

# SUPER WIDE DYNAMIC COLOR CAMERA

## OPERATION MANUAL



Thanks for purchasing our product, Before operating the unit, please read the instructions carefully and keep this manual for future reference.

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# Introduction

The camera adopts innovative DPS (Digital Pixel System) wide dynamic range image sensor and image processing technology, the DPS system uses the individual ADCs in each pixel, This pixel-level ADC architecture permits the use of many highly parallel, so it can achieve a wider dynamic range than CCD and CMOS camera and provide a better image when there is a sharp contrast in lighting conditions.

Contrast between WDR and Regular Camera



Normal



BLC

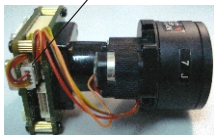


WDR

# Features

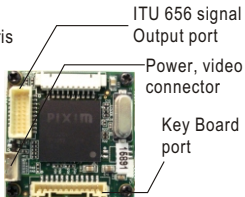
1. Adopts 1/3"DPS(Digital Pixel System)wide dynamic range sensor
2. Digital processing technology
3. Horizontal resolution of 540TVL, Vertical resolution of 460TVL
4. Programmable OSD menu
5. Color mode:0.5Lux/F1.2;Slow shutter mode: 0.08Lux/F1.2

# Structure



Side view

DC auto iris  
connector



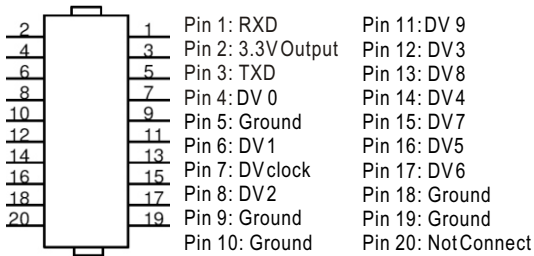
Rear View

ITU 656 signal  
Output port

Power, video  
connector

Key Board  
port

## ITU 656 output connector Pin Diagram



**DV N:** Data bit N(0,1...9) of Digital video output.

## Cautions



1. Before installing and operating the unit, please read the manual carefully.
2. Precision components are contained in the camera, so please avoid violent vibration during the course of transit, maintenance and installation. For the sake of safety, please do not connect to power before installation completion.
3. Please abide by all the electric codes when using the unit.
4. Do not use corrosive or abrasive detergent for cleaning. Use lens paper or cotton stick with alcohol to clean the sensor board.
5. Under no circumstances to direct the camera to the sunlight or strong light sources, in order to avoid any damage to the lens and sensor.
6. Do not use the camera in situations beyond the rated operating temperature (-10°C~50°C), humidity (less 95%) or power source.
7. In times of malfunction, do not attempt to dismantle and service the camera by yourself. Please refer to qualified serving personnel to repair or contract our technical department to solve the problems.

# Optional Accessories



Setup camera by menu

Can control normally by connecting the keyboard interface cable to the exterior keyboard port.



**Centre button**— Use the centre button to enter menu or select a menu. Press it for 2 seconds, the menu will appear, continuous press on the key to exit. Setup camera by menu



**Up / Down button**— Move the icon vertically between the menus and options.



**Left / Right button**— Move the icon horizontally between the menus and options.

# Menu Functions

## MAIN MENU

LANGUAGE	ENGLISH
PRESET	SPECIAL
WDR SETUP	HIGH
BASIC SETUP..	
EXPOSURE..	
ADVANCED SETUP..	
SAVE/DEFAULT	SAVE
EXIT MENU	

Press for 2 seconds the main menu will appear. Details of the button operation see "Optional Accessories" on page 5.

## Language

Select the language type of the menu. Chinese and English optional.

## Preset mode

Select default Special, normal, indoor, outdoor and custom modes with left and right key.

**Normal:** mainly use for stable lighting environments.

**Indoor:** mainly use for indoor.

**Outdoor:** mainly use for outdoors.

**Special:** mainly use for ATM or other situations that need very wide dynamic range.

**Custom:** customize the image effect.

## WDR Setup

Adjust the wide dynamic range (WDR) of the camera. Three presets can be chosen: AUTO, HIGH and LOW. Select the "CUSTOM.." item can customize the WDR setup .

WDR CUSTOMIZE			
BIAS	----- -----		
	-36	0	36
LIMIT	----- -----		
	-36	0	36
PREVIOUS PAGE.			

**BIAS:** this value can decrease the WDR when it's negative or increase the WDR when it's positive.

**LIMIT:** Set the maximum value of the WDR. The practical WDR will not exceed in limit value.

## Basic Setup

### 1、Video Signal

## BASIC SETUP

VIDEO SIGNAL..	
MIRROR	OFF
IMAGE ADJUST..	
TITLE..	
LENS SELECT	MANUAL
SYNC	INT
PREVIOUS PAGE.	

## VIDEO SIGNAL

VIDEO FORMAT	PAL
VIDEO LEVEL	----- -----
	80 110 150
PREVIOUS PAGE.	

**VIDEO FORMAT:** Supports both NTSC and PAL standards.

**VIDEO LEVEL:** Set the output voltage of the video signal from 0.8Vp-p to 1.5Vp-p. 80 corresponds to 0.8 Vp-p while 150 corresponds to 1.5Vp-p.

## 2、 Mirror

The camera provides support to display the image horizontal flipped, vertically flipped and to be flipped both horizontally and vertically. The default setting is "OFF".

## 3、 Image Adjustment

**GAMMA correction:** in "AUTO" mode, the gamma value is set automatically. Select the "MANUAL" to set the gamma by

customer himself. The range of gamma is 25 to 100, corresponding to practical 0.25 to 1. Gamma correction controls the overall brightness of an image. The high value is, the darker image is. The default is 0.45.

```
GAMMA MANUAL
GAMMA      |---|---|
           25 45 100
PREVIOUS PAGE.
```

```
IMAGE ADJUST
GAMMA MODE  AUTO
SHARPNESS   |---|---|
            -8 0 8
SATURATION  |---|---|
            -8 0 8
PREVIOUS PAGE.
```

**SHARPNESS:** Properties to bias the overall image sharpness can be adjusted to soften or crispen the image. Making the image crisper can produce higher resolution images, but noise becomes apparent. The default is 0.

**SATURATION:** Biases the saturation (color level) in the video. Reducing the "SATURATION" value desaturated colors. The default is 0.

#### 4、 TITLE

**DISPLAY:** Turns on/off the ID text display. The default is "OFF".

**TITLE:**String used to identify camera name. The title can be 0 to 8 characters. The default is "CAMERA\_1". 66 characters can be used : both upper case and lower case English alphabet, number "0" to "9", character "+", "-" and "\_".

**Operation step:** Center button selects char position, and left/right button selects char.

**POSITION:** camera name display Position. Five presets optional: UP-LEFT, UP-CENTER, UP-RIGHT, DOWN-LEFT and DOWN-RIGHT.

TITLE	
DISPLAY	ON
TITLE:	CAMERA_1
POSITION	UP-LEFT
PREVIOUS PAGE.	

DC LENS	
GAIN	---- ----
	0 120 255
AI THRESHOLD	---- ----
	-42 -18 60
PREVIOUS PAGE.	

## 5、LENS SELECT

Supports DC-drive autoiris lens. Make sure that the "LENS SELECT" setting in the OSD menu matches the actual lens you are using. F<1.2 famous DC-drive lens is recommended. The default is "MANUAL".

**GAIN:** increasing the gain increases responsiveness and sensitivity.

**Note:** if the gain too large, the iris will exhibit under-damped behaviour under some transient lighting conditions. If the gain too low, the image may oscillate between brightness and darkness. The default is 120.

**AI THRESHOLD:** adjusts the threshold at which the automatic iris becomes active. If the gain larger than the threshold, electronic shutter works, lower than the threshold, auto iris works. The default is -18.

## 6、 SYNC

Determines the type of synchronization will be used. Use line synchronization to eliminate the vertical roll that occurs when multiple cameras are connected to the same switching device. Line synchronization locks each camera to the same frame rate. Provides support both internal synchronization and line lock synchronization. The default is "INT" mode.

**Line lock (L.L):** The Video timing of line lock is locked to AC line input. The output video can be varied with respect to the incoming line frequency reference through 360 degrees by

adjusting vertical phase. The range of the phase is 0 to 624, the default is 519. (Optional function)

VERTICAL PHASE  
PHASE |----|----|  
0 519 624  
PREVIOUS PAGE.

**Notice:** It is normal that the image will flicker a while when power on with AC source in Line Lock mode.

## Exposure

### 1、 WHITE BALANCE

White balance mentions the color reproduction in different lighting conditions. There are five white balance modes:

#### **Auto Tracking White Balance (ATW)**

The ATW mode continuously monitors color temperature of the scene and adjusts the white balance of the video image automatically. In ATW mode, the color temperature is adjusted from a minimum of 2000 Kelvin to a maximum of 11,000 Kelvin. It is useful when scene's lighting condition changes termly.

#### EXPOSURE

WHITE BALANCE ATW LIMIT  
AE PREFs HIGHLIGHT  
GAIN SETUP MEDIUM  
LOW LIGHT SLOW SHUTTER..  
PREVIOUS PAGE.

## ATW Limit

The ATW Limit mode performs like ATW mode, but limits the range of auto tracking when the calculated color temperature goes below 2800 Kelvin or above 7500 Kelvin. This can help the color temperature to remain bounded, preventing the camera from overcompensating for scenes that have extremely high or low color temperatures.

## Auto white balance (AWB)

In AWB mode, white balance changes only on command. If select this function, a confirm information would be shown:

PUSH AWB CONFIRM

CANCEL.

SAVE.

\*\*\* WARNING \*\*\*

Current WB properties  
will be written to ROM

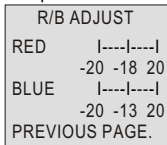
Aim the camera at the white object, (like white wall, white paper etc.) and select the "SAVE" item. The current color temperature value will be written to ROM and preserved until the user signaled to change.

## ATW DESAT.

The ATW Desat. mode performs like ATW mode, but desaturation begins when the calculated color temperature goes below 2800 Kelvin or above 7500 Kelvin (for sodium lighting).

## MANUAL

The manual mode allow user to specify red/blue color composition of the image.



Use the red/blue slider to either increase or decrease the red/blue elements in the camera image .Move the slider from -20 to 20.

## 2、 AE PREFs(Auto Exposure Preference)

Auto Exposure Preference Optimizes exposure when high dynamic range lighting is detected.

**HIGHLIGHT:** optimizes scene for highlights. In highlight mode, the image is adjust for correct brightness based on the highlights of the picture. Dark parts of the image may become very dark.

**SHADOW:** optimizes scene for shadows. In shadow mode, dark parts of the image are adjusted for correct brightness; bright scenes of the image may be overdriven or over exposed.

### 3、 GAIN SETUP

The image light levels is in relation to the gain setup. Higher gain value indicates brighter image. Three Preference can be chose: LOW, MEDIUM and HIGH, or, set the gain properties manually.

MANUAL AGC	
BIAS	---- ----  -18 0 18
LIMIT	---- ----  0 26 60
PREVIOUS PAGE	

**BIAS:** this value can decrease the gain when it's negative or increase the gain when it's positive.

**LIMIT:** Set the maximum value of the gain. The practical gain value will not exceed in limit value.

### 4、 LOW LIGHT

Setting the mode of the camera when in low light conditions. Provide supports For both slow shutter mode and gain mode.

**GAIN:** Increases the image gain as light decreases up to the maximum set "LIMIT" in the "GAIN SETUP" submenu. The dynamic range is not decreased as gain increases. Gain amplifies both the signal and picture noise. The higher the gain the higher noise. In gain mode, You do not suffer from blurred motion as compared to slow shutter mode.

**SLOW SHUTTER:** the camera uses a combination of applied gain and slow shutter to compensate for decreased light levels. If select the "SLOW SHUTTER" mode, shutter speed limit can be set. Shutter speed limits: X2, X4, X8, X16, X32 optional. The default is X2.

**NOTE:** X2 means the shutter speed is normal divided by 2. For example: normal value of the shutter speed is 1/50, X2 will be 1/25. In low light condition, leaving the shutter open longer can optimize image, but with motion the image can be blurred.

SHUTTER PRIORITY	
SHUTTER LIMIT	X2
PREVIOUS PAGE.	

## Advanced setup

### ADVANCED SETUP

ZONE EXPOSURE..
PRIVACY MASK SETUP..
PREVIOUS PAGE.

### ZONE EXPOSURE

METER MODE	BACKGROUND
F.G PRESETS	LOWER 1/3
F.GROUND ZONE..	
B.GROUND.ZONE..	
PREVIOUS PAGE.	

## 1、 ZONE EXPOSURE

The camera uses meter zones to implement foreground meter and background meter. Many installations include multiple light sources or unusual colors and lights, meter zones let you identify a light or color reference section in the camera view. The camera can adjust the entire video image based on the "metered" zone.

### **METER MODE**

Selects either the foreground mode or the background mode for metering exposure, white balance and dynamic range. In foreground mode, the camera analyzes both brightness and color elements in the meter zone. Then it adjusts these elements throughout the entire image. In background mode, the camera analyzes the light levels in the meter zone. Then it enhances the detail for backlight objects that would otherwise appear as silhouettes.

### **F.G PRESETS (Foreground Presets)**

Provides four default zones: FULL SCREEN/MOST SCREEN/CENTER SPOT/LOWER 1/3.

**F.Ground Zones/B.Ground Zones:** Adjustable four foreground/ background zones,select this item will enter "FOREGROUND ZONES"/"BACKGROUND ZONES" submenu.

**FOREGROUND ZONES**

ENABLE ZONES 1 ONLY  
ADJUST ZONE1  
ADJUST ZONE2  
ADJUST ZONE3  
ADJUST ZONE4  
PREVIOUS PAGE.

**BACKGROUND ZONES**

ENABLE ZONES 1 ONLY  
ADJUST ZONE1  
ADJUST ZONE2  
ADJUST ZONE3  
ADJUST ZONE4  
PREVIOUS PAGE.

**ENABLE ZONES:** select the meterzone. Zone 1 to zone 4 optional.

**ADJUST ZONE 1/2/3/4:** adjust the area of zone 1/2/3/4.

**Zone Adjustment Methods:**

**White box:** Press up/down/left/right button to move the zone

**Green box:** Press up/down/left/right button to increase the zone

**Red box:** Press up/down/left/right button to decrease the zone

**Center key:**

1. Press it to shift the box color among white, green and red.

2. Press it for several seconds to return to the previous page  
**NOTE:** If selecting "ADJUST ZONE 4.." the white box can be invisible because zone 4 is preset by default as the full area of sensor and the white box is out of screen. Press the centre button twice to change the white box to red box and shrink the area until visible.

## 2、 PRIVACY MASK SETUP

Privacy mask is useful because it can shield the areas which are unnecessary or prohibit to be watch. The application will support up to 12 masks and three mask color optional: white, black and red.

PRIVACY MASK SETUP	
PRIVACY MASK	OFF
MASK COLOR	WHITE
PREVIOUS PAGE.	

12 mask can be turn on or off respectively. Select "ON.." and enter the zone adjustment pages to edit the mask area.

ENABLE MASK 1 TO 6	
MASK 1	ON..
MASK 2	OFF
MASK 3	OFF
MASK 4	OFF
MASK 5	OFF
MASK 6	OFF
PREV.	NEXT.

ENABLE MASK 7 TO 12	
MASK 7	ON..
MASK 8	OFF
MASK 9	ON..
MASK 10	OFF
MASK 11	OFF
MASK 12	OFF
PREVIOUS PAGE.	

### Mask adjustment methods:

**Change mask position and size:** Press the center button to cycle the mask state. Different mask color stands for different state. There are:

**White mask:** Active mask, press up/down/left/right button to move the mask.

**Blue mask:** Active mask, press right/down button to extend the mask, left/up button to shrink the mask.

**Green mask:** Inactive mask.

### **Shift the active mask:**

Several masks display in the same time, but only one zone can be controlled at a time. The centre button can shift the active

mask.If current mask color is white,then press the centre button twice to shift active mask to the next.

**Exit mask edit:** Press the center button for several seconds to return to the previous page.

## **Save/Default**

- 1、 SAVE:save parameters of the currently user.
- 2、 DEFAULT: restore factory default settings.

## **Exit menu.**

Exit menu.

# Specifications

Image Sensor	1/3"DPS(Digital Pixel System)
Signal System	PAL/NTSC
Effective Pixels	720 × 540
Resolution	540TVLines
Minimum illumination	0.5Lux/F1.2;0.08Lux(Slow Shutter)
S/N Ratio	>48dB
White Balance	AUTO 2000K to11000K
Dynamic Range	102dB Typical, MAX120dB
Auto Iris Lens	DC
Video Output	1.0Vp-p,75 Ω Typical 0.8~1.5Vp-p adjustable
Power Supply	DC12V
Power Consumption	<2W
Weigh	50g
Line Lock(Optional)	ON/OFF
Control	On-screen display(OSD) with softkey controls
Operating temperature	-10°C~+50°C RH95%MAX

All data and specifications subject to change without notice.

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