

Backup Camera System with Rear Sensors

CG-1B37DSN4

Instruction Manual



A Clariance Technologies Company

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1. INTRODUCTION

The CG-1B37DSN4 combines a flagship backup camera system with intelligent rear bumper sensors for enhanced visibility and obstacle awareness while reversing. The system includes a crystal-clear 7” LED digital color monitor with distance grid lines and mirror-image capability, paired with a durable 130° SHARP® CCD backup camera featuring 50 ft infrared night vision, high shock resistance, and a fully weatherproof IP69K-rated housing.

The integrated SN-U14 rear sensor system includes four waterproof bumper-mounted sensors that detect obstacles up to 8 ft away. When an object enters the detection range, the system alerts the operator with an on-screen warning and loud audible tone, helping improve safety around the rear of the vehicle. Intelligent sensor logic automatically ignores fixed vehicle-mounted objects, such as steps, bumpers, custom made brackets and railings.

BEFORE BEGINNING INSTALLATION

Before drilling please check that no cable or wiring is on the other side of the wall. Please clamp all wires securely to reduce the possibility of them being damaged while vehicle is in use. Keep all cables away from hot or moving parts and electrical noisy components. We recommend doing a benchmark test before installation to insure that all components are working properly.

- Step 1:** Choose the monitor and camera locations.
- Step 2:** Install all cables in vehicle, when necessary a 0.8 (20mm) hole should be drilled for passing camera cable through vehicles walls. Install split grommets where applicable.
- Step 3:** Once all cables and wiring have been properly routed, perform a system function test by temporarily connecting the system. If the system seems to not be operating properly see troubleshooting.

2. STANDARD CONFIGURATION

Item	Configuration	Amount
1	1/3" Sharp® Color CCD Infra-Red Waterproof Camera	1
2	7" LED Digital Panel Color Monitor with Universal Mount/Stand and Wire	1
3	Waterproof Sensors	4
4	Rubber Grommets	4
5	Control Module (ECU)	1
6	Y Adapter Power Cable	1
7	Cable Clips	3
8	Sensor Cable (13.2' to each sensor)	1
9	66' Camera Cable	1
10	Remote Control	1
11	Power Harness	1
12	RCA Adaptor	1
13	Screw Kit For Installation	1

Note: minor details may change based on item configuration



3. INSTALLATION GUIDE

Cable

1. Be sure to position the cable properly. The camera cable uses aircraft grade connectors which means the camera cable can be exposed to all weather elements. Do not run the cable over sharp edges, do not kink the cable and keep away from HOT and rotating parts.
2. Fasten all cables and secure all excess cable.

Monitor

1. To Attach the Pedestal mount to the dashboard or to the headliner use self-tapping screws and/or the adhesive pad.
2. Attach monitor to mount, and adjust mounting angle to allow optimum driver viewing comfort.

The Power Harness.

1. To power the system connect the power (RED) 12V+ wire to ignition power and the ground (BLACK) wire to chassis ground.
2. These are the only wires needed to power the entire system and all the cameras. Each camera can be seen at any time by simply pressing the power button and using the V1/V2 button.
3. The other channels can similarly be triggered (i.e. side cameras can be triggered by the turn signals etc.)
4. To automatically have camera and monitor turn ON when vehicle activates, simply twist BLUE positive trigger 12V+ to Red. Power line 12V+ and wire to ignition power and the V1/2 button to toggle.
5. The three positive trigger wires (YELLOW-CH1, BROWN-CH2, BLUE-CH3) each represent one channel and will turn on their channel when the trigger wire is energized with 12V.
6. "Camera 3" is the designated backup channel. To have the the backup camera come on when you go into reverse, connect the BLUE wire to reverse power (or any power source that comes on only in reverse).

4. WIRING CAMERA & MONITOR

Audio
There is audio on channels 2 and 3. On channel 3 the blue trigger wire must be energized (12V) to activate the audio. On channel 2 the audio is always on.

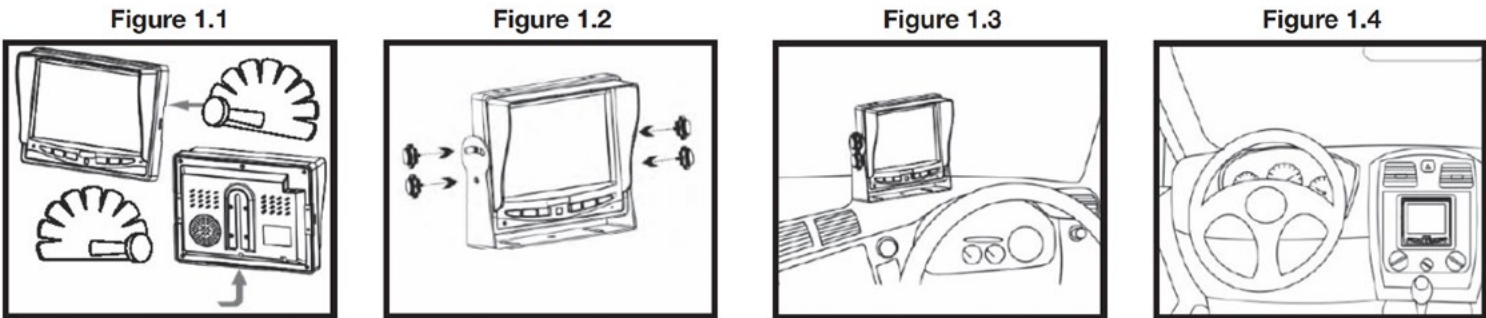
Grid-lines
The grid-lines are also carried through the blue wire. To use the grid-lines for reversing, connect the blue wire to a reverse power.

The Power Harness.
There is a built-in voltage regulator for our systems which can handle 9-32 volts. Real consumption is 10 to 30 Volts.

Note: The camera and monitor can always be activated by manually pushing the power button on monitor. This is in addition to utilizing the positive triggers.

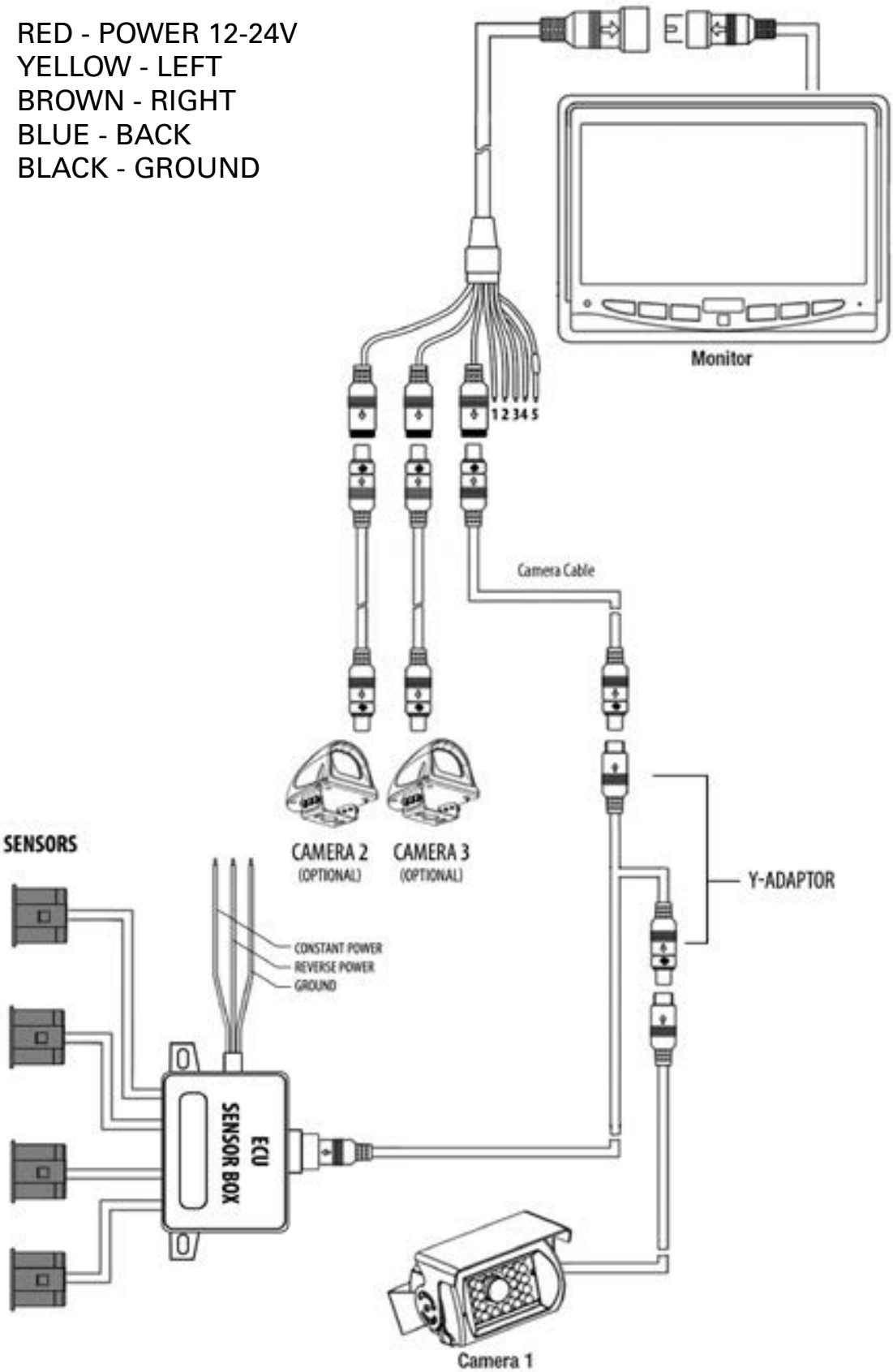
Note: If connecting power directly to battery, the camera is always ON and therefore can drain battery. Therefore it is recommended to connect power to an ignition switched accessory power source.

4.INSTALLATION DIAGRAM

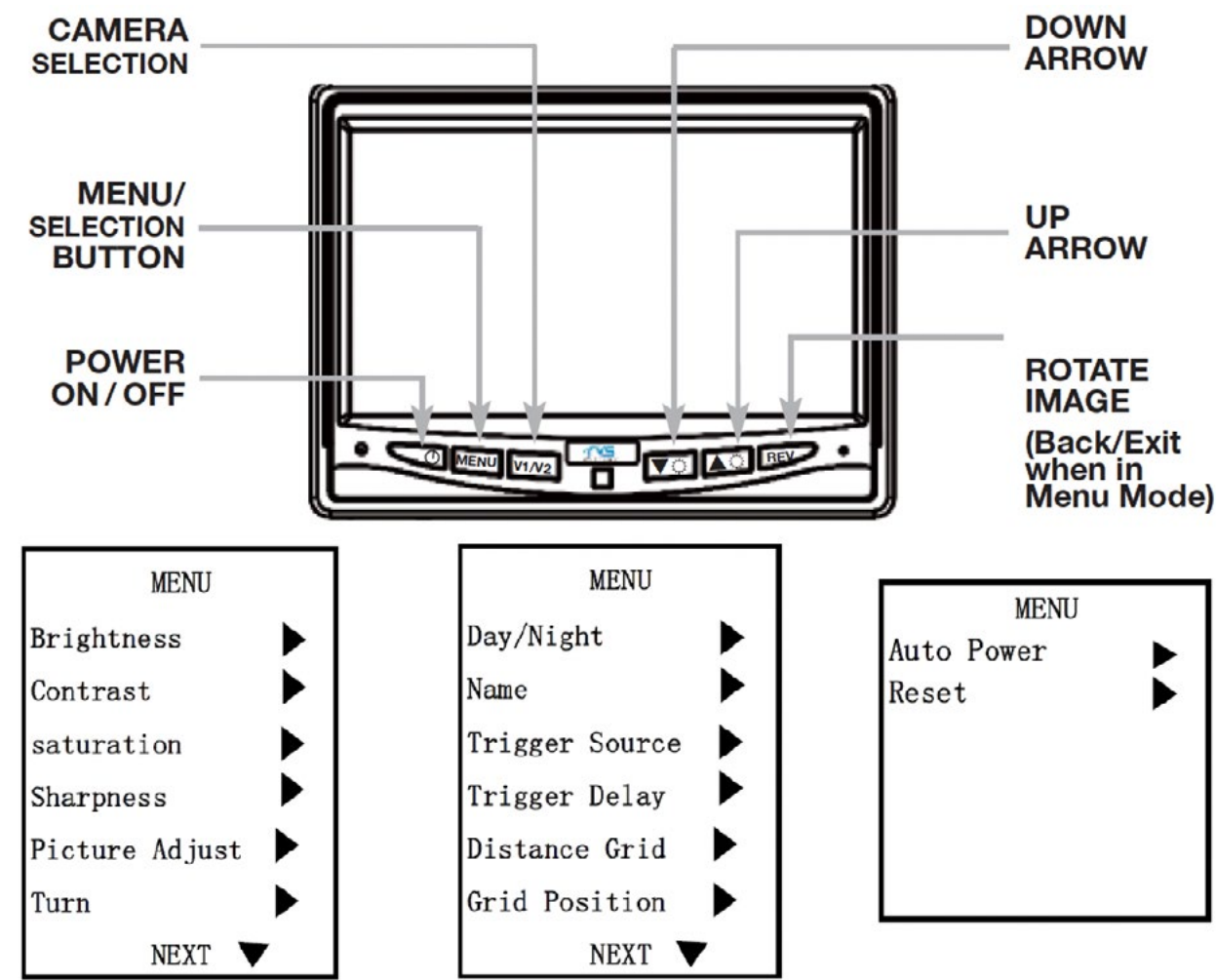


5. WIRING DIAGRAM

RED - POWER 12-24V
YELLOW - LEFT
BROWN - RIGHT
BLUE - BACK
BLACK - GROUND

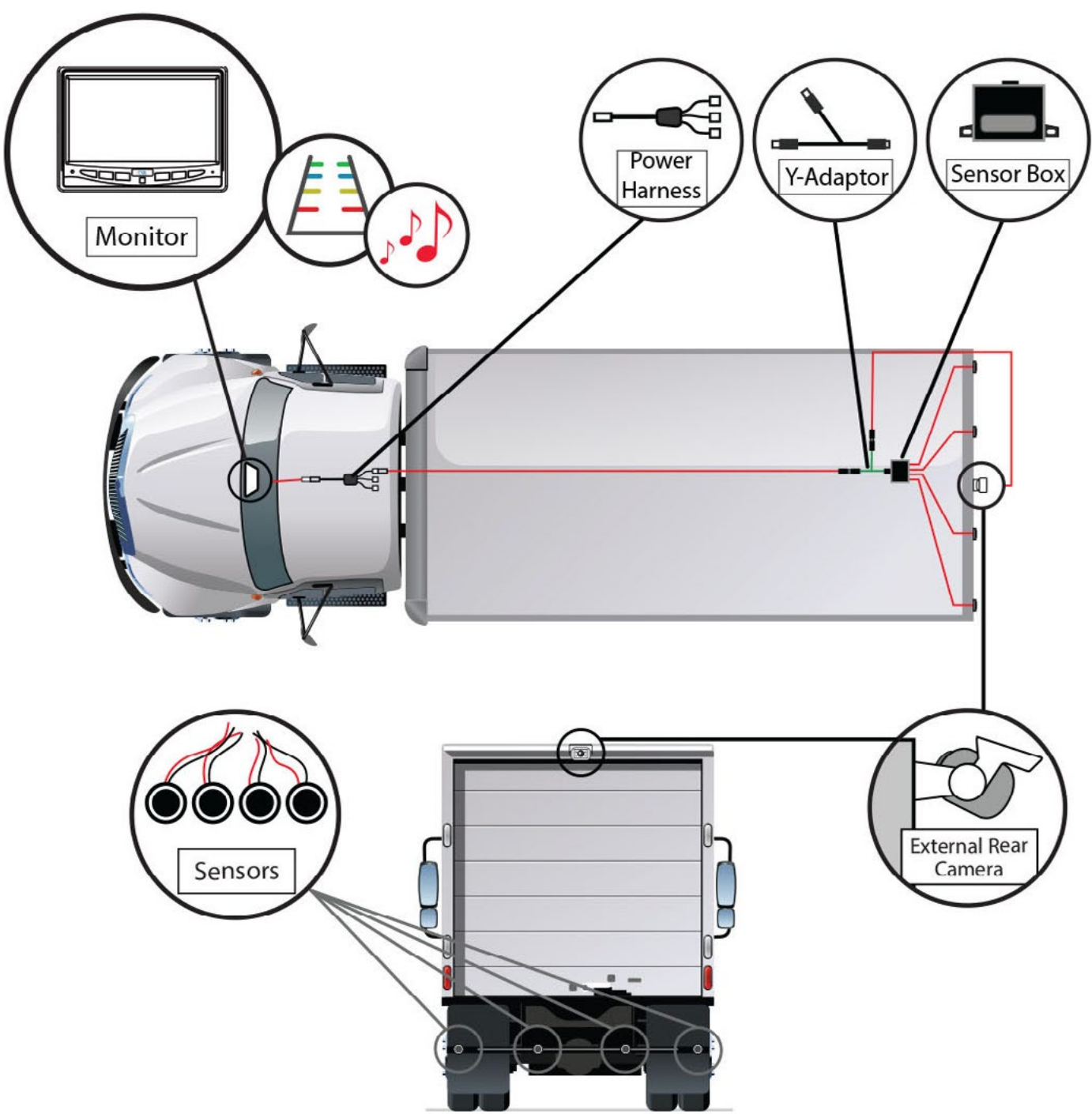


6. MONITOR OPERATION

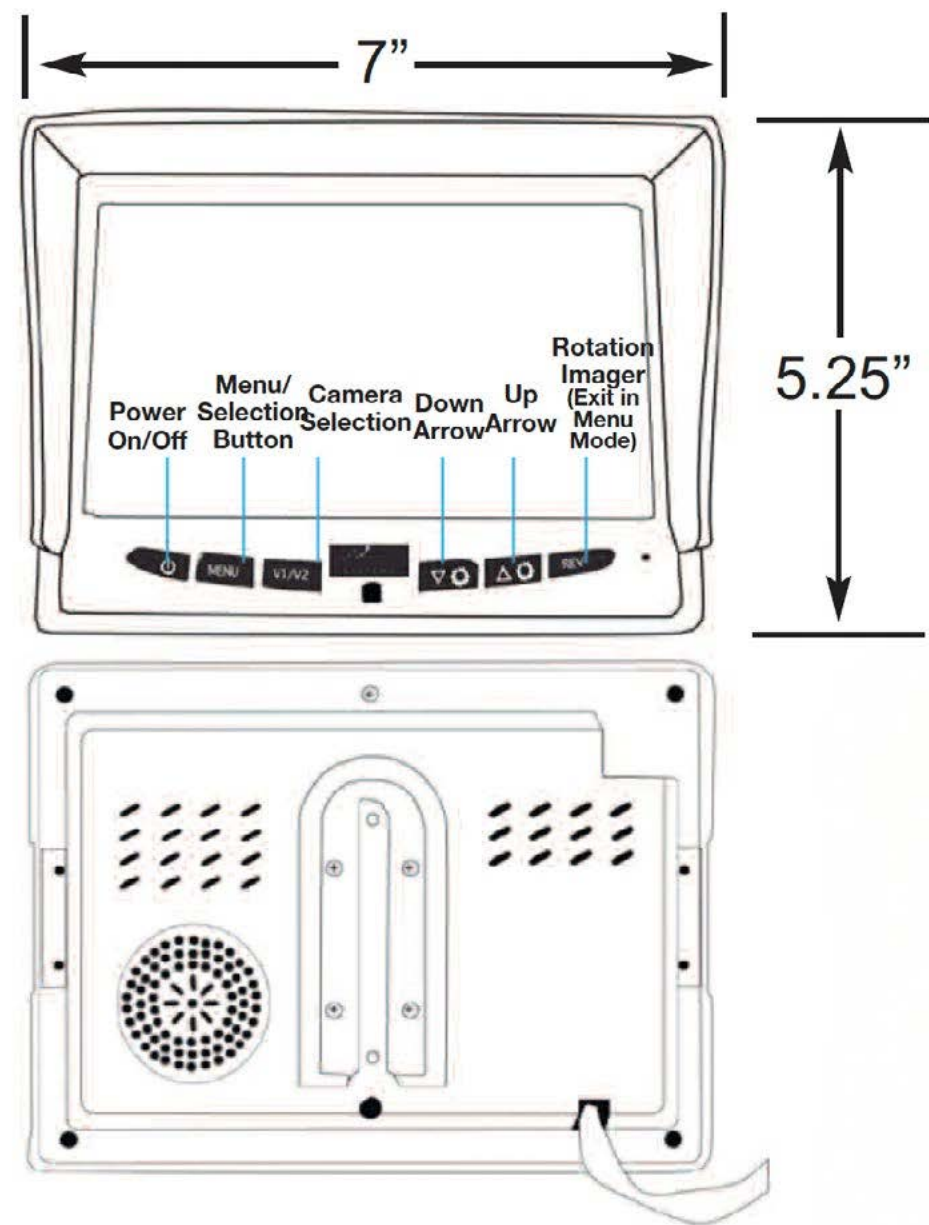


- "Brightness" "Contrast" "Saturation" "Sharpness": adjust image properties
- Picture Adjust: Stretch image horizontally (right/left and left/right)
- Turn: Toggle between mirror/normal image on each individual channel
- Day/Night: Toggle between back-lit buttons and auto dimming
- Name: Change name of each individual channel
- Trigger Source: Toggle channel destination for each trigger
- Trigger Delay: Adjust time delay on each trigger
- Distance Grid: Toggle which channel distance grid lines will display on
- Grid Position: Adjust grid lines
- Auto Power: On: Monitor will automatically turn on when powered. Off: Monitor will only turn on when triggered. Auto: Monitor will follow previous state.
- Reset: Reset settings to factory default

7. PLACEMENT DIAGRAM



8. MONITOR DIMENSIONS



9. SPECIFICATION

Monitor Specifications	
Monitor Type	LED Digital Panel
Screen Size	7"
Dot Resolution	800 X 3 (RGB) X 480
Display Format/Contrast	16:9 / 500:1
Display Brightness	400cd/m³
Viewing Angle	U:50° D:60° L/R:70°
Video Input	3 Channel
Video Source	1Vp-p, 75Ω
Power Supply	DC 12V-24V (+/- 10%)
Power Consumption	5W
Video System	Auto NTSC/PAL
Weight	400G
Impact Rating	5G
Dot Pitch	0.192 (H) X 0.1805 (V)
Sync System	Internal
Operating Temperature	-30°C ~ +70°C
Storage Temperature	-30°C ~ +85°C
Overall Dimensions	7" (L) x 5" (H) x 1" (D)

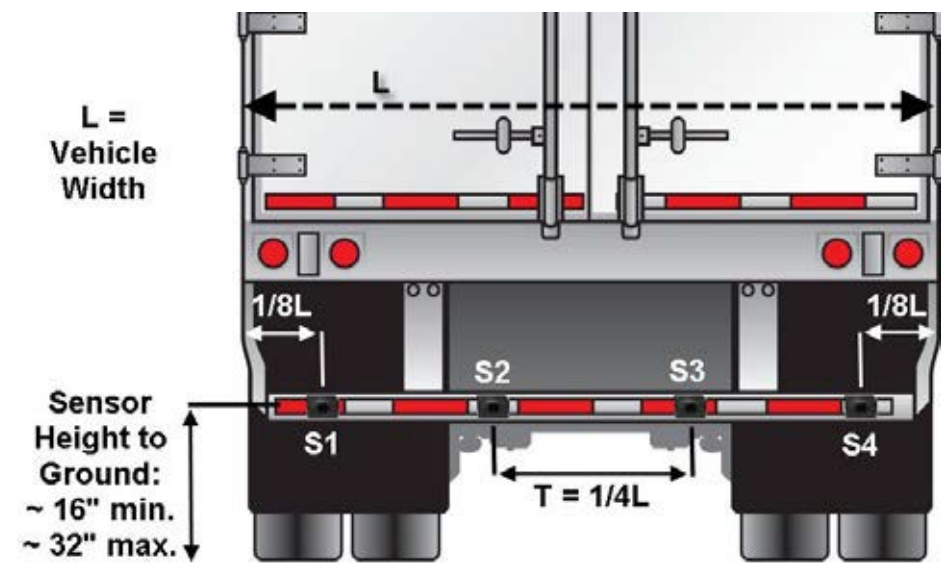
Sensors Specifications	
Sensor Type	Analog Ultrasonic Sensor
Sensor Quantity	4 Sensors
Sensor Frequency	40kHz +/- kHz
Waterproof Rating	IP68
Static Capacitance	2000± 15%pF
Input Voltage max.	140 Vp-p {at 40KHz}
Decay Time	<1.2ms
Decay Parameter	20±3 (Admissible parameter)
Echo Sensitivity	>200mV
Horizontal Angle	51°
Vertical Angle	62°
Detection Range	0.22mm (0.08ft) to 2.5m (8ft)
Working Voltage	10.0 ~ 28.0 VDC
Rated Current (ECU)	60mA max
Wiring Harness	Vehicle Spec. T-Piece
Working Temperature	-40°C ~ +75°C
Storage Temperature	-40°C ~ +90°C

Camera	
Image Sensor	1/3" Sharp® Color CCD
Picture Elements	410,000 Pixels
Gamma Correction	r=0.45 to 1.0
Image Sensor	620 TV lines PAL: 752 (H) x 582(V), NTSC: 811 (H) x 507(V)
Lens	2.5mm
View Angle	130°
Waterproof Rating	IP69K
Sync System	Internal Synchronization
Infra-red Distance	50 Feet (18 Infrared)
Usable Illumination	0 Lux (IR On)
Power Source	DC 9V-32V
S/N Ratio	More than 48dB
Electronic Iris	1/50, 160-1/100,000sec
Video Output	1Vp.p 75ohm
IR Switch Control	ACDS Automatic Control
Vibration and Shock Rating	20G / 100G
Operating Temperature	-40°C - +70°C (-40°F - +158°F) / RH 95% Max
Storage Temperature	-40°C - +85°C (-40°F - +185°F) / RH 95% Max
Net Weight	220Z
Dimensions	1.875" (H) x 2.625" (L) (no bracket) 3.25" (H) x 3" (L) x 1.5" (D) (w/ bracket)
Weight	22oz

Control Module Specifications	
Normal Voltage	12 VDC
Operating Voltage	1.0 ~ 28 VDC
Rated Current	60 mA
Operating Frequency	40 +/- 1 kHz
Housing Material	ABS
Housing Color	Black
Working Temperature	-40°C ~ 75°C
Storage Temperature	-40°C ~ 90°C
Waterproof Rating	IP67

10. SENSOR INSTALLATION

The width of vehicles vary. It is important to install the Sensors at the appropriate distance and location along the rear bumper or equivalent Assuming that the width of vehicle is L, then the space between Sensors is 1/4L (Sensors must be mounted S1, S2, S3, S4, from left to right). Sensors S1 and S4 should be located approximately 1/8L from either side of the vehicle. S2 and S3 will be located 1/4L from S1 and S4. If the Sensors are mounted on a DOT type bumper, the Sensor loca-tions are determined by the vehicle width (L), not the width of the bumper. 2) Sensors should be mounted at an absolute minimum of 16 inches (40cm) to 32 inches (80cm) from the ground (20 inches (50cm) is a good choice, if available). See Alternate Sensors Mounting Locations, for other options.



Sensor Installation (In-Bumper Flush Mount).

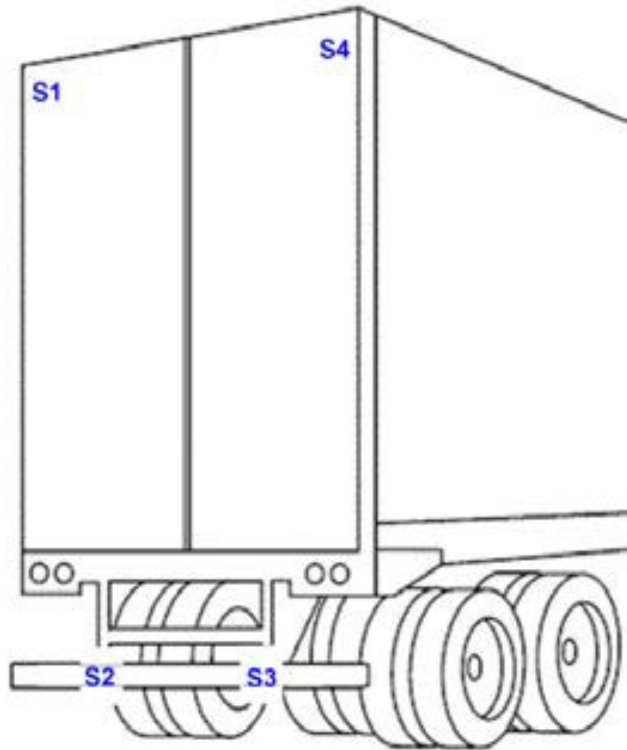
For vehicles equipped with a bumper that can accommodate the Sensors, carefully drill a 25mm hole and insert the Rubber Jacket, properly orientated “UP”, in the hole first. Then insert the Sensor, again properly orientated “UP” Depending on the thickness and construction of the bumper, the hole diameter may need to be varied. The Rubber Jacket is designed to seat properly into a 25mm hole with a 1/8 inch (3.2mm) thick metal bumper. If this is not the case, the flanges on the Rubber Jacket must be taken into consideration. It is suggested that a test hole be utilized to confirm a proper fit.



11. ALTERNATE SENSOR MOUNTING LOCATIONS

The system is designed to be installed with all 4 (four) Sensors aligned across the rear of the vehicle, preferably at a height ranging from 16” to 32” from the ground. When the Sensors are installed in a different layout (for example to detect a building overhang as shown below), please consider the following:

- Each Sensor detects objects in a circular area approximately 20” in diameter.
- It is recommended that the face of all Sensors should be on the same plane to ensure the accuracy of the system.
- When the Sensors are placed on two different levels (per the example below) install S1 and S4 on the top and S2 and S3 on the bottom of the vehicle.



Sensors can also be mounted across the front of the vehicle to detect building overhangs or to detect objects out of view.

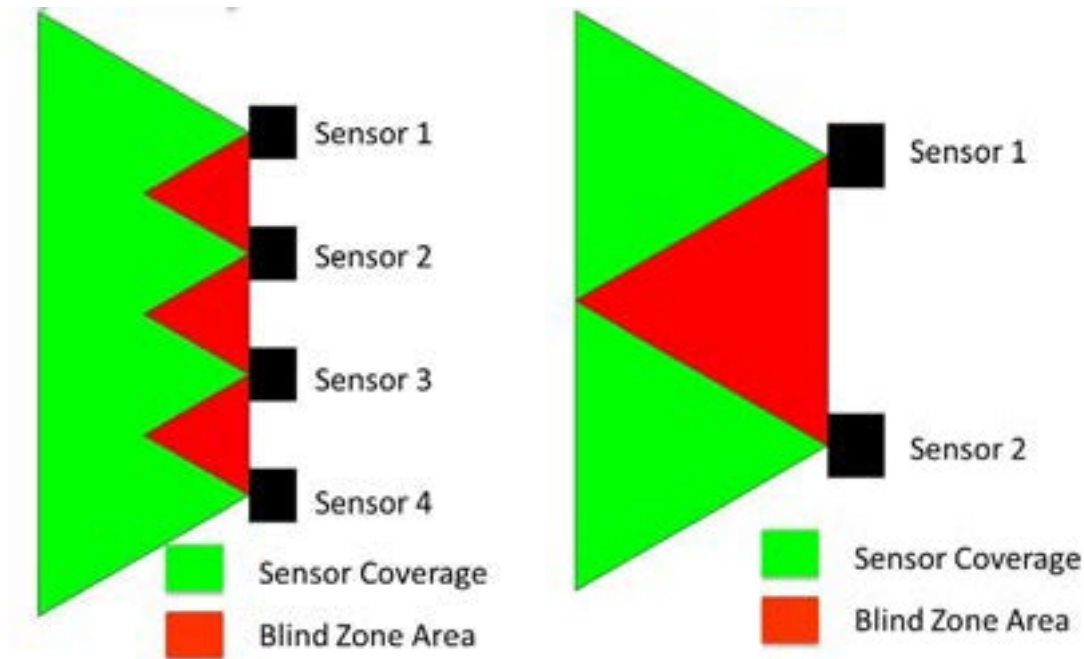
NOTE: These sensors are a tool to help the driver. The driver should always know what is in front of or behind them and physically check the area themselves.



Alternate Sensor Mounting Locations

CAUTION: Using less than 4 (four) Sensors across the width of a bumper will create limited coverage resulting in blind zones! It is strongly suggested that these blind zones are mapped out to educate the driver regarding the system limitations.

Having all four Sensors in line, on the same plane, provides the best result. If you break the Sensor configuration up, for example two on top and two on bottom, you create a bigger gap between the Sensors, causing a large blind zone area. This blind zone area can lead to objects or people being undetected by the Sensors.



Control Module Installation

Depending on the vehicle type, select an appropriate location to mount the water-tight control module on the rear undercarriage of the truck chassis.



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