

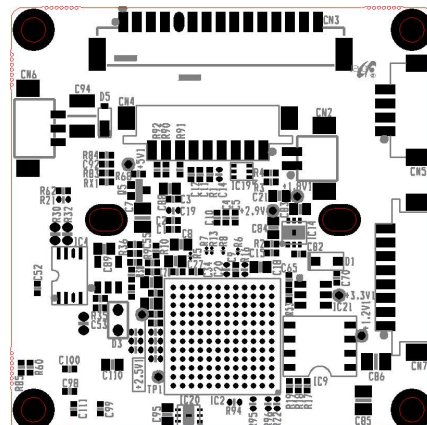
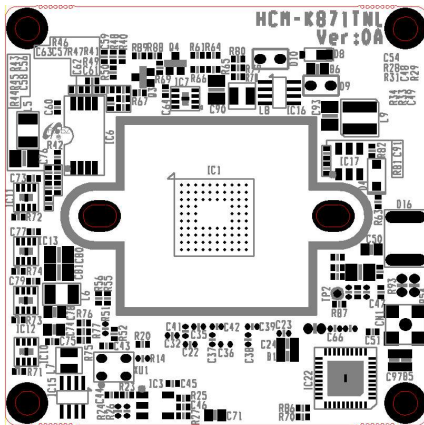


|                    |                         |
|--------------------|-------------------------|
| <b>CUSTOMER</b>    |                         |
| <b>ATTENTION 1</b> | <b>QHD(use 5M CMOS)</b> |
| <b>ATTENTION 2</b> | <b>38x38mm</b>          |
| <b>MODEL</b>       | <b>HCM-K871TNL</b>      |
| <b>CODE NO</b>     |                         |

4M EX-SDI/TVI/AHD/VBS Color PoC Camera Module

# SPECIFICATIONS

JAN. 17. 2020



P&A Corporation



# Table of Contents

- Revision History

|  |    |
|--|----|
| <b>1. Features</b>                       | 4  |
| <b>2. Applications &amp; Information</b> |    |
| 2-1. General Specifications & Functions  | 7  |
| 2-2. Block Diagram                       | 8  |
| 2-3. I/O Interface Specifications        |    |
| 2-3-1. I/O Circuit                       | 9  |
| 2-3-2. I/O Specifications                | 10 |
| 2-3-3. ADC Key                           | 13 |
| 2-3-4. How to Choose a HD-SDI & EX-SDI   | 13 |
| 2-3-5. PCB Layout                        | 14 |
| 2-4. PCB Outline Dimensions              | 15 |
| 2-5. OSD Menu tree                       | 16 |
| 2-6. OSD Menu Functions                  | 18 |
| <b>3. Packing Information</b>            | 32 |



## - Revision History

| Date        | Version | Description   |
|-------------|---------|---------------|
| JAN.07 2019 | 0A      | Establishment |



## 1. Features

### ■ 1/2.8" 5.14 MEGA SONY IMX335LQN-C CMOS

High definition 12-bit digital image signals offering 6.87 mega pixels are obtained with high speed of 60 fps (LVDS output I/F) and with low power consumption. High sensitivity, low dark current and no smear are achieved through the adoption of R, G and B primary color mosaic filters. This chip features an electronics shutter with variable charge-integration time.

### ■ High Resolution

This camera has realized high resolution of 3096x2218 using the top-notch full digital image processing, 12 Bit A/D serial signal processing and special algorithm technologies.

### ■ DNR (Digital Noise Reduction, 2D+3D)

The DNR technology eliminates noise thus generating a distinct and clear image.

This camera DNR function utilizes both an adaptive 2D filter reducing noise in the brightness of the image and an adaptive 3D filter reducing caused by movement.

### ■ DAY&NIGHT (Output the Filter changing signal)

This camera has the Day&Night function which outputs the filter changing signal with detecting the illumination condition. Day&Night operation feature an 'auto' mode which switches between day and night mode automatically based upon the level of illumination on the scene.

EXTERN mode changes between day and night operation upon triggering from an external source(Optional).

And also, the COLOR mode operates in daytime conditions to provide optimum colors, and B/W mode operates in night-time conditions to enhance the definition of the image.

### ■ SMART IR & WDR

Brightness of IR and saturation phenomenon are automatically adjusted. Multiple exposure WDR(Wide Dynamic Frange)

### ■ OSD (On Screen Display)

This camera supports the OSD function which is used with multi language. And so, the camera can be controlled by selecting text displayed on the monitor screen.

### ■ Privacy Mask Function (box: 16 area, polygon: 8ea)

Privacy masking allows for the 'blinking' of specific areas of a scene, where the viewing or recording of images is prohibited or undesired.

The technology of this camera allows for the user defined setting of a 16 point rectangle mask and 8 point polygon mask, which is overlaid onto the video signal output.



### ■ Use 2-Motor Lens

- **Auto Focus** : When the camera zooms IN / OUT, the focus is then automatically engaged. In addition, even when the Day & Night performed, and the focus then automatically engaged.
- **Manual Zoom In/Out** : When the user wants to control the camera more precise zoom and focus, manual control is possible.
- **One Push AF** : While viewing the camera image, when you need to correct the focus, the use of this feature, it is possible to obtain a better image.

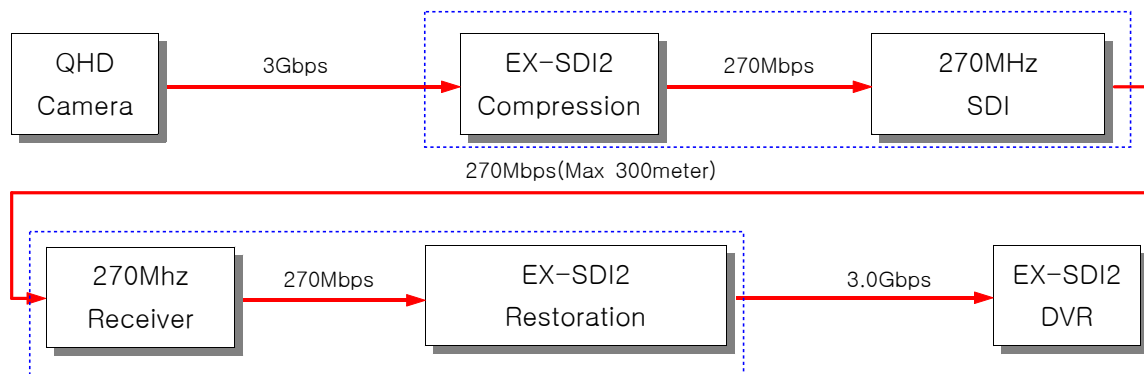
### ■ EX-SDI (HD-VLC : Long Reach Solution) & UTC, PoC

# This camera supports the EX-SDI2™(Long Reach Solution). The EX-SDI is no loss of up to 1,000m (warranty 600m) to HD-SDI (1.5GHz) is a revolutionary technology that can be transferred.

# The technical background EX-SDI2 : HD-SDI video signal is compressed and then lowered the frequency of 135Mhz to transfer technology to increase the distance almost no loss of image.

# This camera sends video signals to the coaxial cable and sends power and data at the same time. It uses + 48V DC power and can transmit up to 600 meters with 0.6A capacity.

#### <BLOCK DIAGRAM>





<Cable Reach>

| Cable Reach In Makers     |                     |                |                       |
|---------------------------|---------------------|----------------|-----------------------|
| Cable Type                | HD-VLC :<br>270Mb/s | HD : 1.485Gb/s | Full HD :<br>2.97Gb/s |
| belden 9292(RG11) 14AWG   | 675                 | 335            | 220                   |
| Belden 7731a(rg11) 14AWG  | 670                 | 330            | 220                   |
| Amphenol 5C-HFBT 16AWG    | 490                 | 245            | 160                   |
| Belden 1694A 18AWG        | 460                 | 230            | 150                   |
| West Penn 815 20AWG       | 535                 | 215            | 140                   |
| Belden RG6(82248) 18AWG   | 375                 | 185            | 120                   |
| West Penn 252815 20AWG    | 345                 | 170            | 110                   |
| Belden RG59(543945) 20AWG | 330                 | 160            | 100                   |
| Belden 1426A(RG59)20AWG   | 330                 | 160            | 100                   |
| Belden 1855A 23AWG        | 235                 | 115            | 75                    |
| JYEBAO RG59B/U 23AWG      | 220                 | 110            | 70                    |
| Canare 3C2V 25AWG         | 190                 | 95             | 60                    |

# Always, the core wire of the cable must be 100% copper. If the core of the cable when using a cable that is coated on copper aluminum, it has reached a distance shorter.



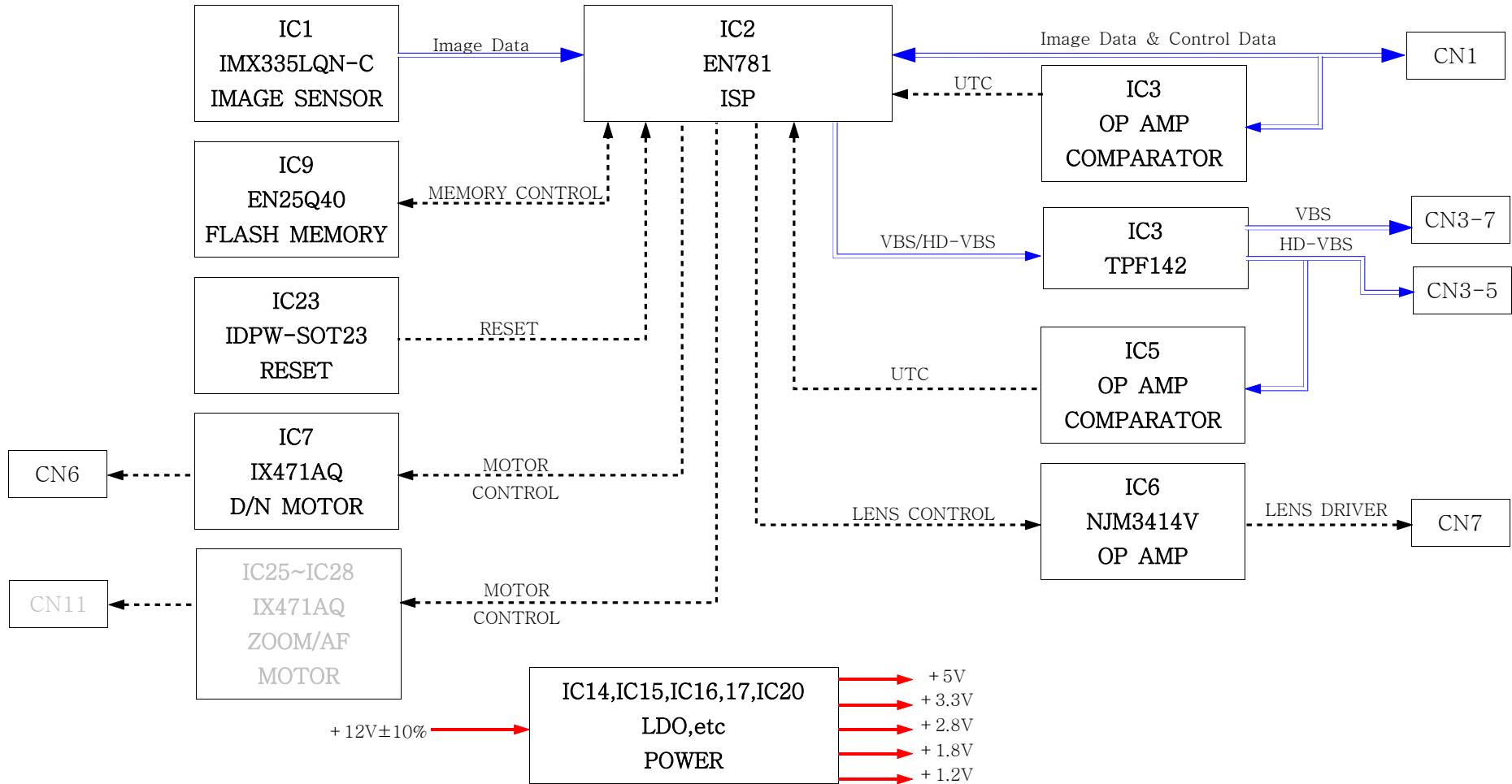
## 2. Applications & Information

### 2-1. General Specifications & Functions

| Items                       | Sub-items  | HCM-K871TNL   |
|-----------------------------|--|---|
| CMOS                        | Device   | 1/2.8" 5MEGA CMOS(SONY IMX335LQN-C)   |
|                             | Total  | 2704 (H) × 2104 (V)   |
|                             | Effective  | 2616 (H) × 1964 (V)   |
| Performance                 | Horizontal/Vertical Resolution                     | 2560/1440 Pixels  |
|                             | Minimum illumination<br>(F1.2, AGC Max)            | Color : 0.2 Lux(50IRE) / 0.05 Lux(15IRE)<br>B/W : 0.05 Lux(50IRE) / 0.02 Lux(15IRE) |
|                             | S/N Ratio  | More than 40dB(AGC off)   |
|                             | Frame  | 30fps QHD   |
| Functions                   | OSD  | English/Chinese/Chinese(S)/Japanese/Korea   |
|                             | Day&Night  | Auto/Color/B&W/EXTERN   |
|                             | ATW  | 1800 ~ 10500K   |
|                             | High Speed Shutter                                 | 1/30(1/25) ~ 1/30Ksec   |
|                             | WDR  | Line mode(30fps)/ Frame mode(15fps) and ROI   |
|                             | D-WDR  | Off/ON  |
|                             | BLC  | Off/ON (Size, Position)   |
|                             | HLC  | Level Setting(0~20), Color  |
|                             | AGC  | Level Setting(0~10) : Max 72dB(TBD)   |
|                             | Camera Title                                       | Off/On (Letters A~Z, Numerals 0~9, Symbols)   |
|                             | White Balance                                      | AUTO / AUTOext / PUSH / MANUAL  |
|                             | DNR  | 2D+3DNR, OFF/LOW/MIDDLE/HIGH  |
|                             | Motion Detection                                   | Off/ON  |
|                             | Privacy Mask                                       | BOX(16 Areas), Polygon(8 Areas)<br>(On/Off, Color, Position)                        |
|                             | Sens-Up  | x2,x4,x8,x16,x32  |
| De-Fog                      | AUTO/Manual  |   |
| Etc. Function               | Sharpness, Reverse(H,V)                            | 0~10, Mirror, Flip  |
|                             | Color Bar  | Off/ON  |
|                             | In/Output  | Alarm Output, Ext IR Mode, IR LED Off/On  |
|                             | UTC  | Pelco-D   |
| Video Output                | Analog Video Output(NTSC/PAL)                      | Analog VBS 1.0Vp-p (75ohm Terminated)   |
|                             | HD Analog Video Output(Selectable)                 | TVI VBS 1.0Vp-p (75ohm Terminated)  |
|                             |  | AHD VBS 1.0Vp-p (75ohm Terminated)  |
| Digital Serial Video Output | Selectable HD-SDI or EX-SDI1.0/2.0/2.1(Long Reach) |   |
| Lens                        | Iris   | DC iris(Galvanometer)   |
|                             | TDN  | Day & Night(Galvanometer)   |
|                             | 2MOTOR(AF)   | YT3013DB.ICR-JZ-4MP(YTOT)   |
| Power Consumption           |  | DC 12V±10%, Less than 3.2 Watts<br><b>DC 24V~48V±10% Less than 2.4 Watts</b>        |
| Operating Temperature       |  | Absolute : -10°C ~ +50°C  |
| Operating Humidity          |  | Less than 90%   |
| Dimension                   |  | 38mm x 38 mm x 1.0t   |



## 2-2. Block Diagram

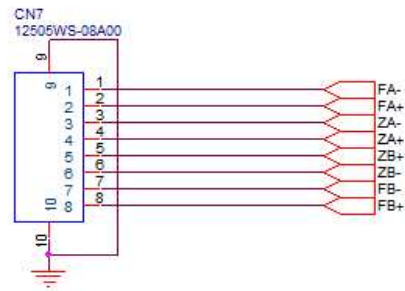
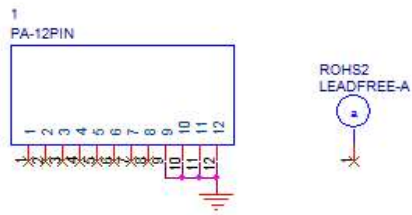
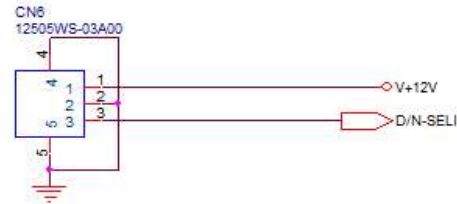
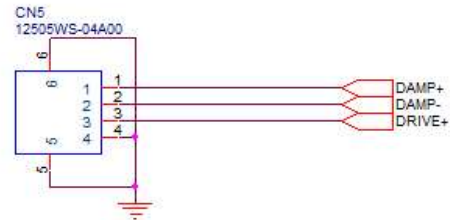
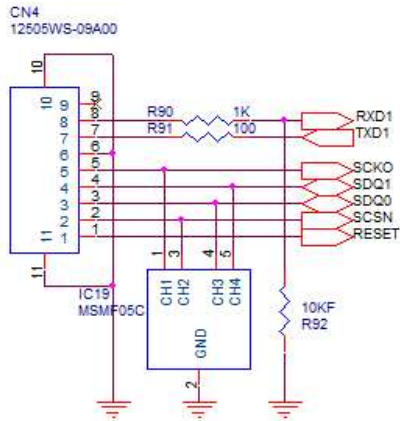
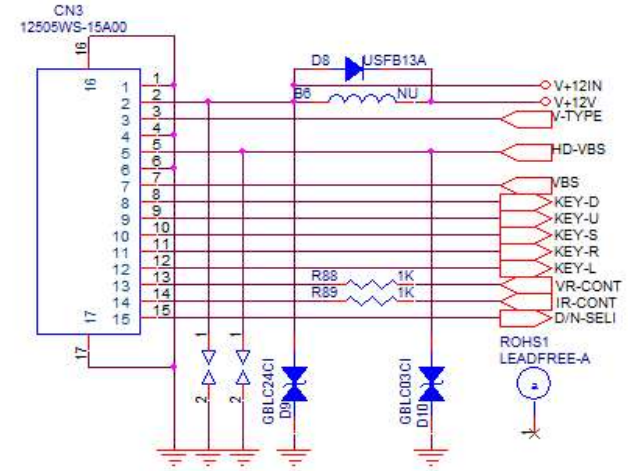
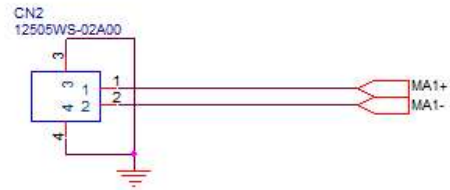
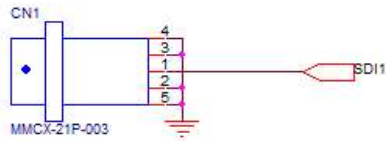






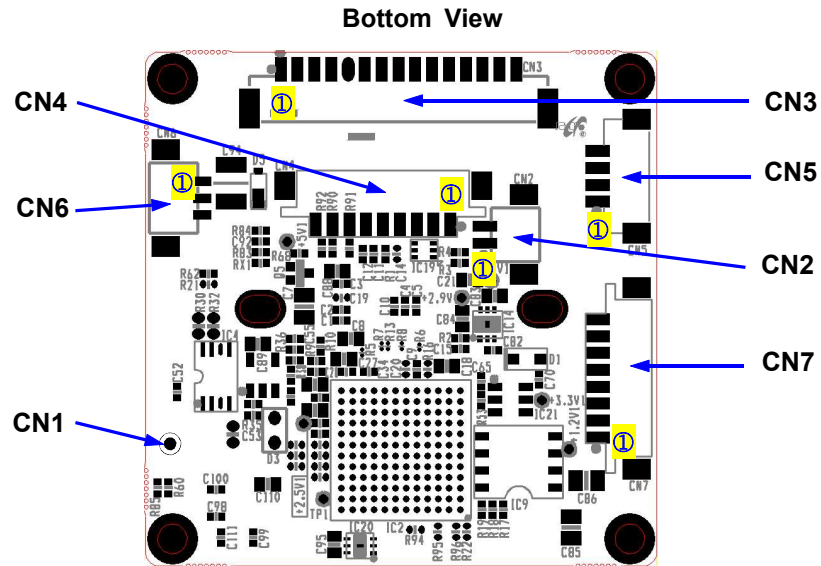
## 2-3. I/O Interface Specifications

### 2-3-1. I/O Circuit





## 2-3-2. I/O Specifications



① CN3 : I/O Connector -1

| Pin NO | Pin Name | Description                           | Normal  | Active  | I/O |
|--------|----------|---------------------------------------|---------|---------|-----|
| 1      | GND      | Board Ground                          | -       | -       | -   |
| 2      | V+12V    | DC+12V Input                          | DC+12V  | DC+12V  | I   |
| 3      | V-TYPE   | AHD:LOW / TVI:HIGH                    | -       | -       | O   |
| 4      | GND      | Board Ground                          | -       | -       | -   |
| 5      | HD-VBS   | 4M Composite Video Output(TVI or AHD) | 1Vp-p   | 1Vp-p   | O   |
| 6      | GND      | Board Ground                          | -       | -       | -   |
| 7      | VBS      | Composite Video Output(NTSC or PAL)   | 1Vp-p   | 1Vp-p   | O   |
| 8      | KEY-D    | OSD Control DOWN                      | 3.3V    | 0V      | I   |
| 9      | KEY-U    | OSD Control Up                        | 3.3V    | 0V      | I   |
| 10     | KEY-S    | ADC KEY INPUT/OSD Control Enter       | 3.3V    | ADC/0V  | I   |
| 11     | KEY-R    | OSD Control RIGHT                     | 3.3V    | 0V      | I   |
| 12     | KEY-L    | OSD Control LEFT                      | 3.3V    | 0V      | I   |
| 13     | VR-CONT  | Visible Light LED Control Output      | 0V/3.3V | 3.3V/0V | O   |



|                                   |          |                                   |            |         |   |
|-----------------------------------|----------|-----------------------------------|------------|---------|---|
| 14                                | IR-CONT  | Day & Night Control Output        | 0V/3.3V    | 3.3V/0V | O |
| 15                                | D/N-SELI | External Day & Night Select Input | Open(3.3V) | 0V      | I |
| Yeonho Electronics, 12505WS-15A00 |          |                                   |            |         |   |

② CN4 : Connector for upgrading Camera Program

| Pin NO                            | Pin Name | Description                  | Normal  | Active  | I/O |
|-----------------------------------|----------|------------------------------|---------|---------|-----|
| 1                                 | RESET    | System Reset                 | Open    | 3.3V/0V | I   |
| 2                                 | SCSN     | Flash Memory Chip Select     | Open    | 3.3V/0V | I   |
| 3                                 | SDQ0     | Flash Memory Data0           | Open    | 3.3V/0V | I   |
| 4                                 | SDQ1     | Flash Memory Data1           | Open    | 3.3V/0V | I   |
| 5                                 | SCKO     | Flash Memory Clock           | Open    | 3.3V/0V | I   |
| 6                                 | GND      | Board Ground                 | -       | -       | -   |
| 7                                 | TXD1     | UART Transmit OUTPUT1(RS232) | 3.3V/0V | 3.3V/0V | O   |
| 8                                 | RXD1     | UART Receive INPUT1(RS232)   | 0V      | 3.3V/0V | I   |
| Yeonho Electronics, 12505WS-08A00 |          |                              |         |         |     |

③ CN2 : Day & Night Motor Control Connector

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

④ CN5 : Auto Iris Lens Control Connector

| Pin NO                            | Pin Name | Description             | Active | 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                                 | GND      | Board GROUND            | -      | -   |
| Yeonho Electronics, 12505WS-04A00 |          |                         |        |     |

⑤ CN1 : HD-SDI / EX-SDI1,2 Digital Serial Video Output Connector

| Pin NO       | Pin Name | Description                          | Normal | Active  | I/O |
|--------------|----------|--------------------------------------|--------|---------|-----|
| 1            | SDI1     | HD-SDI / EX-SDI2 output(with DC+48V) | -      | 0.8Vp_p | O   |
| 2            | GND      | Board GROUND                         | -      | -       | -   |
| 3            | GND      | Board GROUND                         | -      | -       | -   |
| 4            | GND      | Board GROUND                         | -      | -       | -   |
| 5            | GND      | Board GROUND                         | -      | -       | -   |
| MMCX-210-003 |          |                                      |        |         |     |

⑥ CN6 : Extra DC+12V & Analog VBS Output

| Pin NO                            | Pin Name | Description                           | Normal | Active | I/O |
|-----------------------------------|----------|---------------------------------------|--------|--------|-----|
| 1                                 | V+12V    | Extra DC+12V Output(Use IR LED Board) | DC+12V | DC+12V | O   |
| 2                                 | GND      | Board GROUND                          | -      | -      | -   |
| 3                                 | VBS      | Composite Video Output(SUB1)          | 1Vp-p  | 1Vp-p  | O   |
| Yeonho Electronics, 12503WS-03A00 |          |                                       |        |        |     |

⑨ CN7 : Focus/Zoom Motor Connector(Optional)



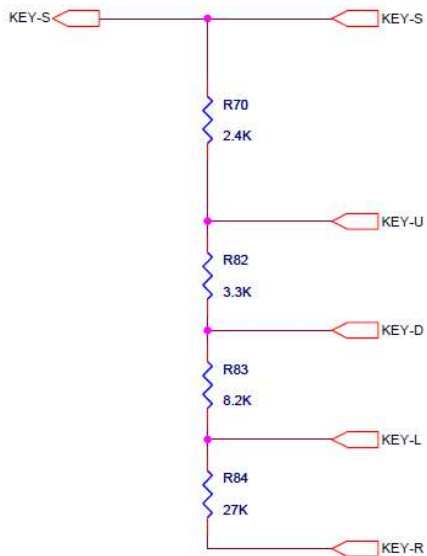
| Pin NO                            | Pin Name | Description                 | Normal | Active  | I/O |
|-----------------------------------|----------|-----------------------------|--------|---------|-----|
| 1                                 | FA-      | Focus A- Motor Drive Signal | Hi-Z   | 3.3V/0V | O   |
| 2                                 | FA+      | Focus A+ Motor Drive Signal | Hi-Z   | 3.3V/0V | O   |
| 3                                 | ZA-      | Zoom A- Motor Drive Signal  | Hi-Z   | 3.3V/0V | O   |
| 4                                 | ZA+      | Zoom A+ Motor Drive Signal  | Hi-Z   | 3.3V/0V | O   |
| 5                                 | ZB+      | Zoom B+ Motor Drive Signal  | Hi-Z   | 3.3V/0V | O   |
| 6                                 | ZB-      | Zoom B- Motor Drive Signal  | Hi-Z   | 3.3V/0V | O   |
| 7                                 | FB-      | Focus B- Motor Drive Signal | Hi-Z   | 3.3V/0V | O   |
| 8                                 | FB+      | Focus B+ Motor Drive Signal | Hi-Z   | 3.3V/0V | O   |
| Yeonho Electronics, 12505WS-08A00 |          |                             |        |         |     |

### 2-3-3. ADC KEY

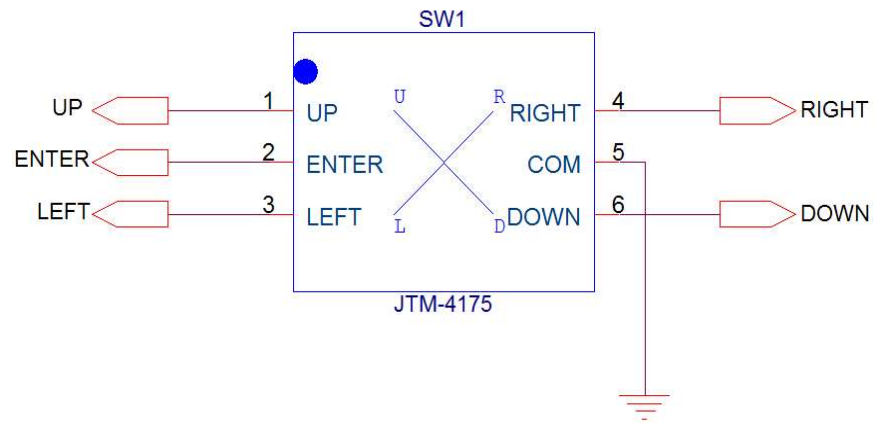
#### ① KEY-VOLTAGE

| net Name | Direction | Key Name      | Voltage |
|----------|-----------|---------------|---------|
| KEY-S    | ⊙         | SELECT(ENTER) | 0.00V   |
| KEY-U    | ▲         | UP            | 0.66V   |
| KEY-D    | ▼         | DOWN          | 1.21V   |
| KEY-L    | ◀         | LEFT          | 1.92V   |
| KEY-R    | ▶         | RIGHT         | 2.65V   |

#### ② Internal/External Circuit



#### ③ External Switch(Sample)





## 2-3-4. How to Choose a Video Output(OSD Key)

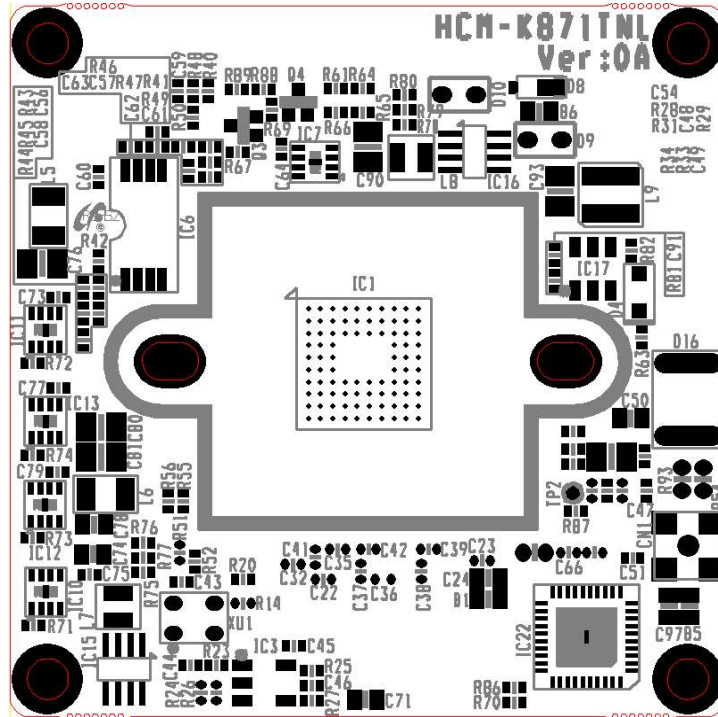
| NO | Output Port | Output Format | OSD KEY           |       |       |   | 적용                        | Remarks |
|----|-------------|---------------|-------------------|-------|-------|---|---------------------------|---------|
|    |             |               | 1'st              | 2'nd  | 3'rd  |   |                           |         |
| 1  | CN2-7       | CVBS          | DOWN              | LEFT  | ENTER | ○ | NTSC mega                 |         |
| 2  | CN2-5       | AHD           | DOWN              | RIGHT | ENTER | ○ | AHD 2.0                   |         |
| 3  |             | TVI           | DOWN              | DOWN  | ENTER | ○ | TVI                       |         |
| 5  | CN7 MMCX    | HD-SDI        | UP                | DOWN  | ENTER | ○ | HD-SDI                    |         |
| 6  |             | EX-SDI 1.0    | UP                | LEFT  | ENTER | ○ | EX-SDI 1.0                |         |
| 7  |             | EX-SDI 2.0    | UP                | UP    | ENTER | ○ | EX-SDI 2.0                |         |
| 8  |             | EX-SDI 2.1    | UP                | RIGHT | ENTER | ○ | EX-SDI 2.1                |         |
| 9  | 2-MOTOR(AF) | TELE          | UP(continuous)    |       |       | ○ | 2-MOTOR ZOOM MODULE only. |         |
| 10 |             | WIDE          | DOWN(continuous)  |       |       | ○ |                           |         |
| 11 |             | FAR           | RIGHT(continuous) |       |       | ○ |                           |         |
| 12 |             | NEAR          | LEFT(continuous)  |       |       | ○ |                           |         |
| 13 | Resolution  | 1440_30p      | RIGHT             | RIGHT | ENTER | ○ | 1440_30p                  |         |
| 14 |             | 1080_30p      | RIGHT             | LEFT  | ENTER | ○ | 1080_30p                  |         |
| 15 |             | 1440_25p      | RIGHT             | UP    | ENTER | ○ | 1440_25p                  |         |
| 16 |             | 1080_25p      | RIGHT             | DOWN  | ENTER | ○ | 1080_25p                  |         |

| MARK | CONNECTOR   | VIDEO Output         | HD-SDI | EX-SDI 1.0 | EX-SDI 2.0 | EX-SDI 2.1 | TVI | AHD | VBS | Remarks |
|------|---|----------------------|--------|------------|------------|------------|-----|-----|-----|---------|
| 1    | CN7 MMCX  | SDI Output           | ○      | ○          | ○          | ○          | X   | X   | X   |         |
| 2    | CN2-5   | HD ANALOG Output     | X      | X          | X          | X          | ○   | ○   | X   |         |
| 3    | CN2-7   | Monitor Output(NTSC) | △      | △          | △          | △          | △   | △   | ○   |         |
| ○    | Output performance function OK  |                      |        |            |            |            |     |     |     |         |
| X    | Output Disable  |                      |        |            |            |            |     |     |     |         |
| △    | Output OK, performance, function, image quality is not guaranteed. Simple MONITOR function (for adjusting angle of view and focus for installation) |                      |        |            |            |            |     |     |     |         |
|      | when Resolution is 1440p, SDI transfer format is fixed to EX-SDI 1.0 in SDI output mode   |                      |        |            |            |            |     |     |     |         |

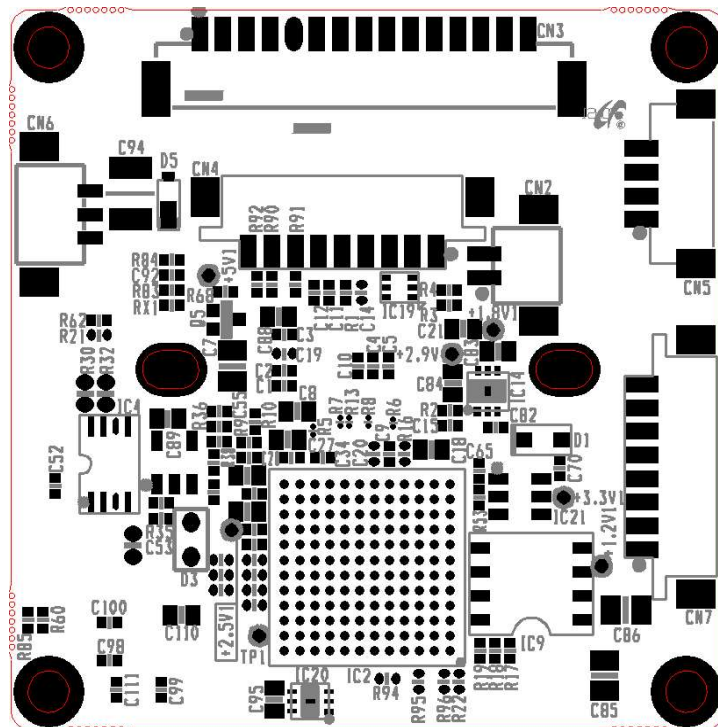


## 2-3-5. PCB Layout

<TOP VIEW>

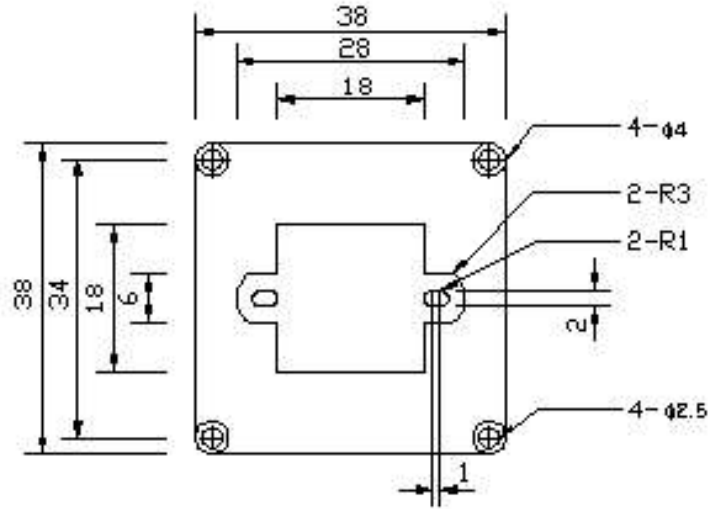


<BOTTOM VIEW>

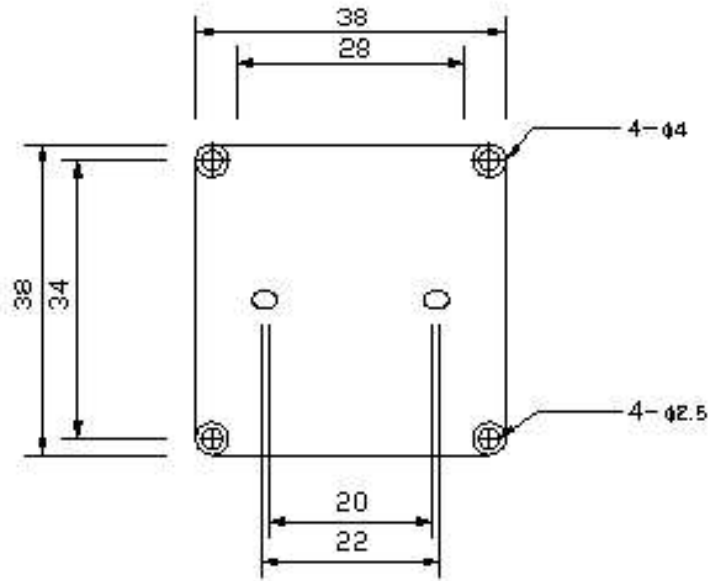




## 2-4. PCB Outline Dimensions



TOP VIEW



BOTTOM VIEW





## 2-5. OSD Menu tree

| Main Menu | Sub Menu    | Descriptions                                       |
|-----------|-------------|--|
| LENS      | MODE        | DC,MANUAL  |
| 2-MOTOR   | AF MODE     | AUTO,MANUAL,HOLD                                   |
|           | SCANNING    | HALF,FULL  |
|           | ONE PUSH AF | ON   |
|           | SYNC TDN    | OFF,ON   |
|           | INITIAL     | ON   |
|           | WIDE/TELE   | TELE, WIDE   |
| EXPOSURE  | BRIGHTNESS  | 0~20   |
|           | SHUTTER     | AUTO,MANUAL,FLICKER                                |
|           | SENS-UP     | OFF,X2~X32   |
|           | AGC         | 0~10   |
| BACKLIGHT | MODE        | OFF,HLC,BLC,WDR                                    |
|           | HLC         | LEVEL:0~20, COLOR: BLK,WHT,YEL,GYN,GRN,MAG,RED,BLU |
|           | BLC         | H-POS,V-POS,H-SIZE,V-SIZE                          |
|           | WDR         | LINE/FRAME MODE, ROI ON, WEIGHT                    |
| DAY/NIGHT | MODE        | AUTO,COLOR,B&W,EXTERN                              |
|           | AUTO        | AGC THRES, AGC MARGIN, DELAY,SMART IR              |
|           | COLOR       | -  |
|           | B&W         | SMART IR   |
|           | EXTERN      | EXTERN SW, D>N THRES, N>D THRES, DELAY, SMART IR   |
| WHITE BAL | MODE        | AUTO,AUTOext,PRESET,MANUAL                         |
|           | COLOR GAIN  | 0~20   |
|           | AUTO        | -  |
|           | AUTOext     | -  |
|           | PRESET      | PRESET, PUSHING                                    |
|           | MANUAL      | C-TEMP,R-GAIN,B-GAIN                               |
| DNR       | MODE        | OFF,LOW,MIDDLE,HIGH                                |
| IMAGE     | SHARPNESS   | 0~10   |
|           | GAMMA       | 0.45,0.55,0.65,0.75                                |



| Main Menu | Sub Menu    | Descriptions                                   |
|-----------|-------------|--|
| IMAGE     | MIRROR      | OFF,ON   |
|           | FLIP        | OFF,ON   |
|           | D-ZOOM      | 1.0X ~ 16.0X                                   |
|           | ACE         | OFF,LOW,MIDDLE,HIGH                            |
|           | DEFOG       | OFF,ON   |
|           | SHADING     | OFF,ON   |
|           | PRIVACY     | OFF,ON   |
| MOTION    | WINDOW USE  | 0~3  |
|           | WINDOW_ZONE | OFF,ON   |
|           | DET H-POS   | 0~80   |
|           | DET V-POS   | 0~45   |
|           | DET H-SIZE  | 0~80   |
|           | DET V-SIZE  | 0~45   |
|           | SENSITIVITY | 0~10   |
|           | MOTION OSD  | OFF,ON   |
|           | TEXT ALARM  | OFF,ON   |
|           | SIGNAL OUT  | OFF,ON   |
| SYSTEM    | OUT INFO    | HDSDI, EXSDI1.0, EXSDI2.0, EXSDI2.1, TVI, HD-A |
|           | FRAME RATE  | 1440_30P(25P), 1080_30P(25P)                   |
|           | FREQ        | 50HZ,60HZ                                      |
|           | SDI MODE    | HDSDI, EXSDI1.0, EXSDI2.0, EXSDI2.1            |
|           | IMAGE RANGE | Full,Comp,User                                 |
|           | COLOR SPACE | HD-CbCr, YUV, SD-CbCr                          |
|           | COLOR BAR   | OFF,ON   |
|           | LANGUAGE    | English,Chinese,Chinese(S)<br>Japanese,Korea   |
|           | CAM TITLE   | OFF,RIGHT UP, LEFT DOWN                        |
|           | VERSION     | D82X79 1A                                      |
| EXIT      | EXIT        | SAVE, Reset                                    |



## 2-6 OSD Menu Functions

### ◆ Main Menu



#### ■ LENS

Select the Lens operation type.

#### ■ 2-MOTOR

Select the Auto Focus Item for 2-Motor

#### ■ EXPOSURE

Adjust camera exposure.

#### ■ BACKLIGHT

The function is used to set the Back Light Compensation(BLC) and High Light Compensation(HLC) and Wide Dynamic Range(WDR).

#### ■ DAY&NIGHT

The function is used to set the Day/Night function which switches day/Night mode automatically based on the level of illumination.

#### ■ WHITE BAL

This function is used to set the White Balance operation which adjusts the color scheme.

#### ■ DNR

The function is used to reduce the noise using the Digital Noise Reduction (DNR).

#### ■ IMAGE

The function is used to adjust the camera picture(Sharpness, Gamma,Color Gain, etc).

#### ■ MOTION

The function is used to configure the Motion Detection operation and Alarm function which sense the movement of the scene.

#### ■ SYSTEM

Set up CVBS on/off, Language, etc.

#### ■ EXIT

SAVE: The function is used to save the various settings of the internal OSD menu.

RESET: The function initializes all the internal OSD menu settings.

#### KEY FUNCTIONS

- ▲: Up
- ▼: Down
- ◀: Left
- ▶: Right
- Ⓢ: Enter(Setup)



## ◆ LENS

DC: IRIS Control, MANUAL: SHUTTER Control

| FUNCTION | OPTION       | DESCRIPTION  |
|----------|--------------|--|
| LENS     | DC<br>MANUAL | DC (Automatic IRIS Control)<br>MANUAL (Electronic Shutter Control) |

## ◆ 2-MOTOR



| FUNCTION    | OPTION                 | DESCRIPTION  |
|-------------|------------------------|--|
| AF MODE     | AUTO<br>MANUAL<br>HOLD | Executes the Auto Focus after Zoom in/out<br>Focus the subjects manually<br>Keep the current focus state without moving the lens |
| SCANNING    | HALF<br>FULL           | Scan the half focus boundary<br>Scan the full focus area   |
| ONE PUSH AF | ON                     | Executes the Auto Focus just one time  |
| SYNC TDN    | OFF, ON                | Execute the Auto Focus when changing the TDN   |
| INITIAL     | ON                     | Check the Zoom and Focus position  |
| WIDE/TELE   | <>                     | Move the zoom position using the DVR left/right command<br>when DVR zoom-move command is not supported                           |

## ◆ EXPOSURE

This function can adjust the intensity of radiation incoming to the camera.

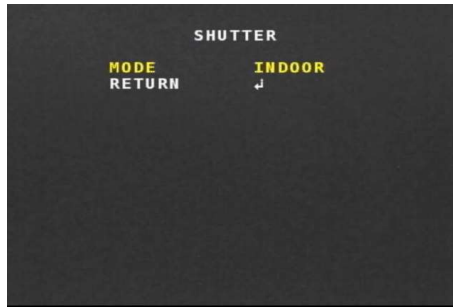
Use the "▲" "▼" "◀" "▶" "⊕" switch to select a menu item.





| FUNCTION   | OPTION               | DESCRIPTION                             |
|------------|----------------------|---|
| BRIGHTNESS | 0~20                 | Sets the screen brightness              |
| SHUTTER    | AUTO "Ⓜ"             | Execute the Shutter speed automatically |
|            | MANUAL "Ⓜ"           | Execute the user setting Shutter speed  |
|            | FLICKER              | Execute the Flickerless Shutter speed.  |
| SENS-UP    | OFF,X2,X4,X8,X16,X32 | Adjusts the SENS-UP                     |
| AGC        | 0~10                 | Adjusts the AGC                         |

### ■ SHUTTER (AUTO)



| FUNCTION     | OPTION  | DESCRIPTION       |
|--------------|---------|-------------------|
| MODE<br>(DC) | INDOOR  | IRIS              |
|              | OUTDOOR | IRIS+SHUTTER      |
|              | DEBLUR  | SHUTTER:1/250+AGC |
| (MANUAL)     | NORMAL  | SHUTTER           |
|              | DEBLUR  | SHUTTER:1/250+AGC |

### ■ SHUTTER(MANUAL)



| FUNCTION | OPTION   | DESCRIPTION             |
|----------|--|-------------------------|
| SPEED    | <60HZ(50HZ)><br>1/30(25),1/60(50),<br>1/120(100),1/250,<br>1/700,1/1000,<br>1/1600,1/2500, | Sets the screen shutter |



|  |                                   |  |
|--|-----------------------------------|--|
|  | 1/5000,1/7000,<br>1/10000,1/30000 |  |
|--|-----------------------------------|--|

## ◆ BACKLIGHT

\*WDR does not operate while CVBS is being output.

"◀" "▶"

| FUNCTION  | OPTION                            | DESCRIPTION   |
|-----------|-----------------------------------|---|
| BACKLIGHT | OFF<br>HLC"Ⓢ"<br>BLC"Ⓢ"<br>WDR"Ⓢ" | –<br>HLC(High Light Compensation) ON<br>BLC(Back light Compensation) ON.<br>WDR(Wide Dynamic Range) ON. |

### ■ HLC



| FUNCTION | OPTION                              | DESCRIPTION                |
|----------|-------------------------------------|----------------------------|
| LEVEL    | 0~20                                | Adjusts the HLC Mask Level |
| COLOR    | BLK,WHT,YEL,CYN,<br>GRN,MAG,RED,BLU | Select the HLC Mask color  |

### ■ BLC



| FUNCTION | OPTION | DESCRIPTION              |
|----------|--------|--------------------------|
| H-POS    | 0~26   | Can be adjusted BLC area |
| V-POS    | 0~26   |                          |
| H-SIZE   | 0~26   |                          |
| V-SIZE   | 0~20   |                          |



## ■ WDR



| FUNCTION | OPTION          | DESCRIPTION   |
|----------|-----------------|---|
| WDR MODE | LINE, FRAME     | WDR 30Frame(Less image retention than frame mode)<br>WDR 15Frame(typical wdr operation) |
| ROI MODE | OFF,ON          | the selected area is compensated by ROI algorithm                                       |
| WEIGHT   | LOW,MIDDLE,HIGH | Selects the WDR weight  |

## ■ ROI



| FUNCTION    | OPTION | DESCRIPTION                                      |
|-------------|--------|--|
| WINDOW ZONE | 0~3    | Selects the window zone number                   |
| WINDOW USE  | OFF,ON | Sets the selected zone ROI on,off                |
| H-POS       | 0~2560 | Sets the selected zone horizontal start position |
| V-POS       | 0~1440 | Sets the selected zone vertical start position   |
| H-SIZE      | 0~2560 | Sets the selected zone horizontal size           |
| V-SIZE      | 0~1440 | Sets the selected zone vertical size             |

## ◆ DAY&NIGHT

| FUNCTION  | OPTION            | DESCRIPTION   |
|-----------|-------------------|---|
| DAY/NIGHT | AUTO "☼"<br>COLOR | switches between day and night mode automatically based upon the level of illumination on the scene<br>fixed day<br>fixed night |



|  |                  |   |
|--|------------------|---|
|  | B&W<br>EXTERN"Ⓢ" | changes between day and night operation upon triggering from an external source |
|--|------------------|---|

■ AUTO



| FUNCTION      | OPTION | DESCRIPTION  |
|---------------|--------|--|
| AGC THRESHOLD | 0~20   | Sets the threshold for identifying the Night status from the Day status. |
| AGC MARGIN    | 0~20   | Sets the margin for identifying the Night status from the Day status.    |
| DELAY         | 0~20   | Sets the Night/Day identification transfer time.                         |
| Smart IR      | 0~20   | Brightness of IR and saturation phenomenon are automatically adjusted.   |

■ EXTERN



| FUNCTION  | OPTION   | DESCRIPTION  |
|-----------|----------|--|
| EXTERN SW | LOW,HIGH | Selects the active level.  |
| D>N THRES | 0~20     | Sets the b&w operation level when external sense is used               |
| N>D THRES | 0~20     | Sets the color operation level when external sense is used             |
| DELAY     | 0~20     | Sets the Night/Day identification transfer time.                       |
| Smart IR  | 0~20     | Brightness of IR and saturation phenomenon are automatically adjusted. |





## ◆ WHITE BALANCE



| FUNCTION   | OPTION                  | DESCRIPTION   |
|------------|-------------------------|---|
| AWB        | AUTO<br>AUTOext<br>PUSH | Auto trace white balance.<br>TDN lens Auto trace white balance.<br>Can be changed in AWC mode only.<br>When the set color temperature doesn't meet with user's environment,<br>press the menu button long to adjust the color temperature to desired setting. |
|            | MANUAL "Ⓢ"              | Manual white balance.   |
| COLOR GAIN | 0~20                    | Adjusts COLOR GAIN  |

## ■ MANUAL



| FUNCTION | OPTION              | DESCRIPTION               |
|----------|---------------------|---------------------------|
| C-TEMP   | 3000K, 5000K, 8000K | Selects Color Temperature |
| R-GAIN   | 0~20                | Adjusts R-GAIN            |
| B-GAIN   | 0~20                | Adjusts B-GAIN            |



## ◆ DNR

| FUNCTION | OPTION                          | DESCRIPTION                                   |
|----------|---------------------------------|---|
| DNR      | OFF,<br>LOW,<br>MIDDLE,<br>HIGH | Set up 3D-DNR(Digital Noise Reduction) LEVEL. |

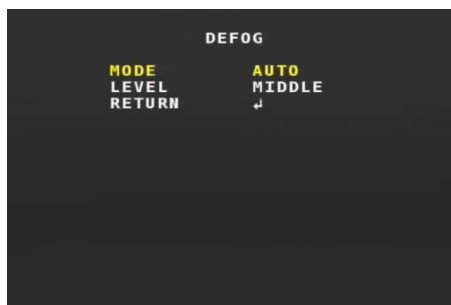
## ◆ IMAGE

### ■ IMAGE



| FUNCTION  | OPTION                  | DESCRIPTION                                |
|-----------|-------------------------|--|
| SHARPNESS | 0~10                    | Select the resolution of the camera.       |
| GAMMA     | 0.45,0.55,0.65,0.75     | Select the GAMMA                           |
| MIRROR    | OFF,ON                  | Set up the screen mirror                   |
| FLIP      | OFF,ON                  | Set up the screen flip                     |
| D-ZOOM    | 1.0X ~ 16.0X            | Sets the digital zoom magnification        |
| ACE       | OFF,LOW,MIDDLE.<br>HIGH | Select Digital ACE(Advanced Enhance) level |
| DEFOG     | OFF,ON"Ⓢ"               | Defog on,off                               |
| SHADING   | OFF,ON"Ⓢ"               | Lens shading on,off                        |
| PRIVACY   | "Ⓢ"                     | Sets the Privacy function                  |

### ■ DEFOG





| FUNCTION | OPTION          | DESCRIPTION   |
|----------|-----------------|---|
| MODE     | AUTO,<br>MANUAL | Changes the Defog level automatically<br>Executes the Defog function within fixed Defog level |
| LEVEL    | LOW,MIDDLE,HIGH | Selects the Defog function weight   |

## ■ SHADING



| FUNCTION | OPTION   | DESCRIPTION                     |
|----------|----------|---------------------------------|
| WEIGHT   | 0 ~ 100% | Selects the lens shading weight |

## ■ PRIVACY



| FUNCTION | OPTION    | DESCRIPTION                                   |
|----------|-----------|---|
| BOX      | OFF,ON"Ⓢ" | Sets the privacy fuction as the box style     |
| POLYGON  | OFF,ON"Ⓢ" | Sets the privacy fuction as the polygon style |

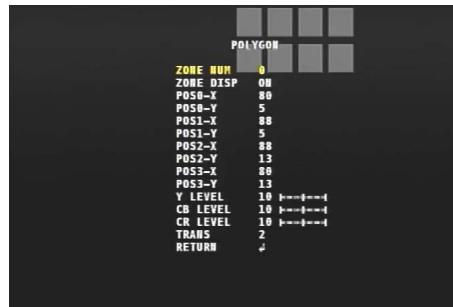


## ■ BOX



| FUNCTION                           | OPTION                       | DESCRIPTION                                       |
|------------------------------------|------------------------------|---|
| ZONE NUM                           | 0~15                         | Select the Privacy zone number                    |
| ZONE DISP                          | OFF,ON                       | Show up PRIVACY AREA function on the screen       |
| H-POS<br>V-POS<br>H-SIZE<br>V-SIZE | 0~80<br>0~46<br>0~80<br>0~46 | Can be adjusted Privacy area                      |
| Y LEVEL                            | 0~20                         | Adjusts the Y LEVEL of the Privacy zone area      |
| CB LEVEL                           | 0~20                         | Adjusts the B GAIN of the Privacy zone area       |
| CR LEVEL                           | 0~20                         | Adjusts the R GAIN of the Privacy zone area       |
| TRANS                              | 0~3                          | Adjusts the transparency of the Privacy zone area |

## ■ POLYGON



| FUNCTION   | OPTION   | DESCRIPTION                                       |
|--|--|---|
| ZONE NUM   | 0~5  | Select the Privacy zone number                    |
| ZONE DISP  | OFF,ON   | Show up PRIVACY AREA function on the screen       |
| POS0-X<br>POS0-Y<br>POS1-X<br>POS1-Y<br>POS2-X<br>POS2-Y<br>POS3-X<br>POS3-Y | 0~160<br>0~91<br>0~160<br>0~91<br>0~160<br>0~91<br>0~160<br>0~91 | Can be adjusted Privacy area as the polygon style |



|          |      |   |
|----------|------|---|
| Y LEVEL  | 0~20 | Adjusts the Y LEVEL of the Privacy zone area      |
| CB LEVEL | 0~20 | Adjusts the B GAIN of the Privacy zone area       |
| CR LEVEL | 0~20 | Adjusts the R GAIN of the Privacy zone area       |
| TRANS    | 0~3  | Adjusts the transparency of the Privacy zone area |

## ◆ MOTION



| FUNCTION    | OPTION | DESCRIPTION                           |
|-------------|--------|---------------------------------------|
| DET WINDOW  | "Ⓞ"    | Adjust the size of the detection area |
| SENSITIVITY | 0~20   | Sets the motion detection sensitivity |
| MOTION OSD  | OFF,ON | Display the motion detection position |
| TEXT ALARM  | OFF,ON | Display the motion detection state    |
| TEXT ALARM  | OFF,ON | Display the motion detection state    |

## ■ DET WINDOW



| FUNCTION    | OPTION | DESCRIPTION                           |
|-------------|--------|---------------------------------------|
| WINDOW USE  | 0~3    | Select the Motion set number          |
| WINDOW ZONE | OFF,ON | Active the Motion set number          |
| DET H-POS   | 0~80   | Adjust the size of the detection area |
| DET V-POS   | 0~45   |                                       |
| DET H-SIZE  | 0~80   |                                       |
| DET V-SIZE  | 0~45   |                                       |



## ◆ SYSTEM



| FUNCTION    | OPTION                                       | DESCRIPTION  |
|-------------|--|--|
| OUTPUT.     | "Ⓢ"  | Sets the video format and transfer format                      |
| IMAGE RANGE | Full,Comp,User"Ⓢ"                            | Digital output data scale                                      |
| COLOR SPACE | HD-CbCr, YUV, SD-CbCr                        | Sets the signal format   |
| COLOR BAR   | OFF,ON                                       | Display Color bar pattern                                      |
| LANGUAGE    | English,Chinese,Chinese(S)<br>Japanese,Korea | Selects the language in which to display the internal OSD menu |
| CAM TITLE   | OFF,ON"Ⓢ"                                    | Sets Camera TITLE  |
| VERSION     | D87X79 1A                                    | Camera VERSION display   |

## ■ OUTPUT



| FUNCTION   | OPTION  | DESCRIPTION                                 |
|------------|---|---|
| OUT INFO   | HDSDI, EXSDI1.0, EXSDI2.0,<br>EXSDI2.1, TVI, HD-A | Displays the current transfer format        |
| FRAME RATE | 1440_30P(25P),1080_30P(25P)                       | Sets the format and frame rate              |
| FREQ       | 50HZ,60HZ   | Sets the system frequency                   |
| SDI MODE   | HDSDI, EXSDI1.0, EXSDI2.0,<br>EXSDI2.1, NOT USED  | Selects the SDI transfer format in SDI mode |



### ■ IMAGE RANGE



| FUNCTION    | OPTION | DESCRIPTION               |
|-------------|--------|---------------------------|
| IMAGE RANGE | 0~32   | Digital output data scale |

### ■ CAM TITLE

This function can set up Title, Version, Communication, etc  
 Use the "▲" "◀" "▶" "Ⓢ" switch to select a menu item



### ◆ Exit

| FUNCTION | OPTION | DESCRIPTION  |
|----------|--------|--|
| EXIT     | SAVE   | All the settings of the internal OSD menu are saved. |
|          | RESET  | All the internal OSD menu settings are reset.        |



## ◆ Menu default data change "▲" "▼" "◀" "▶" "ⓔ"

Sets the menu data to be used as default data.  
and then push the left button for 3 seconds at system item.



Push the enter button for 3 seconds at save item  
(appear the 'pushing' instead of 'on')  
and then exit the menu.







### 3. Packing Information

