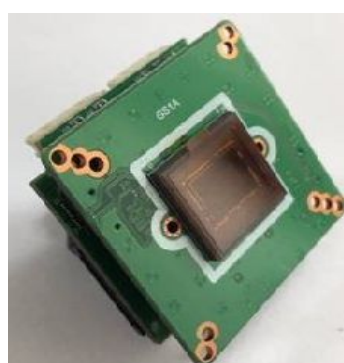
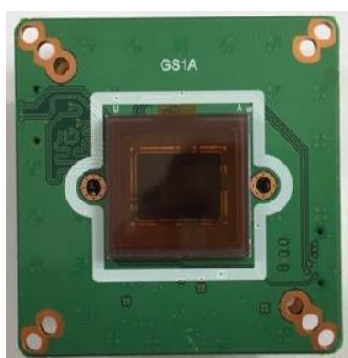




G20C42S

GLOBAL SHUTTER board Camera
SONY "IMX392LQR-C" Image Sensor
1080/60fps, WDR@30fps



REVISION CONTENTS

NO	REVISION CONTENTS	REVISION DATE	Page	REMARKS
V1.0	- The release version	Mar, 2019		



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1. Features (Continuation)

■ SONY1/2.3" 2 Mega Pixels "**Pregius**" IMX392 CMOS Image Sensor

- Sony's **Pregius** global shutter CMOS technology truly fulfills its promise: crisp, clear, distortion-free images at high speeds.

■ **Global Shutter**

- About fast moving object, **Global shutter** scans the whole frame, so it doesn't show horizontal lines or image distortions. But **Rolling shutter** scans horizontal lines gradually, it shows horizontal lines or image distortions.

Global Shutter

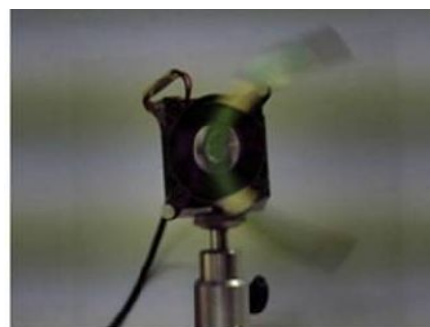


GS

MOVING



Rolling Shutter



RS

MOVING



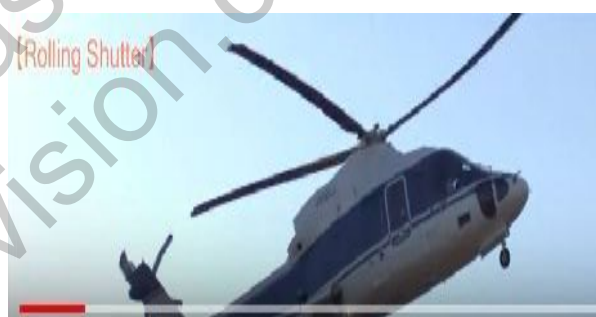
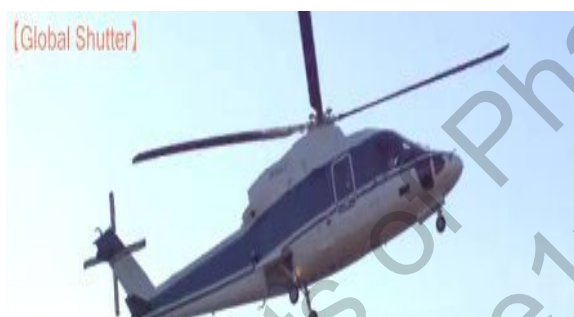
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Global Shutter



Rolling Shutter



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■ Progressive Scan (1080P)

■ Hybrid Video Output support

- 3G-SDI, HD-SDI, EXSDI (Support 1080p 60/50, 1080i 60/50, 1080p 30/25, 720p 60/50/30/25)
- ANALOG HD (1080p 30/25, 720p 60/50/30/25)
- CVBS

■ Natural Color Reproduction and clear & vivid image

■ Enhance Local Real-time Surveillance Image Quality

■ Double shutter Wide Dynamic Range Compensation(WDR@30fps)

WDR function extends dynamic range of image by composing each differently exposed image. It repeatedly applies long exposure and short exposure for every frame. It applies adaptive tone mapping algorithm to establish linearity among these two images. (Dual shutter image fusion, Frame by Frame)



■ Advanced RGB Interpolator for High Resolution

This function converts 3channel RGB to RGB Bayer Pattern.

The most important goal of this function is to correct unknown pixel



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■ Adaptive Digital Noise Reducer(2D/3D)

This feature removes noise in images(spatial, temporal domain)

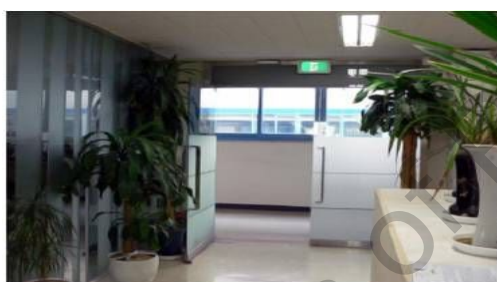
Temporal noise is reduced by 3D filter using frame memory and spatial noise is reduced by 2D filter.

Especially, the ghost effect is reduced by motion adaptive filter.



■ Edge enhancement

This function enhances the edge of image for sharpness



■ Superior low light performance : Support SENS-UP

■ Miscellaneous functions

- ACE (Adaptive Contrast Enhancer), De-fog, LSC (Lens Shading Compensation), Digital zoom, BLC(Back Light Compensation), HLC(High Light Compensation), Privacy Zone Masking, Motion Detection, DIS etc.

■ OSD (On Screen Display)

This camera supports the OSD function.

■ Communication

- PELCO-D/PELCO-D

■ Special Function t.b.d.

- Support External Trigger
- Support Strobe out
- Support Genlock

■ Option

- Digital Output model (BT.1120)



2. Precautions

- Avoid aiming the camera directly towards extremely bright objects such as sun, as this may damage the CMOS image sensor.
- Do not use the camera in the extreme environments.
 - Extremely hot or cold place such as radiators, heat registers (Operating condition -10°C ~ +50°C, under 90% humidity)
 - Close to generators of powerful electromagnetic radiation.
 - The place which is subject to light reflections, unstable lighting conditions, strong vibration.
- Remove dust or dirt on the surface of the CMOS with a blower.
- Do not apply excessive voltage. (Operating Power Input : DC 12 +- 10%)
- The following phenomena that may appear in images are specific to CMOS. They do not indicate malfunctions.
 - White Flecks : The fleck especially tend to be seen when operation at a high environmental temp. or when you have raised the master gain and use in sense-up function.
 - Vertical Smear : When an extremely bright object, such as a strong spotlight or flashlight, is being shot, vertical tails may be produced on the screen, or the image may be distorted.
 - Alias : When fine patterns, stripes, or lines are shot, they may appear or flicker.
- Do not drop objects on the product or apply strong blows to it.
- Do not install the unit in humid, dusty, or sooty locations. Doing so may cause fire or electric shock.



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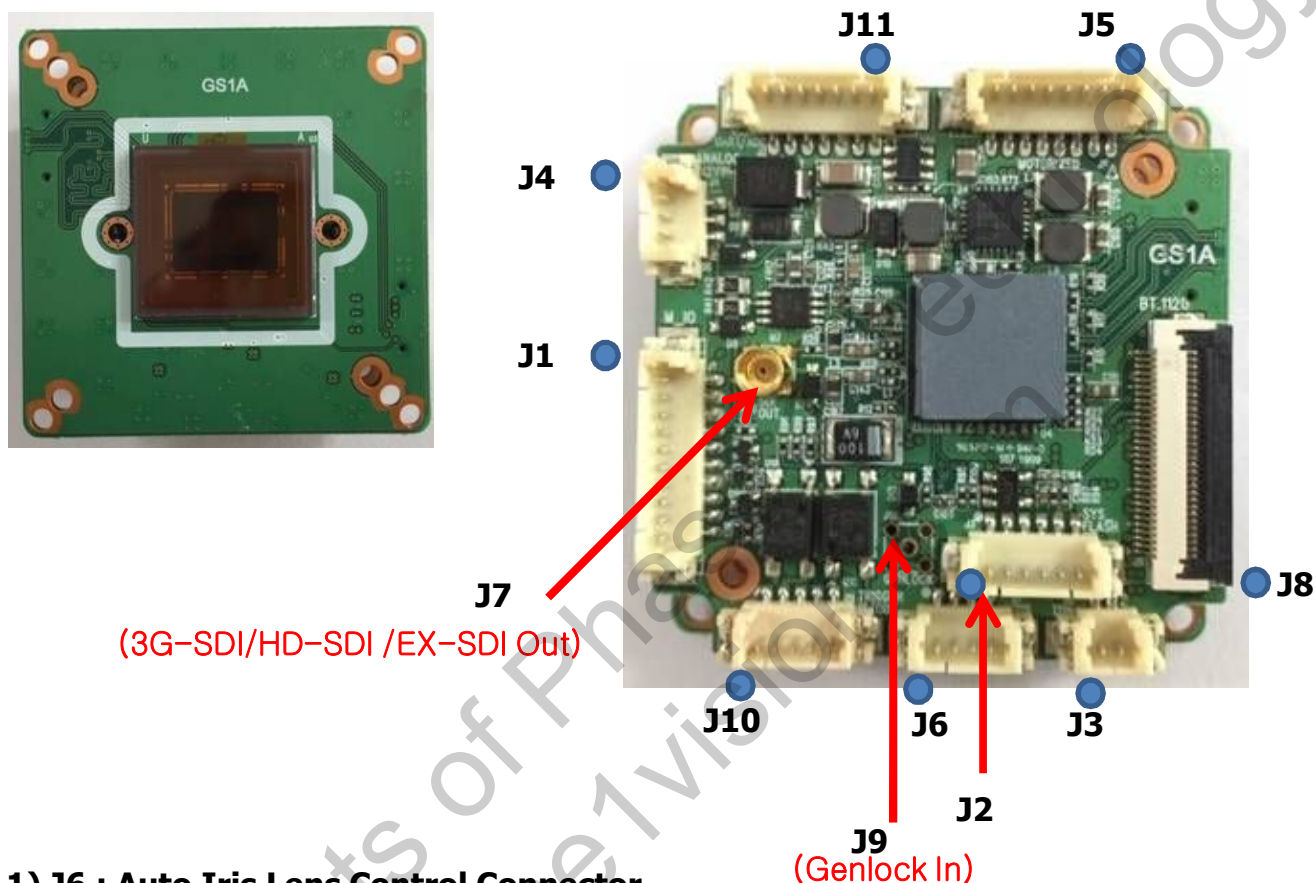
3. Applications & Information

3-1. General Specifications & Functions

Items	Sub-items	Specification
CMOS	Device	SONY1/2.3" 2 Mega Pixels "GLOBAL SHUTTER" IMX392 Image Sensor
	Effective Pixels	1920(H) x 1080(V)
Performance	Image / Frame rate	1080P Full HD (60fps / 50fps)
	Scanning system	16:9 Progressive Scan
	Min.illumination	More than 0.03Lux at sens up « off »
	S/N Ratio	More than 52dB (AGC off)
Functions	Video Interface	HD-SDI 1080p@30_25fps
		3G-SDI 1080p@60_50fps, 1080i@60_50fps
		HD-SDI/EX-SDI Support
		Analog HD 1080p@30_25fps
		CVBS
	Day & Night	Auto / Day / B&W / EXTERN
	Color Temperature	1800 ~ 10500K
	WDR	Support 1080p@30_25fps
	ACE	Off / LOW / MIDDLE / HIGH
	BLC	Off/ON
	HLC	Off/ON
	AGC	Level Setting
	D-Zoom	1.0x ~ 16.0x
	Camera ID	Off/On
	White Balance	AUTO / AUTOext / PRESET / MANUAL
	DNR	2D+3D (OFF / LOW / MIDDLE / HIGH)
	Motion Detection	Off/ON
	Privacy Mask	24 Areas (On/Off, Color, Position)
	Sens-Up	Auto (X2 ~ X32)
Etc. Function	Etc. Function	SHARPNESS, GAMMA, MIRROR, FLIP, DIS Etc.
	ColorBar	Off/ON
	Special	Trigger input / Strobe out / Genlock (TBD)
	Option	Digital Output (BT.1120)
Power Consumption		DC 12V, Less than 4Watts
Operating Temperature		-10°C ~ +50°C
Operating Humidity		Less than 90%
PCB Size		42mm x 42mm Dual stack board



3-2. I/O Interface Specification



1) J6 : Auto Iris Lens Control Connector

Pin NO	Pin Name	Description	DC IRIS	I/O
1	DAMP+	DC Iris Damping Motor +	DAMP+	O
2	DAMP-	DC Iris Damping Motor -	DAMP-	O
3	DRIVE+	DC Iris Motor Drive/	DRIVE+	O
4	DRIVE-	Board GROUND	DRIVE-	O
Yeonho Electronics, 12505WS-04A00				

2) J3 : Day & Night Motor Control Connector

Pin NO	Pin Name	Description	Normal	Active	I/O
1	MA+	Day & Night Motor Drive + Output	Open	5V/0V	O
2	MA-	Day & Night Motor Drive - Output	Open	0V/5V	O
Yeonho Electronics, 12505WS-02A00					



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3) J1 : I/O Connector

Pin NO	Pin Name	Description	Normal	Active	I/O
1	V+12V	DC+12V Input	-	-	I
2	GND	Board Ground	-	-	-
3	GND	Board Ground	-	-	-
4	ANALOG VIDEO	Video Output(CVBS, Analog HD-T/C/A)	-	-	O
5	D/N-SEL(GPIO)	External Day & Night Select Input	0V/3.3V	3.3V/0V	I
6	NC	-	-	-	-
7	GND	Board Ground	-	-	-
8	KEY	AD-Key OSD Control	-	-	I
9	ALARM	Alarm Output	OPEN	0V(Ground)	O
10	N/C	-	-	-	-
Yeonho Electronics, 12505WS-10A00					

4) J4 : ANALOG VIDEO / 12VIN

Pin NO	Pin Name	Description	Normal	Active	I/O
1	V+12V	DC+12V Input	-	-	I
2	GND	Board Ground	-	-	-
3	ANALOG VIDEO	Video Output(CVBS, Analog HD-T/C/A-T/C/A)	-	-	O
Yeonho Electronics, 12505WS-3A00					

5) J5 : MOTORIZED LENS - OPTION

Pin NO	Pin Name	Description	Active	I/O
1	ZA+	Zoom A+	-	O
2	ZA-	Zoom A-	-	O
3	ZB+	Zoom B+	-	O
4	ZB-	Zoom B-	-	O
5	FA+	Focus A+	-	O
6	FA-	Focus A-	-	O
7	FB+	Focus B+	-	O
8	FB-	Focus B-	-	O
Yeonho Electronics, 12505WS-08A00				

6) J11 : ADC KEY / UART Connector

Pin NO	Pin Name	Description	Normal	Active	I/O
1	GND	Board Ground	-	-	-
2	KEY	AD-Key OSD Control	-	-	I
3	GND	Board Ground	-	-	-
4	485 EN	485 EN	-	-	O
5	UART0	UART0 TX	-	-	O
6	UART0	UART0 RX	-	-	I
7	V+3.3	V+3.3			
Yeonho Electronics, 12505WS-7A00					

7) J7 : SDI Serial Output (MMCX CONNECTOR)

8) J9 : SPECIAL FUNCTION - GENLOCK (MMCX CONNECTOR-OPTION)



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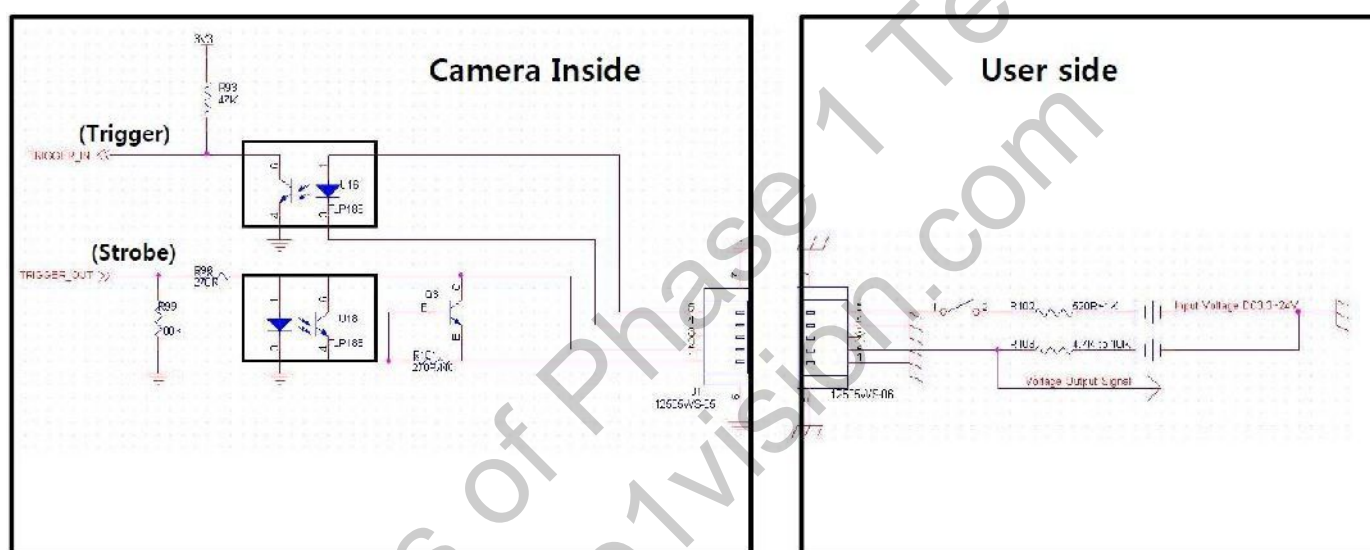
Revision No. 1.0

9) J2 : SYSTEM FLASH PORT (NOT USED)

Pin NO	Pin Name	Description	Normal	Active	I/O
1	NRST	DOWNLOADER PORT	-	-	X
2	CS	DOWNLOADER PORT	-	-	X
3	MOSI	DOWNLOADER PORT	-	-	X
4	MISO	DOWNLOADER PORT	-	-	X
5	SCLK	DOWNLOADER PORT	-	-	X
6	GND	BOARD GROUND	-	-	-

Yeonho Electronics, 12505WS-6A00

10) J10 : EXTERNAL TRIGGER PORT



11) J8 : Digital Output (BT.1120) - OPTION

Pin NO	Pin Name	Description	I/O	Pin NO	Pin Name	Description	I/O
1	YO1	Luminance Data1	O	16	CO8	Chroma Data8	O
2	YO2	Luminance Data2	O	17	HSYNC	Horizontal Sync	-
3	YO3	Luminance Data3	O	18	VSNC	Vertical Sync	-
4	YO4	Luminance Data4	O	19	GND	-	-
5	YO5	Luminance Data5	O	20	PCLK	Video Data Clock	-
6	YO6	Luminance Data6	O	21	GND	-	-
7	YO7	Luminance Data7	O	22	MD-OUT	Motion Out	O
8	YO8	Luminance Data8	O	23	ADC KEY	ADC KEY In	I
9	CO1	Chroma Data1	O	24	I2C-SDA	I2C Data	I/O
10	CO2	Chroma Data2	O	25	I2C-SCL	I2C Clock	O
11	CO3	Chroma Data3	O	26	GND	-	-
12	CO4	Chroma Data4	O	27	GND	-	-
13	CO5	Chroma Data5	O	28	XTRING IN	NC	-
14	CO6	Chroma Data6	O	29	GND	-	-
15	CO7	Chroma Data7	O	30	RSTN	Reset	I

Yeonho Electronics, 05002HR-NNJ05 30P



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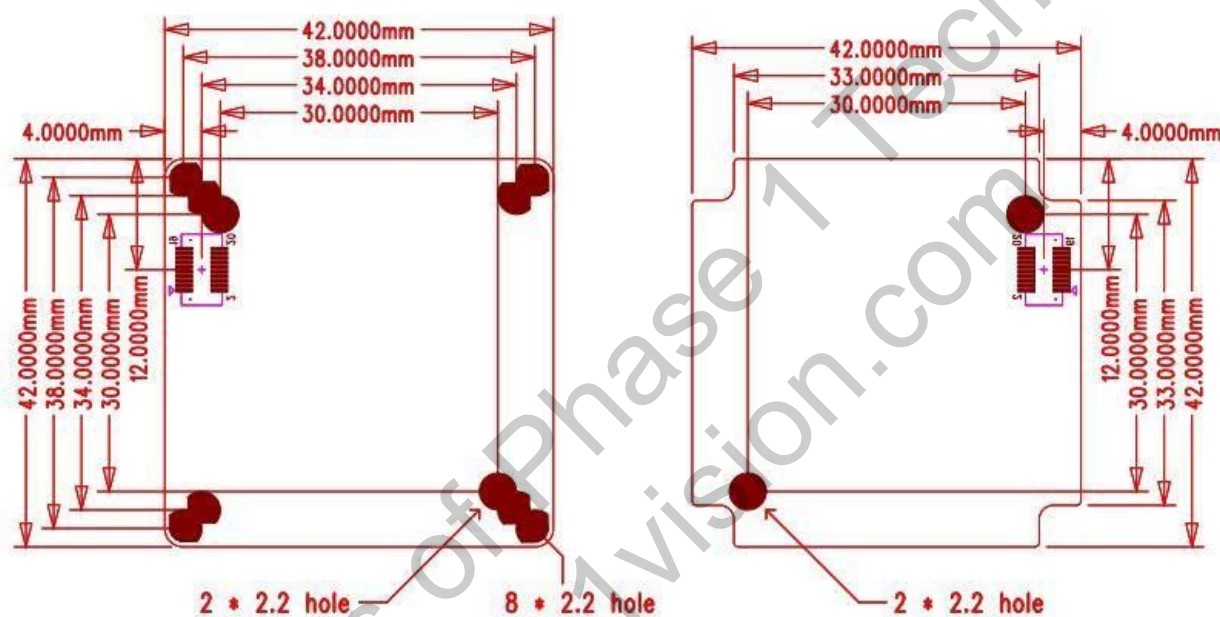
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3-3. OSD Menu Tree

EDGE DET	OFF / ON	
EXPOSURE	LENS	DC/MANUAL
	BRIGHTNESS	Level Setting
	SHUTTER	Lens mode is DC : AUTO (OUTDOOR / INDOOR / DEBLUR)
		Lens mode is MANUAL : AUTO (NORMAL / DEBLUR)
		MANUAL(1/25_30, -----, 1/30,000)
		FLICKER
	SENS-UP	X4, x2 ---- x32, OFF
	AGC	Level Setting
BACKLIGHT	OFF	
	HLC	
	BLC	
	WDR	Frame by Frame(1080p/30fps)
DAY&NIGHT	AUTO / COLOR / B&W / EXTERN	
WHITE BAL	AWB	AUTO / AUTOext / PRESET / MANUAL
DNR	OFF/LOW/MIDDLE/HIGH	
IMAGE	COLOR GAIN	Level Setting
	SHARPNESS	Level Setting
	GAMMA	0.45 ~ 0.75
	MIRROR	OFF / ON
	FLIP	OFF / ON
	D-ZOOM	1.0x (1.0x ~ 16.0x)
	ACE	OFF / LOW / MIDDLE / HIGH
	DEFOG	OFF / ON
	SHADING	OFF / ON
	PRIVACY	2 Kinds : BOX(16ea), POLYGON(8ea)
MOTION	OFF / ON (4ea Zone)	
SYSTEM	COM.	CAM ID / BAUDRATE
	OUTPUT	FRAME RATE : 1080P 60/50, 1080P 30/25, 1080i 60/50 720P 60/50, 720P 30/25
		FREQ : 60/50Hz
		SDI MODE : SDI, 3G-SDI
		ANALOG MODE : CVBS/HD-T, CVBS/HD-C, CVBS/HD-A, CVBS
		CONFIRM : YES(pushing)
	COLOR SPACE	3 Kinds
	COLOR BAR	OFF / ON
	LANGUAGE	ENG / CHN / CHN(S) / JPN / KOR
	CAM TITLE	
	RESET	
EXIT		



3-4. PCB Outline Dimensions



TOP side

BOTTOM side