

CV356-10X

Compact 10x Zoom FHD Camera
with 3G-SDI and HDMI



49mm threaded ring adapter included for close-up and ND filters

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 accessories:

1. 12 Volt DC 2 Amp power adapter with 4 interchangeable plugs
2. I/O breakout Cable (Power/RS485/Audio)
3. IR Remote Controller with battery
4. 49mm threaded ring adapter for close-up and ND filters



The CV356-10X Camera utilizes a built-in 10x optical zoom lens.

Each camera comes set to default at 1920x1080p @59.94fps 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 (1920x1080p@59.94fps) 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	AWB		
	ATW		
	ONE PUSH		
	INDOOR		
	OUTDOOR		
AE CONTROL	MANUAL	BLUE	
		RED	
	AUTO		AGC MAX
			SENS UP
			AE BRIGHT
			FLICKERLESS
	SHUT PRI		SHUTTER
			AGC MAX
			SENS UP
			AE BRIGHT
	IRIS PRI		IRIS
			AGC MAX
			SENS UP
			AE BRIGHT
	AGC PRI		FLICKERLESS
			AGC
			SENS UP
		AE BRIGHT	
MANUAL		FLICKERLESS	
		SHUTTER	
		IRIS	
		AGC	
	SENS UP		
	BRIGHT	BRIGHT LEVEL	
FOCUS CONTROL	FOCUS MODE		
	AF MODE		
	DZOOM		
	ZOOM SPEED		
	NEAR LIMIT		
	AF INTERVAL		
	AF AREA / SIZE		
DAY / NIGHT	DAY		
	NIGHT	NIGHT COLOR	
	AUTO		

2. Menu Structure

Continued

SETUP	SUB MENU	SUB MENU
AUDIO	MIC/LINE	AUDIO LEVEL
		MIC ATTENUCATOR
		SAMPLE BITS
BACKLIGHT	BACKLIGHT	BLC
		HLM
		SPOT
	WDR	
	DWDR	
	DEFOG	
IMAGE CONTROL	LENS SHADING	
	CONTRAST	
	BRIGHTNESS	
	SATURATION	
	HUE	
	EDGE ENHANCE	
	AUTO SATURATE	
	IMAGE EFFECT	
	IMAGE MIRROR	
	IMAGE FLIP	
	BLACK WHITE LV	BLACK LEVEL
		WHITE LEVEL
	GAMMA CORRECT	
DNR		DNR MODE
		DNR LEVEL
SPECIAL	ZOOM MAG	
	DIS	
	BINNING	
	DEFECT PIXEL	
	FREEZE	
	MOTION DETECT	
	PRIVACY	
SETUP	CAM TITLE	
	COMMUNICATION	CAM ID
		ID DISPLAY
		BAUD RATE
	MODEL	
	S/W VER	
OUTPUT FORMAT		
RESET	USER/FACTORY	
EXIT		

3. OSD Joystick and Button



I/O Cable (included in box)

1. SET Used to access the menu and confirm selection.
2. UP Used to move the cursor up.
3. DOWN Used to move the cursor down.
4. LEFT Used to move the cursor left and change the value.
5. RIGHT Used to move the cursor to the right and change the value.

Press SET button to access the Main Menu

MAIN MENU

WB CONTROL >
AE CONTROL >
FOCUS CONTROL >
DAY/NIGHT >
AUDIO >
BACKLIGHT >
IMAGE CONTROL >
SPECIAL >
SETUP >
RESET >
EXIT >

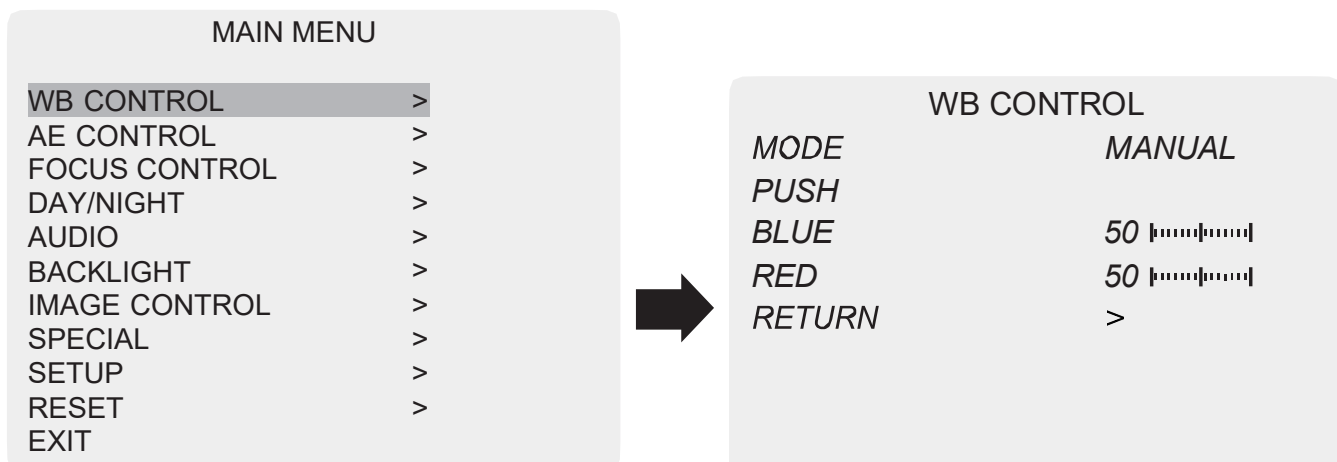
Use the UP & DOWN buttons to select the desired item.

Use the LEFT and RIGHT buttons to change the sub-item.

4. WB Control

Select **WB CONTROL** using the **UP** or **DOWN** button. You can change between **AWB**, **ATW**, **PUSH**, and **MANUAL** using the **LEFT** or **RIGHT** buttons.

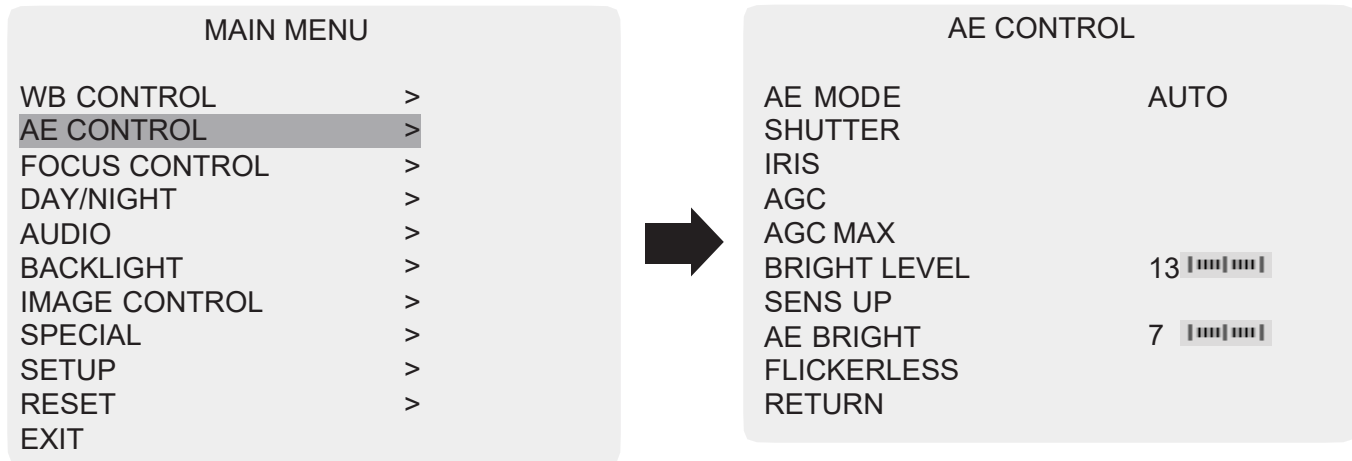
- a. **AWB:** Continuously adjusts camera color balance in accordance with any change in color temperature changes within the range of 3,000°K to 8,000°K.
- b. **ATW:** Continuously adjusts camera color balance in accordance with any change in color temperature. Compensates for color temperature changes within the range of 1,900°K to 11,000°K.
- c. **ONE PUSH:** Color temperature will be manually adjusted by pushing the OSD button. Place the white paper in front of the camera when OSD button is pressed to obtain optimum result.
- d. **MANUAL:** Select this to fine-tune White Balance manually.
You can adjust the blue and red tone level manually.
 - i. **BLUE:** Adjust the Blue tone of the image. (0~255)
 - ii. **RED:** Adjust the Red tone of the image. (0~255)
- e. **INDOOR:** Select this to adjust white balance to indoor lighting condition.
- f. **OUTDOOR:** Select this to adjust white balance to outdoor lighting condition.



- i. *Adjust White Balance first by using the AWB or ATW mode before switching to MANUAL mode.*
- ii. *White Balance may not work properly under the following conditions. In this case, select the ATW mode.*
 1. *When the ambient illumination of the subject is dim.*
 2. *If the camera is directed towards a fluorescent light or is installed in place where illumination changes dramatically, the White Balance operation may become unstable.*

5. AE Control

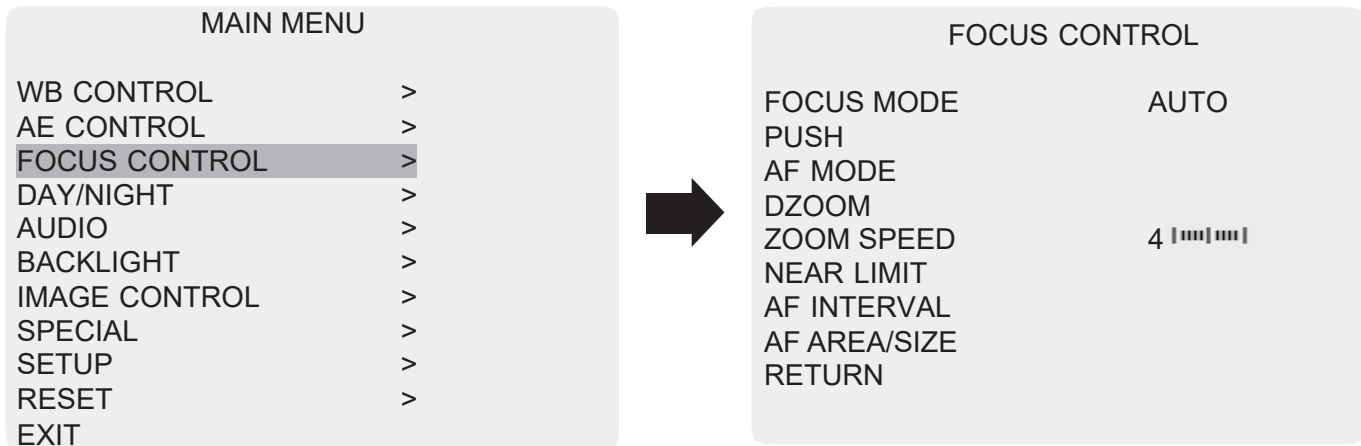
Select **AE CONTROL** using the **UP** or **DOWN** button. You can select one sub-mode using the **UP** or **DOWN** buttons.



- **AUTO:** Adjusts the exposure level automatically. Detailed fine tuning options are available under this menu.
- **SHUT PRI:** Provides more detailed shutter speed options. All other controls are tuned for the selected shutter speed.
- **IRIS PRI:** Provides more detailed iris control options. All other controls are tuned for the selected iris.
- **AGC PRI:** Provides more detailed gain option. All other controls are tuned for the selected gain.
- **BRIGHT:** Provides bright exposure level control.
- **MANUAL:** Adjusts the exposure level manually.
 1. **SHUTTER:** Speed can be set at auto or manual. (NTSC: 1/30~1/10,000, PAL: 1/25~1/10,000)
 2. **IRIS:** Electronic Iris speed can be controlled. (F1.6~F16)
 3. **AGC:** Electronic gain level can be controlled. (0dB~75dB)
 4. **AGC MAX:** Used to set maximum gain value to control the video noise caused by Auto Gain Control. (0~15)
 5. **SENS UP:** Controls the digital slow shutter to allow extra light into the camera and adjust the picture quality. (off, x2~x15)
 6. **AE BRIGHT:** Select this to adjust auto exposure brightness levels. (0~24)
 7. **FLICKERLESS:** Provides a proper image sensor frequency to match the power frequency in order to minimize video flicker.

6. Focus Control

Select **Focus Control** using the **UP** or **DOWN** button. You can change between **AUTO** and **Manual** focus modes.

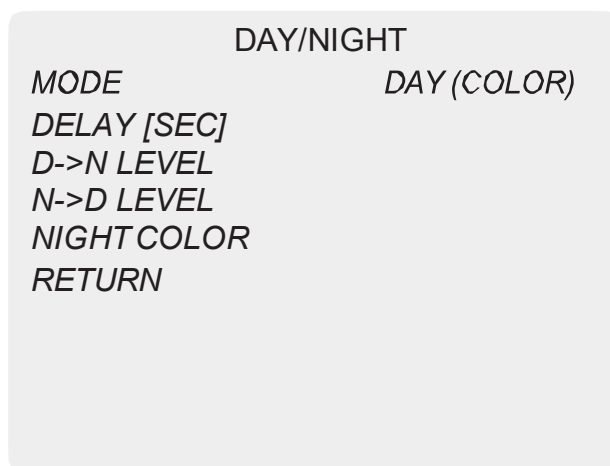
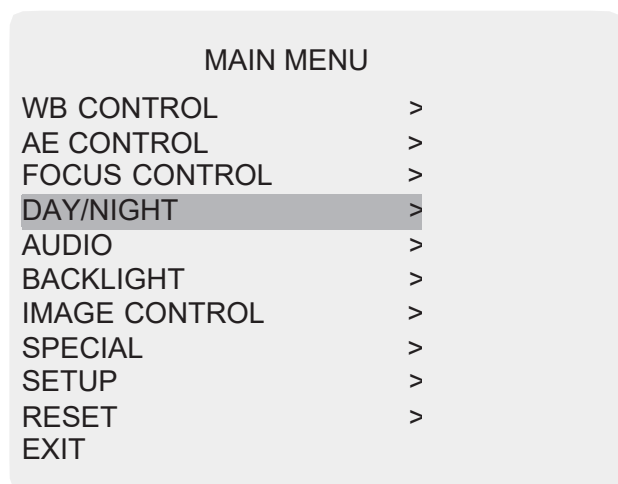


- a. **FOCUS MODE:** Adjust camera focus automatically or manually. When MANUAL mode is selected, initial focus position can be automatically adjusted by choosing PUSH menu.
- b. **AF MODE:** Focusing type can be set under this menu.
 - i. **NORMAL:** Normal AF operation.
 - ii. **INTERVAL AF:** AF movement is carried out at interval setup from AF INTERVAL menu.
 - iii. **ZOOM TRIG:** When zoom position is changed, AF will be activated within 5 seconds.
- c. **DZOOM:** Digital zoom can be enabled. (x1~x12)
- d. **ZOOM SPEED:** Optical zoom speed can be set. (0~7)
- e. **NEAR LIMIT:** Set the limit of the tele control. (1M~10M)
- f. **AF INTERVAL:** AF Interval time can be set under this menu. Initial setting is 5 seconds and it can be adjusted in 1 second increment.
- g. **AF AREA/SIZE:** Focus area can be manually adjusted. Camera focus is set to the center of the screen by default.

7. DAY / NIGHT

Select **DAY / NIGHT** using the **UP** or **DOWN** button. You can select one sub-mode from **AUTO**, **COLOR**, and **NIGHT** using the **UP** or **DOWN** buttons.

- **MODE:** Set camera to either color mode or B&W mode. (Auto, Day, Night)
- **DAY:** When set to DAY mode, camera stays in color and IR cut filter is engaged.
- **NIGHT:** When set to NIGHT mode, camera stays in B&W and IR cut filter is removed.
 1. **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 changes DAY and NIGHT mode automatically.
 1. **DELAY [SEC]:** Delay time between mode change can be adjusted.
 2. **D-> N LEVEL:** Adjust the level to switch from Day mode to Night mode.
 3. **N-> D LEVEL:** Adjust the level to switch from Night mode to Day mode.

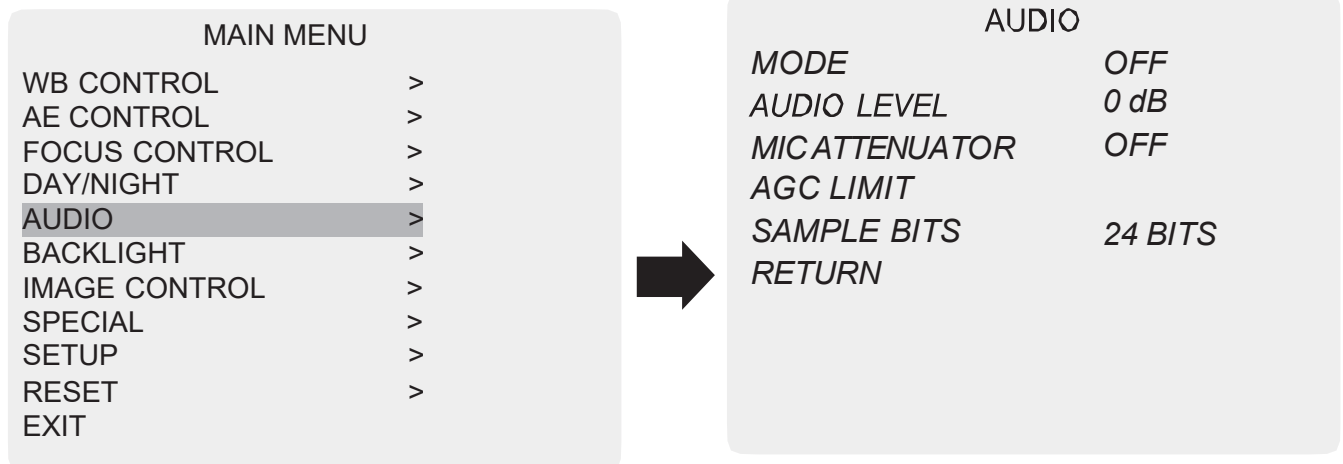


8. AUDIO

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
- **AGC LIMIT:** Audio gain limit can be controlled while MIC ATTENUATOR is in used.
 1. **SAMPLE BITS:** Select the bit depth of audio

Line input does not provide power to the audio device. Mic will use Mic Bias 1.7V and up to 3mA max current.



9. BACKLIGHT

Select **BACKLIGHT** using the **UP** or **DOWN** button.

You can Select **BACKLIGHT**, **WDR**, **DWDR** and **DEFOG** using the **UP** or **DOWN** buttons.

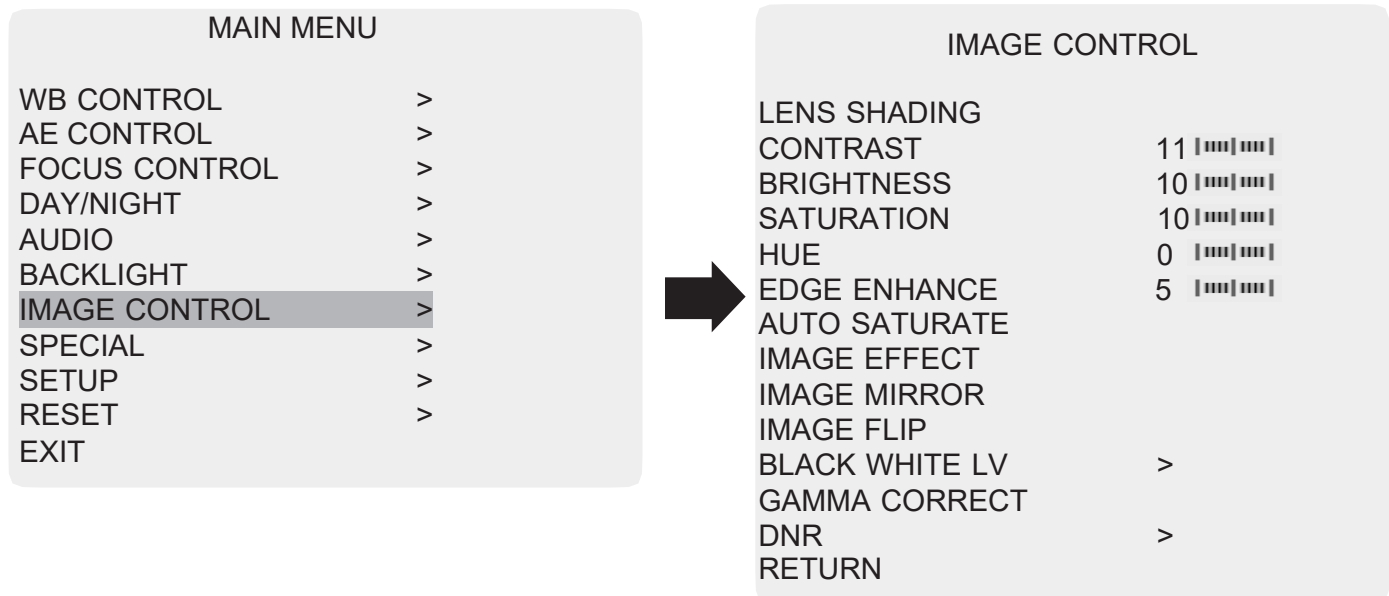


- **BACKLIGHT:** Select between different BACKLIGHT compensation modes.
 1. **BLC:** BLC enables back light compensation.
 2. **HLM:** HLM mode will mask out bright areas.
 3. **SPOT:** SPOT enables to create a user defined area for BLC.
- **WDR:** Sensor enables to view both object and background more clearly when background is too bright.
- **DWDR:** Digital algorithm enables to view both object and background more clearly when background is too bright
- **DEFOG:** This feature will help increase visibility in extreme weather conditions, such as fog, rain or in a very strong luminous intensity.

10. IMAGE CONTROL

Select **IMAGE CONTROL** using the **UP** or **DOWN** button.

You can select **LENS SHADING**, **CONTRAST**, **HUE**, and image related menu using the **UP** or **DOWN** buttons.

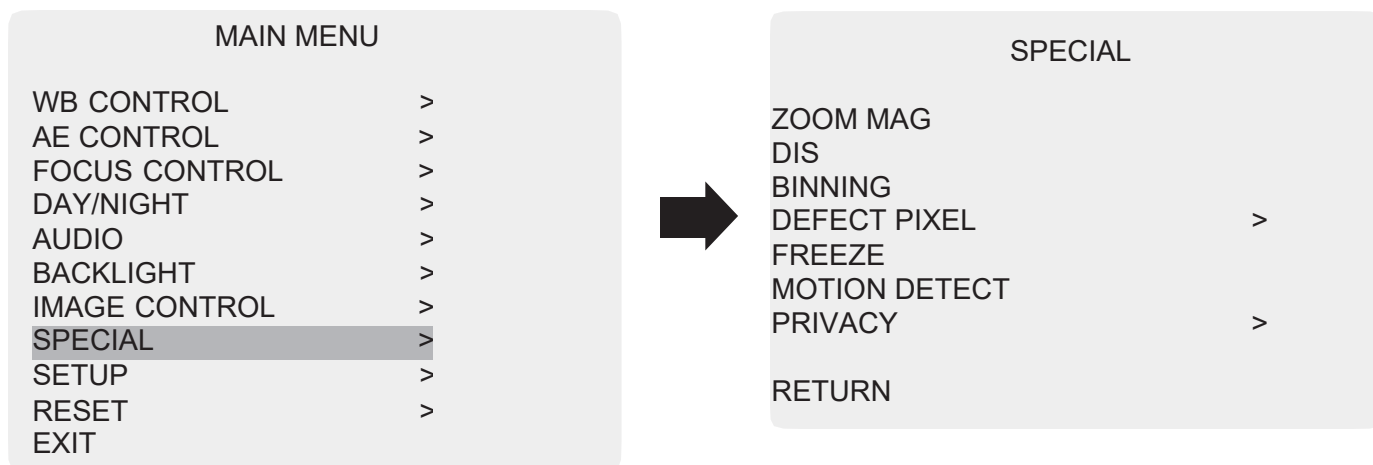


- **LENS SHADING:** Corrects inconsistent brightness level in the image.
- **CONTRAST:** Adjust the image contrast level.
- **BRIGHTNESS:** Adjust the image brightness level.
- **SATURATION:** Adjust the image saturation level.
- **HUE:** Adjust the image hue level.
- **EDGE ENHANCE:** Adjust the image sharpness level.
- **AUTO SATURATE:** Decrease saturation automatically when noise scene is detected.
- **IMAGE EFFECT:** Adjust different color schemes.
- **IMAGE MIRROR:** Adjust horizontal mirror effect.
- **IMAGE FLIP:** Adjust vertical flip effect.
- **BLACK WHITE LEVEL:** Adjust the image black level and white 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.

11. SPECIAL

Select **SPECIAL** using the **UP** or **DOWN** button.

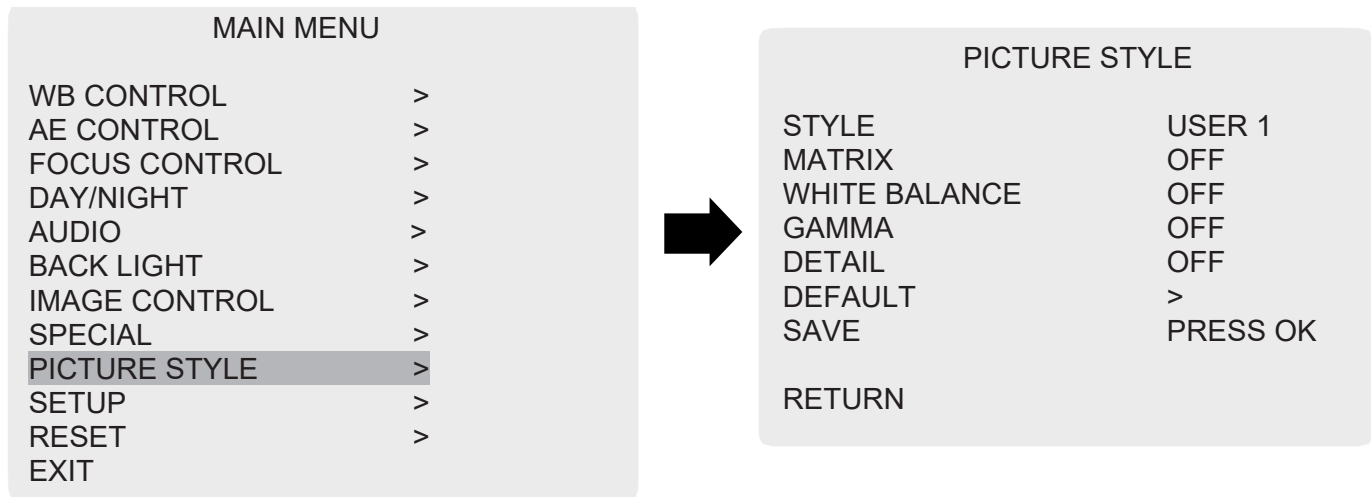
You can select **DEFOG**, **MOTION DETECT**, **BACKLIGHT**, **DEFECT PIXEL**, and **FLICKER DETECT** using the **UP** or **DOWN** buttons.



- **ZOOM MAG:** Turn ON or OFF the zoom ratio display on the top left corner of the image.
- **DIS:** This feature enables digital image stabilization.
- **BINNING:** Enable or disable pixel binning.
- **DEFECT PIXEL:** Advanced defective pixel correction menu.
- **FREEZE:** Freeze or defreeze the image output.
- **MOTION DETECT:** Enables motion detection zones.
- **PRIVACY:** Mask areas you want to hide on the screen by applying the privacy zones.

12. PICTURE STYLE

Select **PICTURE STYLE** menu for color matrix tuning.
You can adjust settings using the **UP** or **DOWN** buttons.

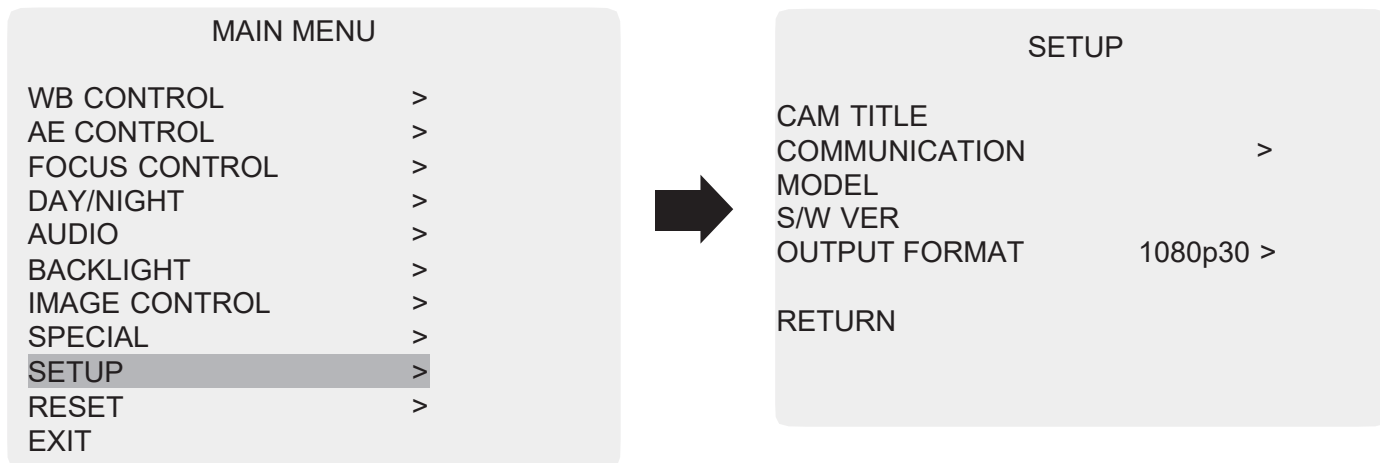


- **STYLE:** 6 different settings can be assigned.
- **MATRIX:** Matrix feature can be configured.
 1. **STYLE:** 4 predefined color matrix styles are available to choose from.
 2. **MASTER LEVEL:** Fine adjustment of master color gain(saturation).
 3. **MASTER PHASE:** Fine adjustment of master color 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 crispning.
 4. **CLIP & CLIP LEVEL:** Adjust sharpness peak clip.
- **DEFAULT:** Reset the selected user number to the default value.
- **SAVE:** Save the selected user settings.

13. 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)
 4. **SAVE:** Save setting after applying the changes.
- **MODEL:** Displays product module number.
- **S/W VER:** Displays software version number.
- **OUTPUT FORMAT:** Camera resolution and frame rate can be set.

(1080 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, 23.98

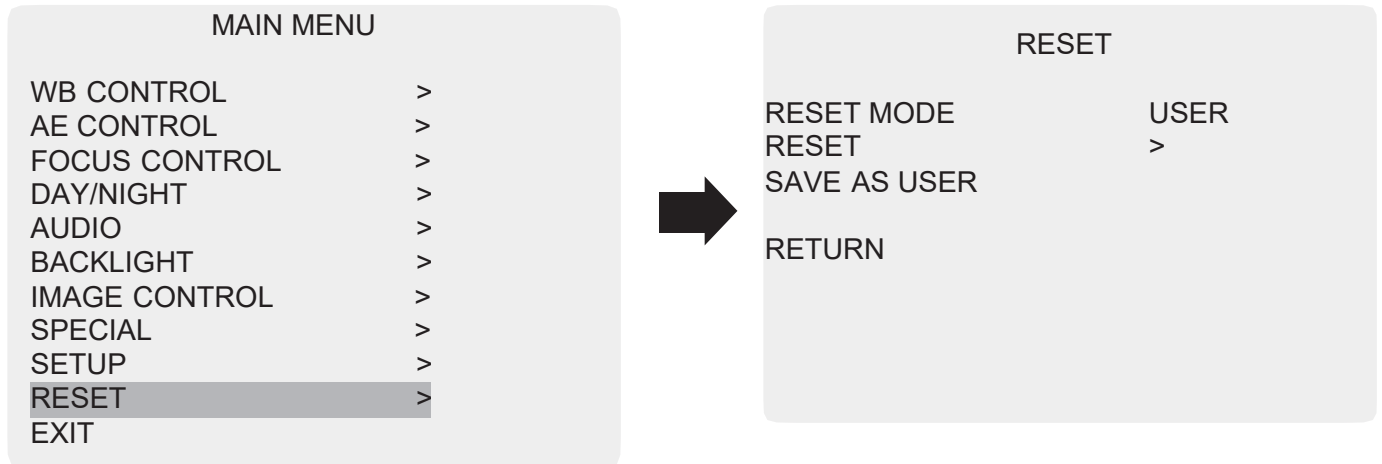
1920 x 1080i 60, 59.94, 50

1280 x 720p 60, 59.94, 50

14. RESET

Select **RESET** using the **UP** or **DOWN** button.

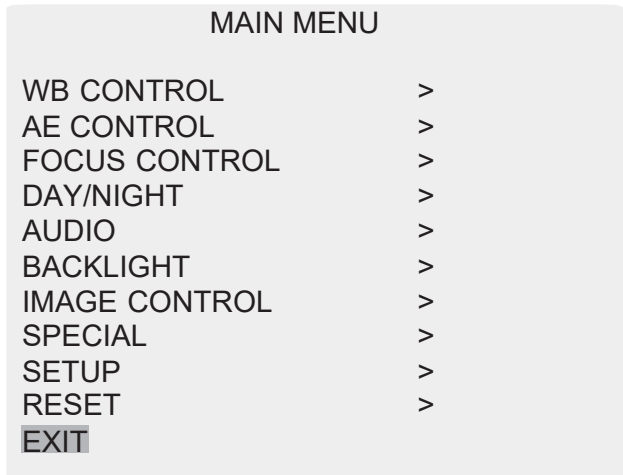
- a. **RESET**: Reset the camera settings the factory defaults or user setting value.



- **RESET MODE**: Set the camera setting to either “FACTORY” or “USER”.
 1. **USER**: Select “USER” if user saved setting value is needed.
 2. **FACTORY**: Select “FACTORY” if factory default setting is needed.
- **RESET**: Reset the camera to the mode set on RESET MODE.
- **SAVE AS USER**: Save the current camera settings as “USER”.

15. EXIT

Select **EXIT** using the **UP** or **DOWN**



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

16. 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"> a. Check that all connected devices are powered on. b. Confirm that the voltage is correct. c. Confirm that the power supply provides enough current to power the camera. d. Check that all video cables are correctly connected.
The picture is not clear.	<ul style="list-style-type: none"> a. Check that your monitor is correctly adjusted. 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. c. Correctly adjust the focus.
The picture has interference.	<ul style="list-style-type: none"> a. The camera may be close to a high voltage source, such as a power generator. b. The BNC cable is not terminated properly. c. The video cables are not connected properly.
The picture is flickering continually.	<ul style="list-style-type: none"> a. Check the termination and set the impedance at 75Ω properly. b. Ensure that the camera is not pointing towards the Sun or any light source. c. Check if there is any intermediate device. d. Check if the distance of the video cable exceeds the maximum transferable limitation.
The camera is not synchronizing with the reference signal.	<ul style="list-style-type: none"> a. Make sure Tri-Level reference signal is used. b. Locking takes up to 1 minute depending on the signal strength. Make sure the sync LED is solidly lit. c. Check if the cable and connectors used in reference sync are in good condition. d. Make sure the cable length used in reference sync does not exceed 100 ft. e. Make sure OUTPUT EN is on when using the genlock output.

WARRANTY

For Warranty information please refer to Marshall website page:

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

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