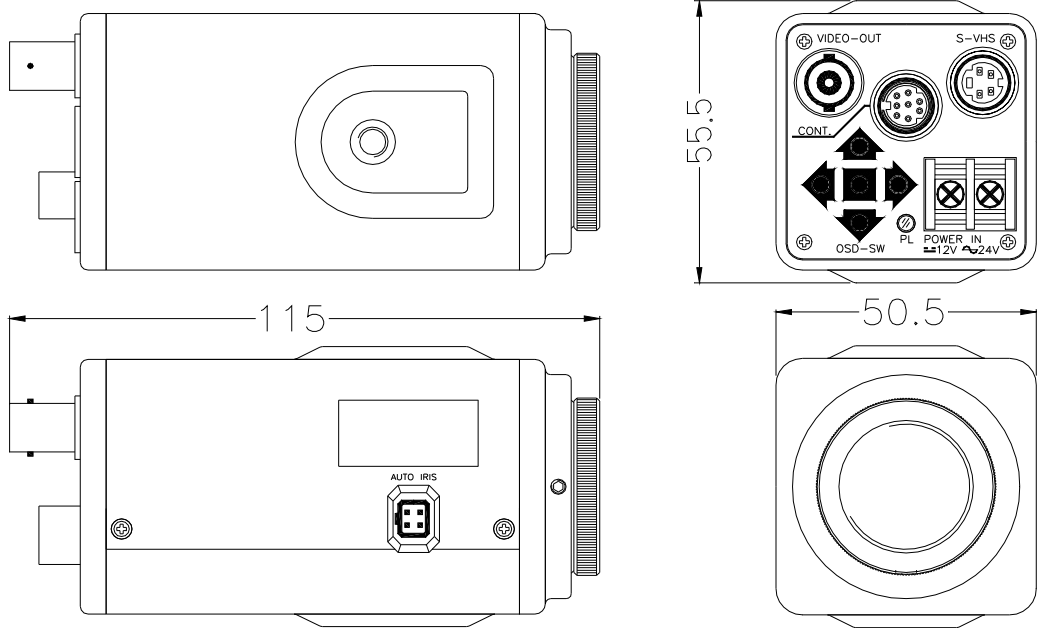


LML7131

ultra wide dynamic range, long exposure “star light”, enhanced resolution color CCD CCTV camera

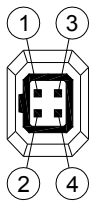
LML7131 at a glance: top, back (rear), right, front views:



DC-driven Lens connector pinout:

DC-LENS	
P1	DUMP -
P2	DUMP+
P3	DRIVE
P4	GND

DC-driven Lens connector (look at the camera view):

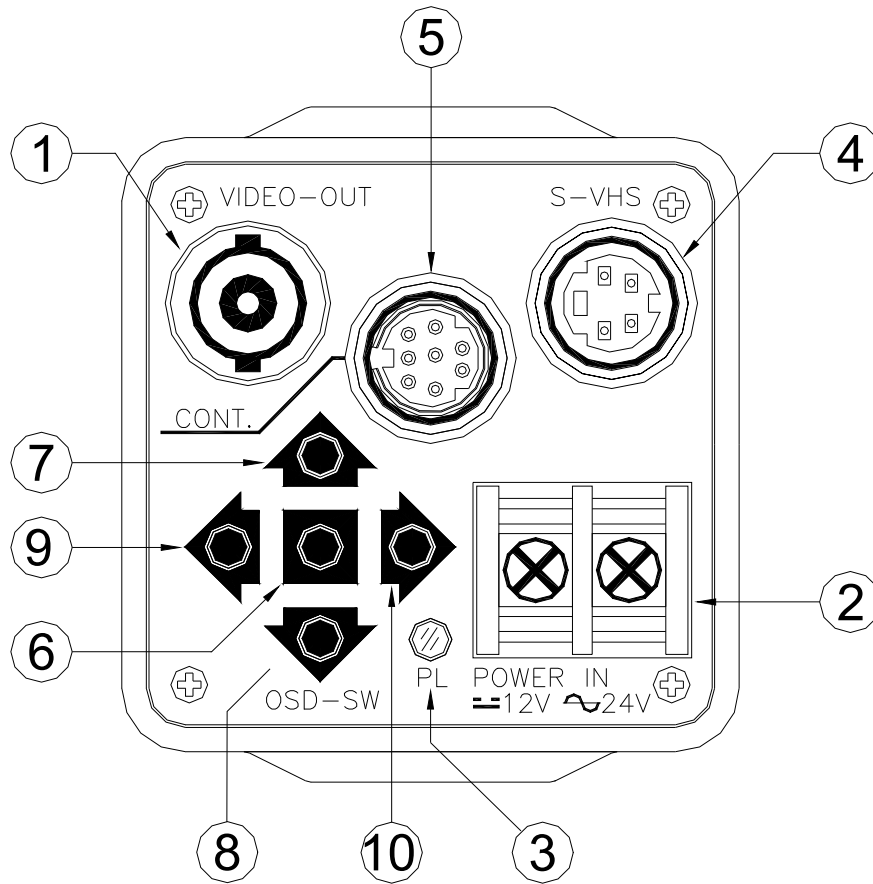


SPECIFICATION

MODE NO.	LML7131	
TV SYSTEM	NTSC	PAL
IMAGE SENSOR	1/3-inch CCD Image Sensor	
CCD TOTAL PIXELS	811(H) X 508(V)	795(H) X 596(V)
SCANNING SYSTEM	525 lines, 60 fields/sec	625 lines, 50 fields/sec
SYNC SYSTEM	Internal / Line-Lock	
MINIMUM ILLUMINATION	Legacy mode	1.0 Lux (F1.2 , 5600°K 50 IRE)
	Star light Mode	0.02 Lux (F 1.2 , 5600°K 30 IRE)
RESOLUTION	520 TVL	
WHITE BALANCE	Mode	ATW / AWB / FIX
	Range	3200 ~ 10000 °K
GAIN CONTROL	Mode	AGC (ON / OFF)
	Range	0 ~ 18dB
S / N RATIO	52dB (MIN) / 60dB (TYP) (AGC OFF)	
AUTO IRIS	A.E.S. / DC driven	
Options setup with:	On screen Display (OSD) 5 buttons control	
OSD selectable:	LANGUAGE (ENGLISH)	
	MIRROR FUNCTION (LEFT <-> RIGHT)	
	UP SIDE DOWN (TOP <-> BUTTON)	
	B.L.C. FUNCTION (back light compensation)	
	DIGITAL ZOOM (X2)	
	NEGATIVE IMAGE	
	MASKING AREA	
	DNR (Dynamic Noise Reduction)	
	MOTION DETECTION	
ALARM OUT	on motion detected	
RS-485 I/F	8 pin mini DIN connector	
WIDE DYNAMIC	52dB (MAX)	
VIDEO OUTPUT	Composite & Y/C output 1.0V p-p at 75 ohm	
GAMMA CORRECTION	0.45 / 1.0 (SELECTABLE BY OSD MANUAL)	
OPERATION TEMPERATURE	-20°C TO 50°C	
OPERATIONAL HUMIDITY	within 85% RH	
POWER SUPPLY	DC12V or AC24V at 7W	

The specification and appearance of the product may change without notice.

REAR PANEL VIEW

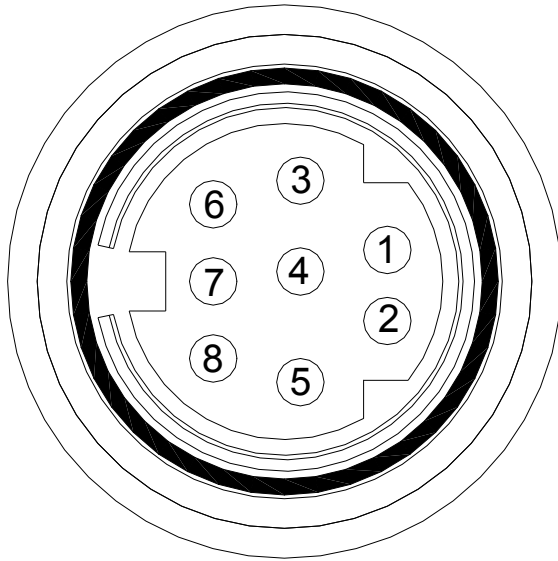


1	VIDEO OUTPUT
2	POWER INPUT
3	POWER ON INDICATOR LED
4	S-VHS Y/C OUTPUT
5	CONT. CONNECTOR
6	OSD-SW "ENTER"
7	OSD-SW "UP"
8	OSD-SW "DOWN"
9	OSD-SW "LEFT"
10	OSD-SW "RIGHT"

Note: OSD buttons are designated through the rest of the document as **LEFT, RIGHT, UP, DOWN** and **ENTER**.

RS485 and Alarm Output mini DIN-8 connector

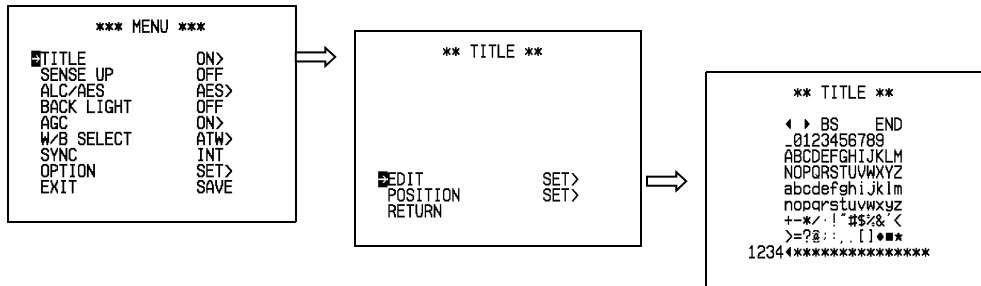
(look at the camera view)



P1	485+	RS-485 Connector TO PC
P2	GND	
P3	485-	
P4	GND	
P5	GND	
P6	GND	
P7	ALARM OUT (Collector)	Open collector alarm output Max sink DC50V/30mA
P8	ALARM OUT (Emitter)	

1 Assigning a name to the camera (TITLE)

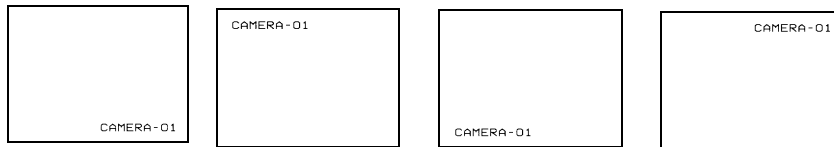
Name may be assigned to the camera, this name (*title*) may be overlaid on video image sent by camera.



Move cursor to the TITLE row, press **RIGHT** button to switch from title-OFF mode to title-ON mode. Press **ENTER** button to get to the TITLE submenu.

EDIT : SET> Press **ENTER** button to get to the character select menu.
 Move around cursor to the character to be entered, press **ENTER** button to select that character and add it to the bottom (*title*) row,
 To finish editing and go back to the main menu level,
 move cursor to the "END" item and press **ENTER** button
 With cursor on "<" symbol pressing **ENTER**, moves *title* row character entry point to the left. ">" symbol does the opposite (moves entry position to the right)
 With cursor on "BS" item pressing **ENTER** deletes previous character in the *title* row

POSITION : SET> Press **ENTER** button to get to the *title* position selection menu
 Press **UP, DOWN, LEFT, RIGHT**, buttons to place *title* name string into one of four screen corners.

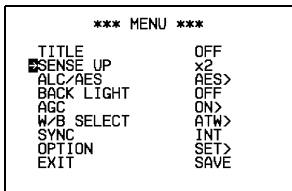


Press **ENTER** button once to go back to TITLE menu.

RETURN : Move cursor to "RETURN" row, press **ENTER** button once more to return to main Menu.

2 Frame accumulation mode (SENSE UP)

This selection allows to increase effective sensitivity of the CCD video matrix by enabling frame integration (multiple exposures) mode on.

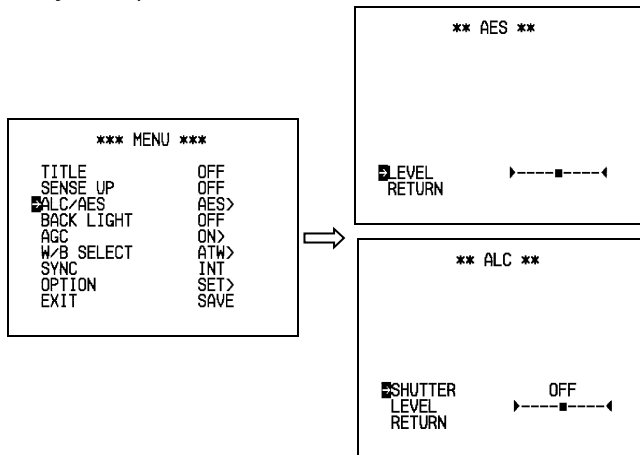


Get cursor to "SENSE UP" row. Press **RIGHT** or **LEFT** button to select number of frames to add up in integration mode, from disabled - OFF to X2 / X4 / X6 / X8 / X12 / X16 / X32 / X64, times.
 The Minimum illumination requirement of the camera will be decreased respectively, and allows vision under star light night conditions.

Frame integration mode increases sensitivity, at the cost of video frame rate decrease. With x64 enabled frame rate will be 0.5 frames/sec for NTSC (0.4 frames/sec for PAL).

3 Auto Exposure, Shutter, Iris Controls (ALC/ELC)

Variety of exposure modes is set with two controls - AES (Auto Exposure Setting) and ALC (Auto Light Control)



AES function:

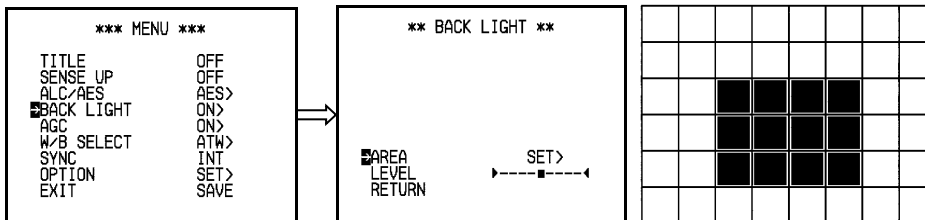
Move cursor to ALC/AES row, press **RIGHT**, until AES mode selected, press **ENTER** to get to AES submenu.
 LEVEL : press **RIGHT** or **LEFT** to select automatic exposure adjustment:
 MIN (make image darker) ~ MAX (make image brighter)
 RETURN: Move cursor to "RETURN" row, press **ENTER** to return to the main Menu.

ALC function:

Move cursor to ALC/AES row, press **RIGHT** until ALC mode selected. press **ENTER** to get ALC submenu.
 SHUTTER : Select fixed shutter speed:
 NTSC : OFF,1/100,1/125,1/250,1/500,1/1000,1/2000,1/4000,1/10000.
 PAL : OFF,1/120,1/125,1/250,1/500,1/1000,1/2000,1/4000,1/10000.
 (OFF means "automatic")
 LEVEL : press **RIGHT** or **LEFT** to adjust DC-driven IRIS setting.
 MIN (make image darker) ~ MAX (make image brighter)
 RETURN: Move cursor to "RETURN" row, press **ENTER** to return to the main Menu.

4 BACKLIGHT and WDR control

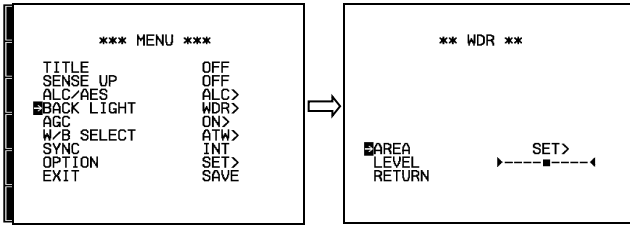
Move cursor to BACK LIGHT row press **RIGHT** to select ON / OFF or Wide Dynamic Range (WDR) mode.



ON function: (press **ENTER** to get to BACK LIGHT submenu)

AREA :with cursor on SET> press **ENTER** to get to 48 zones setup screen,
 that shows 8 by 6 (for a total of 48 zones) lattice, move cursor to block to set up.
 press **RIGHT** or **UP** button to move to the right,
 press **LEFT** or **DOWN** cursor to move to the left.
 press **ENTER** to switch block to gray or clear (Gray= AREA ON / Clear=AREA OF).
 Move to another block and repeat the above step till all blocks are set as needed.
 press **ENTER** button for 2 sec. to exit from 48 zones setup screen.
 LEVEL :press **LEFT** and **RIGHT** to adjust degree to which OFF AREAs affect backligh compensation.
 MIN setting: ON AREA / OFF AREA = 50/50 ,
 MAX setting: ON AREA / OFF AREA = 100/0
 RETURN: Move cursor to "RETURN" row, press **ENTER** to return to the main Menu.

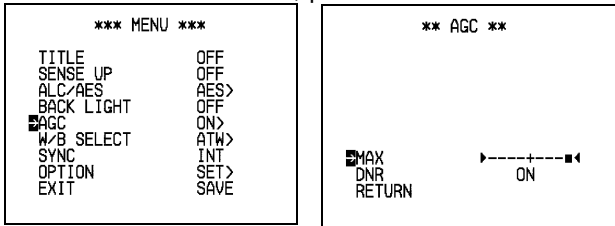
WDR function: (press **ENTER** to enter WDR menu)



- AREA : SET> row press **ENTER** to enter 48 zone programming screen (same as for backlight).
 move cursor around zones, press **ENTER** to turn blocks gray or clear as needed
 Gray= WDR detect ON AREA
 Clear=WDR detect OFF AREA
 press **ENTER** for 2 sec. to exit 48 zone setup screen.
- LEVEL : press **LEFT** and **RIGHT** to adjust WDR sensitivity
 MIN (low sensitivity) , MAX (high sensitivity)
- RETURN : Move cursor to "RETURN" row, press **ENTER** to return to the main Menu.

5 Automatic Gain Control (AGC)

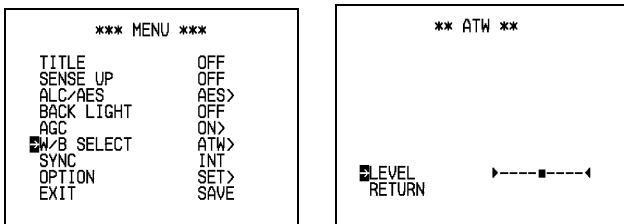
Move cursor to AGC row, press **RIGHT** button to toggle AGC mode ON / OFF



- AGC ON function:** (Press **ENTER** button to go down into AGC menu)
- MAX : User **LEFT** and **RIGHT** to adjust AGC gain between MIN and MAX.
 MIN (wider output range), MAX (narrower output range)
- DNR : press **LEFT** and **RIGHT** button to ON/OFF (enable/disable) Digital Noise Reduction (DNR)
- RETURN : press **ENTER** to return to the main Menu.

6 White balance (W/B) SELECT

Move cursor to W/B SELECT row, press **RIGHT** until desired ATW / AWB / IN DOOR / OUT DOOR / MANUAL function to set is selected.



- ATW function:** (press **ENTER** to enter ATW menu)
- LEVEL : ATW offset adjustment (Red/Blue).
 R-GAIN strong ~ B-GAIN strong)
- RETURN : Move cursor to "RETURN" row, press **ENTER** to return to the main Menu.

Auto White Balance (AWB) function: allows to adjust white point for current lighting environment

```

*** MENU ***
TITLE           OFF
SENSE UP        OFF
ALC/AES        AES>
BACK LIGHT     OFF
AGC            ON>
W/B SELECT     AWB
SYNC           INT
OPTION         SET>
EXIT          SAVE
    
```

Press **ENTER** to set current subject color as a standard "White Balance" (reference) - ideally use some white object for that setting, like a sheet of white paper.

IN DOOR white balance set function:

```

*** MENU ***
TITLE           OFF
SENSE UP        OFF
ALC/AES        AES>
BACK LIGHT     OFF
AGC            ON>
W/B SELECT     IN DOOR
SYNC           INT
OPTION         SET>
EXIT          SAVE
    
```

OUT DOOR white balance set function:

```

*** MENU ***
TITLE           OFF
SENSE UP        OFF
ALC/AES        AES>
BACK LIGHT     OFF
AGC            ON>
W/B SELECT     OUT DOOR
SYNC           INT
OPTION         SET>
EXIT          SAVE
    
```

MANUAL color balance setup function: press **ENTER** to get into W/B MANUAL submenu

```

*** MENU ***
TITLE           OFF
SENSE UP        OFF
ALC/AES        AES>
BACK LIGHT     OFF
AGC            ON>
W/B SELECT     MANUAL>
SYNC           INT
OPTION         SET>
EXIT          SAVE
    
```

⇒

```

** W/B MANUAL **
R-GAIN          ────┬───┬───
B-GAIN          ────┬───┬───
RETURN
    
```

R-GAIN : Red-GAIN adjustment. (R-GAIN low ~ R-GAIN high)
 B-GAIN : Blue-GAIN adjustment. (B-GAIN low ~ B-GAIN high)
 RETURN : Move cursor to "RETURN" row, press **ENTER** to return to the main Menu.

7 SYNC

Move cursor to SYNC row press **RIGHT** to select INT or EXT mode

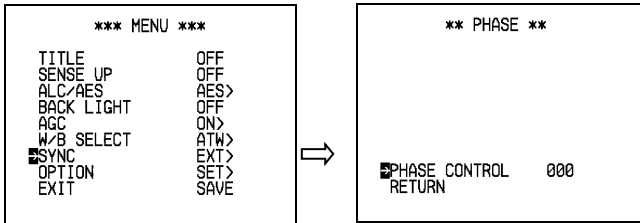
INT function:

```

*** MENU ***
TITLE           OFF
SENSE UP        OFF
ALC/AES        AES>
BACK LIGHT     OFF
AGC            ON>
W/B SELECT     INT>
SYNC           INT
OPTION         SET>
EXIT          SAVE
    
```

Camera is synchronized by internal sync-signal.

EXT function: (press **ENTER** button to enter PHASE menu)



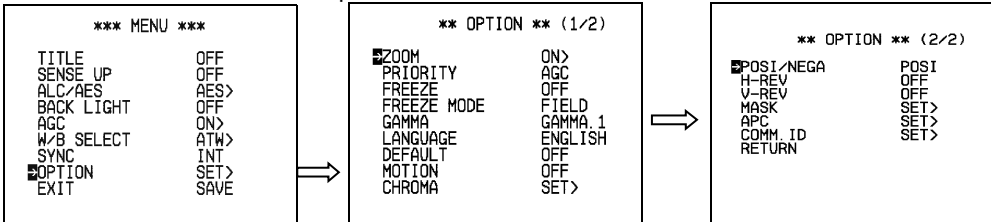
PHASE CONTROL

: Adjust phase for vertical (???). (NTSC = 0 ~ 524 , PAL = 0 ~ 624).

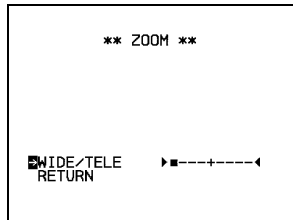
RETURN : Move cursor to "RETURN" row, press **ENTER** to return to the main Menu.

8 OPTION

Move cursor to **OPTION** row press **ENTER** button to enter **OPTION (1/2)** menu.



ZOOM function: Move cursor to **ZOOM** row press **RIGHT** to select ON/OFF zoom mode.



WIDE/TELE : press **LEFT** and **RIGHT** to adjust ZOOM ratio setting.
Left slider position(X1) ~ right slider position(X2)

RETURN : Move cursor to "RETURN" row, press **ENTER** to return to the options Menu.

AGC vs. SENSE UP PRIORITY function: (press **RIGHT** or **LEFT** to select AGC / SENSE UP)

AGC : AGC high priority
LENS IRIS **▶▶** AGC **▶▶** SENSE UP

SENSE UP : SENSE UP high priority
LENS IRIS **▶▶** SENSE UP **▶▶** AGC

FREEZE function: press **RIGHT** or **LEFT** to freeze (capture) image ON / OFF

FREEZE MODE function: Then press **RIGHT** or **LEFT** to select freeze modes:
FIELD (image freeze in field mode)
FRAME (image freeze in frame mode)

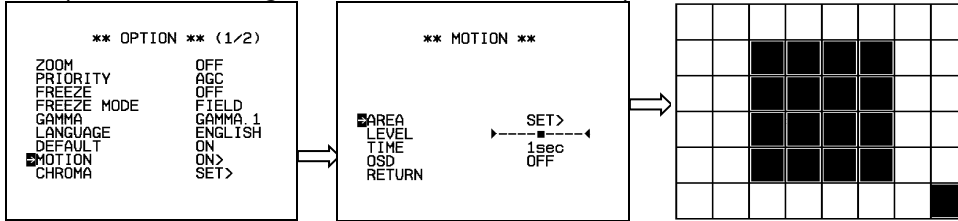
GAMMA function: press **RIGHT** or **LEFT** to adjust gamma between 0.45 and 1

LANGUAGE function: Then press **RIGHT** or **LEFT** button to select display language
ENGLISH / CHINESE / JAPANESE

DEFAULT function: (press **RIGHT** or **LEFT** to prepare to reset settings to default ON / no reset OFF)
ON : press **ENTER** to load default data, and do a soft camera reset.

MOTION detection function: (press **RIGHT** or **LEFT** to select ON / OFF)

ON: press **ENTER** to get to MOTION detection setup menu.



AREA : SET> row press **ENTER** to enter 48 zone setup screen. that has 8 by 6 = 48 zone lattice, use **RIGHT/LEFT/UP/DOWN** buttons to move cursor between blocks press **ENTER** button to set block Gray or Clear Gray= MOTION detection ON AREA Clear=MOTION detection OFF AREA). Move to another block and repeat until all blocks are set properly. press **ENTER** for 2 sec. to exit from 48 zone setup screen.

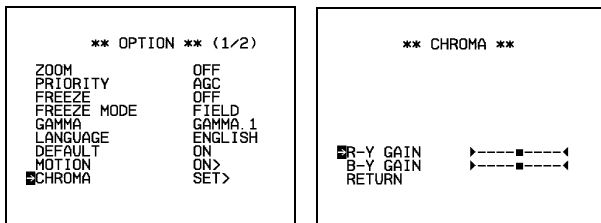
LEVEL : press **LEFT** and **RIGHT** button, Power that the MOTION sensitive is adjusted. Leftward (weak sensitive) ~ Rightward (strong sensitive)

TIME : Alarm output time set at motion detected. press **LEFT** and **RIGHT** button, select time set 1sec./2sec./3sec./5sec/10sec./30sec./60sec.

OSD : press **LEFT** and **RIGHT** button select "MOTION" character display ON or OFF at motion detected.

RETURN : Move cursor to "RETURN" row, press **ENTER** button once more to return to OPTION Menu.

CHROMA function: (press **ENTER** to enter CHROMA submenu)

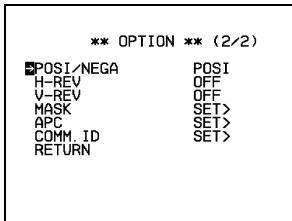


R-Y GAIN : R-Y GAIN adjustment. (R-Y GAIN weak ~ R-Y GAIN strong)

B-Y GAIN : B-Y GAIN adjustment. (B-Y GAIN weak ~ B-Y GAIN strong)

RETURN : Move cursor to "RETURN" row, press **ENTER** to return to OPTION Menu.

Move cursor to "CHROMA" row, and pressing **DOWN** allows to get to to OPTION (2/2) Menu.

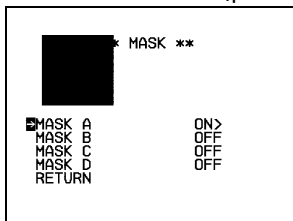


POSI/NEGA function: (Default (after reset) setting is POSI) turns picture negative or positive Move cursor to POSI/NEGA row. Then press **RIGHT** or **LEFT** to select Positive / Negative effects.

H-REV function: (Preset is at the OFF state) turns picture into a mirror image Move cursor to H-REV row. Then press **RIGHT** or **LEFT** to select ON (Mirror effect on) / OFF (Normal).

V-REV function: (Preset is the OFF state) upside-down picture effect
Move cursor to V-REV row. Then press **RIGHT** or **LEFT** to select ON (Up side down effect) /OFF(Normal).

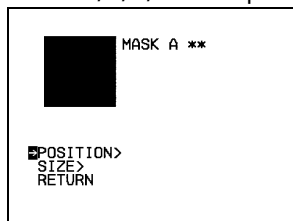
MASK function: (press **ENTER** to get to MASK submenu)



MASK A/B/C/D: press **UP / DOWN** to select mask area A/B/C or D,
after that use **RIGHT / LEFT** to select mask area to set ON/OFF mode.
When MASK (A/ B/C/D) is ON, it will show a corresponding zone on the picture.

RETURN: Move cursor to "RETURN" row, press **ENTER** to return to OPTION Menu.

MASK A/B/C/D: ON>press **ENTER** to get to MASK settings page:



POSITION : press **UP / DOWN** to select POSITION line, press **ENTER** to get into adjustment mode.
press **UP / DOWN / RIGHT / LEFT** to select the location for the mask zone.
press **ENTER** button to get back to the previous (mask adjustment) menu.

SIZE : press **UP / DOWN** to select SIZE line, press **ENTER** to get into adjustment mode.
press **UP / DOWN / RIGHT / LEFT** to set the size of the masking zone.
press **ENTER** to get back to the previous (mask adjustment) menu.

RETURN: Move cursor to "RETURN" row, press **ENTER** to MASK menu can, may set other mask zone there.