Operating Instructions

2.4G Digital 9″ Wireless Color LCD Monitor

Please read this manual thoroughly before operating the device,

and keep it for future reference.

V 1.1

Contents

1. Precautions

● Storage and Keeping

1. Do not expose the monitor to excessive heat or cold. The storage temperature of this device is -30~+80°C, and the operating temperature is -20~+70 °C. The humidity is Rh90%.
2. Never use this device near a bathtub, wash basin, kitchen, damp basement, swimming pool or similar places.
3. Never use this device in environments with excessive moisture, dust or smoke.
4. Avoid dropping or striking this device.
5. Avoid using this device in enclosed spaces, areas with excessive vibration or subject to severe impacts.
6. Never puncture, scratch or use abrasive cleaning materials on this device.
7. Do not place cables where they may be pinched or stepped on.
8. Leave at least a 2" space between the monitor and walls, cabinets or other objects to allow adequate air circulation around the device.
9. The monitor is not designed to be waterproof.

● Operating Precautions

1. The device may be powered by a 12 or 24 volt automotive battery or vehicle electrical system.
2. Make sure all cables are connected properly. Observe polarity. Improper cable connections may damage the monitor. Remove the power cable connections when you do not intend to use the device.

⚠ Warning!

1. High voltage is present within the monitor. The opening of the case should be by professionals.
2. Do not watch the video while driving unless you are monitoring the rear view camera display.

⚠ Special Notice

Occasionally, a few highlights or dark spots may occur on the LCD screen. This is a very common phenomenon in active matrix display technology, and doesn't necessarily indicate any defects or faults. Never try to repair this device by yourself. In case of any problems, please turn off the display at once and notify our company or authorized dealer. The monitor is a complex device. Any disassembly or modification may lead to damage and void the warrantee.

● Maintenance

1. Remove all the cable connections from the monitor before cleaning the device.
2. Use a mild household detergent and clean the unit with a slightly damp, soft cloth. Never use strong solvents such as thinner or benzine, as they might damage the finish of the device.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK

DO NOT REMOVE COVER(OR BACK).

NO USER-SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

This symbol is intended to alert the user not to waste electrical and electronic equipment.

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your warrantee and necessitate expensive repairs.

● Declaration of conformity

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference.
(2) This device must accept any interference received, including interference that may cause undesired operation.

R&TTE

2. Features

1. TFT LCD monitor with wide angle view and high resolution display.
2. NORMAL, MIRROR, FLIP and MIR-FLIP viewing available.
3. Split mode, auto-scan mode and single-display mode available.
4. Auto pairing: Auto pairing happens when camera is activated.
5. Support 4-channel composite and single-channel recording in AVI signal format.
6. Auto dim function available.
7. Full-function remote control.
8. 4 wireless camera input.
9. Multiple video formats: PAL / NTSC.
10. Wide voltage input: 10 - 32V.
11. On-board speaker.
12. Auto switch to the working channel when trigger is activated.

3. Technical Specifications

LCD size	9"
Resolution	800 x 3 (RGB) x 480
Contrast	500:1
Brightness	350 cd/m²
Viewing Angle	U: 50 / D: 70, R/L: 70
Dot pitch	0.0825(H) x 0.2327(V)
Aspect Ratio	16:9
Channel	4 channels
Operating Frequency	2400 - 2483.5 MHz
Receiving Sensitivity	-89 dBm
Decompression Form	MPEG4
Modulation	2.4G FSK/GFSK
Time Delay	120ms
Transmitting Distance	120 M
SD Card	Max. 128G
System Format	PAL / NTSC
Power Supply	DC 10-32V
Power Consumption	Max. 6W
Loudspeaker	1.5W/8Ω
Operating temperature	-20~+70ºC,RH90%
Storage temperature	-30~+80ºC,RH90%

⚠ Special Notice

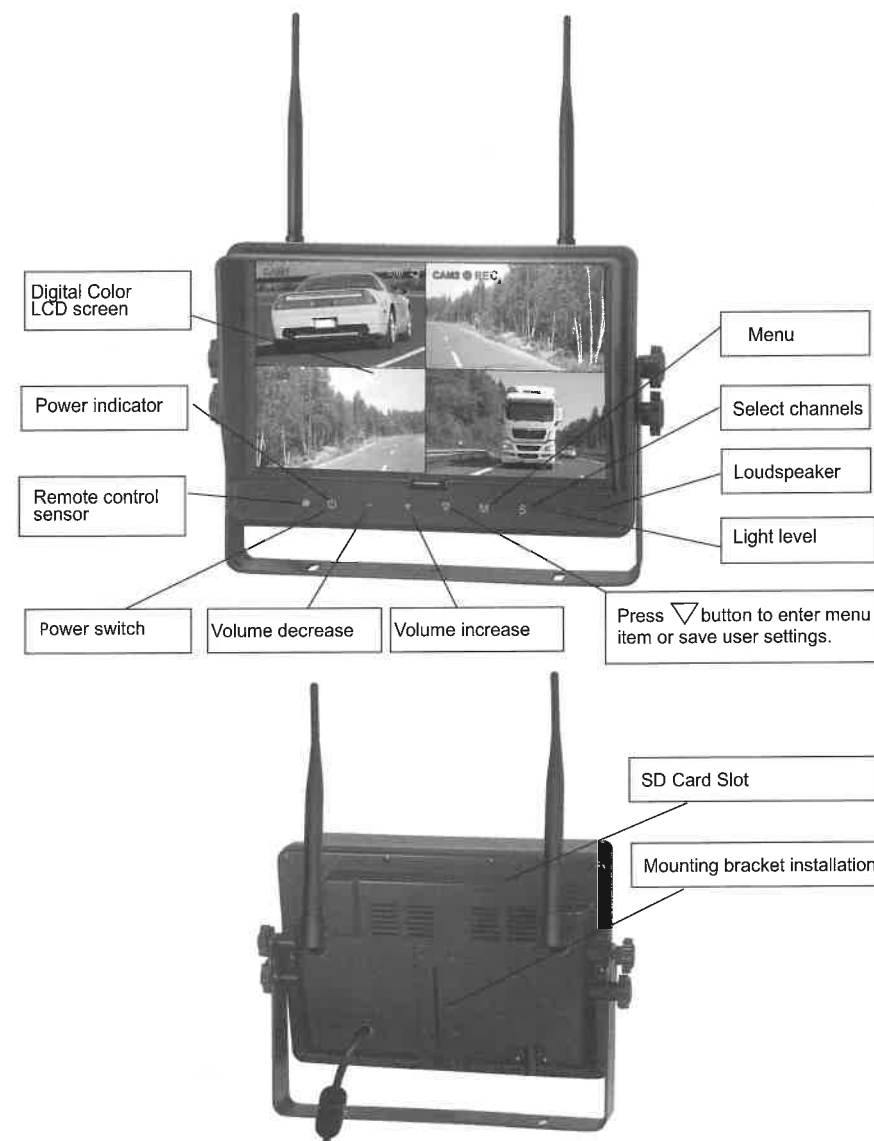All specification are subject to change without notice.

4. Accessories

U-Support Bracket	Center Mount Bracket
Sun Shield	Power cable
Angle Adjustment Screws	IR Remote control

⚠ Special Notice

Accessory supply may be different for different application.

5. Parts Identification

- Digital Color LCD screen
- Power indicator
- Remote control sensor
- Menu
- Select channels
- Loudspeaker
- Light level
- Power switch
- Volume decrease
- Volume increase
- Press ▽ button to enter menu item or save user settings.

- SD Card Slot
- Mounting bracket installation

6. Remote Control Operation

Press to select MUTE or enable sound	Press to turn on/off the monitor
Press OK button to enter menu item or save user settings. Press OK button - shortcut for start/stop recording.	Press to show menu or exit menu
Volume decrease and menu selection left	Volume increase and menu selection right
Jump key selector. Fast jump to the display mode specified by SYSTEM	MIR-Flip selection
Fast pairing when camera is activated	PAL / NTSC TV system selector

- **MUTE(Mute)**

  Press to select MUTE or enable sound

- **POWER(Power switch)**

  Press to turn on/off the monitor

- **OK**

  Press OK button to enter menu item or save user settings. Press OK button - shortcut for start/stop recording

- **MENU**

  Press to show menu or exit menu

- **◁ VOL**

  Volume decrease and menu selection left

- **▷ VOL**

  Volume increase and menu selection right

- **SEL**

  Jump key selector. Fast jump to the display mode specified by SYSTEM SETUP - JUMP KEY

- **PAIR**

  Fast pairing when camera is activated

- **SYS**

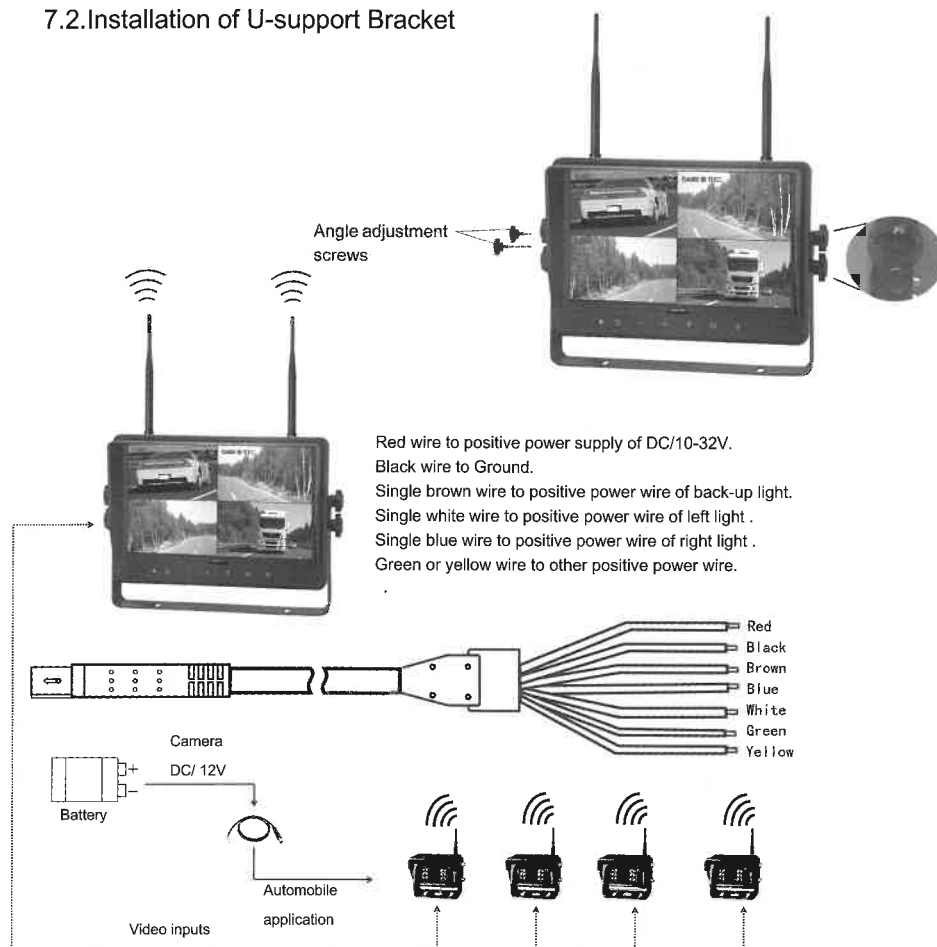 PAL / NTSC TV system selector

- **MIR**

  MIR-Flip selection

7. Basic Operation

7.1.Installation of Center Mounting Bracket:

①Adjust monitor level by sliding the support to the desired height.
②Adjust the angle of the monitor and tighten the knob on the center mounting bracket.

Support attaching piece

Knob

7.2.Installation of U-support Bracket

Angle adjustment screws

Red wire to positive power supply of DC/10-32V.
Black wire to Ground.
Single brown wire to positive power wire of back-up light.
Single white wire to positive power wire of left light .
Single blue wire to positive power wire of right light .
Green or yellow wire to other positive power wire.

Red
Black
Brown
Blue
White
Green
Yellow

Camera
DC/ 12V
Battery

Automobile
application
Video inputs

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7.3.Reversing Display:

7.3.1. When the green wire is activated, the monitor automatically switches to CAM1.

7.3.2. When the white wire is connected to the positive wire of the left turn light , the monitor automatically switches to CAM2(left side camera) when the left light is activated.

7.3.3. When the blue wire is connected to the positive wire of the right turn light,　the monitor　automatically switches to CAM3 (right side camera) when the right light is activated.

7.3.4. When the brown wire is connected to the positive wire of back-up light, the monitor　automatically switches to CAM4(back-up camera) when the reversing light is activated. The distance label will be displayed.

7.3.5. When the yellow wire is connected to the positive wire, the monitor automatically switches to quad or split display. Connection depends on the application request.

CAM1	CAM2
CAM3	CAM4
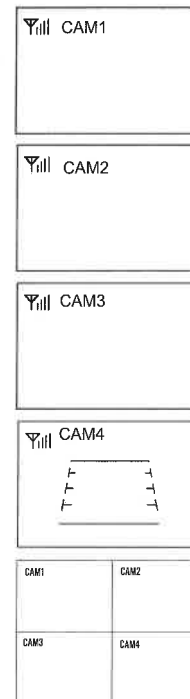
7.4. Volume selection under quad view

7.4.1. Check the volume icon on the top right area under single channel mode. It stands for audio out for

the selected channel.

7.4.2. Press ◁ or ▷ to select the channel for audio out.

CAM1	CAM2
CAM3	CAM4

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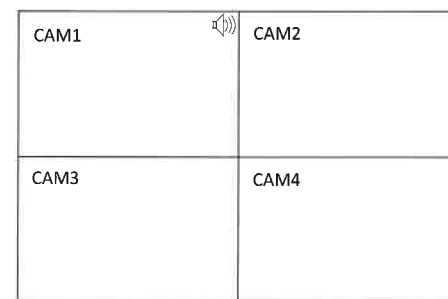
8. Menu

● MENU is only allowed for operation under single image mode, not quad mode.

● Press MENU to display the following options and settings:

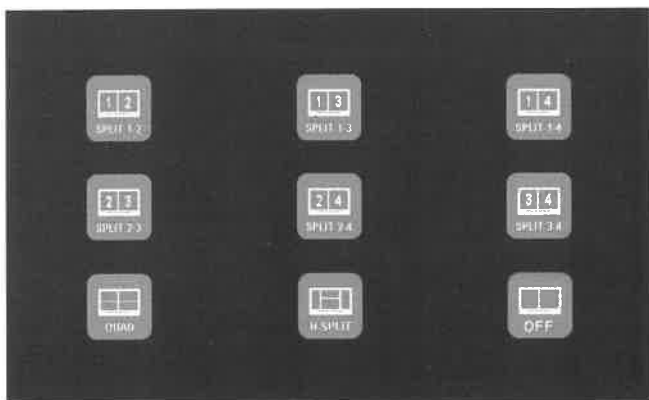|			
1.	MODE	5.	AUTOSCAN
2.	PICTURE	6.	SYSTEM
3.	MIR-FLIP	7.	PLAY
4.	RECORD	8.	PAIRING

(1) Press — or + to select MODE. Press ▽ to enter. press — or + to select SPLIT/QUAD mode, Select OFF to exit SPLIT/QUAD mode. Press M return to main menu.

Note:

When select OFF to exit split/quad mode, split/quad trigger display is disabled.

Monitor will switch to single image mode.

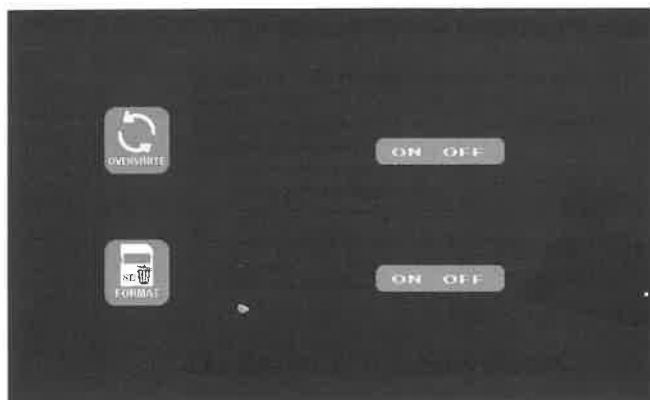

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(2) Press — or + to select PICTURE. Press ▽ to enter.

● Press — or + to select BRIGHTNESS / CONTRACT / HUE / VOLUME, press ▽ to enter. Press — or + to adjust. Press ▽ to exit. Press M return to main menu.
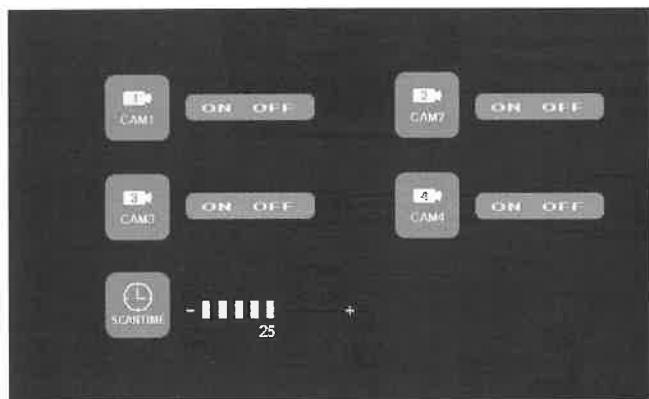
(3) Press — or + to select MIR-FLIP. Press ▽ to select.
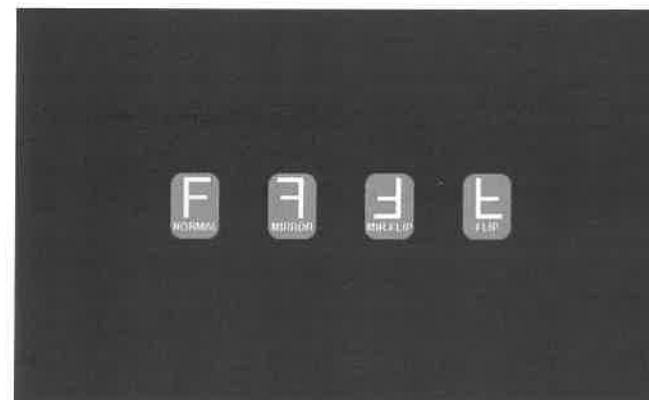
● Press — or + to select NORMAL / MIRROR / MIR-FLIP / FLIP. Press M return to main menu

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(4) Press — or + to select RECORD, Press ▽ to enter.

● Press — or + to select OVERWRITE / FORMAT, press ▽ to enter. When the icon turns yellow, press — or + to select ON or OFF. Press ▽ to exit. Press **M** return to main menu.

● OVERWRITE: Previous video file will be overwritten when disk is full.

● FORMAT : SD card must be formatted before being used. All files in SD card will be lost once disk is formatted.

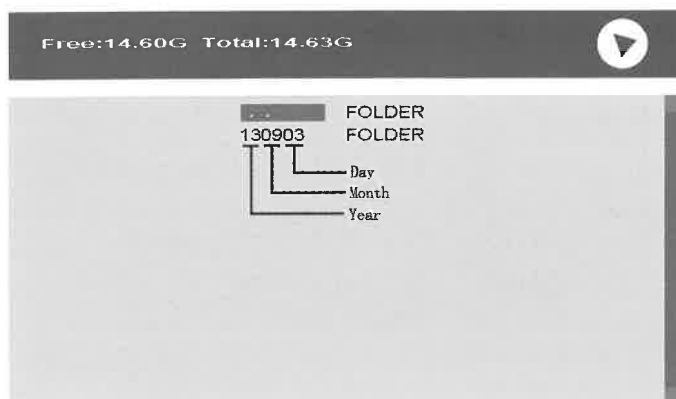(5) Press — or + to select AUTOSCAN, Press ▽ to enter .

● Press — or + to select CAM1/CAM2/CAM3/CAM4/SCANTIME, press ▽ to enter. When the icon turns yellow, press — or + to select or adjust. Press ▽ to exit. Press **M** return to main menu.

● No video will be displayed under AUTOSCAN mode if a channel is turned OFF.

● SCANTIME frame is between 5 and 45 seconds, with a step time of 5s.

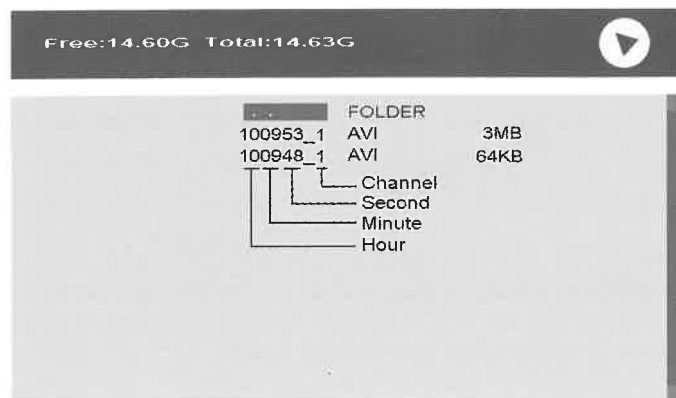(6) Press — or + to select   SYSTEM, Press ▽ to enter .

● TIME : Press — or + to select TIME. Press ▽ to set. Press — or + to adjust. Press ▽ to continue setting.

● COLOR-SYS: Press — or + to select COLOR-SYS, Press ▽ to enter, Press — or + to select NTSC/PAL.

● AUTO-DIM: Press — or + to select AUTO-DIM. Press ▽ to enter, and then press — or + to select ON/OFF.When set as ON, backlighting automatically adjusts in accordance with the outer brightness.

● ELETRONIC DISTANCE LABEL: Press — or + to select ELETRONIC DISTANCE LABEL. Press ▽ to enter, press — or + to select ON/OFF to open or close the electronic distance label. When it is on, the electronic distance label will be displayed in reversing channel 4.

(7) Press — or + to select PLAY, Press ▽ enter .

● Press — or + to select DATE , Press ▽ to enter.

● Press — or + to select TIME & CHANNEL, Press ▽ to enter.

(8) Press — or + to select PAIRING, then press ▽ to enter.

● Auto pairing:

1. Choose the channel that needs to be set up, and the monitor display the message "PAIRING START 50" and a counter that counts down 50s.
2. Within the countdown, power the camera.
3. The monitor and cameras will synchronize themselves with each other after the camera is powered for 5s.
4. If pairing is completed, the video will be displayed. If it is failed, a message "No Signal" will be displayed. Repeat the pairing procedure.

● Manual pairing:

1. Choose the channel that needs to be set up, and the monitor display the message "PAIRING START 50" and a counter that counts down 50s.
2. Press the pairing button on the power-on camera.
3. The monitor and cameras will synchronize themselves with each other.
4. If pairing is completed, the video will be displayed. If it is failed, a message "No Signal" will be displayed. Repeat the pairing procedure.
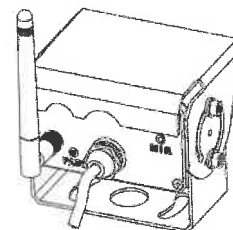
9. Recording Time

With SD cards in different capacities, please refer to the table below for recording time under 3 different image modes.

This table is for reference only. Data may vary under different environments.

SD / MODE	8G	16G	32G	64G	128G
SINGLE (640x480x1)	14h	28h	55h	110h	220h
QUAD (320x240x4)	11h	22h	43h	86h	172h
SPLIT (400x480x2)	13h	25h	50h	101h	201h

10. Installation Tips

10.1 Antennas should be vertically lined to the ground. Make sure there is no obstacle around antennas.
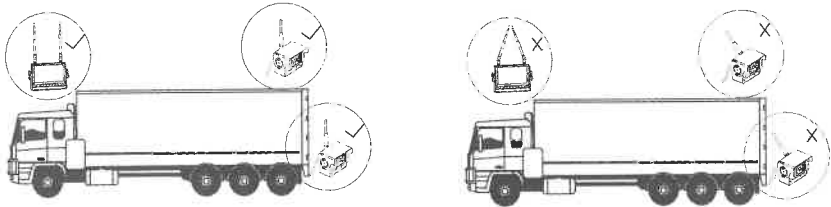
10.2 Magnet based extension antenna should be attached on the top of the vehicle. Make sure there is no obstacle around or between 2 antennas.
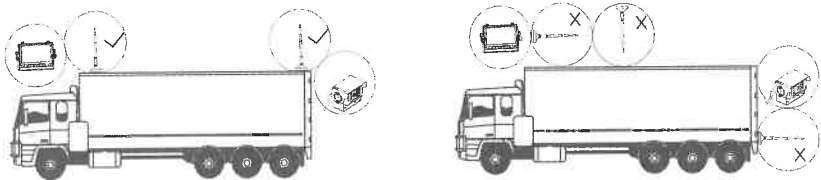
11. Troubleshooting

The symptoms described below do not necessarily mean a failure within the display. Please check the following items before you initiate request for repair.

Symptoms	Possible Causes/Solutions
No picture, no sound	Improper connection of automobile adapter. Use of un-authorized power supply. Power switch is on OFF position.
No signal	Check whether the camera has power supply. Pair the monitor and the camera again.
No sound	Check whether the sound volume is turned off or set too low.
Dark picture	Check whether brightness and contrast are adjusted correctly.
No color	Adjust the HUE settings.

CAMERA SPECIFICATION

Image Device	1/3" CMOS PC3089	
TV System	PAL	NTSC
Effective Pixels	756×504 pixels	
Sensing Area	4.80mm×3.73mm	
Scanning System	2:1 Interlace	
Sync. System	Internal	
Horizontal Sync Frequency	15.625 kHz	15.734 kHz
Vertical Sync Frequency	50 Hz	60 Hz
Video Output	1.0Vp-p, 75Ohm	
Gamma Consumption	0.45	
AGC	Auto	
S/N Ratio	Better than 46.5dB	
White Balance	Auto	
Electronic Shutter	Auto:1/60(NTSC)/1/50(PAL)~1/100,000 Seconds	
BLC	Auto	
Operation Frequency:	2400-2483.5MHZ	
Transmision Distance (barrier free):	☐60m ☑120m	
Receiving Sensitivity:	-89dBm	
Video Codec:	MPEG4	
Frame Rate:	PAL: 25f/s NTSC: 30f/s	
Transmission Power:	☐10dBm ☑18dBm	
Spread SPECTRUM:	FHSS	
Delay:	120ms	
RF Bit Rate:	4Mbps	
Operating Temperature	−20℃ ~ 70℃, RH95%MAX.	
Storage Temperature	−30℃ ~ 80℃, RH95%MAX.	
Minimum Illumination	☑0Lux ☐0.1Lux	
Power Supply	DC10~32V	
Night vision distance	☐3~5m ☑8~10m ☐12~15m ☐20~25m	
Waterproof rating	IP69K	
Audio	☑ Yes ☐ No	
Viewing Angle	☐ 150° ☑ 120° ☐ 92° ☐ 69°	
Heater	☐ Yes ☑ No	
IR-Cut	☑ Yes ☐ No	