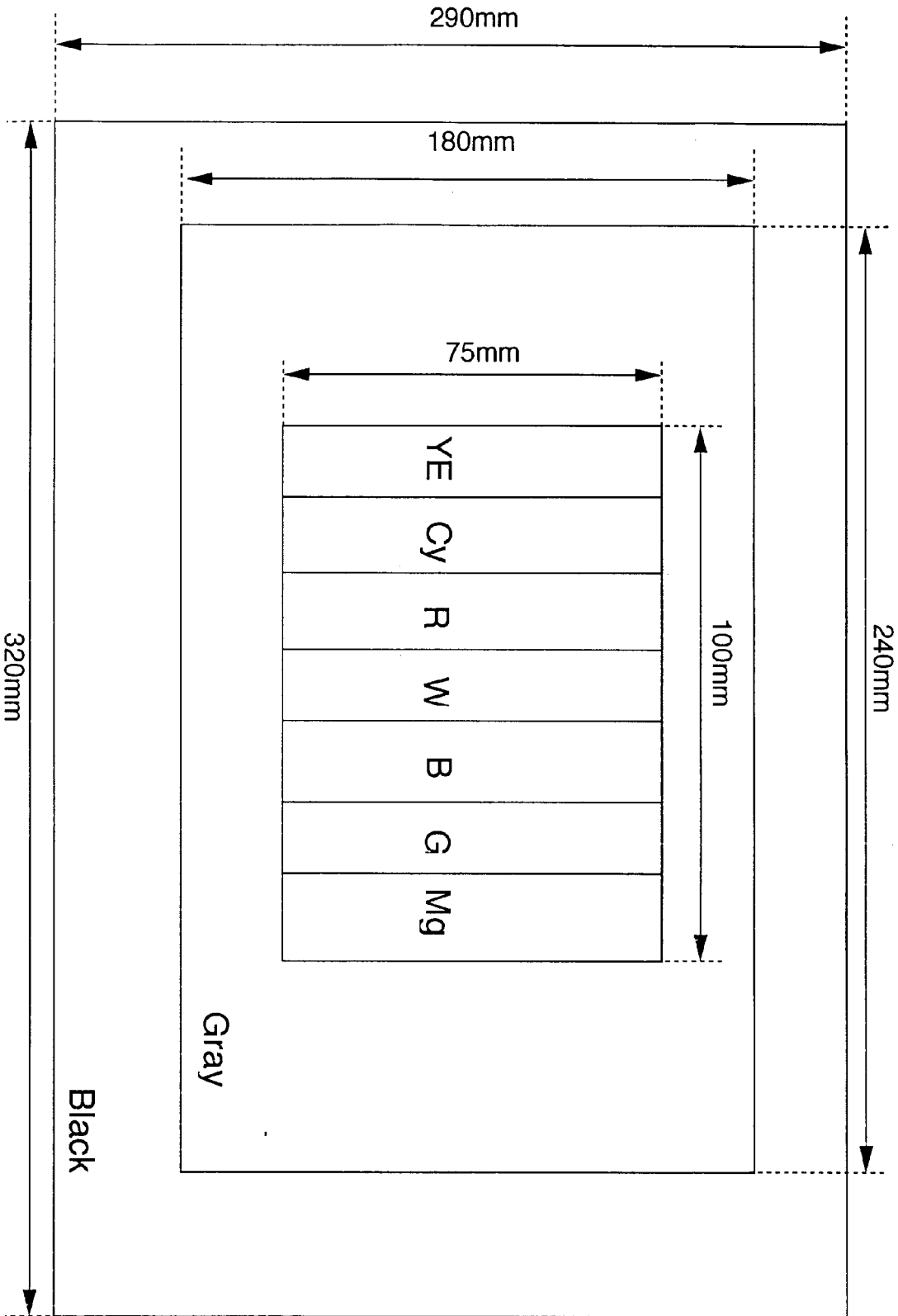
Condition 2; Exclusive color chart (page YH-7181-02 -4)

Line select; 141 lines(NTSC)/166 lines(PAL)

Y(white) amplitude; 714mV(NTSC)/700mV(PAL)

Color temp.; 5,100°K

Proprietary color chart: • Transmissive type
• Transmissivity of Gray part; 27%



4. Connector

4 - 1. CN501(Signal processing board)

- 1) Power input, Signal output
- 2) Pin assignment

No.	Name
1	GND
2	_____
3	_____
4	Composite video signal
5	_____
6	GND
7	Power input(Vdd)

3) Connector used in the module Molex 53398 - 0710

4) Mating connector Molex 51021 - 0710

4 - 2. CN103(Signal processing board)

- 1) Video signal control
- 2) Pin assignment

No.	Name
1	GND
2	_____
3	_____
4	_____
5	_____
6	_____
7	Video signal level down control input
8	Video signal level up control input

3) Connector used in the module Molex 53398 - 0810

4) Mating connector Molex 51021 - 0810

4 -3. CN100(Signal processing board)

- 1) Connection between Signal processing board and CCD board

2) Connector used in the module Molex 52559 - 1690

4 -4. CN1(CCD board)

- 1) Connection between Signal processing board and CCD board

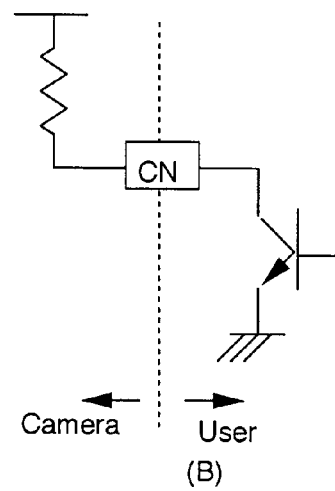
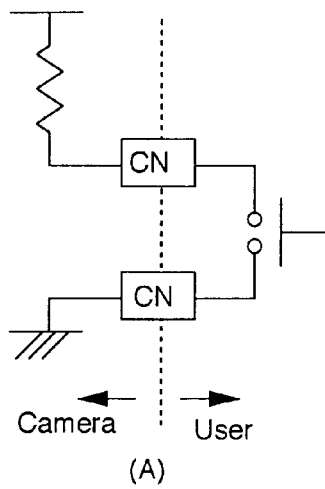
2) Connector used in the module Molex 52559 - 1490

5. Video control (CN401)

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1) Interface

Either (A) or (B)



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

3) Video signal(contrast)level

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

Pin No.	7	9	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°C for 24 H and then left at room temp. for 2 H min.

2) Low temp. operation test

To prove that the module normally operates for continuously 5H at ambient temp. of -10°C .

3) High temp. storage test

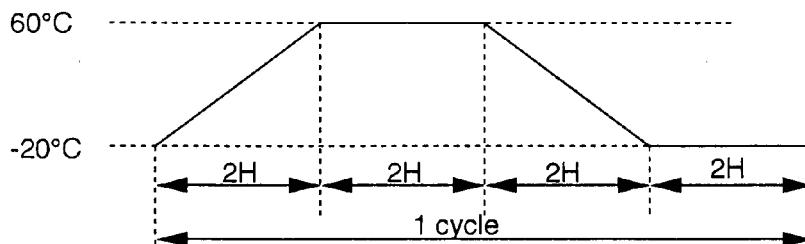
To prove that the module shows no abnormal operation and function after it is stored at ambient temp. of 60°C for 24 H and then left at room temp. for 2 H min.

4) High temp. operation test

To prove that the module normally operates for continuously 5H at ambient temp. of 50°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) Normal 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°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 directions 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)

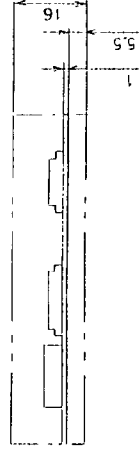
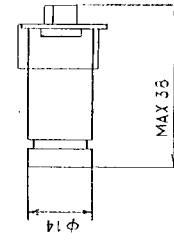
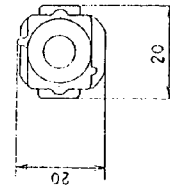
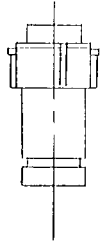
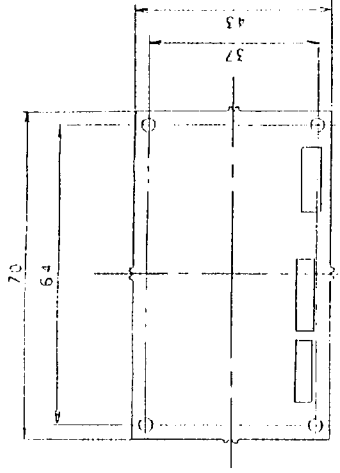
*10 pixels in both horizontal edges and 9 pixel in both vertical edges shall be disregarded as a void area.

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) Do not use the module under a fluorescent lamp of 60Hz in case of PAL TV system or 50Hz in case of NTSC TV system.
 The differences in field and light frequency will cause image flicker.
- 4) 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.
- 5) Care shall be used not to damage the components during installation or removal of the cables.
- 6) Never shoot at direct sunlight, since color filters of CCD will be discolored.
 The display picture disappears in case of shooting at direct sunlight.
- 7) An earth band or conductive mat shall be used to avoid the generation of static electricity that easily damages the CCD sensors.
- 8) Under fluorescent lamp, camera module image taken by EE type camera module slowly changes color.
- 9) 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 exceeds ordinary house-hold or office use.

PRELIMINARY



CCD board

Signal process board

