

User's Manual

Reverse Sensor System for commercial vehicles



Reverse sensor system

● INTRODUCTION

Congratulations!

You have just purchased the most sophisticated REVERSE SENSOR SYSTEM available today. This manual contains instructions and information enabling you to understand how this system works and how it will help you. Enjoy your REVERSE SENSOR SYSTEM and PARK SAFELY.

● NOTICE

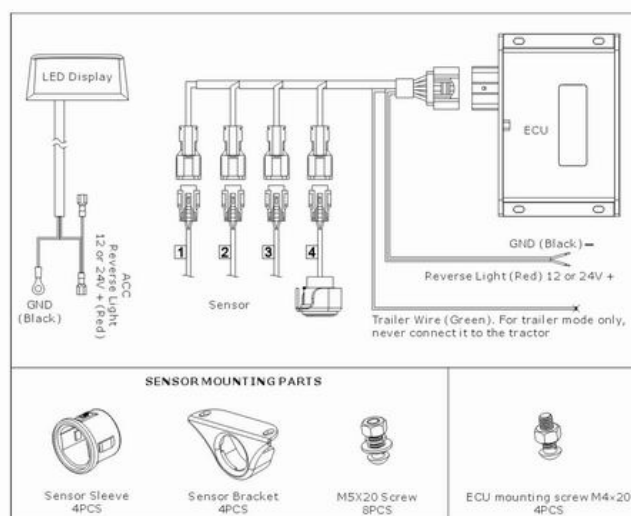
- (1) It is recommended the system should be installed by professional personnel
- (2) This manual describes only in principle the functions, installation, usage and precautions
- (3) The diagrams or figures in the manual may differ from the real products
- (4) Designs and specifications are subject to change without prior notice

● OVERVIEW

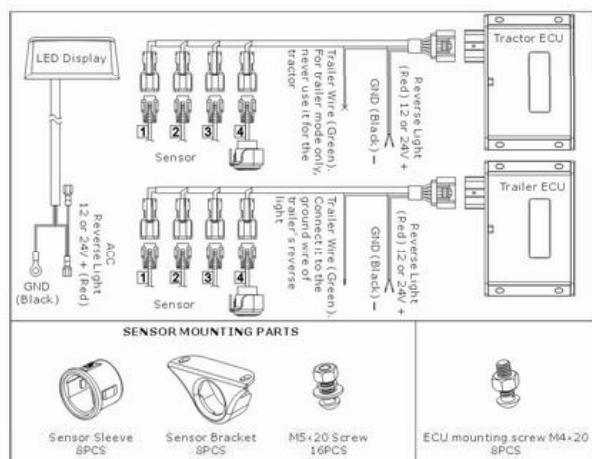
Using waterproof aluminum ECU case, waterproof OEM active sensors and latest signal transmission technology through Power-bus, this reverse sensor system is designed and intended for use in caravan, motor home, camping car, truck, bus or other commercial vehicles, especially the vehicles with a trailer or container.

● PRODUCT COMPOSITION

This system consists of an LED display (Warning unit), a control unit (ECU) and 4 sensors (Detection unit). When a trailer or container is used together with the vehicle that works as tractor, just install another set of ECU / 4 sensors of the same type in the trailer or container (Trailer Mode). All connecting wires and necessary mounting parts are included in the package.



Without trailer



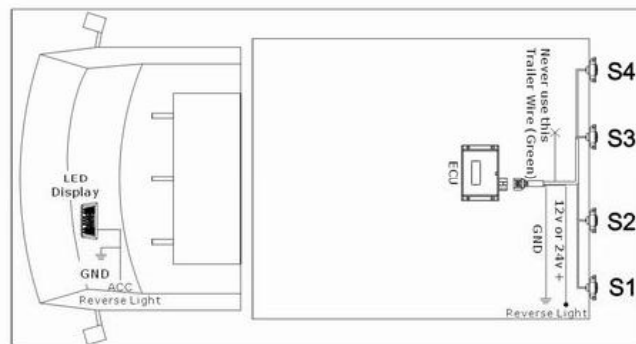
With trailer

● TECHNICAL DATA

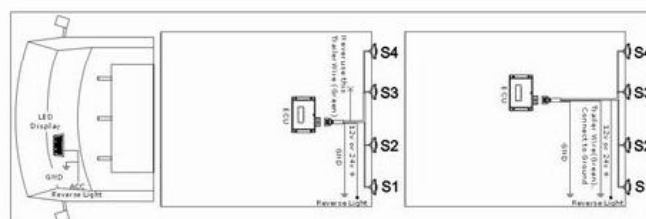
Item	Description
Sensor type	Analog active sensor, 40KHz
Transmission mode	Through Power-bus
Detection range	0.22 ~ 2.50m (based on 1m x 1m wood plank)
Warning mode	Digit, LED bar & Sound
Power source	Reverse light
Working voltage	10.5 ~ 16.0 or 18.0 ~ 28.0 VDC
Rated voltage	12.0 or 24.0 VDC
Rated current	≤400 mA
Operation Temp.	-35 ~ +80 (°C)
Storage Temp.	-40 ~ +85 (°C)
Waterproof Grade	IP67 (sensors and ECU)

● INSTALLATION

➤ MOUNTING LOCATION OF EACH PART



Without trailer



With trailer

➤ Install the ECU on the rear part of chassis or somewhere near the reverse light, connect the power cable (Red & Black wires) to that of reverse light. When a trailer is used together with this vehicle that works as tractor, install the other ECU somewhere near the reverse light of trailer, connect its power cable (Red & Black wires) to that of trailer reverse light, and the trailer control wire (Green) to the Ground power wire of reverse light. Fix the warning unit on the dashboard or at the front headline, and connect its power cable to ACC or reverse power cable.

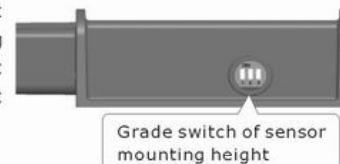


Important:

1. Never reverse the polarities of power.
2. The ECU for tractor and that for trailer are exactly the same. But never use the trailer control wire for the tractor.

➤ INSTALLATION OF SENSORS

- (1) Since the width of different vehicle models varies, it is important to install sensors at right place. Suppose the width of vehicle is L, the space between the adjacent sensors is 1/4L.
- (2) The sensors should be mounted on the bumper at the level of 60 - 100cm above the ground. If they have to be mounted on a low bumper at a level of less than 60cm, they will probably report the ground as obstacle, and disturb the driver. In this case, you need to adjust the grade of mounting height with the switch on the ECU. select Grade 2, the mounting height can be 50cm; select Grade 3 for 40cm; select Grade 4 for above 70cm.
- (3) How to fix sensors.

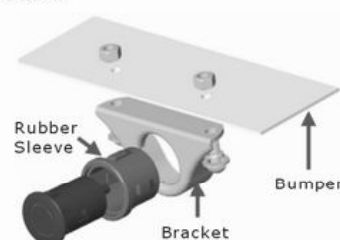


Recess mounting on plastic bumper:

Make holes on the bumper with the enclosed drill bit, feed the sensor cable through the hole and fix the sensors one by one.

Mounting with the metal bracket:

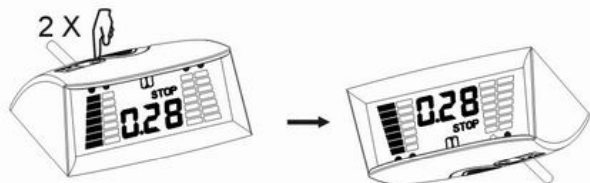
- (a) With an M5 drill bit, make 2 holes spaced 56mm in the bumper.
- (b) As the right picture shows, fix sensors on the bumper. Be sure the rubber sleeve is used together with the sensor.



● HOW TO SET FUNCTIONS

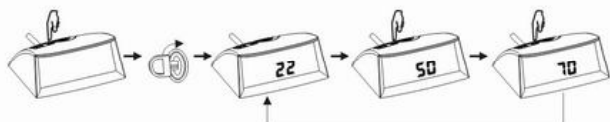
(1) With Volume Switch, adjust the alarm volume at 3 levels: Hi, low or off

(2) Click Set Button twice to flip the LED bar and distance indication, in case it is mounted upside down at the front headline



(3) Parking line adjustment

The default parking line of this kit is 22cm, which can be extended. Press and hold the button, then power on the system and wait for 3s, a number of "22" will be shown on the screen. Release and re-press the button, the number will become "50". Press again, it'll shift to "70". Wait for 5s, the selected number will be saved automatically and work as new parking line.



In some circumstances, for instance, if the vehicle is equipped with a rear bicycle carrier (or a spare tyre etc.) which is actually a part of the vehicle, the system should ask the driver to stop reversing when the obstacle is as far away as 22cm from the carrier instead of the bumper where the sensors are installed. So the carrier size must be taken into consideration and you should re-set the parking line.

> WARNING MODE:

ABOUT THE DISPLAY

(1) Indication of direction and zone: the 4 columns of LED bar show the direction and location of the obstacle.

(2) Indication of distance: the digits show the distance in meter from the obstacle to the closest one of the sensors.

(3) Indication of trailer mode: "II" indicates that the displayed information is detected by the sensors mounted in the trailer; "I" indicates that no trailer is used together.



Without trailer



With trailer

(4) Warning mode based on different parking lines

Parking line = 22cm

Distance (m)	Zone	Audible warning		Danger Zone Mark	Distance Indication (m)	LED bar
		Sensor 2 or 3	Sensor 1 or 4			
$d < 0.22$	Danger	Bi	Bi	STOP	- P -	
$0.22 \leq d \leq 0.30$	Danger	Bi	Bi	STOP	0.22~0.30	
$0.30 < d \leq 0.50$	Caution	Bi..Bi..Bi	Bi..Bi..Bi	---	0.30~0.50	
$0.50 < d \leq 0.70$	Caution	Bi...Bi...Bi	Bi...Bi...Bi	---	0.50~0.70	
$0.70 < d \leq 0.90$	Caution	Bi...Bi...Bi	Bi...Bi...Bi	---	0.70~0.90	
$0.90 < d \leq 1.10$	Caution	Bi...Bi...Bi	Bi...Bi...Bi	---	0.90~1.10	
$1.10 < d \leq 1.30$	Safety	Bi....Bi....Bi	---	---	1.10~1.30	
$1.30 < d \leq 1.50$	Safety	Bi....Bi....Bi	---	---	1.30~1.50	
$1.50 < d \leq 1.80$	Safety	Bi....Bi....Bi	---	---	1.50~1.80	
$1.80 < d \leq 2.00$	Safety	---	---	---	1.80~2.00	
$2.00 < d \leq 2.20$	Safety	---	---	---	2.00~2.20	
$2.20 < d \leq 2.50$	Safety	---	---	---	2.20~2.50	
$d > 2.50$	Safety	---	---	---	---	

Parking line = 50cm

Distance (m)	Zone	Audible warning		Danger Zone Mark	Distance Indication (m)	LED bar
		Sensor 2 or 3	Sensor 1 or 4			
$d < 0.50$	Danger	Bi	Bi	STOP	- P -	
$0.50 \leq d \leq 0.70$	Caution	Bi..Bi..Bi	Bi..Bi..Bi	---	0.50~0.70	
$0.70 < d \leq 0.90$	Caution	Bi..Bi..Bi	Bi..Bi..Bi	---	0.70~0.90	
$0.90 < d \leq 1.10$	Caution	Bi...Bi...Bi	Bi...Bi...Bi	---	0.90~1.10	
$1.10 < d \leq 1.30$	Safety	Bi....Bi....Bi	Bi....Bi....Bi	---	1.10~1.30	
$1.30 < d \leq 1.50$	Safety	Bi.....Bi.....Bi	---	---	1.30~1.50	
$1.50 < d \leq 1.80$	Safety	Bi.....Bi.....Bi	---	---	1.50~1.80	
$1.80 < d \leq 2.00$	Safety	Bi.....Bi.....Bi	---	---	1.80~2.00	
$2.00 < d \leq 2.20$	Safety	---	---	---	2.00~2.20	
$2.20 < d \leq 2.50$	Safety	---	---	---	2.20~2.50	
$d > 2.50$	Safety	---	---	---	---	

Parking line = 70cm

Distance (m)	Zone	Audible warning		Danger Zone Mark	Distance Indication (m)	LED bar
		Sensor 2 or 3	Sensor 1 or 4			
$d < 0.70$	Danger	Bi	Bi	STOP	- P -	
$0.70 \leq d \leq 0.90$	Caution	Bi..Bi..Bi	Bi..Bi..Bi	---	0.70~0.90	
$0.90 < d \leq 1.10$	Caution	Bi..Bi..Bi	Bi..Bi..Bi	---	0.90~1.10	
$1.10 < d \leq 1.30$	Safety	Bi...Bi...Bi	Bi...Bi...Bi	---	1.10~1.30	
$1.30 < d \leq 1.50$	Safety	Bi....Bi....Bi	Bi....Bi....Bi	---	1.30~1.50	
$1.50 < d \leq 1.80$	Safety	Bi.....Bi.....Bi	---	---	1.50~1.80	
$1.80 < d \leq 2.00$	Safety	Bi.....Bi.....Bi	---	---	1.80~2.00	
$2.00 < d \leq 2.20$	Safety	Bi.....Bi.....Bi	---	---	2.00~2.20	
$2.20 < d \leq 2.50$	Safety	---	---	---	2.20~2.50	
$d > 2.50$	Safety	---	---	---	---	

● HOW TO USE

➤ STARTUP

When the reverse gear is engaged, the system is automatically powered on, and beeps once for a duration of 0.5s, before starting the diagnostic mode.

If the trailer is used together, after the system is powered on, the system will shortly beep 3 times, reminding you of the trailer, and then beep once again for a duration of 0.5s, before starting the diagnostic mode.

➤ DIAGNOSTIC MODE

(1) If some sensor is found abnormal, the system will quickly beep "X" times. At the same time, "EX" will be displayed on the screen. "X" is the serial number (1~4) of the abnormal sensor.
Ex 1: If "E4" is displayed and you hear a short beep for 4 times, it tells you the sensor No. 4 doesn't work.

Ex 2: If neither Sensor No. 2 nor No. 3 works, "E2" and "E3" will appear in the display successively, and you'll hear a rapid beep for twice...

If none of the sensors works, "EE" will be displayed, the system refuses to work and keep beeping for 1.5s.

(3) The warning of diagnostics and possible faulty lasts 3s, before the system assumes working mode, although with abnormal sensors.

Note: Warning unit will never alert you of any obstacles behind the abnormal sensor(s), and the relative indication of direction will also disappear.

● DISCLAIMER

(1) The system is designed and intended as a warning aid for vehicle reverse and parking, and it should be used as such.

(2) Our company shall accept no responsibility for any accidents and / or damage caused during the usage of this system.

(3) The detection results may be affected when the system works under very bad weather conditions (e.g. strong wind, heavy rain, snow, very low or high temperature) or on complicated roads (such as rugged roads or roads with slope).

(4) Keep the sensor surface clean. Water, ice or mud stayed on it may affect the performance.

(5) Ultrasonic and electromagnetic wave from other sources near the system, if any, may affect the detection results.

Important environmental information about this product



This symbol indicates that disposal of the device after its life-cycle could harm the environment.

Do not dispose of the unit as unsorted municipal waste; it should be taken to a specialized company for recycling.

This device should be returned to your distributor or to a local recycling service.

Respect the local environmental rules.

If in doubt, contact your local waste disposal authorities.

