

Think safety think Steelmate



STEELMATE CO., LTD.
www.steel-mate.com

All rights reserved
The trademark, patent and copyright are owned by Steelmate Co., Ltd.
The right to change the design and specifications reserved
PTSV403 75545485



STEELMATE[®]
Automotive

PTSV403

Camera
Parking Assist System



Camera



Sensor

Contents

User's Manual

Reasons to choose Steelmate	1
Disclaimer	1
Important notice	2
Key features	2
About the product	2
Technical specifications	3
About the monitor	3
Self-test function	4
About the parking assist lines	5
How does the system work	6
OSD setting	8
Attention	10
Sensor and camera maintenance	10
Troubleshooting	11
Warranty terms	12
Steelmate warranty card	12

Installation Manual

Brief installation diagram	14
Packing list	15
Installation tools	15
Wire connection	16
Sensor installation	17
Camera installation	18
ECU installation	19
Monitor installation	19
Parking assist lines mode selection and adjustment	20
Function test after installation	21

Camera Parking Assist System User's Manual

Reasons to choose Steelmate

1. Professional manufacturer with high quality standards.
2. Complete range of products, you can easily select a product to match.
3. There are agents/distributors in more than 80 countries to supply local service.
4. More than 100 engineers in the company, you can enjoy the latest technology.
5. More than 300 patents.
6. Products have international approvals, high quality guaranteed.
7. Leading manufacturer in automotive industry, ISO9001, ISO/TS16949, ISO14001 and OHSAS18001 certified.

Disclaimer

The camera parking assist system is designed as a driver assistance device, and should not be used as a substitute for safe parking practices. The area into which the vehicle is to be reversed must be constantly visually monitored while parking.

Steelmate and its distributors do not guarantee or assume liability for collisions or damages while reversing your vehicle.

Important notice

Steelmate parking assist systems help to provide assistance when reversing and parking. Driving skills, such as slowing down, use of mirrors etc. are always essential.

1. This unit is for vehicles with 12V DC only.
2. This unit should be installed by a professional auto technician.
3. Route wiring harness away from heat sources and electrical components.
4. It is strongly recommended to check the position of the sensors before the actual drilling of the holes.
5. Perform tests after finishing the installation.

Key features

- TFT LCD monitor with parking assist lines
- OSD menu
- Flush mount or micro-tab camera available
- Shock, vibration and water resistant camera
- PAL or NTSC mode available
- Accurate digital distance and clear rearview shown on the monitor
- Audible warning and voice warning (optional), volume adjustable
- Self-test function
- Anti-false alert technology

About the product

PTSV403 is a camera parking assist system with parking assist lines shown on the TFT LCD monitor.

Turn ACC on and engage reverse gear, the system will start scanning the rear area. If there is any object within the detection range, the image, digital distances and corresponding parking assist lines will appear on the monitor while the audible sound will change tones when the distance gets shorter (voice warning is optional).

Each piece of our products has passed the most stringent test before releasing to the market. It performs well at a wide temperature range and becomes very useful when you are reversing at a raining day, snowing day or at night etc. With Steelmate's camera parking assist system on board, you can enjoy a convenient and nervousfree reversing experience.

Technical specifications

For parking assist system

Input voltage	10~16VDC
Operating current	<250mA
Detection range	0.1 ~ 2.5m
Display range	0.3 ~ 2.5m
Operating temperature	-40* ~ +85*

For rearview camera

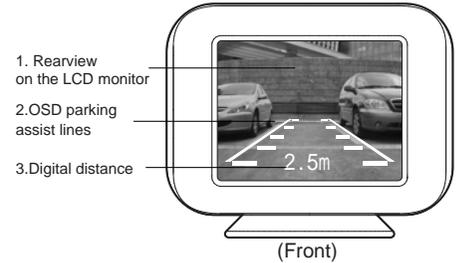
Video standard	NTSC / PAL
Graphic sensor	Color sensor
Horizontal resolution	400 TV lines
Minimum illumination	<1.5 Lux
View angle	120° / 135° / 138°
Operating temperature	-20* ~+80* / -40* ~+85*

For TFT monitor

Size	2.5"
Resolution	640 (H) x 240 (V)
System	NTSC / PAL
Input voltage	9~16VDC
Working current	<250mA
Operating temperature	-20* ~ +60*
Beep volume	70~90dB

* The technical specification of the camera may vary. It may change according to the camera design.

About the monitor



1. Rearview on the LCD monitor

The color camera automatically projects the image behind the car to the monitor once the reverse gear is engaged.

2. Parking assist lines

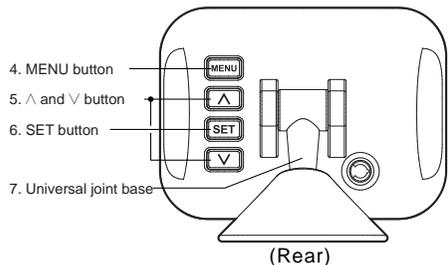
The space between the 2 vertical parking assist lines is equivalent to the width of your vehicle. Any object in that space will hinder your reversing. The color distance indicator will appear on the monitor when the vehicle is getting closer to the obstacle.

3. Digital distance

Detection range: 0.3~2.5m.

The distance detected by the sensors will be shown on the left and right side of the monitor. The digital number on the monitor will be refreshed every 0.1m. When the obstacle distance is less than 0.3m, "STOP" will be shown on the monitor and the speaker will beep continuously or say "STOP" (when the voice warning is turned on).

Self-test function



4. MENU button

The MENU button is used to open the on-screen-display menu and to return to previous menu.

5. \wedge and \vee button

\wedge and \vee button are used to select voice on/off and to adjust volume, brightness, contrast, and color .

6. SET button

Press the SET button to save and confirm the selection.

7. Universal joint base

The display can be adjusted to any direction to meet the driver's requirement.

The system will test the sensors automatically when the reverse gear is selected.

- 1) If all sensors are functioning, the system will beep once.
- 2) If there is any problem with the sensors, the system will beep three times to indicate that one or more sensors are damaged.



※ Any damaged sensors should be replaced.

This picture indicates all sensors are functioning and the obstacle distance is more than 2.59m.

About the parking assist lines

Right obstacle distance indicator

Green (2.59-1.6M)

Yellow (1.59-1.2M)

Yellow (1.19-0.9M)

Red (0.89-0.6M)

Red (0.59-0.3M)

The rear image

Left obstacle distance indicator

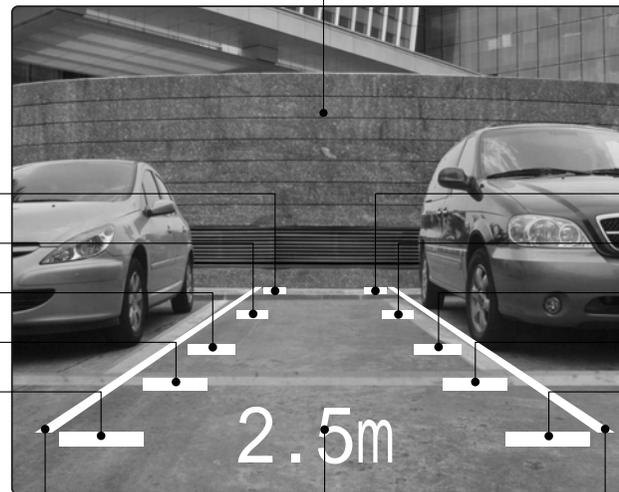
Green (2.59-1.6M)

Yellow (1.59-1.2M)

Yellow (1.19-0.9M)

Red (0.89-0.6M)

Red (0.59-0.3M)



Obstacle distance

Parking assist lines

Status preserving

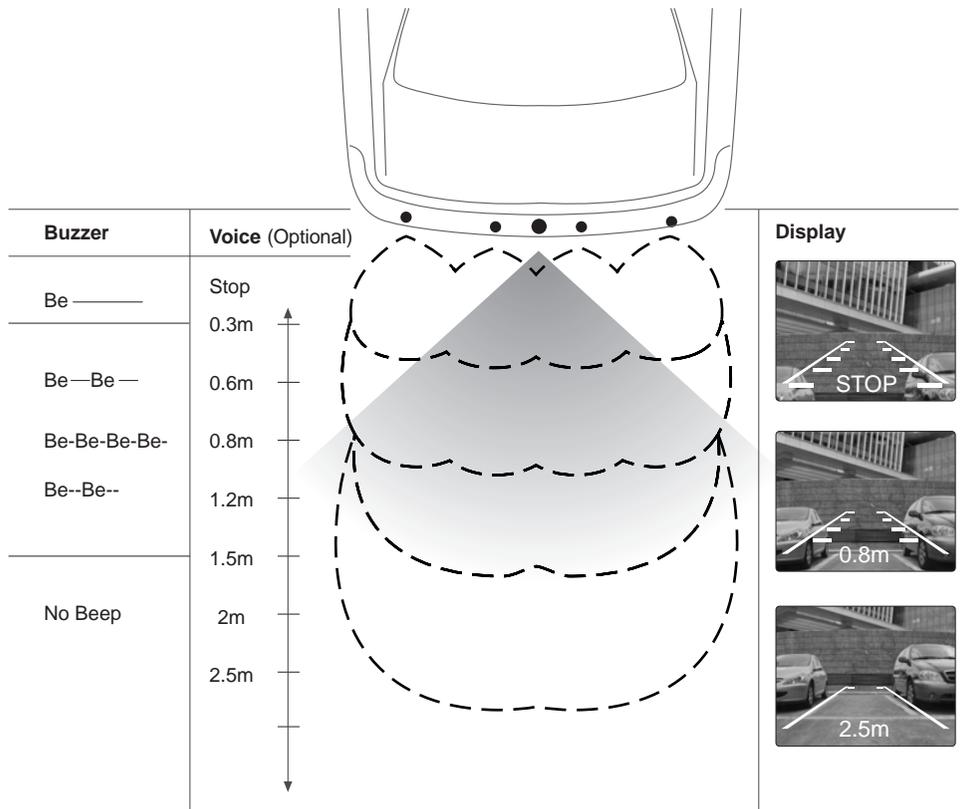
All the previous settings (such as parking assist lines mode and color contrast etc.) will be saved after power-off. No further adjustment is needed when the power is on again.

Note • All the distances shown by parking assist lines are for reference only.

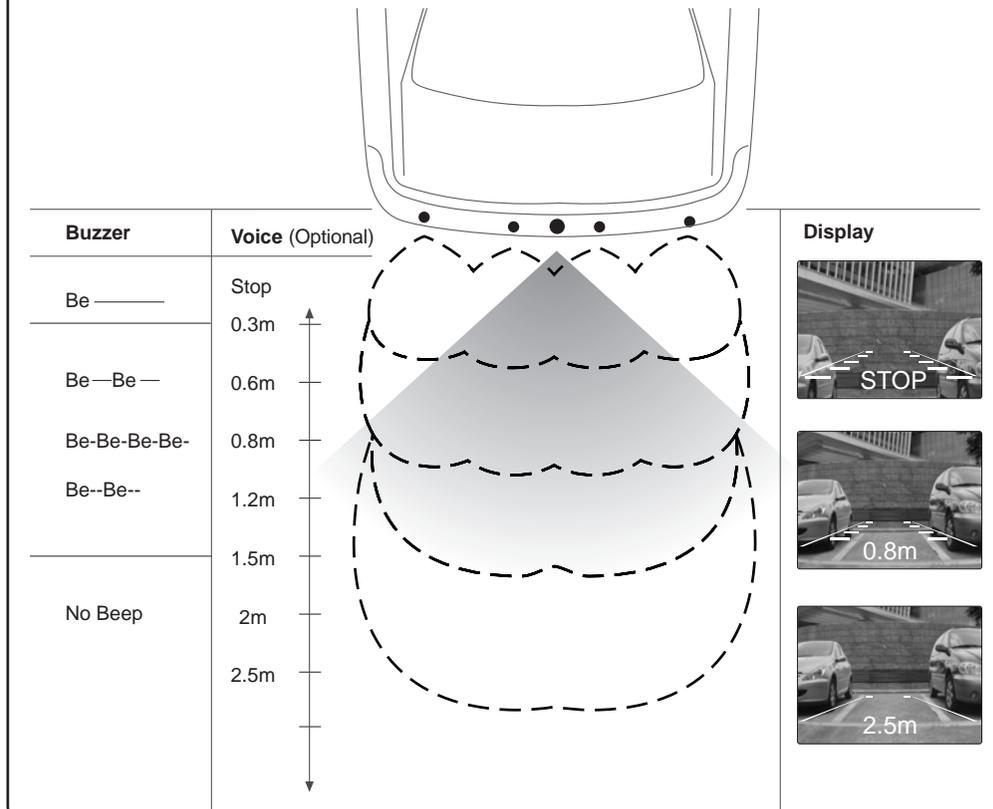
- For parking assist lines mode selection and adjustment, please refer to page 20.

How does the system work

Parking assist lines mode 1— for micro-tab camera

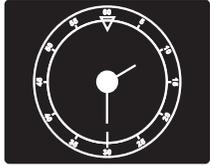


Parking assist lines mode 2— for flush mount camera



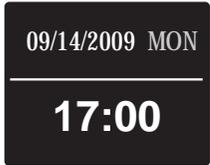
OSD setting

Once ACC is ON, one of the default clock setting will appear as below



(Factory default)

Mode 1

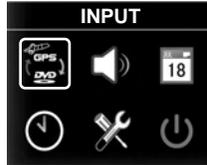


Mode 2



Calendar mode

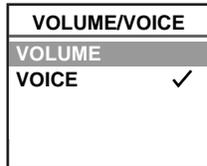
1. Volume and voice adjustment



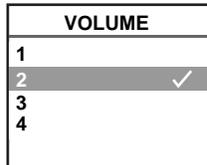
Press the MENU button to enter the OSD menu.



Press \wedge or \vee button to choose. Press SET button to activate the highlighted option.



Press SET button again to choose the volume.



Press \wedge or \vee button to select the volume (1 low – 4 high).

Press SET to save and press MENU to return to the previous menu.

2. Date & calendar



Press MENU and then \vee button to select CALENDAR icon, then press SET button to enter CALENDAR menu to change setting.

3. Time setting



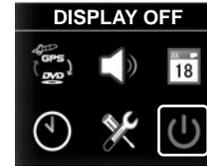
Press MENU and then \vee button to select TIME icon, then press SET button to change the setting.

4. Display setting



Press MENU and \vee button to select SYSTEM icon, then press SET button to change the setting.

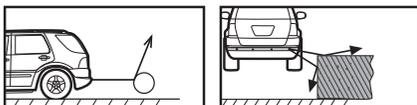
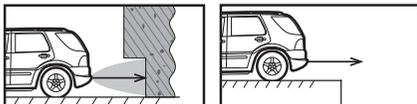
5. Turn off the display



Press the MENU and \vee button to select DISPLAY OFF. Press SET to turn off the display. Press any button to turn on the display.

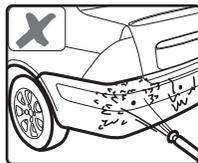
Attention

False detection may occur in the following situations:

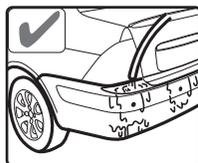


- After installation, please fully test the system before use.
- Heavy rain, dirty or damaged sensor or camera may result in false warning occasionally.
- Ensure that the self-test procedure is completed, the camera and all sensors are functioning before reversing.

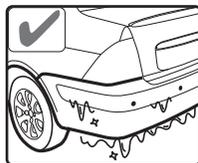
Sensor and camera maintenance



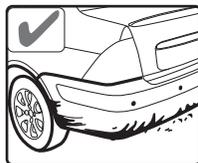
Do not wash the sensor/camera with squirt gun or swab them forcibly.



Please wash car with low-pressure water.



Please melt the ice with warm water when the sensors/camera is covered by ice.



Please clean the sensors/camera with cloth or low-pressure water when the sensors are covered by mud or snow.

Troubleshooting

• There is no image on the LCD monitor.

- 1) Check whether the power supply wire is connected correctly.
- 2) Check whether the ignition is turned to ACC ON.
- 3) Check whether the reverse gear is selected.
- 4) Check whether all the connections are correct.
- 5) Check whether the video output plug is connected to the video-in socket of the LCD monitor.
- 6) Check whether the function setting of the monitor is correct.
- 7) Check whether the camera is correctly connected to the ECU.

• The monitor indicates a defective sensor.

- 1) Check whether the sensor surface is clean.
- 2) Check whether the sensor wires are plugged in the ECU properly.
- 3) Check whether the sensor wires are damaged or not.

• The object position does not correspond to that on the monitor.

- 1) Are the sensor cables connected to the ECU in the correct order e.g. A. B. C. D?

• When reverse gear is selected, 0.5m ~ 0.6m will be shown on the LCD monitor. (No obstacle behind the vehicle)

- 1) Check whether the sensors are mounted too low or detecting the ground?

- 2) Check whether the sensor is installed up-side-down.

- 3) Unplug 1 sensor at a time to check for response.

• Audible voice or warning sound is too low.

- 1) Adjust the volume to a certain level.

• Blurred image on the LCD monitor?

- 1) Check whether there is dirt or water on the lens of the camera.
- 2) Clean the lens with a wet cotton swab and then dry it with a soft clean cloth.

• Parking assist lines is too high or too low.

- 1) Adjust the parking assist lines properly according to P20 in the manual.

• If the problem persists, please follow these steps:

A. For consumers: contact your dealer or nearby service center.

B. For installer or dealer:

- 1) Check the wire connection.
- 2) Replace the ECU and recheck the system
- 3) Test the sensors with certified ECU using a flat wooden board.
- 4) Plug the certified sensors into the ECU and recheck.
- 5) Email your questions to us and we will reply ASAP.

Warranty terms

- I. The unit is warranted for a limited period of time from the date of purchase. In the unlikely event of a defect arising in this product when used in accordance with the manufacturer's instructions, the parts would be repaired or replaced free of charge.
 - a) It is required to show warranty card when making any warranty claims.
 - b) The model and the unit's serial number must be the same as the information on the warranty card.
- II. This warranty is non-transferable and is automatically void if:
 - a) The original purchaser has not completed the warranty card.
 - b) The unit's serial number is defaced, missing or altered.
 - c) The unit has been modified or used in not to its intended purpose.
 - d) The unit has been damaged by accident, unreasonable use, neglect, improper installation or service.
- III. The warranty does not cover:
 - a) Damage caused by incorrect or poor installation, problems which may be caused by anomalies in the vehicle's electrical system or originating from the environment in which the system is operated;
 - b) Damage to the system caused by accident or improper use in any manner whatsoever not the fault of Steelmate, including but not limited to damage by water or as a result of excess voltage applied to the system or if misused or repaired or altered in any way other than by Steelmate or it's authorized agent.
 - c) False information displayed in the panel of the dash board that is caused by car with CAN bus system.

Steelmate warranty card

User:

Tel:

Vehicle Reg No.:

Product Model No.:

Serial No.:

Date of Installation:

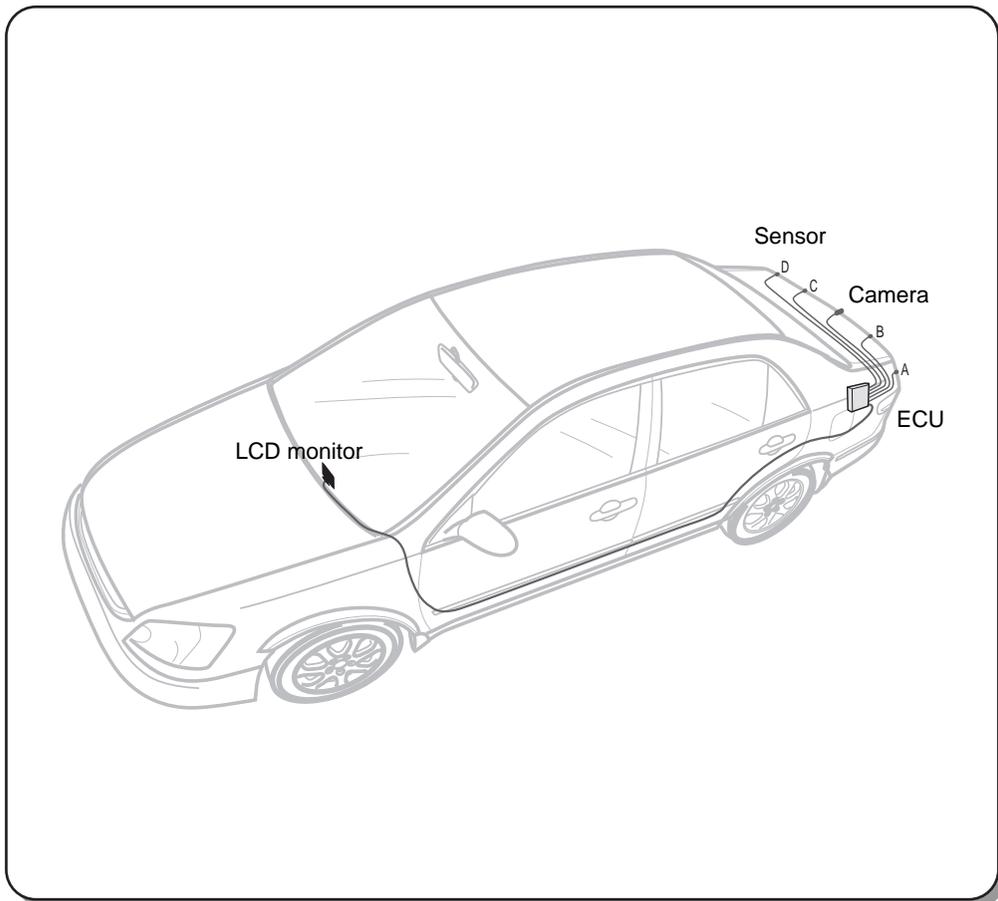
Name of the Retailer:

Signed by Retailer:

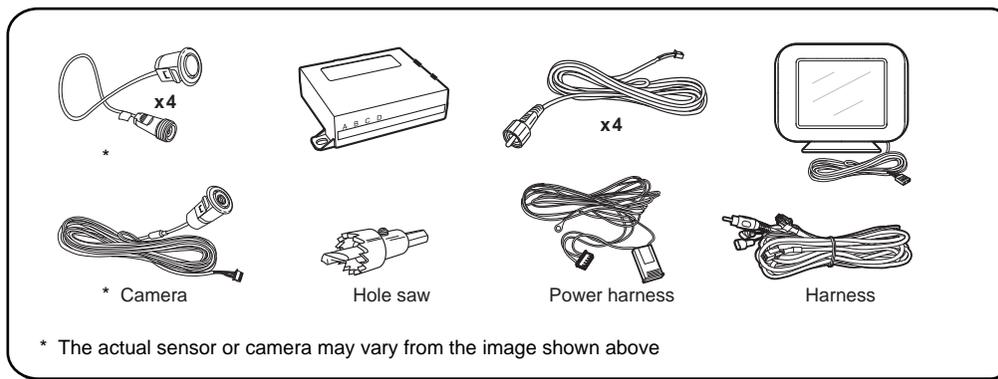
Camera Parking Assist System

Installation Manual

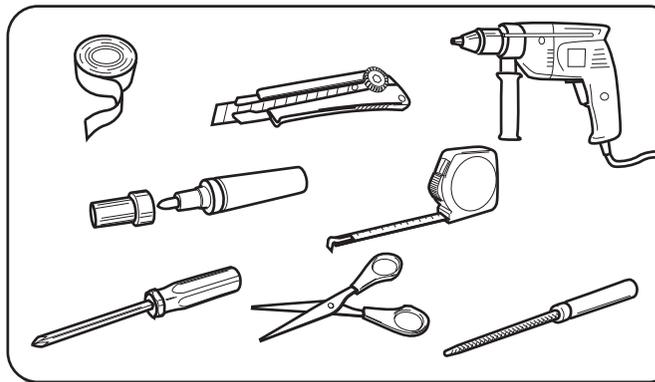
Brief installation diagram



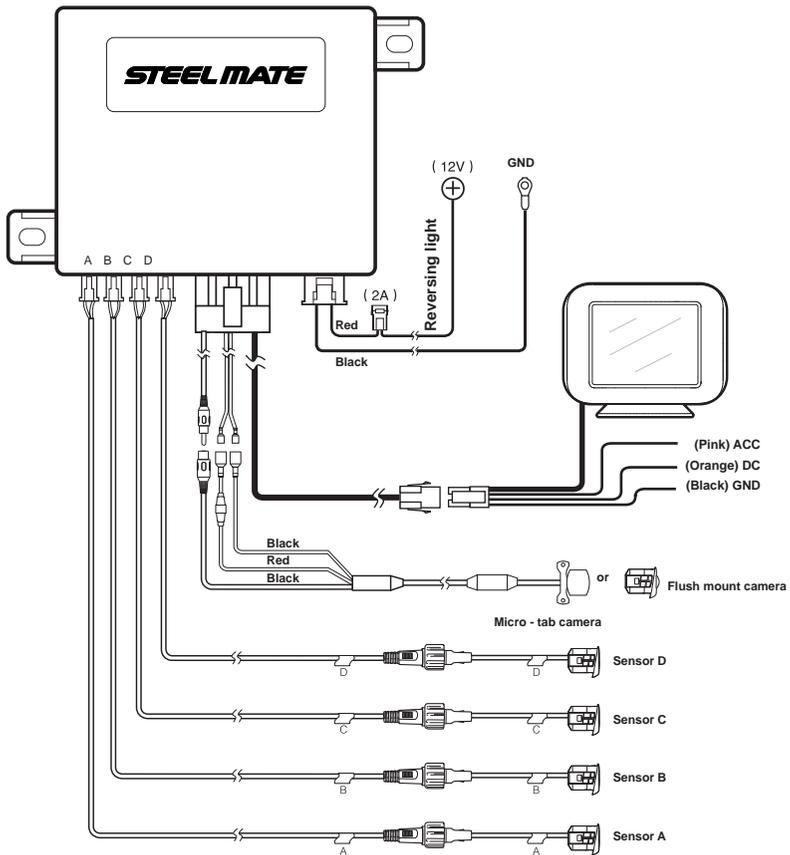
Packing list



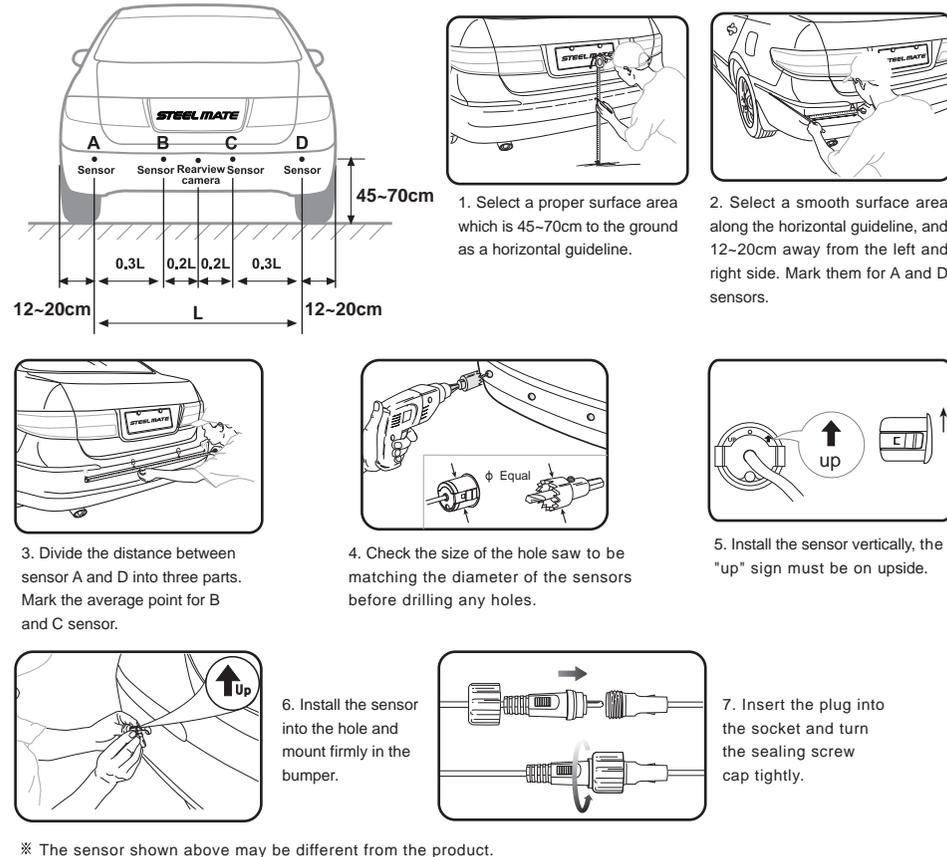
Installation tools



Wire connection

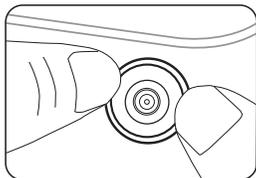
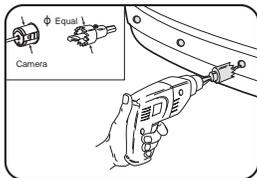
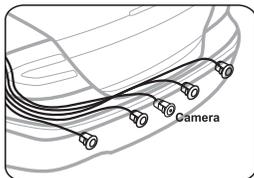


Sensor installation



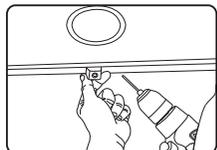
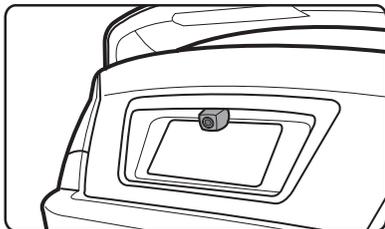
Camera installation

Flush mount camera installation

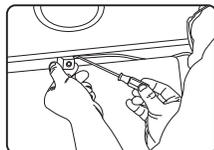


Insert the camera and press into the hole firmly.

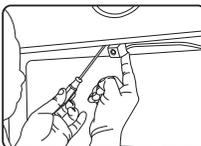
Micro - tab camera installation



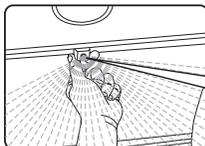
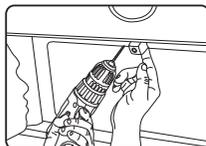
1. Choose a proper place above the number plate and drill a hole.



2. Fix one side of the camera with screw



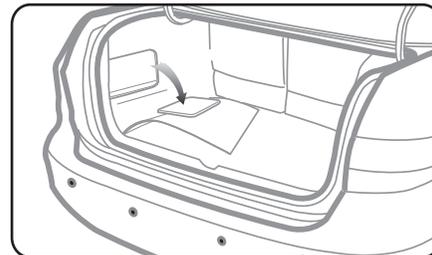
3. Fix the other side of the camera with screw



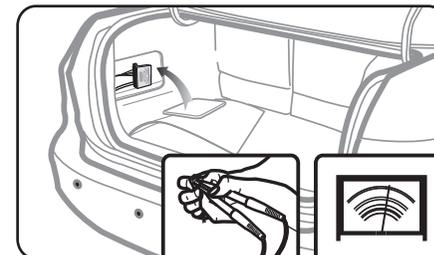
4. Connect the system to the monitor and adjust the camera direction accordingly.



ECU installation

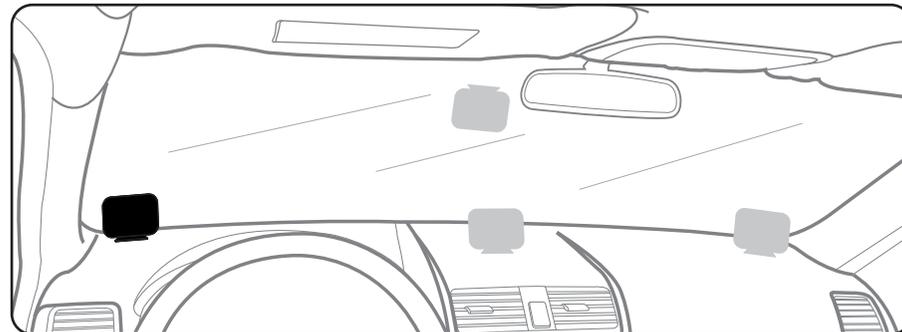


Mount ECU on the driver's side of the trunk.



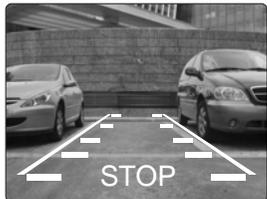
Connect the red wire to the reversing light wire (+).

Monitor installation

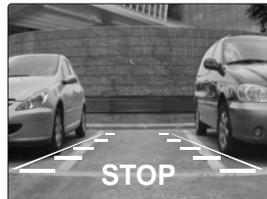


Before fixing the monitor on the dash board, adjust the brightness or contrast of the monitor if needed.

Parking assist lines mode selection and adjustment



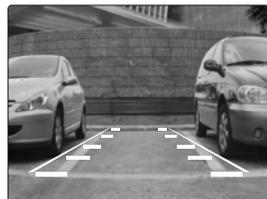
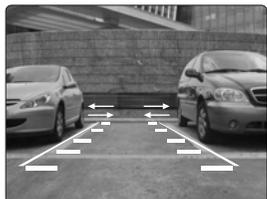
Mode 1



Mode 2

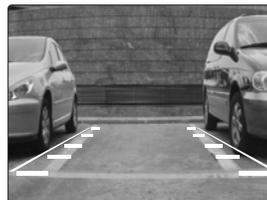
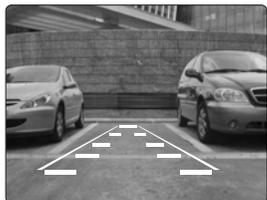
The choice of parking assist lines mode is based on the camera type. Mode 1 is for micro-tab camera, while mode 2 is for flush mount camera.

The width of rear view image is suggested to be the same as the width of the vehicle.

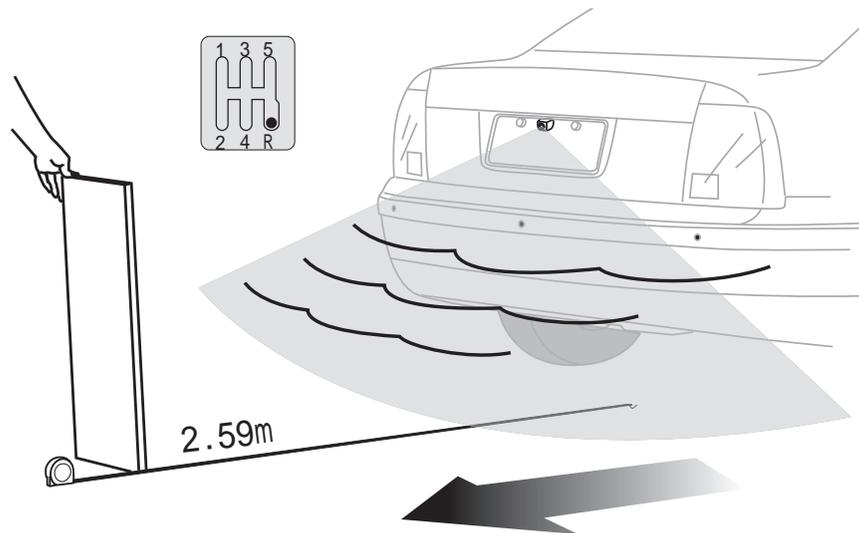


Parking assist lines adjustment

- Select the reverse gear
- Press and hold the MENU button to enter the parking assist lines mode
- Select mode 1 or mode 2 with Δ or ∇ button
- Press SET button once to confirm the selection.
- Press Δ or ∇ button to adjust the width of parking assist lines. Press SET button to confirm the selection.



Function test after installation



Use a flat board (1.0x1.5m) standing behind the car, reverse slowly to test each function respectively as shown in the manual.