



CV503, CV504, CV506,  
CV508, CV346, CV348

**Miniature, Micro, Compact POV Cameras**

## **User Manual**

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## 1. General Information

Thank you for your purchase of a Marshall Miniature or Compact Camera.

The Marshall Camera team recommends thoroughly reading this guide for a deep understanding of on-screen-display (OSD) menus, breakout cable operation, settings adjustment explanation, troubleshooting, and other critical information.

Please carefully remove all contents of box, which should include the following components:

**CV503/CV506 includes:**

- Camera with 3.6mm lens (interchangeable)
- Camera Breakout Cable (Power/RS485/Audio)
- 12V Power Supply

**CV344/CV346 includes:**

- Camera with CS/C mount (lens sold separately)
- Camera Breakout Cable (Power/RS485/Audio)
- C-Mount Lens Adapter (only used when using C-Mount lens)
- 12V Power Supply

The CV503/506 ships with a 3.6mm (72°AOV) M12 lens installed and is interchangeable to any number of Marshall M12 lenses.

The CV344/346 Camera utilizes a CS/C lens mount and does not include a stock CS/C Lens. CS/C mount lenses are sold separately, as well as adapters to other lens mount types.

Each camera comes set to default at 1920x1080p @ 30fps out of the box; which can be changed in the OSD Menu to a variety of resolutions and framerates.

To RESET Camera to default settings (1920x1080p30fps) power-cycle the camera then use the following combo on OSD Joystick: UP, DOWN, UP, DOWN, then push and HOLD joystick in for 5 seconds then release.

## 2. Menu Structure

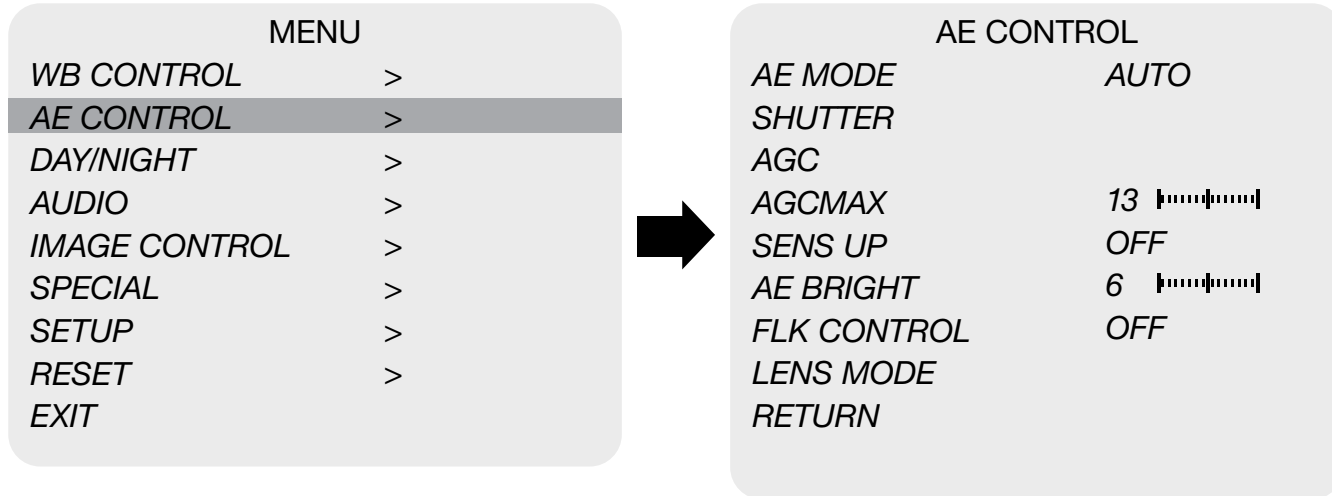
SETUP	SUB MENU	SUB MENU	
WB CONTROL	ATW		
	AWB		
	ONE PUSH		
	INDOOR		
	OUTDOOR		
	MANUAL	BLUE	
		RED	
	BLACK BALANCE	AUTO	
MANUAL			
AE CONTROL	AUTO	AGC MAX	
		SENS UP	
		AE BRIGHT	
		FLK CONTROL	
		LENS MODE (DC IRIS ONLY)	
	SHUT FIX	SHUTTER	
		AGC MAX	
		SENS UP	
		AE BRIGHT	
	AGC FIX	AGC	
		AE BRIGHT	
		FLK CONTROL	
		LENS MODE (DC IRIS ONLY)	
	MANUAL	SHUTTER	
		AGC	
		SENS UP	
DAY / NIGHT	DAY		
	NIGHT	NIGHT COLOR	
	AUTO		
AUDIO	MIC/LINE		
	AUDIO LEVEL		
	MIC ATTENUATOR		

SETUP	SUB MENU	SUB MENU	
AUDIO	SAMPLE BITS		
IMAGE CONTROL	LENS SHADING		
	CONTRAST		
	BRIGHTNESS		
	SATURATION		
	HUE		
	EDGE ENHANCE		
	AUTO SATURATE		
	AUTO EDGE		
	BLACK WHITE LEVEL		
	GAMMA CORRECT		
	DNR		DNR MODE
		DNR LEVEL	
SPECIAL	DZOOM		
	DEFOG		
	DIS		
	BACKLIGHT		
	BINNING		
	DEFECT PIXEL		
	DISP FUNCTION		
	WDR		
	FLICKER DETECT		
	PRIVACY		
	PICTURE STYLE	MATRIX	
		WHITE BALANCE	
		GAMMA	
DETAIL			
SETUP	CAM TITLE		
	COMMUNICATION	RS-485/ID	
	MODEL		
	S/W Ver		
	OUTPUT FORMAT		
RESET	USER/FACTORY		
EXIT			



## 5. AE CONTROL

Select AE CONTROL using the UP or DOWN button. You can select one sub-mode using the UP or DOWN buttons.



- **AUTO:** Adjusts the exposure level automatically. Detailed fine tuning options are available under this menu.
- **SHUT FIX:** Provides more detailed shutter speed options. All other controls are tuned for the selected shutter speed.
- **AGC FIX:** Provides more detailed gain option. All other controls are tuned for the selected gain value.
- **MANUAL:** Adjusts the exposure level manually
  1. **SHUTTER:** Speed can be set at auto or manual. (1/30 ~ 1/10,000)
  2. **AGC:** Electronic gain level can be controlled. (0db ~ 66db)
  3. **AGC MAX:** Used to set maximum gain value to control the video noise caused by Auto Gain Control. (0 ~ 15)
  4. **SENS UP:** Controls the digital slow shutter to allow extra light into the camera and adjust the picture quality. (Off, x2 ~ x15)
  5. **AE BRIGHT:** Select this to adjust auto exposure brightness levels. (0 ~ 24)
  6. **LENS MODE:** Lens setting will be optimized for selected environment, for DC Iris lens only.
  7. **FLK CONTROL:** Provides a proper image sensor frequency to match the power frequency in order to minimize video flicker.

**Note: DC Iris is automatically set by camera ISP. It's not manually adjustable.**

## 6. DAY / NIGHT

Select DAY, NIGHT or AUTO using the Right or Left button.

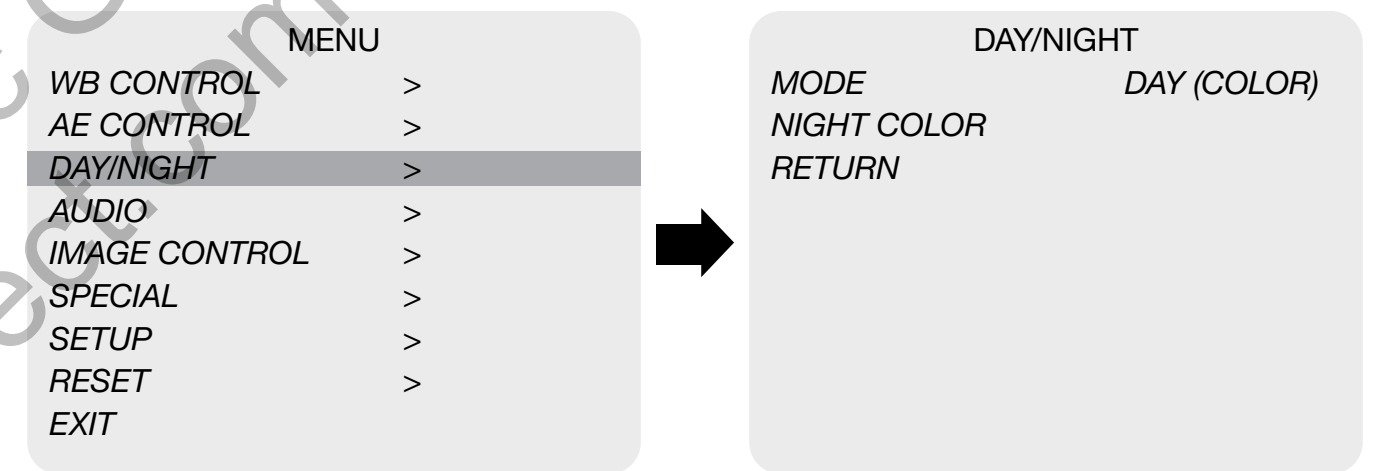
**MODE:** Set camera to either color mode or B&W mode. (Day, Night, Auto)

**DAY:** When set to DAY mode, camera stays in color and IR cut filter is removed.

**NIGHT:** When set to NIGHT mode, camera stays in B&W and IR cut filter is removed.

- **NIGHT COLOR:** When on, camera stays on color mode. NIGHT (B&W) can be selected from this mode. (On, Off)

**AUTO:** When set to AUTO mode, camera automatically switches between DAY and NIGHT mode depending on lighting condition.

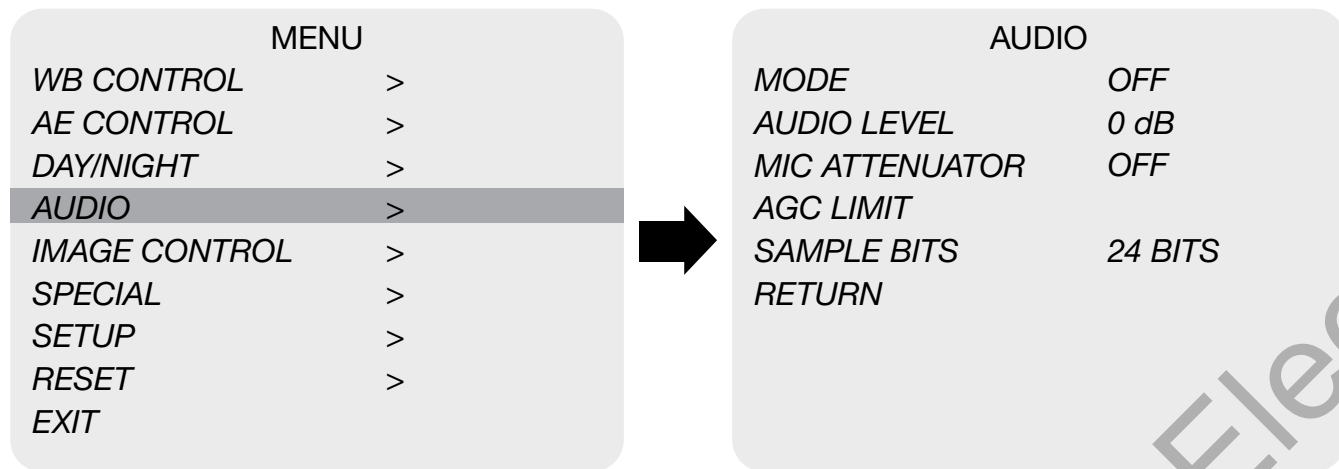


## 7. AUDIO

Select **AUDIO** using the UP or DOWN button and enter ON using SEL button. You can select one sub-mode using the UP or DOWN buttons.

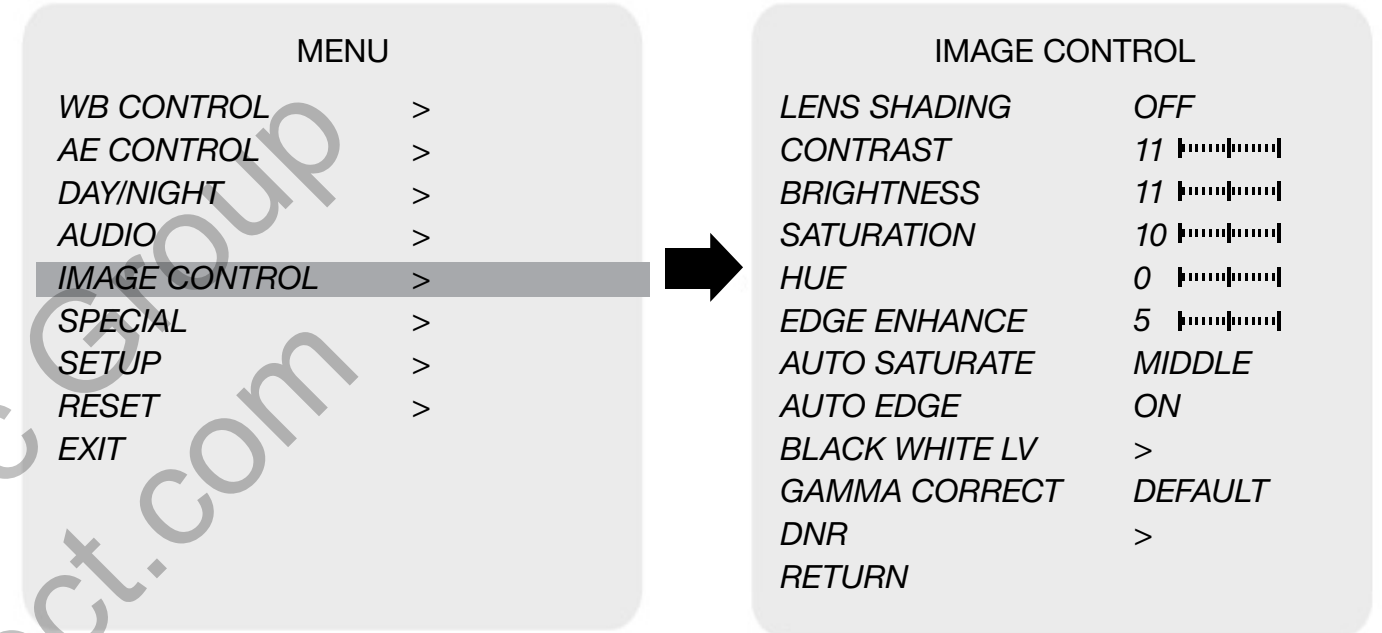
- **MIC / LINE:** Select MIC or LINE for the audio input source.
- **AUDIO LEVEL:** Select this to adjust audio levels manually.
- **MIC ATTENUATOR:** Audio attenuation can be controlled from this menu to minimize the audio noise level

1. **SAMPLE BITS:** Select the bit depth of audio



## 8. IMAGE CONTROL

Select **IMAGE CONTROL** using the UP or DOWN button. You can select **LENS SHADING**, **CONTRAST**, **HUE**, And **EDGE ENHANCE** using the UP or DOWN buttons.



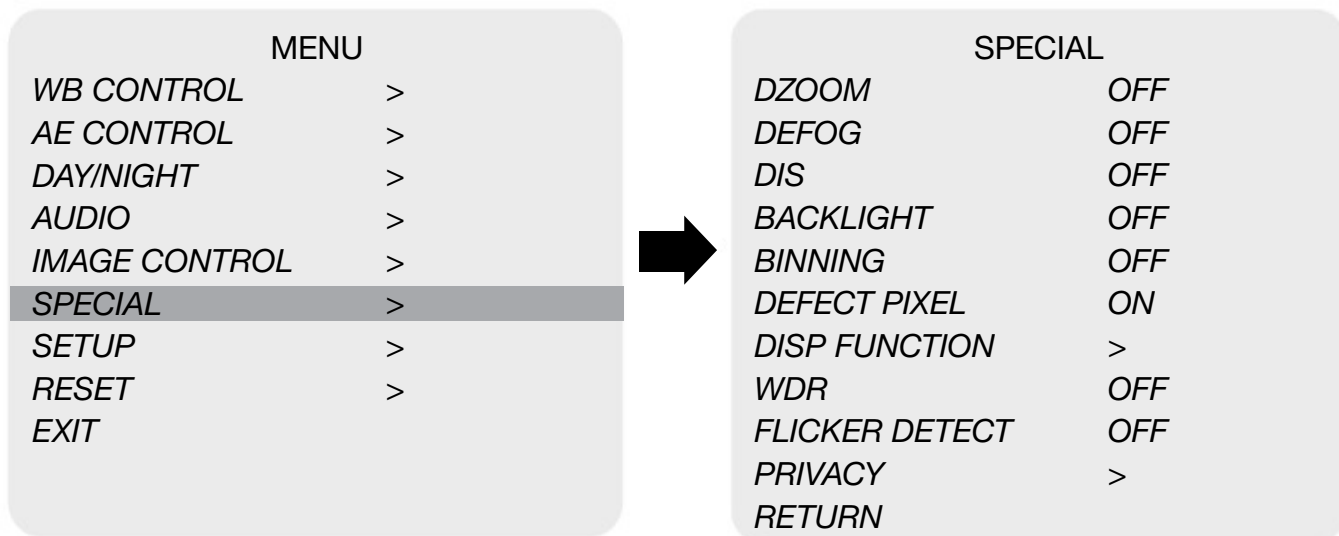
- **LENS SHADING:** Corrects inconsistent brightness level in the image.
- **CONTRAST:** Adjust the image contrast level.
- **BRIGHTNESS:** Adjust the image brightness level.
- **SATURATION:** Adjust the image saturation level.
- **HUE:** Adjust the image hue level.
- **EDGE ENHANCE:** Adjust the image sharpness level.
- **AUTO SATURATE:** Decrease saturation automatically when noise scene is detected.
- **AUTO EDGE:** Adjust line sharpness level automatically.
- **BLACK WHITE LEVEL:** Adjust the image black level value.
- **GAMMA CORRECT:** Adjust the image output gamma level.
- **DNR:** Reduces video noise at low ambient light.

Select the DNR level from **AUTO**, **LOW**, **MIDDLE**, and **HIGH** using the LEFT or RIGHT button.

## 9. SPECIAL

Select SPECIAL using the UP or DOWN button.

You can select DEFOG, MOTION DETECT, BACKLIGHT, DEFECT PIXEL, and FLICKER DETECT using the UP or DOWN buttons.

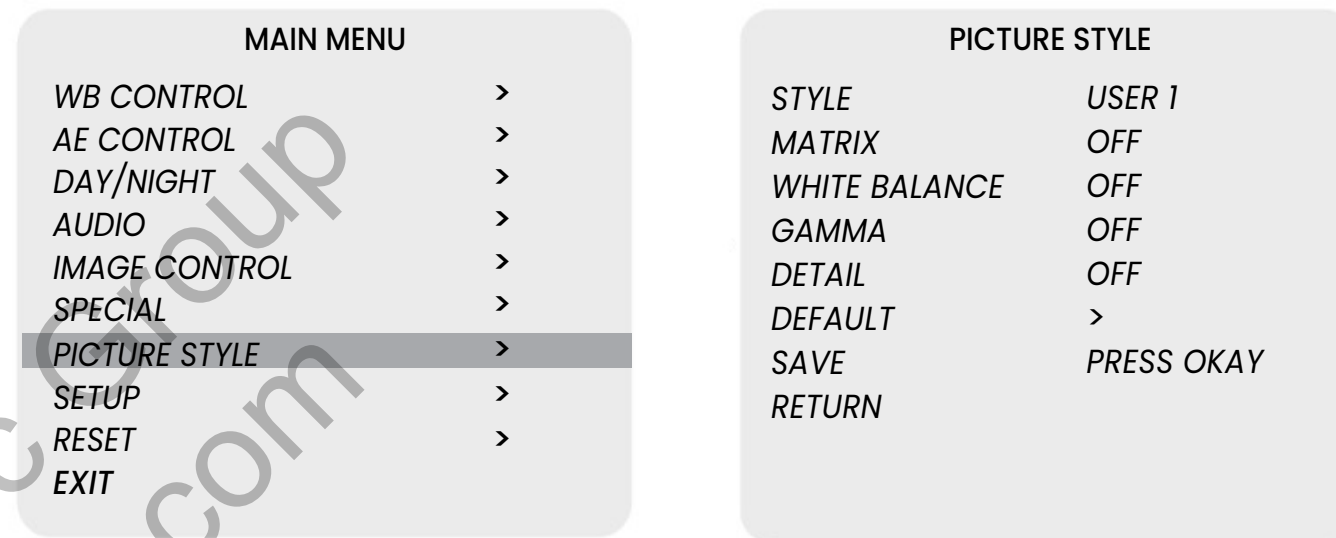


- **DZOOM:** Digitally zoom the video by the desired ratio.
- **DEFOG:** This feature will help increase visibility in extreme weather conditions, such as fog, rain or in a very strong luminous intensity.
- **DIS:** This feature enables digital image stabilization
- **BACKLIGHT:** Adjust backlight compensation by choosing either BLC HLM from this menu.
- **BINNING:** Enable or disable pixel binning.
- **DEFECT PIXEL:** Advanced defective pixel correction menu.
- **DISP FUNCTION:** Display effect such as freeze mirror, rotation, and style can be applied from this menu.
- **WDR:** This feature enables user to view both object and background more clearly when background is too bright.
- **FLICKER DETECT:** Adjust the image sensor frequency to match the power frequency.
- **PRIVACY:** Mask an area you want to hide on the screen by applying the privacy zones.

## 9. PICTURE STYLE

Select PICTURE STYLE menu for color matrix tuning.

You can adjust settings using the UP or DOWN buttons.



- **STYLE:** 6 different settings can be assigned.
- **MATRIX:** Matrix feature can be configured.
  1. **STYLE:** 4 predefined color matrix styles are available to choose from.
  2. **MASTER LEVEL:** Fine adjustment of master color gain (saturation).
  3. **MASTER PHASE:** Fine adjustment of master color hue.
  4. **COLOR SEL:** Select color to be adjusted. 6 colors to choose from.
  5. **COLOR LEVEL:** Fine level adjustment of selected color.
  6. **COLOR PHASE:** Fine phase adjustment of selected color.
- **WB:** Adjust camera white balance within the selected picture style.
 

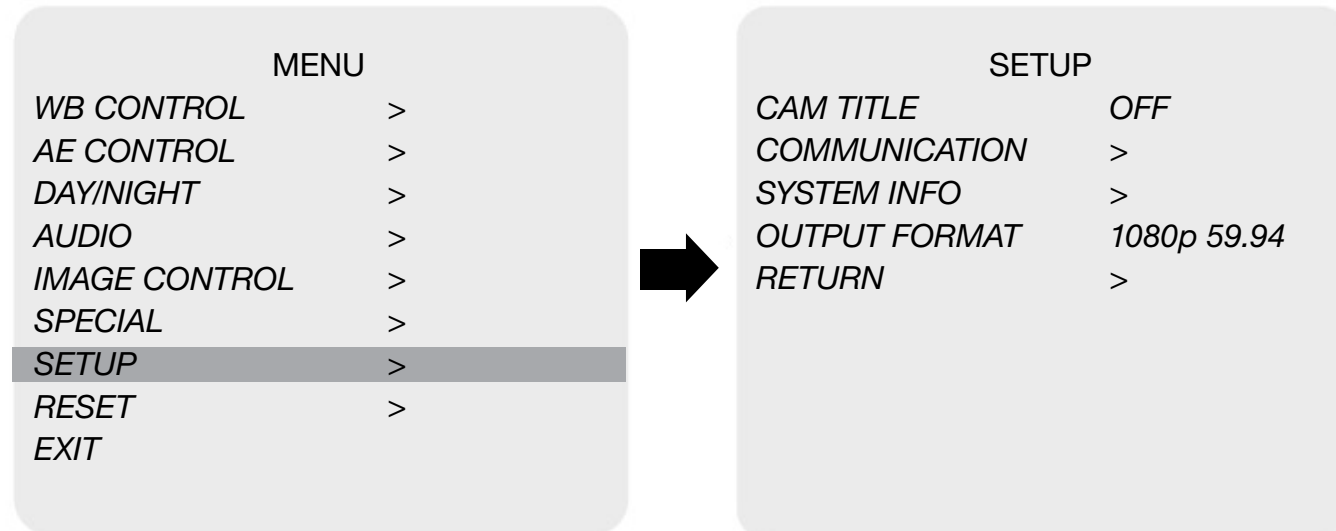
*WB feature is identical as the one from the main menu. When Picture Style WB is enabled, main menu WB will be disabled.*
- **GAMMA:** Adjust camera gamma value within the selected picture style.
 

*Gamma feature is identical as the one from the main menu. When Picture Style Gamma is enabled, main menu Gamma will be disabled.*
- **DETAIL:** Adjust camera peak levels (sharpness) balance within the selected picture style.
  1. **H-PEAK LEVEL:** Adjust horizontal peak level.
  2. **V-PEAK LEVEL:** Adjust vertical peak level.
  3. **VIDEO DEPENDANT:** Adjust image crispening.
  4. **CLIP & CLIP LEVEL:** Adjust sharpness peak clip.
- **DEFAULT:** Reset the selected user number to the default value.
- **SAVE:** Save the selected user settings.

## 10. SETUP

CAMERA setup can be adjusted from this menu.

You can select CAMERA ID, Communication, System Info, and Output Format using the UP or DOWN buttons.

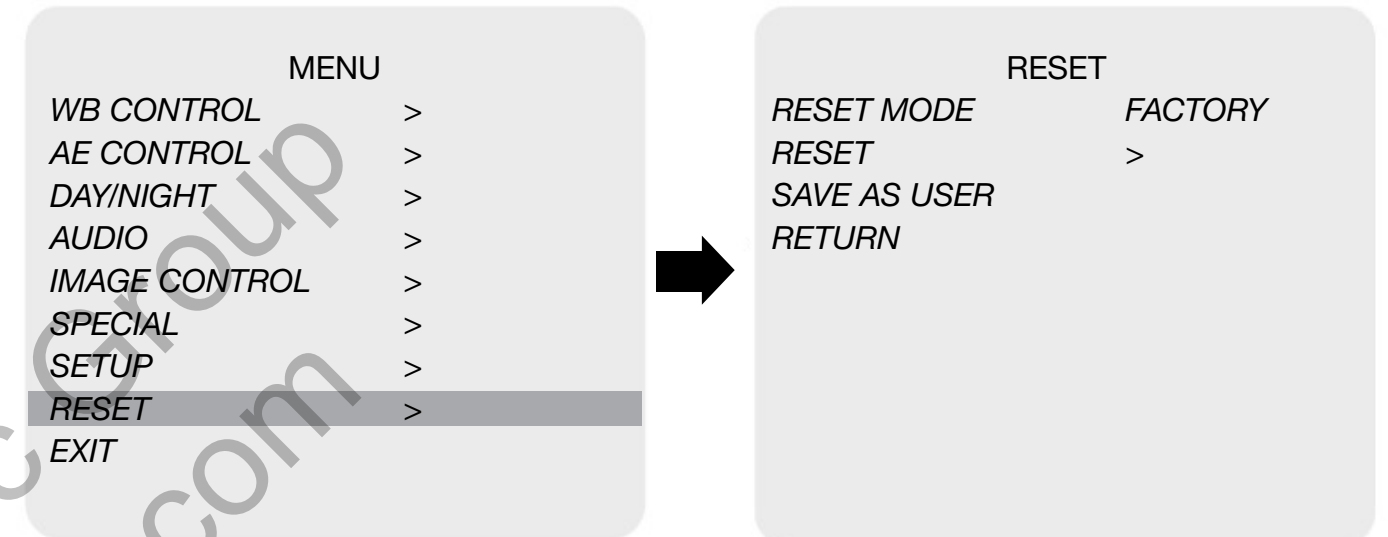


- **CAM TITLE:** Camera title can be turned ON or OFF.
- **COMMUNICATION:** VISCA communication can be adjusted.
  1. **CAM ID:** Camera ID can be setup. (0~254)
  2. **ID DISPLAY:** Camera ID display can be displayed.
  3. **BAUDRATE:** Camera baudrate can be set. (2400, 4800, 9600, 19200, 38400, 115200)
- **MODEL:** Displays product model number.
- **S/W VER:** Displays software version number.
- **OUTPUT FORMAT:** Camera resolution and frame rate can be set. (1080p by default) Select the FRAME RATE using the LEFT or RIGHT buttons.  
Available Frame Rates are:  
1920 x 1080p 60, 59.94, 50, 30, 29.97, 25, 24, 23  
1920 x 1080i 60, 59.94, 50  
1280 x 720p 60, 59.94, 50

## 11. RESET

Select RESET using the UP or DOWN buttons.

- **RESET:** Reset the camera settings the factory defaults or user setting value.



- **ON:** Set the camera setting to either “FACTORY” or “USER” of “CHANGE” menu. Make sure to select the right mode from “CHANGE” before defaulting the camera.

- **RESET MODE:** Select the desired setting mode.

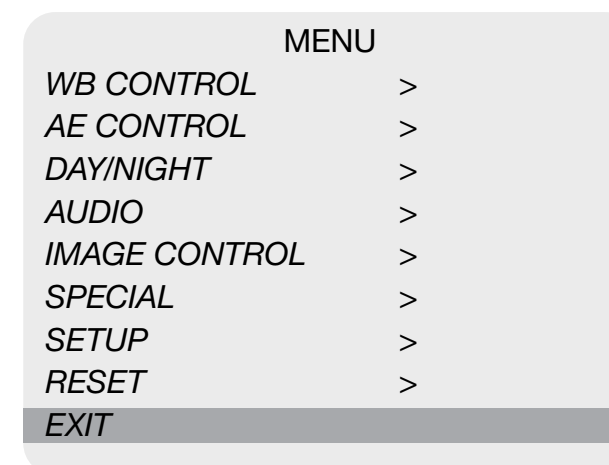
Select from USER or FACTORY using the LEFT or RIGHT button.

1. **USER:** Select “USER” if setting value user saved last is needed.
2. **FACTORY:** Select “FACTORY” if factory default setting is needed.

“FRAME RATE”, “CAM ID”, and “BAUDRATE” will note change.

## 12. EXIT

Select EXIT using the UP or DOWN button.



- **SAVE:** Exit the setup after saving the value changes.

## 13. TROUBLESHOOTING

Before sending the camera for repair, please check below to make sure that the camera is installed correctly. If it still does not perform adequately, please consult with your supplier.

Problem	Solutions
Nothing appears on the screen.	<ul style="list-style-type: none"> <li>a. Check that all connected devices are powered on.</li> <li>b. Confirm that the voltage is correct.</li> <li>c. Confirm that the power supply provides enough current to power the camera.</li> <li>d. Check that all video cables are correctly connected.</li> </ul>
The picture is not clear.	<ul style="list-style-type: none"> <li>a. Check that your monitor is correctly adjusted.</li> <li>b. Confirm that the glass in front of the lens is clean. If there is dust, dirt, or fingerprints on the glass, the image quality will be affected. To clean the glass, use a soft, dry, and non-abrasive cloth or a commercially available lens cleaning set.</li> <li>c. Correctly adjust the focus.</li> </ul>
The picture has interference.	<ul style="list-style-type: none"> <li>a. The camera may be close to a high voltage source, such as a power generator.</li> <li>b. The BNC cable is not terminated properly.</li> <li>c. The video cables are not connected properly.</li> </ul>
The picture is flickering continually.	<ul style="list-style-type: none"> <li>a. Check the termination and set the impedance at 75Ω properly.</li> <li>b. Ensure that the camera is not pointing towards the Sun or any light source.</li> <li>c. Check if there is any intermediate device.</li> <li>d. Check if the distance of the video cable exceeds the maximum transferable limitation.</li> </ul>
The camera is not synchronizing with the reference signal.	<ul style="list-style-type: none"> <li>a. Make sure Tri-Level reference signal is used.</li> <li>b. Locking takes up to 1 minute depending on the signal strength. Make sure the sync LED is solidly lit.</li> <li>c. Check if the cable and connectors used in reference sync are in good condition.</li> <li>d. Make sure the cable length used in reference sync does not exceed 100 ft.</li> <li>e. Make sure OUTPUT EN is on when using the genlock output.</li> </ul>
Focus	<p>The miniature (M12) lens that comes installed on camera is set to optimal focus position, however if lens is slightly out of focus rotate lens clockwise or counter-clockwise slightly to fine tune. Once the desired focus point is achieved, rotate the locking nut back towards the camera which will hold the lens position at optimal focus point.</p>

## Warranty

For Warranty information please refer to Marshall website page:

<https://marshall-usa.com/company/warranty.php>

# Marshall

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