



ECCO®

Installation and Operation Instructions WIRELESS CAMERA/MONITOR SYSTEM

IMPORTANT! Read all instructions before installing and using. Installer: This manual must be delivered to the end user.

WARNING!
 Failure to install or use this product according to manufacturer's recommendations may result in property damage, serious injury, and/or death to those you are seeking to protect!

 **Do not install and/or operate this safety product unless you have read and understood the safety information contained in this manual.**

1. Proper installation combined with operator training in the use, care, and maintenance of emergency warning devices are essential to ensure the safety of emergency personnel and the public.
2. Emergency warning devices often require high electrical voltages and/or currents. Exercise caution when working with live electrical connections.
3. This product must be properly grounded. Inadequate grounding and/or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or severe vehicle damage, including fire.
4. Proper placement and installation is vital to the performance of this warning device. Install this product so that output performance of the system is maximized and the controls are placed within convenient reach of the operator so that they can operate the system without losing eye contact with the roadway.
5. It is the responsibility of the vehicle operator to ensure daily that all features of this product work correctly. In use, the vehicle operator should ensure the projection of the warning signal is not blocked by vehicle components (i.e., open trunks or compartment doors), people, vehicles or other obstructions.

IMPORTANT! 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 warranty.

Precautions:

Storage and Keeping

1. Do not expose the monitor to excessive heat or cold.
2. Never use this device in environments with excessive moisture, dust or smoke.
3. Avoid dropping or striking this device.
4. Never puncture, scratch or use abrasive cleaning materials on this device.
5. Do not place cables where they may be pinched or stepped on.
6. Leave at least a 2" space between the monitor and walls or other objects to allow adequate air circulation around the device.
7. 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. The camera and monitor do not require constant 12 or 24 volt. They may be connected to an ignition power source.

Maintenance:

1. Disconnect power 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 benzene, as they might damage the finish of the device.



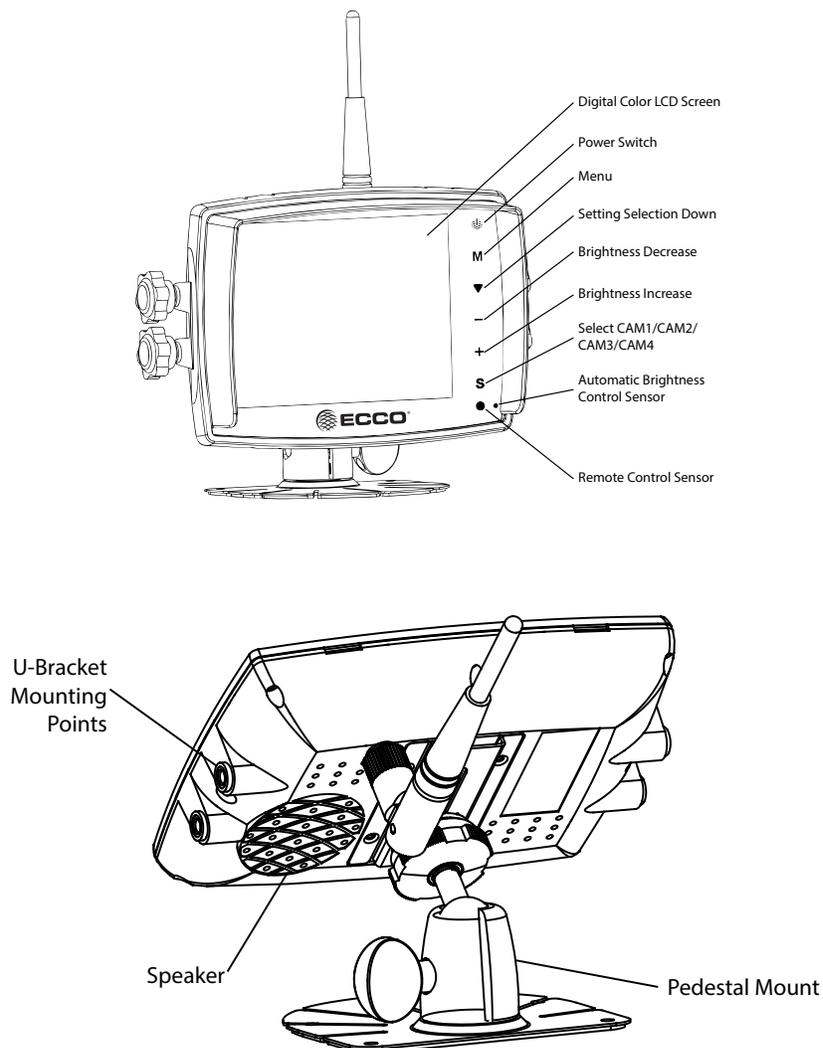
WARNING!

To prevent accidental shock, DO NOT OPEN THE MONITOR CASE. Opening the monitor case will expose the inside of the monitor to conditions that could adversely affect performance. Any evidence of tampering with sealed components will void the warranty.

Features:

1. TFT LCD monitor with wide angle view and high resolution display.
2. Picture image may be adjusted for Horizontal, Vertical, Mirror and Normal viewing.
3. Supports multiple image display modes like single, dual, quad, and H-split
4. Select from 8 languages for user operation.
5. Automatic back lighting for buttons.
6. Full-function remote control.
7. Multiple video formats: PAL/AUTO/NTSC.
8. Up to 4 wireless camera input, 1 video output and 1 audio output.
9. Supports 12V or 24V vehicle systems.
10. On-board speaker.
11. Automatic scanning function.
12. The scale can be adjusted for left, right, up and down.
13. Automatically switches to back-up, left, right or front camera views.

Parts Identification:



Camera Installation:

NOTE: Before installing the system, pair all cameras to the monitor. See PAIRING section on page 8. The camera and monitor will need 12 or 24 volt supplied to them for the pairing process.

Important! Mount the camera at a location that provides the best view of the area immediately behind the vehicle. Generally, mounting locations toward the top of the vehicle provide the best field of view. Lower mounting locations reduce the field of view and increase the likelihood of damage from road spray.

1. Find an appropriate location for installation.
2. Drill holes according to the size of U-bracket and fix the U-bracket.
3. Drill a 3/4" (19mm) hole next to U-bracket.
4. Install the camera on U-bracket.
5. Connect the power leads to 12 or 24 volt as shown in Figure 2.
6. Loosen the hex head screws and adjust the camera's position to get the best view angle in the monitor as shown in Figure 1.



Figure 1

Wiring:

Important! Waterproof all connections whether inside or outside the vehicle by using sealant and wrapping with insulation tape. Wrap tape tightly, overlapping by one-half widths so there are no gaps.

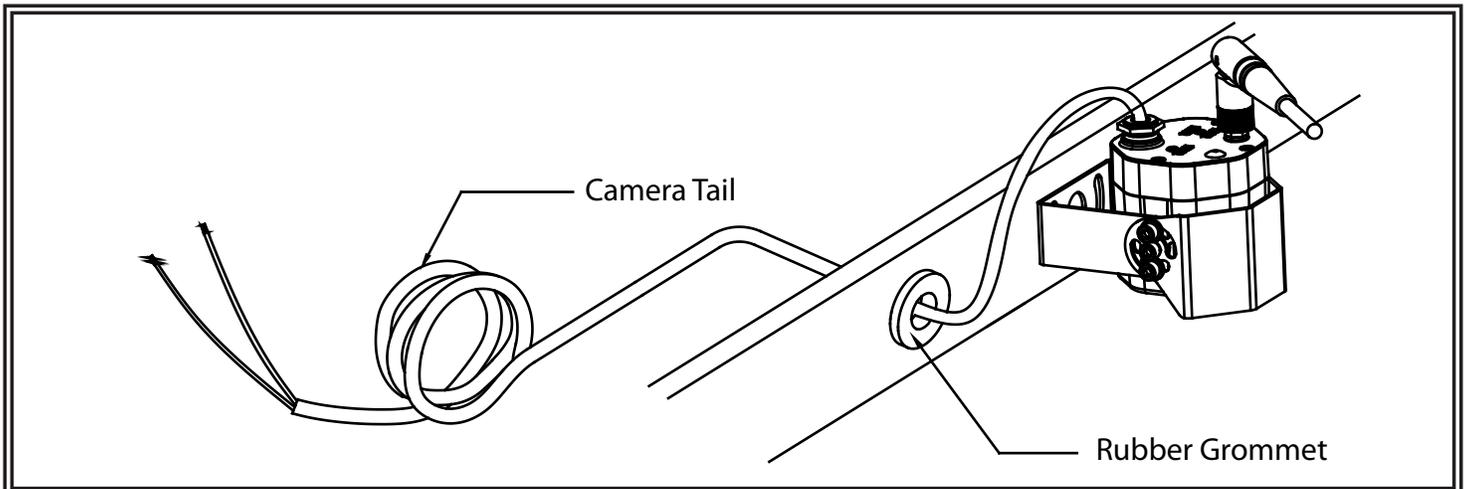


Figure 2

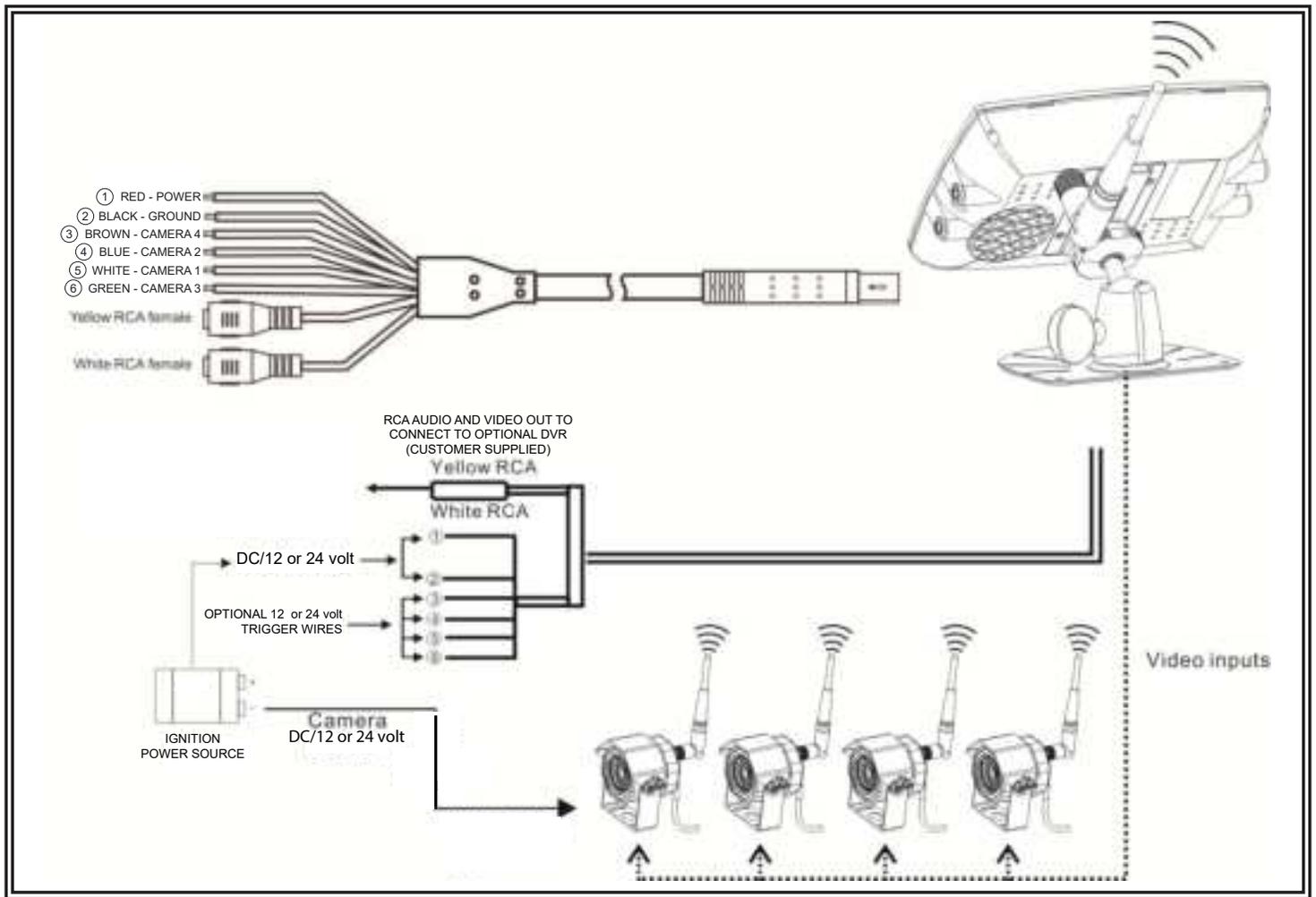


Figure 3

Single red wire to positive power supply of DC/12 or 24 volt using a 3A fuse.
 Single black wire to GND.

Optional Trigger Wires (see Figure 3):

1. The monitor can be manually switched between all 4 cameras using the "S" button or the "SEL" button on the remote.
2. The trigger wires can be used to automatically display any of the cameras. The brown (CAM 4) trigger wire has the highest priority since it is the default reverse camera. This is a safety feature so when the vehicle is in reverse, only CAM 4 can be displayed. Trigger wire priority can be changed in the settings. See Trigger options on page 10.

3. The trigger wire priority is as follows:

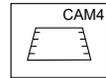
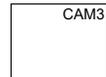
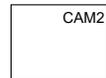
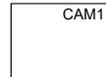
- Brown wire (CAM 4)
- Blue wire (CAM 2)
- White wire (CAM 1)
- Green wire (CAM 3)

Wire	Color	Function
1	Red	Power 12 or 24 VDC
2	Black	Ground
3	Brown	Cam 4 trigger wire
4	Blue	Cam 2 trigger wire
5	White	Cam 1 trigger wire
6	Green	Cam 3 trigger wire

4. Standby state - To put the display into standby state, press the power button on the display. This will turn the display off but will turn the monitor on when a trigger wire is activated.

Reversing Display:

1. When the white wire is connected to positive, the monitor automatically switches to CAM1.
2. When the blue wire is connected to positive, the monitor automatically switches to CAM2.
3. When the brown wire is connected to positive, the monitor automatically switches to CAM4 (back-up camera). The reverse scale, if enabled, will display.
 - When brown trigger wire is engaged (reversing camera) the camera view cannot be changed until the vehicle is out of reverse.
4. When the green wire is connected to positive, the monitor automatically switches to CAM3.



Bracket Installation:

Installation instruction of using U-support bracket

1. Select suitable position on vehicle and fix the U-support bracket with screws (Figure 4)
2. Fix the monitor to the U-support bracket with angle adjustment screws and adjust the view angle of the monitor (Figure 5)
3. Connect the monitor to the included harness.

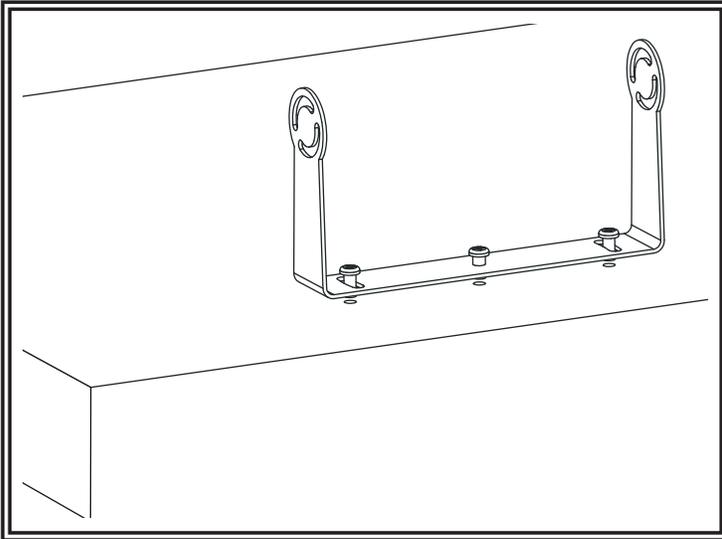


Figure 4

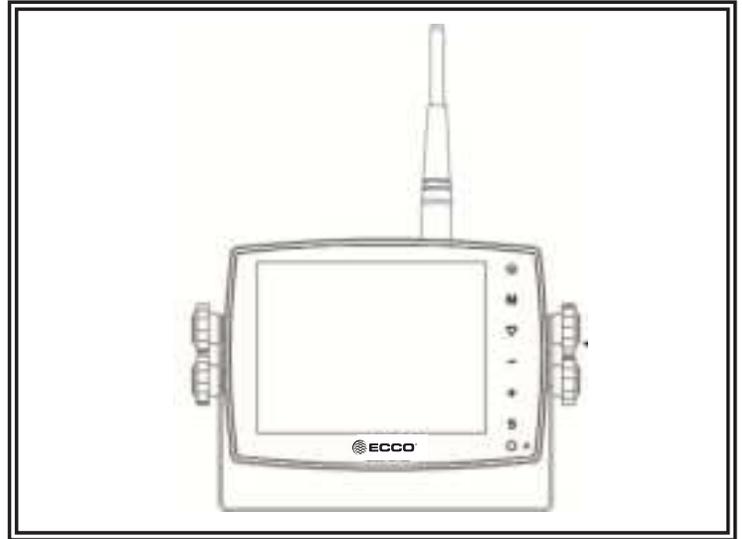


Figure 5

Base Support Installation (Pedestal Mount)

1. Select suitable position on vehicle and fix the base support. (Figure 6)
2. Fix the monitor to the base support and adjust the view angle. (Figure 7)
3. Connect the monitor with the AV and power supply cable (Figure 8)

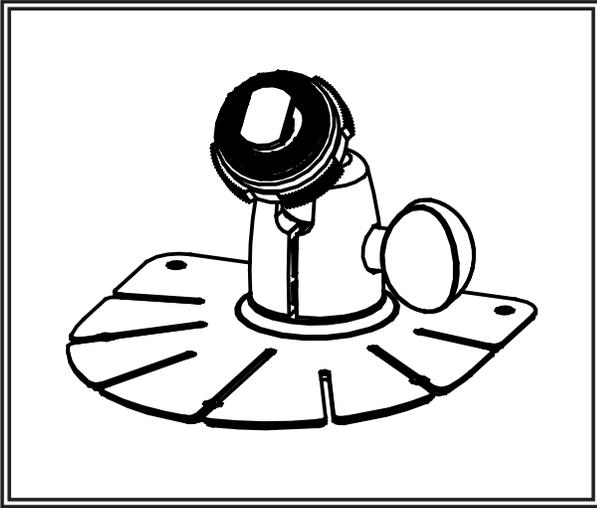


Figure 6

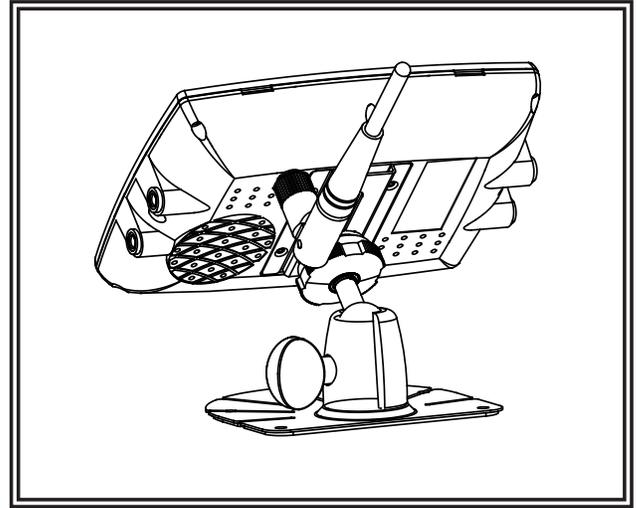


Figure 7

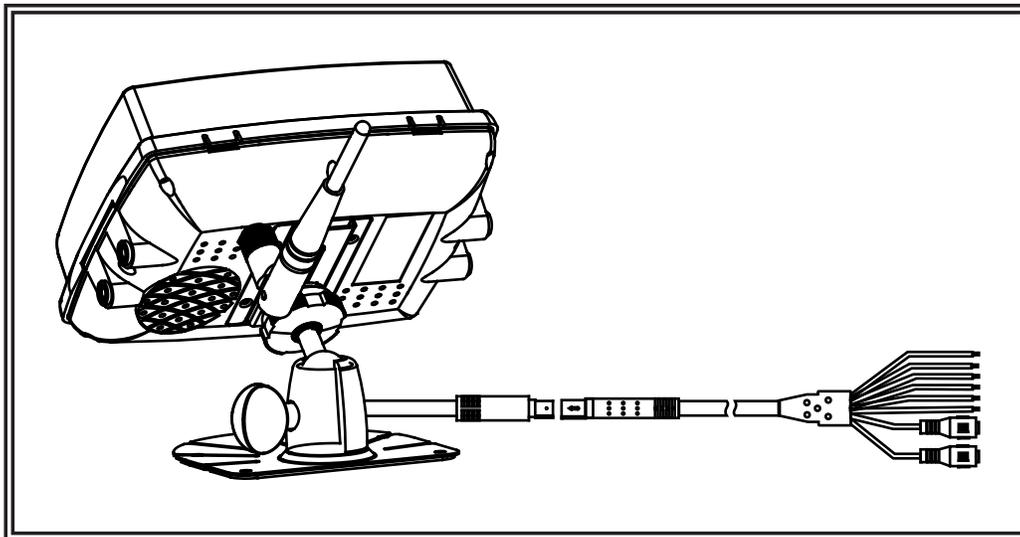
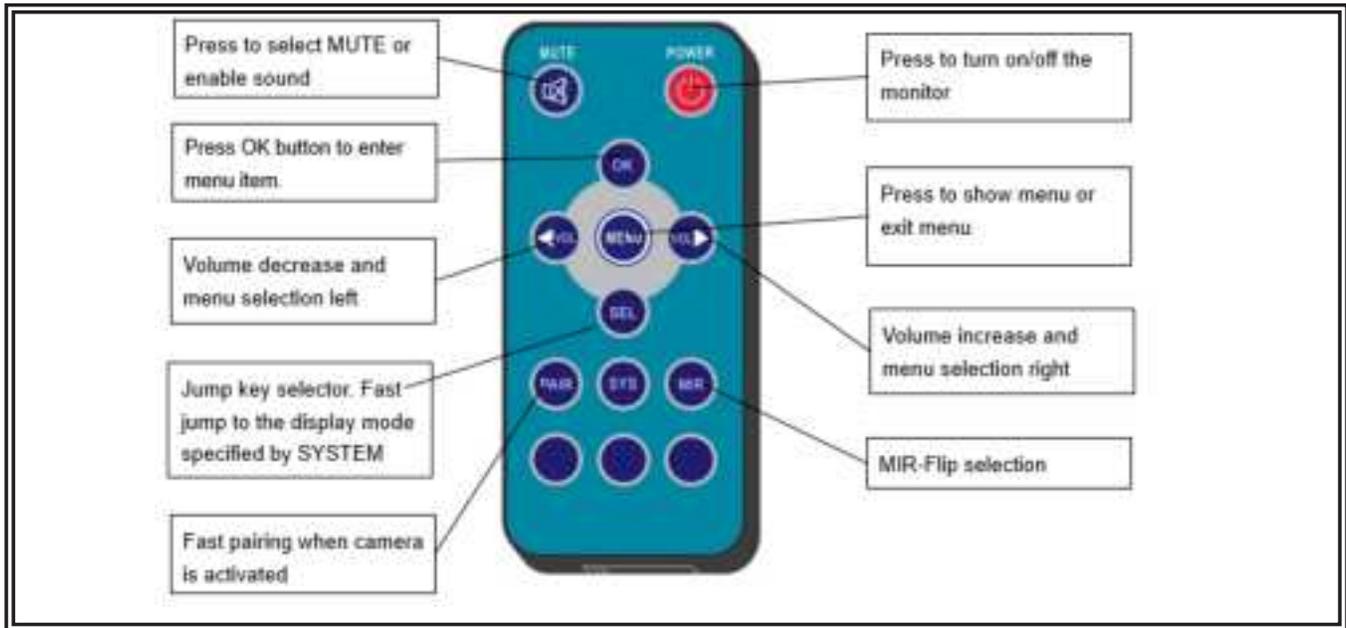


Figure 8

Remote Control Operation:



Important!

1. Never disassemble the remote control or allow it to drop, or become wet.
2. Press the control button firmly. Allow 2 seconds for the picture to change.

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.

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.

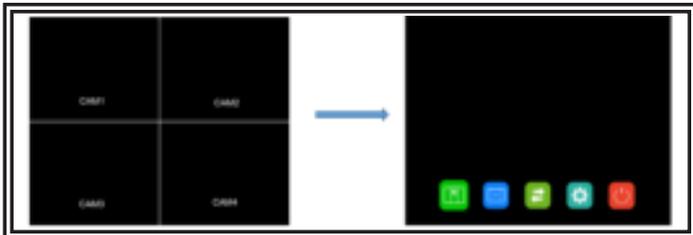
MIR: MIR-Flip selection.

Menu:

Press the MENU button either on the remote control or monitor screen to display the following options : Audio Source, Mode, Pairing, Settings, Power. To navigate MENU, press '+' or '-' button on the monitor or VOL +/- on the remote control to select sub-menu. Press down arrow on the monitor or 'OK' on the remote control to enter sub-menu. Press 'MENU' button again to exit menu and save settings.

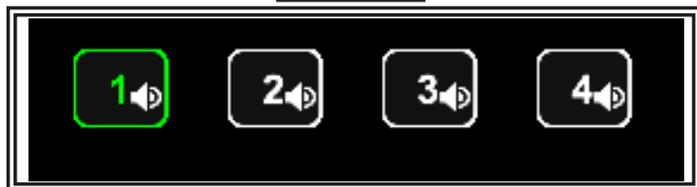
1. Main Menu:

Press 'M' button on monitor or 'menu' button on remote control to show menu
 Press '+' or '-' button on monitor or VOL +/- on remote control to select sub-menu
 Press ▾ button on monitor or 'OK' on remote control to enter sub-menu
 Press 'menu' button again to exit menu with settings saved



2. Audio:

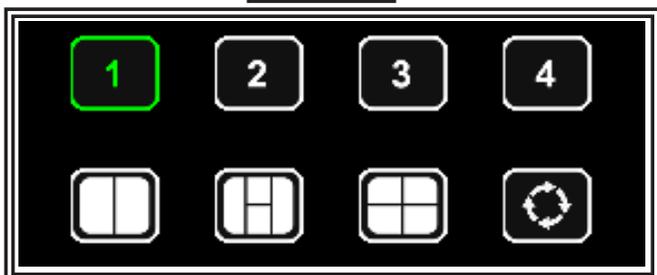
Select the channel that you want to hear the audio under split view mode
 Press '+' or '-' button on monitor or VOL +/- on remote control to switch option
 Press (down arrow) on monitor or 'OK' on remote control to select the channel and exit the menu.



3. Mode:

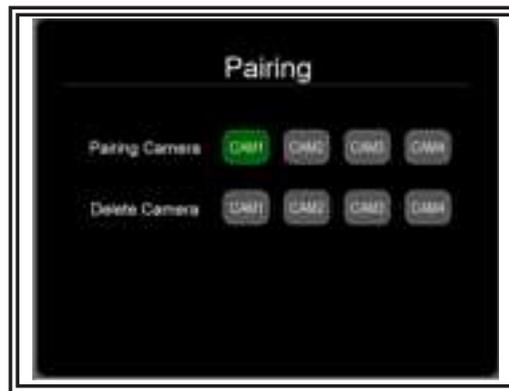
Select display mode, [Auto-Scan Icon] is auto-scan, which automatically switches channel in circle from channel 1 through [Grid Icon]

Press '+' or '-' button on monitor or VOL +/- on remote control to switch option.
 Press (down arrow) on monitor or 'OK' on remote control to select the channel and exit the menu.



4. Pairing:

Pairing Camera: select the channel you want to pair.
 Press '+' or '-' button on monitor or VOL +/- on remote control to switch option.
 Press ▾ button on monitor or 'OK' on remote control to start pairing.

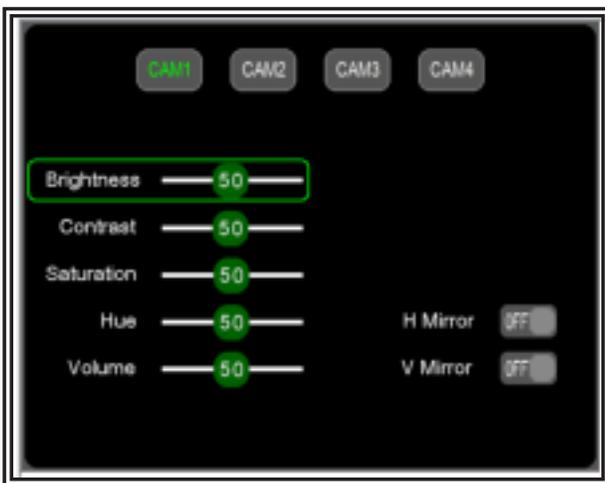


When pairing is in process, there will be pairing icon [Pairing Icon] on top of the correspondent channel. Pairing icon will be replaced with a check mark when pairing is successful. If no camera pairs successfully in 20 seconds, the pairing icon will disappear and the pairing process will stop.

Delete Camera: remove the camera that is already paired in the selected channel.



5. Settings



Please note that these parameters can only be adjusted when camera is connected to correspondent channel

To select channel, press 'M' button on monitor or 'Menu' on remote control. When the icon background turns green, press '+' or '-' button on monitor or VOL +/- on remote control to switch to the channel you want to set

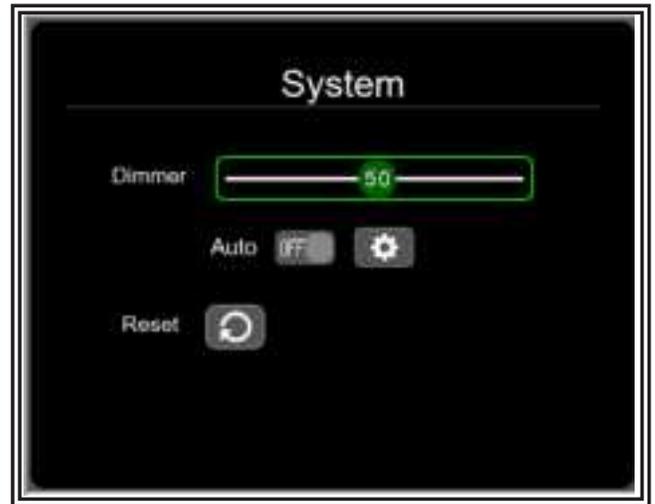
Press button on monitor or 'OK' on remote control to enter the channel's parameter.

Press '+' or '-' button on monitor or VOL +/- on remote control to select the parameter to change. A GREEN outline will show on the current selected parameter.

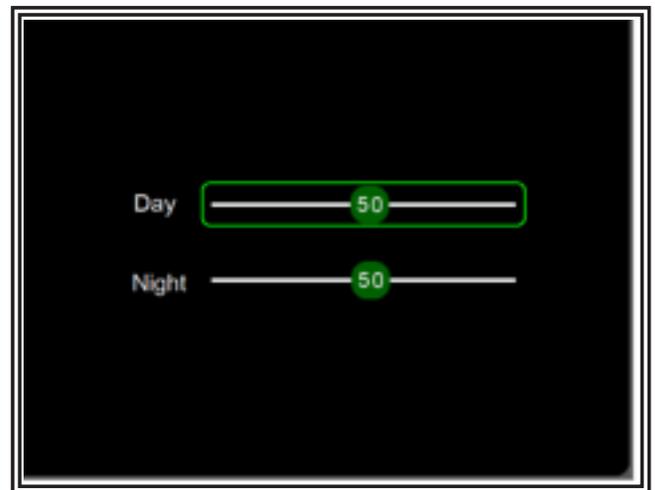
Press button on monitor or 'OK' on remote control to select the current parameter. When the outline turns RED, Press (or long press) '+' or '-' button on monitor or VOL +/- on remote control to adjust value, press button on monitor or 'OK' on remote control, cursor return to green and confirm the setting.

Press 'M' button on monitor or 'Menu' on remote control to return to select channel

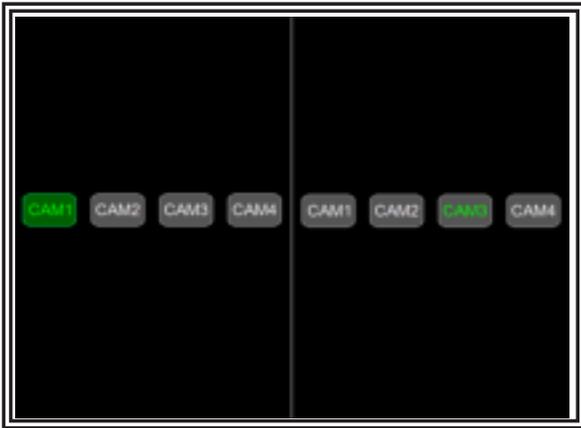
Press 'M' on monitor or 'menu' on remote control to save and exit menu



Dimmer value can be adjusted when Auto is off
Select to set day and night dimmer value for when Auto is on.



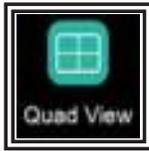
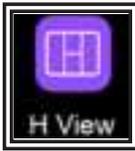
Day: adjust the panel brightness in normal light condition
Night: adjust the panel brightness in low light condition



Currently displayed channels are indicated by green lettering. The new selection is indicated by a green background. Press '+' or '-' button on monitor or VOL +/- on remote control to select which channel to display in dual view. Press  button on monitor or 'OK' on remote control to save selection



Auto scan duration range is 5-60 seconds. The duration indicates how long a camera view will be shown when the monitor is set to auto scan, before cycling to the next camera view. Each camera view can be turned on or off to be included or removed from the auto scan rotation.



Same way of operation as Dual View



Trigger Delay: setting range is 1-60 seconds. The trigger delay indicates how long it will take after the trigger wire is disconnected, before the monitor goes back to the original view.

Priority: setting range is 1-4.



Select the view you want to show upon power on



Start auto scan upon power on



Enter standby mode (black screen) upon power on

Icon in green is the one currently selected.

Press '+' or '-' button on monitor or VOL +/- on remote control to switch option.

Press  button on monitor or 'OK' on remote control to cancel option, icon turns white if option is canceled, when all options are white, monitor will show the picture from the last time when it was powered off.

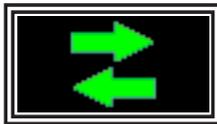
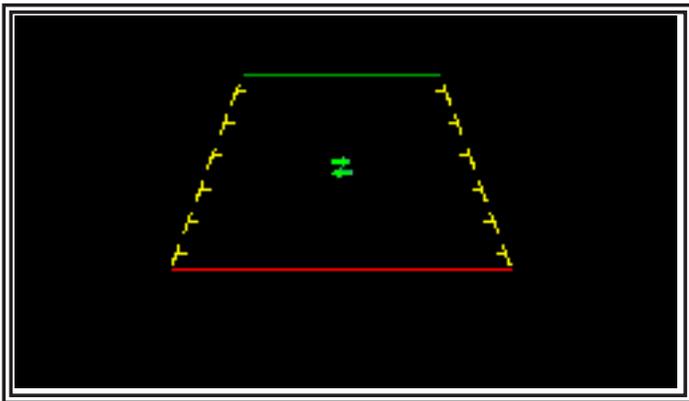
Press 'M' on monitor or 'menu' on remote control to save and exit menu.



If set on, show reverse label upon trigger the correspondent channel.



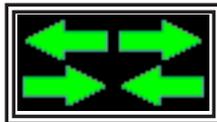
Enter setting to move the label.



Press '+' or '-' button on monitor or VOL +/- on remote control to move the label right or left.



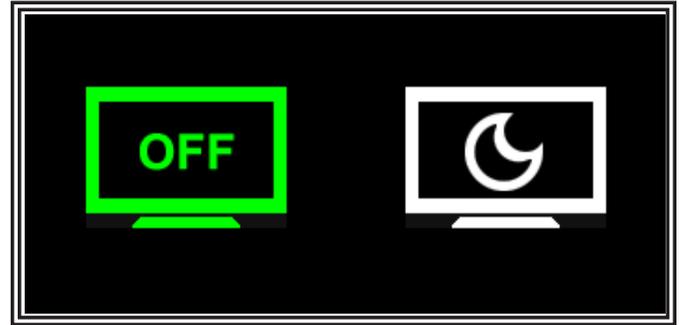
Press '+' or '-' button on monitor or VOL +/- on remote control to move the label up or down.



Press '+' or '-' button on monitor or VOL +/- on remote control to adjust size of label

Press ▾ button on monitor or 'OK' on remote control to switch mode

5. Power Off



Select screen off to enter standby mode, monitor will respond upon trigger.



Select sleep to enter sleep mode, monitor will not respond to trigger.

Specifications:

CAMERA SPECIFICATIONS / FEATURES	
Image Device	1/3" CMOS
Ingress Protection	IP69K
Night Vision	11 IR LEDES = MAX. 10M Distance
TV System	NTSC / PAL
Effective Pixels	728 x 488
Sensing Area	4.6228mm x 3.6112mm
Video Output	1.0VP-P, 750OHM
S/N Ratio	Better Than 48dB
White Balance	Auto
Current Consumption	Max. 0.5 A
Lens Angle	120°
Voltage	12 or 24 volt

MONITOR SPECIFICATIONS / FEATURES	
Product	5.6 inch HD 2.4GHz Digital Wireless Vehicle Quad-view Monitor
Resolution	640 x 3 (RGB) x480
Contrast	800:1
Brightness	600cd/m2
Operation Freq.	2400-2483.5MHz
Range	984 feet / 300 meters
Receiving Sensitivity	-78dBm
RF Band Width	5MHz
Speaker	Yes
Voltage Range	12 or 24 volt
Power Consumption	5W
Monitor Dimension	6.32"(W)x4.51"(H)x1.06"(D)
Operating Temp	-20° C to 70°C/-4°F to 158°F
Storage Temp	-30°C to 80°C/-22°F to 186°F

FCC Warning

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE 1: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTE 2: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



Manufacturer Limited Warranty and Limitation of Liability:

Manufacturer warrants that on the date of purchase, this product will conform to Manufacturer's specifications for this product (which are available from the Manufacturer upon request). This Limited Warranty extends for Twelve (12) months from the date of purchase.

DAMAGE TO PARTS OR PRODUCTS RESULTING FROM TAMPERING, ACCIDENT, ABUSE, MISUSE, NEGLIGENCE, UNAPPROVED MODIFICATIONS, FIRE OR OTHER HAZARD; IMPROPER INSTALLATION OR OPERATION; OR NOT BEING MAINTAINED IN ACCORDANCE WITH THE MAINTENANCE PROCEDURES SET FORTH IN MANUFACTURER'S INSTALLATION AND OPERATING INSTRUCTIONS VOIDS THIS LIMITED WARRANTY.

Exclusion of Other Warranties:

MANUFACTURER MAKES NO OTHER WARRANTIES, EXPRESSED OR IMPLIED. THE IMPLIED WARRANTIES FOR MERCHANTABILITY, QUALITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, USAGE OR TRADE PRACTICE ARE HEREBY EXCLUDED AND SHALL NOT APPLY TO THE PRODUCT AND ARE HEREBY DISCLAIMED, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW. ORAL STATEMENTS OR REPRESENTATIONS ABOUT THE PRODUCT DO NOT CONSTITUTE WARRANTIES.

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MANUFACTURER'S SOLE LIABILITY AND BUYER'S EXCLUSIVE REMEDY IN CONTRACT, TORT (INCLUDING NEGLIGENCE), OR UNDER ANY OTHER THEORY AGAINST MANUFACTURER REGARDING THE PRODUCT AND ITS USE SHALL BE, AT MANUFACTURER'S DISCRETION, THE REPLACEMENT OR REPAIR OF THE PRODUCT, OR THE REFUND OF THE PURCHASE PRICE PAID BY BUYER FOR NON-CONFORMING PRODUCT. IN NO EVENT SHALL MANUFACTURER'S LIABILITY ARISING OUT OF THIS LIMITED WARRANTY OR ANY OTHER CLAIM RELATED TO THE MANUFACTURER'S PRODUCTS EXCEED THE AMOUNT PAID FOR THE PRODUCT BY BUYER AT THE TIME OF THE ORIGINAL PURCHASE. IN NO EVENT SHALL MANUFACTURER BE LIABLE FOR LOST PROFITS, THE COST OF SUBSTITUTE EQUIPMENT OR LABOR, PROPERTY DAMAGE, OR OTHER SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES BASED UPON ANY CLAIM FOR BREACH OF CONTRACT, IMPROPER INSTALLATION, NEGLIGENCE, OR OTHER CLAIM, EVEN IF MANUFACTURER OR A MANUFACTURER'S REPRESENTATIVE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. MANUFACTURER SHALL HAVE NO FURTHER OBLIGATION OR LIABILITY WITH RESPECT TO THE PRODUCT OR ITS SALE, OPERATION AND USE, AND MANUFACTURER NEITHER ASSUMES NOR AUTHORIZES THE ASSUMPTION OF ANY OTHER OBLIGATION OR LIABILITY IN CONNECTION WITH SUCH PRODUCT.

This Limited Warranty defines specific legal rights. You may have other legal rights which vary from jurisdiction to jurisdiction. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages.



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