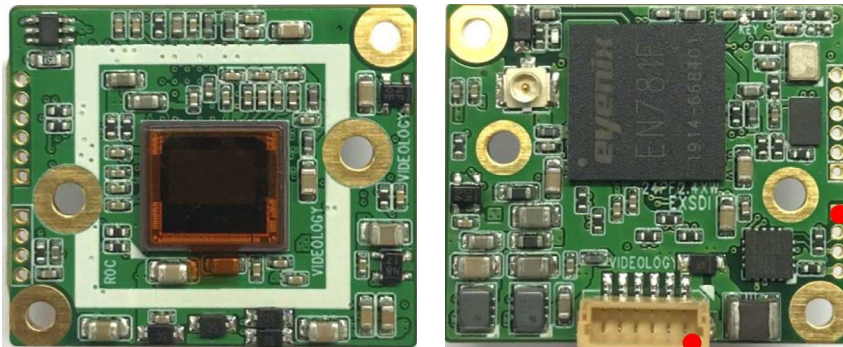


# VIDEOLOGY®

IMAGING SOLUTIONS INC.  
Original Equipment Manufacturer

## Application Note 24PF2.4XW Board Camera Series Preliminary



24PF2.4XW shown

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## Document History

Revision	Issue date	Reason	CN Issued
Rev A	15/09/2020	Initial creation	
Rev 0.1	07/10/2020	USED TO CREATE INITIAL CN A version	20-0065
Rev 0.2	23/10/2020	Checked all menu descriptions, improved sentence structure	
Rev 0.3	30/10/2020	Removed all references to EXSDI and described N/P option	
Rev B	12/02/2021	Added changes that were made when CCN A version was created from outdated document (eng rev 0.4)	21-0010

## 1. Introduction

---

The 24PF2.4XW is a miniature 26x22mm 2.4 Megapixel 1080P color board camera designed around a 1/3" Panasonic CMOS sensor.

The camera provides 25, 30, 50 & 60 fps at full HD resolution of 2.1MP (1920x1080) via a serial EX-SDI or HD-SDI output.

Supported Video formats:

- 1080p (25,30,50 & 60 fps)
- 1080i (50 & 60 fps)
- 720p (25,30,50 & 60 fps) (\*)

Besides the SDI output, analog CVBS output is available, which supports PAL or NTSC in both 16:9 or 4:3 (cropped) format.

The camera is equipped with a true WDR feature extending the range to 120dB in HD-SDI modes.

The camera provides various zoom options for both the SDI and CVBS outputs. On the CVBS output, a zoom factor of 2.7 can be applied without loss of resolution.

The camera comes with a M12 lens mount.

(\*) 720P@25FPS AND 720P@30FPS FORMATS ARE NOT ALWAYS SUPPORTED BY MONITORS OR TV'S

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## 2. Specification

### 2.1 Opto-Electric

24PF2.4XW	
Image sensor	CMOS 1/3" Panasonic MN34422PL Progressive scan sensor
Active Pixels	1944 (H) x 1092 (V)
Video Format	1080P 25/30/50/60Hz 1080i 50/60Hz 720P 25/30/50/60Hz
Resolution	Digital: 1080p , 1080i & 720p Analog: >500 TVL (NTSC/PAL) (D-WDR mode only)
Min. Illumination	1/30s Color: 0.5 lux, B&W: 0.1 lux DSS 1/7.5s Color: 0.02 lux, B&W: 0.025 lux
Gain Control (AGC)	Off/On
Exposure	Auto/Manual
Mirror/Flip	Off/H (mirror)/V (flip)/H&V
Aspect ratio	EX/HD-SDI: 16:9 CVBS: 16:9 or 4:3 (cropped)
Video Output	EX-SDI 270Mbps visually lossless compression HD-SDI 1.485 Gbps, (SMPTE 292M) EX-SDI or SDI(?) output present on a U.FL-R coaxial connector J2  CVBS NTSC/PAL standard, 1Vp-p @75Ω composite, present on the main connector J1. A buffer amplifier is provided
Exposure	Brightness / Shutter / Sens-up / AGC
DAY / NIGHT	AUTO / COLOR / B&W
White Balance	AUTO / AUTOext / PRESET / MANUAL
WDR	Real time to 120dB (HD-SDI only) Digital WDR (HD-SDI and analog)
ROI WDR	Yes
DNR	3D-NR
Functions	Motion Detection, Privacy Mask, Sens-up(x32), D-WDR, H/V/HV Flip, BLC/HLC, Title Set, Defog

### 2.2 Communication

24PF2.45W	
Camera control	24PF2.4XW-V VISCA over UART (3.3V) 24PF2.4XW-I I <sup>2</sup> C (3.3V) 24PF2.4XW-K Keyboard for OSD control only (3.3V)
Zoom Controls	Point and Zoom function

### 2.3 Electrical

24PF2.45W	
Power Supply	5±0.5 volts DC. (reverse polarity protection)
Power Consumption	±1.2W @25/30 fps ±1.5W @50/60 fps

## 2.4 Environmental

	24PF2.45W
Operating Temp.	-20° ~ 50° Celsius (-4°F ~ 122°F)
Operating Humidity	30% ~ 80% RH
Storage Temp.	-40° ~ 80° Celsius (-40°F ~ 176°F)
Storage Humidity	94% RH

## 2.5 Mechanical

	24PF2.45W
Dimensions WxHxD	26 x 22 x 7mm (no lens mount) 1.02" x 0.866" x 0.276" 26 x 22 x 24mm (with lens mount) 1.02" x 0.87" x 0.94"
Weight	18 Grams (0.635 oz)
Lens mount	Replace x in type number: 8: CS lens mount 5: M-12 lens mount 2: M-12 Pin-hole lens mount X: no lens mount
Connectors	J1: Hirose U.FL-R coaxial: HD-SDI/EX-SDI serial out: J2: JST-BM06B-SRSS or equivalent: Power, CVBS out and communication

(\*) DESIGN AND SPECIFICATIONS ARE SUBJECT TO CHANGE FOR PRODUCT IMPROVEMENTS WITHOUT PRIOR NOTICE.

### 3. Mechanical

Camera board without lens mount.

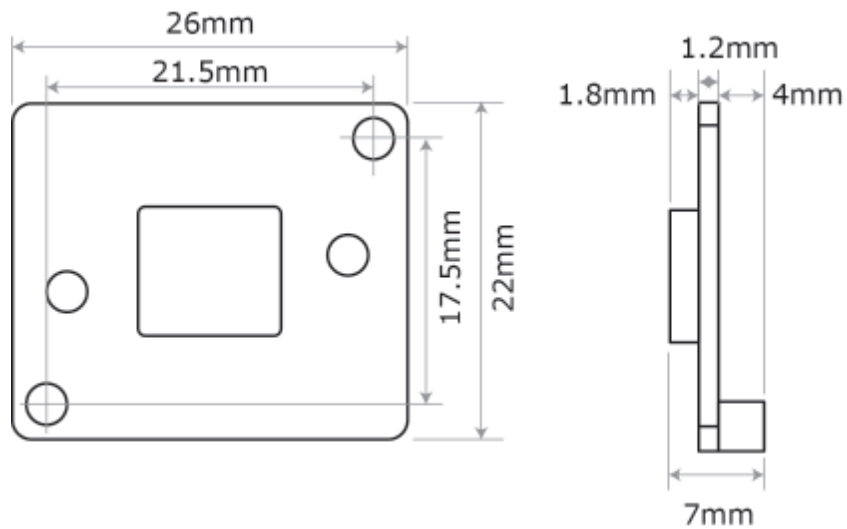


Figure 1. Camera Dimensions (without Lens Mount)

#### 3.1 Connectors

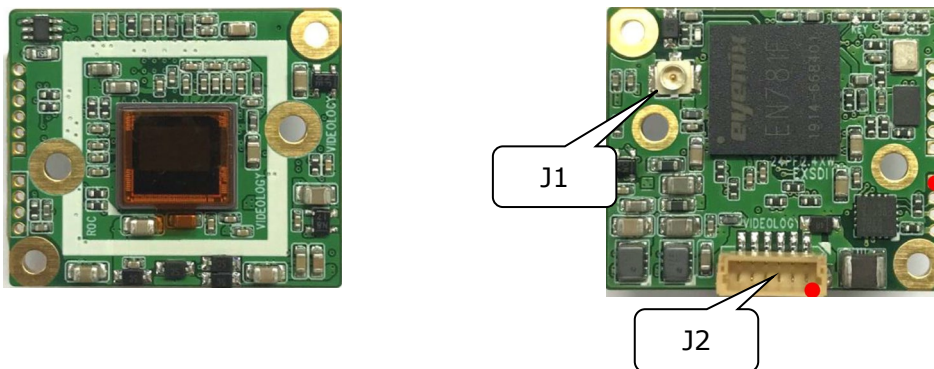


Figure 2. Camera board (Connectors)

Pin #	Pin name
1	SDI out
2	GND

Table 1. Connector J2- HIROSE-U.FL-R-SMT-1(10)

Pin #	Function
1	5VDC
2	GND
3	CVBS
4	GND
5	UART-Rx, I2C-SCL, Keyboard (3.3V)
6	UART-Tx, I2C-SDA (3.3V)

Table 2. Connector J2 - JST-BM06B-SRSS



### 3.2 Lens mount options

Cameras are available with or without an M-12 mount. Table 3 and Table 4 below give the part number for each configuration.

Lens interface	Camera type number
No lens mount	24PF2.4XW
M12 lens mount	24PF2.45W
M12 pinhole lens mount	24PF2.42W
CS lens mount	24PF2.48W

Table 3. Lens Mount Options

### 3.3 Control interface and CVBS options

Control Interface	Camera type number
VISCA	24PF2.4xW-VN
	24PF2.4xW-VP
I <sup>2</sup> C	24PF2.4xW-IN
	24PF2.4xW-IP
Keyboard	24PF2.4xW-KN
	24PF2.4xW-KP

Table 4. Control Options

N for NTSC

P for PAL

## 4. Features

---

- Full-HD, 2Mega pixel CAMERA
  - 1920x1080 (60p/50p, 30p/25p)
  - 1280x720 (60p/50p, 30p/25p)
  - 1920x1080 (50i/60i)
- Extended long reach HD Solution via EX-SDI. (EX-SDI receiver is needed)
- Video output EX-SDI / HD-SDI / CVBS selectable
- CVBS 16:9 or 4:3 selectable in OSD menu or command interface
- DIS (Digital Image Stabilization) function
- True WDR (Wide Dynamic Range)
- Improved Noise figure with the enhanced 3D-NR
- ROI (Region of Interest) WDR mode:
  - Proper compensation of exposure for inside or outside of interested area.
  - Better contrast and less motion ghost effect
- Motion Detection, Privacy Mask, Sens-up(x32), D-WDR, H/V/HV Flip, BLC/HLC, Title Set, Defog
- OSD Menu for easy installation & maintenance
- Circuit protection against faulty connection in power polarity
- Top performance at low light sensitivity (Sens-up On)
- Supply voltage, 4.5 to 5.5 volts DC
- Power consumption 1.2 Watts @ 25/30FPS, 1.5Watts @50/60FPS
- Serial communication via Visca command set, or I2C at 3.3 Volt levels

## 5. Operating Instructions

**OSD Menu Table**

MENU	SUB MENU	CONFIGURATION		
EXPOSURE	BRIGHTNESS	0~20		
	SHUTTER	AUTO	NORMAL, DEBLUR	
		MANUAL (SPEED)	1/30(1/25), 1/60(1/50), 1/120(100), 1/250(200), 1/500(400), 1/1000(800), 1/2000(1600), 1/4000 (3200), 1/8000(6400), 1/15000(12800), 1/30000 (25600)	
		FLICKERLESS		
	SENS-UP	OFF, X2, X4, X8, X16, X32		
	AGC	0~10		
	3D-NR	OFF, LOW, MIDDLE, HIGH		
BACKLIGHT	OFF			
	HLC	LEVEL, COLOR		
	BLC	H/V-POS, H/V-SIZE		
	WDR	WDR MODE	FRAME	
		ROI MODE	OFF, BOX, POLYGON	
		WEIGHT	LOW, MIDDLE, HIGH	
DAY & NIGHT	AUTO	D>N THRES, N>D THRES, DELAY		
	COLOR			
	B&W			
PICT. ADJUST	WHITE BAL.	AUTO, AUTOEXT, PRESET, MANUAL (C-TEMP, R/B-GAIN)		
	COLOR GAIN	0~20		
	SHARPNESS	0~10		
	GAMMA	0.45, 0.5, 0.55, 0.6, 0.65, 0.7, 0.75		
	D-WDR	OFF, LOW, MIDDLE, HIGH		
	DEFOG	OFF, ON	MODE, LEVEL	
	SHADING	OFF, ON	WEIGHT	
DIS	OFF, ON	RANGE	10% ~ 30%	
		FILTER	LOW, MIDDLE, HIGH	
		AUTO-C	OFF, HALF, FULL	
SPECIAL	MIRROR	OFF, ON		
	FLIP	OFF, ON		
	PRIVACY	BOX	ZONE NUM, ZONE DISP, H/V-POS, H/V-SIZE, Y LEVEL, CB/CR LEVEL, TRANS	
		POLYGON	ZONE NUM, ZONE DISP, POS 0-X/Y, POS 1-X/Y, POS 2-X/Y, POS 3-X/Y, Y LEVEL, CB/CR LEVEL, TRANS	
	MOTION	DET WINDOW	WINDOW USE, WINDOW ZONE, DET H/V-POS, DET H/V-SIZE	
		SENSITIVITY	0~10	
		ESTIMATE	OFF, ON	
		QUICK ZOOM	ZOOM SPEED, TRACKING, REPEAT	
		MOTION OSD	OFF, ON	
		TEXT ALARM	OFF, ON	
	E. COLOR SUPPRESS	OFF, ON		
SYSTEM	FRAME RATE	1080 30/25p, 1080 60/50p, 1080 60/50i, 720 30/25p, 720 60/50p		
	TV SYSTEM	EU(PAL), US(NTSC)		



MENU	SUB MENU	CONFIGURATION
	SDI MODE	HD-SDI, EX-SDI
	CVBS FORMAT	16:9, 4:3
	COMM	CAM ID, BAUDRATE
	CAM TITLE	OFF, RIGHT UP, LEFT DOWN
	FACTORY RESET	OFF, DONE
EXIT	SAVE, CANCEL	

## 5.1 Main Menu

MENU V1.00	
1. EXPOSURE	↓
2. BACKLIGHT	OFF
3. DAY&NIGHT	COLOR
4. PICT. ADJUST	↓
5. DIS	OFF
6. SPECIAL	↓
7. SYSTEM	↓
8. EXIT	SAVE ↓

Note that this also shows the firmware version.

## 5.2 EXPOSURE

1. EXPOSURE	
BRIGHTNESS	9 
SHUTTER	AUTO ↓
SENS-UP	OFF
AGC	7 
3D-NR	MIDDLE
2D-NR	OFF
RETURN	↓

### 5.2.1 BRIGHTNESS

Adjusts the brightness of video (0~20).

### 5.2.2 SHUTTER

Shutter speed can be set to auto, manual or anti-flicker

**AUTO: Selects NORMAL or set DEBLUR.**

Optimizes the video level by controlling the iris and the shutter speed automatically. De-blur limits the shutter time to give a sharper image at the expense of noise.

**MANUAL :**

Manual shutter time can be set to:

1/30(25), 1/60(50), 1/120(100), 1/250(200), 1/500(400), 1/1000(800), 1/2000(1600), 1/4000(3200), 1/8000(6400), 1/15000(12800), 1/30000(25600)

**ANTI-FLICKER :**

Anti Flicker is used to remove the flickering on screen due to a difference in framerate and the mains frequency. In Flickerless mode the shutter speed will be automatically fixed to 1/100s or 1/120s for 25 fps or 30 fps; for 50 fps or 60 fps the shutter speed will be automatically fixed to 1/200s or 1/240s.

**5.2.3 SENS-UP**

The sense-up mode is the extended integration time. For Auto exposure mode in a night situation when the exposure time and the gain are already at a maximum, the brightness still can be too low. With the Sens-up function, which integrates multiples frames, the scene gets brighter at the expense of slower scene updates.

(x2, x4, x8, x16 or x32.)

The Higher the setting the brighter the video, but the slower framerate.

**5.2.4 AGC**

AGC (0~10) Manual gain or Maximum gain for Auto mode. For Manual exposure mode, this command is used to force a manual gain value. For the Auto exposure mode it provides the maximum gain that will be applied.

**5.2.5 3D-NR**

3D Noise Reduction (3D-NR) is a very sophisticated and powerful temporal noise reduction technology. The noise is monitored for several video frames and cancellation or reduction of the noise is performed by using multiple consecutive frames (over time).

Therefore 3DNR works mainly on slow or non-moving video. Higher settings reduces noise more, but also results in blurring of fast moving video. 3DNR can be set to: OFF, LOW, MIDDLE & HIGH.

**5.2.6 2D-NR**

2D Noise reduction can improve the picture quality under some circumstances and works on a single frame. It can be set to OFF, MIDDLE and HIGH.

## 5.3 BACKLIGHT

Compensates the video image by cutting out the highlight area with a mask or control the contrast of video. It can be set the compensation level or areas. It can be OFF, HLC, BLC or WDR

### 5.3.1 HLC (High Light Compensation)

For High Light compensation the highlight areas that exceed a certain HLC level are cut out and replaced with colored masks. The color can be set with HLC color. For compensation these cut-out areas are excluded from the brightness measurement.

<b>2. BACKLIGHT</b>	
<b>LEVEL</b>	<b>10</b> ██████████
<b>COLOR</b>	<b>BLK</b>
<b>RETURN</b>	↓

**LEVEL (0~20): Sets the HLC level. It determines the video level that starts cutting out.**

A lower setting cuts out and masks bright video at a lower level. The cut out area is masked with the selected color.

**COLOR : Select mask color from 9 colors.**

Black, White, Yellow, Cyan, Green, Magenta, Red and Blue.

### 5.3.2 BLC (Backlight Compensation)

This function is used to brighten an image in the foreground with a highly light area behind it such as sunlight, limiting the effect of silhouette. (for example a person standing in front of a brightly lit window).

The BLC only functions for the Auto Exposure mode. Then the auto exposure control compares the measured image brightness with the target point and the exposure time and the gain are adjusted accordingly to meet the target requirement.

In the BLC mode the image brightness of the BLC window is assigned more priority compared with the area outside the window.

BLC has a target window for compensation and its size and position can be set by H-POS, V-POS, H-SIZE and V-SIZE.

<b>2. BACKLIGHT</b>	
<b>H-POS</b>	<b>8</b>
<b>V-POS</b>	<b>7</b>
<b>H-SIZE</b>	<b>3</b>
<b>V-SIZE</b>	<b>3</b>
<b>RETURN</b>	↓

**H-POS, V-POS :**

Sets the position of BLC area to move vertically and horizontally.

**H-SIZE, V-SIZE :**

Sets the horizontal and vertical size of the BLC area.

### 5.3.3 WDR (Wide Dynamic Range)

The camera can be set in Normal mode or in WDR mode. In WDR (wide dynamic range) mode the visibility for both high bright areas and dark areas in the image are improved significantly by double captures of the image with long and short exposure times. Enabling WDR reduces the frame rate becomes by half due to the double captures. The WDR level can be selected from LOW, MID and HIGH. Care should be taken to select WDR mode HIGH, because video may lose its quality in some environments by the over-compensation.

2. BACKLIGHT	
<b>WDR MODE</b>	<b>FRAME</b>
<b>ROI MODE</b>	<b>OFF</b>
<b>WEIGHT</b>	<b>HIGH</b>
<b>RETURN</b>	↓

#### **WDR MODE**

FRAME : Conventional WDR mode.  
There are no alternative settings for this menu item

#### **ROI MODE (Region Of Interest) :**

It can be either OFF, BOX or POLYGON  
If BOX or POLYGON mode is selected:

#### **WINDOW ZONE :**

First select window zone number from 0 to 3. Then for each window the position and size can be modified.

#### **WINDOW USE : ON/OFF**

If set to ON the selected window zone becomes visible on the screen. The selected zone can be adjusted in position and size.  
When it is OFF the window is not shown and the window zone definition settings are grayed out.

**ROI MODE - BOX :** Sets specific area of WDR using a square window.

H/V-POS : Adjusts the H, V position of the selected zone.

H/V-SIZE : Adjusts the area size of the selected zone.

ROI MODE	
<b>WINDOW ZONE</b>	<b>0</b>
<b>WINDOW USE</b>	<b>ON</b>
<b>H-POS0</b>	<b>320</b>
<b>V-POS0</b>	<b>180</b>
<b>H-SIZE</b>	<b>512</b>
<b>V-SIZE</b>	<b>432</b>
<b>RETURN</b>	↓

ROI MODE	
<b>WINDOW ZONE</b>	<b>0</b>
<b>WINDOW USE</b>	<b>OFF</b>
<b>H-POS</b>	<b>320</b>
<b>V-POS</b>	<b>180</b>
<b>H-SIZE</b>	<b>512</b>
<b>V-SIZE</b>	<b>432</b>
<b>RETURN</b>	↓

**ROI MODE - POLYGON** : Set area using a polygon shape.  
 POS0-X,Y ~ POS3-X,Y : Adjusts the four corners to create a polygon shape.

ROI MODE	
WINDOW ZONE	0
WINDOW USE	ON
POS0-X	320
POS0-Y	180
POS1-X	620
POS1-Y	180
POS2-X	320
POS2-Y	480
POS3-X	620
POS3-Y	480
RETURN	↵

**WEIGHT : LOW, MIDDLE, HIGH**

Selects the WDR value that you set the WDR mode.

**5.4 DAY & NIGHT**

DAY/NIGHT is used to control the setting during day-time and night-time operation. Select the mode according to the light condition and the camera types.

MENU V1.00	
1.EXPOSURE	↵
2.BACKLIGHT	OFF
3.DAY&NIGHT	AUTO ↵
4.PICT. ADJUST	↵
5.DIS	OFF
6.SPECIAL	↵
7.SYSTEM	↵
8.EXIT	SAVE ↵

**5.4.1 AUTO**

Used when DAY or NIGHT is determined by light level through the lens and DAY from/to NIGHT is switched automatically by the scene brightness.

3. DAY&NIGHT	
D>N THRES	8
N>D THRES	15
DELAY	MIDDLE
RETURN	↵

**D>N THRES, N>D THRES**

D>N THRES: Threshold level switching from DAY to NIGHT N>D THRES : Threshold level switching from NIGHT to DAY

**DELAY**

In auto mode there is a delay, the camera maintains its status before Day to Night switching to avoid the unwanted/frivolous switching by a short-term light, such as light from the passing car. The delay can be set to low, middle or high.



### 5.4.2 COLOR

The camera is always in COLOR mode.  
DAY/NIGHT is disabled and the camera outputs color video.

### 5.4.3 B&W

The camera is always in B&W mode.

## 5.5 Pict. Adjust

4. PICT. ADJUST	
<b>WHITE BAL.</b>	<b>AUTO</b>
<b>COLOR GAIN</b>	<b>10</b>
<b>SHARPNESS</b>	<b>5</b>
<b>GAMMA</b>	<b>0.5</b>
<b>D-WDR</b>	<b>OFF</b>
<b>DEFOG</b>	<b>OFF</b>
<b>SHADING</b>	<b>OFF</b>
<b>RETURN</b>	↵

### 5.5.1 WHITE BAL.

Automatically tracks the changes of color temperature and continuously adjusts the white balance. AUTO, AUTOext, PRESET and MANUAL modes are available.

- **AUTO**: Normal mode. The white balance is continuously working for color temperature changes in the range of 2,000K~8,500K.
- **ATWext**: Auto Tracing White balance extended mode. The White balance is continuously working for color temperature changes in the range of 1,800K~11,000K.
- **PRESET** : AWB is performed only whenever ● is pressed.
- **MANUAL** : White balance is fixed to the settings by Color-Temperature Red-GAIN and Blue-GAIN. It can be used only when the color temperature does not vary.

AWB MANUAL	
<b>C-TEMP</b>	<b>5000K</b>
<b>R-GAIN</b>	<b>10</b>
<b>B-GAIN</b>	<b>10</b>
<b>RETURN</b>	↵

### 5.5.2 COLOR GAIN

Sets the color gain control level. (0~20)

### 5.5.3 SHARPNESS

Sets the Sharpness level 0~10. Increases or decreases the sharpness of the picture. Too much sharpness can make image harsh and show more noise as well as line flicker at the edge of object in the picture.

### 5.5.4 GAMMA

Adjust the gamma level of video. In WDR mode GAMMA mode is disabled.

### 5.5.5 D-WDR

Improves the visibility for the bright area and the dark area by compensating the video gain. Warning; be careful to select low, middle or high level, because video may lose its quality in some environments by over compensation. Video noise can be increased in the dark area accordingly. In WDR mode D-WDR mode is disabled.

### 5.5.6 DEFOG

Enhance the foggy video according to status of scene. Video quality can be less in normal environments. In WDR mode DEFOG mode is disabled.

#### **MODE**

AUTO : Enhance the foggy video automatically according to status of scene.

MANUAL : Sets to enhance the foggy video manually regardless of status of scene.

**LEVEL : Sets LOW, MIDDLE or HIGH.**

Video quality can be less in normal environments.

### 5.5.7 SHADING

ON enables to compensate the shade caused by wide lens setting. Sets shading WEIGHT from 0% to 100%.

If you set to WDR in SCENE ENHANCE menu, SHADING mode is disabled.

## 5.6 DIS (Digital Image Stabilization)

### 5.6.1 RANGE

Sets the image compensation range. It can be set to 10%, 20%, 30%.

Higher values attempt to stabilize the image against big displacement but the field of view is narrowed.

### 5.6.2 FILTER

LOW, MIDDLE, HIGH

Sets the sensitivity to initiate DIS function.

### 5.6.3 AUTO-C

OFF, HALF, FULL

Sets how to align video at center after finishing the stabilization.

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## 5.7 SPECIAL

6. SPECIAL	
<b>MIRROR</b>	<b>OFF</b>
<b>FLIP</b>	<b>OFF</b>
<b>PRIVACY</b>	↓
<b>MOTION</b>	<b>OFF</b>
<b>E. COLOR SUPPRESS</b>	<b>ON</b>
<b>RETURN</b>	↓

### 5.7.1 MIRROR

When ON, the video is reversed left and right.

### 5.7.2 FLIP

When ON, the Video is reversed upside down. When the video is flipped by vertical, then the joystick directions are reversed accordingly. It is very useful when a camera is installed upside down.

### 5.7.3 PRIVACY

Set the Privacy zones which can be enabled individually. BOX or POLYGON zones are available to mask the video.

#### **BOX : Set area to select privacy zones by square.**

- ZONE NUM : Set a number to select a privacy zone from 0~15.
- ZONE DISP : ON enables a relevant privacy zone.
- H-POS, V-POS, H-SIZE and V-SIZE : Adjust the size and position of zone.
- Y LEVEL : Set the brightness of color.
- CB LEVEL : Higher value makes the privacy color bluish.
- CR LEVEL : Higher value makes the privacy color reddish.
- TRANS : Defines the transparency for the mask zone.

#### **POLYGON : Set area to select privacy zones by polygon shape.**

- ZONE NUM : Set a number to select a privacy zone from 0~7.
- ZONE DISP : ON enables a relevant privacy zone.
- POSX-X/Y : Set the position of X/Y Coordinate value.
- Y LEVEL : Set the brightness of color.
- CB LEVEL : Higher value makes the privacy color bluish.
- CR LEVEL : Higher value makes the privacy color reddish.
- TRANS : Defines the transparency for the mask zone.

BOX		
<b>ZONE NUM</b>		<b>3</b>
<b>ZONE DISP</b>		<b>ON</b>
<b>H-POS</b>		<b>12</b>
<b>V-POS</b>		<b>2</b>
<b>H-SIZE</b>		<b>6</b>
<b>V-SIZE</b>		<b>6</b>
<b>Y-LEVEL CB</b>		<b>0</b>  ■■■■■■■■■■
<b>LEVEL CR</b>		<b>10</b>  ■■■■■■■■■■
<b>LEVEL</b>		<b>10</b>  ■■■■■■■■■■
<b>TRANS</b>		<b>0</b>
<b>RETURN</b>		↵

POLYGON		
<b>ZONE NUM</b>		<b>0</b>
<b>ZONE DISP</b>		<b>ON</b>
<b>POS0-X</b>		<b>80</b>
<b>POS0-Y</b>		<b>5</b>
<b>POS1-X</b>		<b>88</b>
<b>POS1-Y</b>		<b>5</b>
<b>POS2-X</b>		<b>88</b>
<b>POS2-Y</b>		<b>13</b>
<b>POS3-X</b>		<b>80</b>
<b>POS3-Y</b>		<b>13</b>
<b>Y-LEVEL CB</b>		<b>0</b>  ■■■■■■■■■■
<b>LEVEL CR</b>		<b>10</b>  ■■■■■■■■■■
<b>LEVEL</b>		<b>10</b>  ■■■■■■■■■■
<b>TRANS</b>		<b>0</b>
<b>RETURN</b>		↵

### 5.7.4 MOTION

Four motion detection areas are available and each area is programmable in size and location. The motion can be detected the changes in the motion areas and displays the results in blocks and/or a text message.

**DET WINDOW : Sets the MOTION DETECTION areas on screen.**

- WINDOW USE : Set the detection zone number from 0 to 3.
- WINDOW ZONE : Sets ON/OFF motion detection area which was selected. If set to ON, It can be adjusted by position and size.
- DET H-POS, V-POS : Adjusts the detection area H, V position which you selected zone.
- DET H-SIZE, V-SIZE : Adjusts the area size using H, V directon which you selected zone.

MOTION	
<b>DET WINDOW</b>	
<b>SENSITIVITY</b>	<b>5</b>  ■■■■■■■■■■
<b>ESTIMATE</b>	<b>OFF</b>
<b>QUICK ZOOM</b>	<b>ON</b>
<b>MOTION OSD</b>	<b>OFF</b>
<b>TEXT ALARM</b>	<b>OFF</b>
<b>RETURN</b>	



DET WINDOW	
<b>WINDOW USE</b>	<b>0</b>
<b>WINDOW ZONE</b>	<b>ON</b>
<b>DET H-POS</b>	<b>1</b>
<b>DET V-POS</b>	<b>1</b>
<b>DET H-SIZE</b>	<b>58</b>
<b>DET V-SIZE</b>	<b>32</b>
<b>RETURN</b>	

### SENSITIVITY

Sets the detection sensitivity for motion (0~10). High value increases the sensitivity to detect the small motion easily. Too low value will cause the erratic detection. E.g. by moving tree leaves or the light level changes.

### ESTIMATE

ON enables to estimation to find Motion quickly in advance.

### QUICK ZOOM

ON enables zooming quickly when Motion is detected.

- ZOOM SPEED : Sets LOW, MIDDLE or HIGH.
- TRACKING : ON enables Zoom to trace the direction of Motion.
- REPEAT : ON enables to repeat as it is set.

### **MOTION OSD**

Set to ON to display the motion results.

### **TEXT ALARM**

Setting ON enables displaying a text message `WINDOWS MOVING!!` or icon when the motion is detected.

### **5.7.5 E. COLOR SUPPRESS**

ON enables to reduce the false color at the edge of object caused by high light.

OFF enables to keep false color at the edge of object caused by high light.

## **5.8 SYSTEM**

<b>7. SYSTEM</b>	
<b>FRAME RATE</b>	<b>1080P 50</b>
<b>TV SYSTEM</b>	<b>EU(PAL)</b>
<b>SDI MODE</b>	<b>HD-SDI</b>
<b>CVBS FORMAT</b>	<b>4:3</b>
<b>COMM</b>	↓
<b>CAM TITLE</b>	<b>OFF</b>
<b>FACTORY DEFAULT</b>	<b>OFF</b>
<b>RETURN</b>	↓

### **5.8.1 FRAME RATE**

1080 30/25P, 1080 60/50P, 1080 60/50i, 720 30/25P(SCALED), 720 60/50P(SCALED)

### **5.8.2 TV SYSTEM**

Selects HDTV standards for US(60HZ) or EU(50HZ). The CVBS analog video output switches to NTSC or PAL accordingly.

### **5.8.3 SDI MODE**

HD-SDI or EX-SDI can be selected.

### **5.8.4 CVBS FORMAT**

Selects 16:9 or 4:3 (Cropped)

### **5.8.5 COMM. : Defines the CAM ID, BAUD RATE.**

CAM ID: Assigns the camera ID from 1~254 for the comm. address.

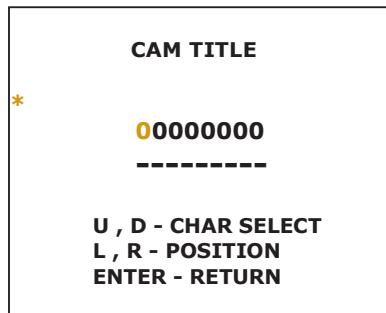
BAUD RATE: Selects the baud rate from 2400~115200.

When changing this settings the communication with the camera module might get lost. In that case connecting tools must be readjusted.

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### 5.8.6 CAM TITLE

Camera title(name) can be set and edited with alphanumeric characters. Select the camera title position 'LEFT DOWN' or 'RIGHT UP' on the video. Then ◀, ▶ moves the cursor and ▲, ▼ choose a character to select it. The selected characters are added and displayed on the input line.



### 5.8.7 FACTORY RESET

OFF or DONE.

### 5.8.8 A. EXIT

Exits SETUP MENU and returns to the normal display.

A-1. SAVE : Save all the setting and exit the setup menu.

A-2. CANCEL : Exit the setup menu without save.

## 6. Contact

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**For technical assistance with this product, please contact the supplier from whom the product was purchased.**

For OEM inquiries, contact Videology® Imaging Solutions:

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