



A Safe Fleet Brand

Operating Instructions



Surround Sensor Detection System (Ultrasonic 12)

RVS-SUR-SDSU12

Please read this manual thoroughly before operating the unit,
and keep it for future reference.

V1.0

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1. Precautions

● Storage and Keeping

1. The storage temperature of this device is $-40\sim+80^{\circ}\text{C}$, and the operating temperature is $-20\sim+70^{\circ}\text{C}$. The humidity is RH90%
2. Never use this device in environments with excessive moisture, dust or smoke.
3. Avoid dropping or striking this device.
4. Avoid using this device in enclosed spaces, areas with excessive vibration or subject to severe impacts.
5. Never puncture, scratch or use abrasive cleaning materials on this device.
6. Do not place cables where they may be pinched or stepped on.

● Operating Precautions

1. The device is powered by 12 volts from a monitor.
2. Make sure all cables are connected properly. Observe polarity. Improper cable connections may damage the monitor.



Warning!

1. Do not open the equipment's enclosure. This can cause damage, short-circuiting or electrical shocks that could lead to serious injury or death.
2. The equipment is not an alternative to safe driving practices.





Special Notice

All specifications are subject to change without notice

● Maintenance

1. Remove all the cable connections from the monitor before cleaning the device.
2. Clean the sensor face of any accumulation of dirt, mud, snow, ice, or debris.
3. Visually inspect the attached wiring and cable and verify that they are properly secured and not damaged. Inspect the Radar Sensor and control box and verify that they are securely attached to the vehicle.

	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 dispose of electrical and electronic equipment

CAUTION

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

2. Hints for Users

1. When triggered to work, the ultrasonic obstacle detection system will start alerting after a one-second delay.
2. If reversing at high speed, expect the ultrasonic obstacle detection system to have a one-second delay before emitting a warning.
3. While reversing, it is indispensable to use the ultrasonic obstacle detection system. However, the product is meant as an assisting device for safety. We declare that the safety responsibility is borne by the driver. Make sure to keep the car at proper speed and pay attention to the surrounding conditions while reversing.
4. There may be improper reception, deviation and error in reflected signal because of difference in material, angle or size of obstacles.

3. Specifications

1. Number Of Sensors: 12 PCS
2. Color Of Sensors: Black (default); Optional
3. Ultrasonic Frequency: 40KHz
4. Detecting Distance: 0.60---5.00m (2ft 0in --- 16ft 6in)
5. Best Detecting Distance: 0.60---3.00m (2ft 0in --- 10ft 0in)
6. Display Unit: M or FT Optional
7. Display Mode: Left-Right or Front-Rear
8. No. of detection zones: 3 or 4
9. Zone distances: Zone 1 = 0.00-0.60m
Zone 2 = 0.60-1.50m
Zone 3 = 1.50-3.00m
Zone 4 = 3.00-5.00m
10. Voice Warning: Optional
11. Camera Volume: Adjustable
12. Power Supply: DC10-18V
13. Operating Temperature: -20°C ~ 70°C RH95% Max
14. Storage Temperature: -40°C ~ 80°C RH95% Max

4. Product Features

1. The ultrasonic sensor detection system consists of a master controller, extension controller, 12 ultrasonic sensors and accessories.
2. The entire system will work automatically when the reverse gear is engaged.
3. The on-screen display will provide real-time information to the vehicle driver about the danger zones surrounding the vehicle.

5. Product Installation

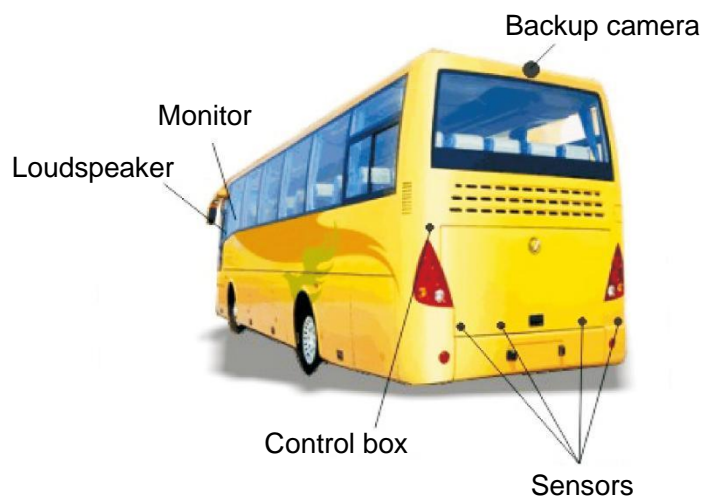


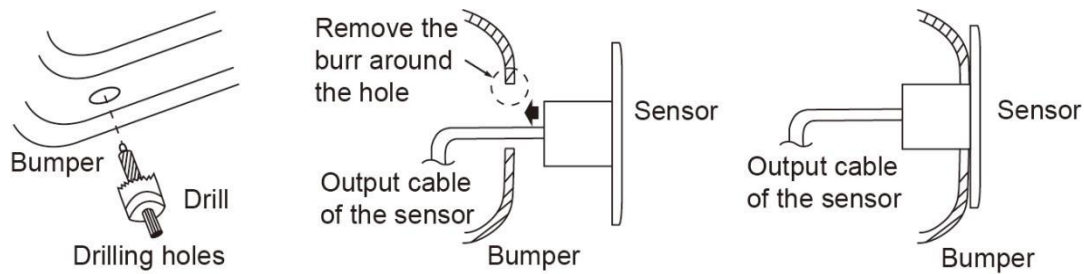
Fig.1 installation instruction

● 1st step

Install the sensors on a suitable place. The distance between sensor S6 / S7 and S1 / S12 must be more than 1.5m, and other adjacent sensors should be installed more than 0.5m. Ideally the sensors should be installed on the vehicle at roughly 0.6m to 0.8m above the ground.

● 2nd step

Make sure the sensor is installed so that it is firm and steady.

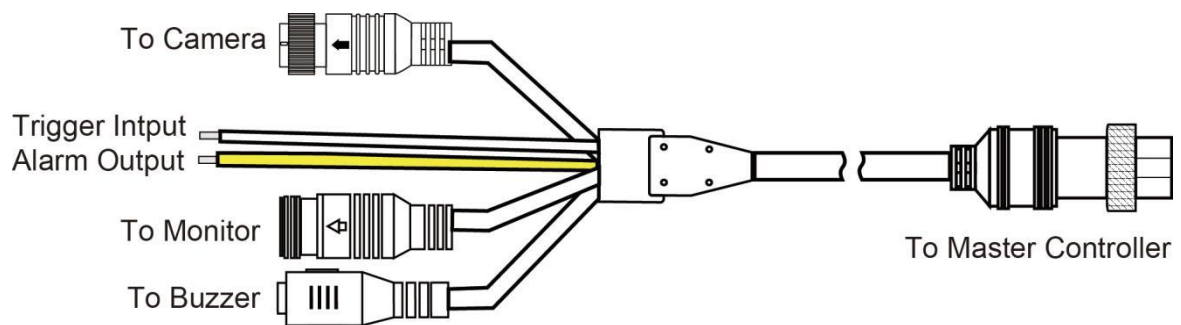
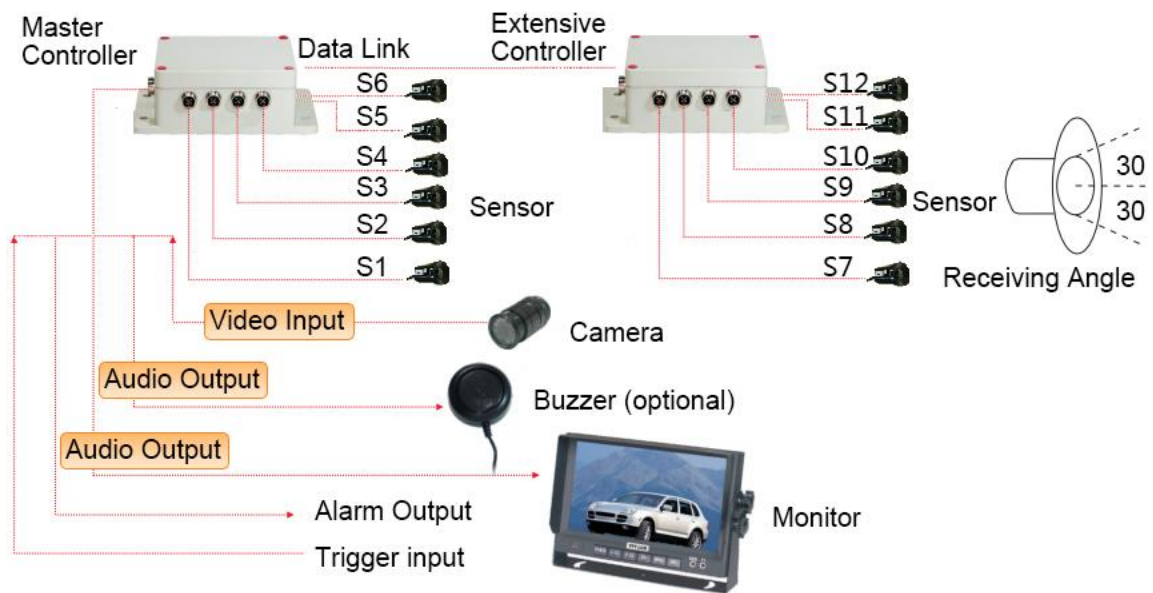


● Installation of other parts

1. Find the right place for camera mounting. e.g.: Drill a hole to install the embedded style camera.
2. Find a proper place in the cab to mount the monitor.
3. Master and extension controller should be placed in a clean and dry place.

6. Connection

1. Please pay attention to the custom wire harness for connection between the ultrasonic sensor kit and the back-up system. Make sure that reverse trigger wire from the harness is connected to the reverse light or is hardwired to power if the camera monitor is already wired accordingly.
2. Connect the 5PIN FEMALE jack to the Monitor and 5PIN MALE plug for camera.
3. The master controller should be hooked by the custom wire harness for VIDEO IN & VIDEO OUT. The port (Data Link) on the bottom-right of the master controller is connected to the bottom-left port (Data Link) of the extension controller via the 461-10 Data Link cable.
4. The sensor input cables should be plugged in sequence.
5. The controllers and camera are both powered by the monitor, which is powered by the vehicle battery.
6. Notice: *Leave the input cables from the sensors unconnected for testing.



- **Trigger in**

The system provides an auxiliary input that allows an external signal input to change the sensor status between standby and active. As a backing sensor application, single white wire of extension cable connects to positive power wire of the back-up light.

- **Alarm out**

The system provides an auxiliary output that triggers an external device whenever the sensor detects an object. This output can be used to activate an external backup alarm or a light beacon.

The output is switched from a high impedance state to ground when activated and is protected against over-current or short-circuit. The maximum operating current is approximately 200 mA.

7. Testing

1. Switch the gear to reverse, reversing lights will turn on automatically. The on-screen display will provide real-time information to the vehicle driver about the danger zones surrounding the vehicle. When an obstacle is detected, the image of the vehicle on the screen lets the driver know that the corresponding area is not clear through the use of colored arc, and distance value is shown too.
2. Connect one input cable from a sensor to the master controller. If no obstacle in front of the sensor, there is a green icon in corresponding place. In Front-Rear Mode, the sensor could properly find a person standing within 3.0 meters right/left in front of the sensor. When sensors are placed at front and rear sides of the vehicle, four levels of arc will appear on corresponding place. The colors of warning arc are Red, Yellow, Dark Green and Green. While the sensors are placed at left/right side, the colors of warning arc are Red, Yellow and Green. In Left-Right Mode, the sensor could properly find a person standing within 3.0 meters all of sensors, the colors of warning arc are Red, Yellow, Dark Green. Remove the sensor and connect others one by one for testing in the same way.
3. After finishing testing. Connect all the sensors with the controllers.
4. Notice: *Most problems occurred in the testing are usually caused by improper installation of the sensors, they may be solved in actual application.



Fig.2 The two detection modes display graphics

8. Troubleshooting

Symptoms	Causes	Solutions
No reaction from the system while the gear is switched to reverse.	No power input.	Check whether the power cable is properly connected.
No reaction from the system while the gear is switched to reverse.	No power input or no trigger input.	Check whether the power cable and trigger input cable is properly connected.
No reaction on display while there are obstacles within the detecting area.	Improper connection of the sensor or monitor.	Check whether the connection is properly connected.
There is no obstacle within the detecting area, but constant warning and voice prompt occurs.	There may be too much dirt on sensors causing some interference.	Clean the sensors.