

Front and Rear Parking Sensor System

4 Front and 4 Rear In-Bumper Sensors
Wired LED Display with Built-in Audible Alert

For Cars, Mini-VANs, 4X4s, SUVs, and Small Trucks

MODEL HYT-F4R4-L

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Included in the Box

- **8x Sensors** (in-bumper type) with attached cable and 2-pin mini connector. Cable Length: Front Sensor = 8.0m (26.2ft); Rear Sensor = 2.5m (8.2ft)
- **1x LED Display** with built-in beeper, On/Off switch, and 8-pin plug with attached cable (6m or 19.7ft long)
- **1x Main Control Box**
- **1x Double-Sided Self-Adhesive Pad** for affixing main control box to vehicle
- **1x Power Cable for Main Control Box** including three wires (red, yellow, and black) with a 3-pin connector on one end. Length: 1.0m (3.3ft)
- **1x Drill Bit** - Φ 21mm. **Note:** if drilling through metal bumpers, you will need a bi-metal Φ 21mm drill bit (not included).
- **8x Plastic Sensor Spacers** with wedged thickness for non-vertical bumpers
- **1x User's Manual**

Features

- Front and Rear Parking Sensor System to provide good coverage of both front and rear end of vehicle
- 4 front and 4 rear in-bumper sensors to give the look of factory installed system
- Rear sensors activated while reversing and front sensors activated while parking forward and braking
- Beeping faster when closer to obstacle
- Wired LED Display with Built-in Audible Alert (Beeper) with On/Off Switch
- Seven (7) LED Lights on each side of the display to indicate both orientation of obstacles and Safe/Warning/Stop zone.
- Distance display in feet or meters
- Designed for cars, SUVs, 4x4s, Mini-VANs, and small trucks
- 12 Month Warranty

Specifications

- FCC CE ISO9001 Approved
- Operating Voltage: DC +10.5 ~ +s16V
- Detecting Range: 0.3 ~ 2.0m (1.0 ~ 6.6ft). Displayed as 0.0 when less than 0.3m (1ft)
- Measuring Error: \pm 0.1m (or 0.1ft)
- Sensor Detection Angle: 90°
- Detection Response Time: 300ms
- Audible Alert when obstacle within: 0.1 ~ 1.5m (0.3 ~ 4.9ft)
- Ultrasonic Frequency: 40Khz
- Audible Alert Volume: 60 db
- Maximum Power Consumption: 4W
- Current Consumption: 100~300mA
- Operating Temperature Range: -30 ~ +70°C
- Dimensions of the LED Display: Width x Depth x Height = 13.4cm x 3.0cm x 2.8cm (5.2" x 1.2" x 1.1")
- Dimensions of the Main Control Box: Width x Depth x Height = 10.0cm x 7.2cm x 2.5cm (3.9" x 2.8" x 1.0")
- Distance display in feet or meters

Note: The specifications are for reference only. They may be changed without prior notice.

Tools Needed

Φ 21mm (13/16") drill bit (include), drill, tape measure, chalk or marker, wire stripper, vinyl electrical tape, cable/wire ties, voltage meter, screw driver set, pliers.

Note: Use a bi-metal 21mm (13/16") drill bit (not included) if drilling through metal bumpers.

FCC CE ISO9001

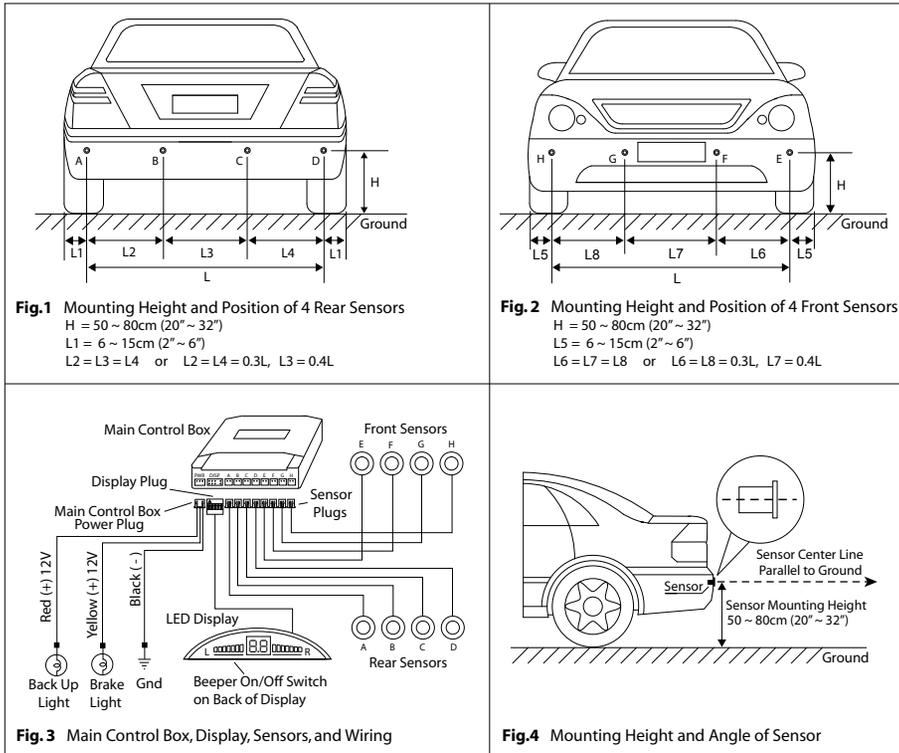
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How the System Works

The Parking Sensor System determines obstacle distance by measuring the time needed for the ultrasonic wave emitted by a sensor to reach an obstacle and for the sensor to receive the ultrasonic wave reflected from the obstacle. Given the speed of the ultrasonic wave, the system can then calculate and display the distance between the sensor and the obstacle.

To provide good coverage of both front and rear end of vehicle, the system comes with 8 sensors (4 front and 4 rear sensors). ❖ To have the look of factory installed system, the 8 sensors are in-bumper type (to be installed in the front and rear bumpers by drilling holes through the bumpers). ❖ Controlled by the +12V from the back up light, the rear sensors are activated when the vehicle is put in reverse. ❖ Controlled by both the +12V from the brake light and the 0V from the back up light (no +12V applied to the back up lights when parking forward), the front sensors are activated when the brake is applied and parking forward. ❖ It is supplied with a wired LED display which shows the exact distance from an obstacle in front or rear of the vehicle. ❖ Seven (7) LED Lights (Green/Yellow/Red) on each side of the distance display indicate both orientation of obstacles and Safe/Warning/Stop zone. ❖ The audible alert (beeper) is built in the display with volume On/Off switch. It beeps faster as vehicle gets closer to obstacle and sounds continuously when vehicle is within 0.4m (1.3ft) from an obstacle.



Installation and Wiring

IMPORTANT: (a) Read this manual thoroughly before proceeding to installation. You can also have the system installed by a professional installer such as your local auto mechanic/auto electrician/car stereo store. (b) Turn off the engine and ACC during installation. (c) Double check that all wiring is correct before power on the system. (d) During installation, avoid flattening, perforating, cutting, and extending the wires of sensors to reduce unnecessary signal loss.

1. Installation of the Main Control Box

- Find a flat and clean surface for the main control box inside the vehicle close to driver's side taillight assembly. **For trucks**, you may install it inside the driver's side taillight assembly. Keep it away from areas of high heat, high humidity, direct water contact, direct sunlight, and electromagnetic devices.
- Place the main control box in place temporarily without securing it to the vehicle as you may need to adjust the location of the main control box while wiring. **Note:** After completing all wiring, use the double-sided self-adhesive pad (included) to secure it to the vehicle.
- Insert the 3-pin plug of the power cable for the main control box into its 3-pin socket labeled "PWR" on the front side of the main control box (Fig. 3).

2. Wiring the Main Control Box

- Locate the +12V and the (-) negative wires from the back up light near the taillight assembly.
- Locate the +12V wire from the brake light near the taillight assembly. If necessary, remove the taillight assembly to locate them. Strip 1/2" of the wires.
- Connect the red wire of the power cable to the +12V wire of the back up light (Fig. 3).
- Connect the black wire of the power cable to the (-) negative wire of the back up light.
- Connect the yellow wire of the power cable to the +12V wire of the brake light.
- Wrap all connections with vinyl electrical tape.

3. Installation of the LED Display

- Find a place for the display on top of the dashboard where the driver can see it easily. Place the display in place temporarily without securing it to the top of the dashboard. **Note:** After completing all wiring, secure it with the included self-adhesive on the bottom of the display.
- Run the display wire from the top of the dashboard down to the floor, and then to the main control box in the back of the vehicle (hide the wire under the door or weather trim).
- Insert the 8-pin connector of the display into its 8-pin socket labeled "DISP" on the front side of the main control box.

4. Installation of the Sensors

IMPORTANT: (a) To avoid false alert from the system detecting the ground, the sensors should be mounted between 50cm to 80cm (20" to 32") above the ground and the face of the sensors need to be vertical or slightly upward angled (Fig.4). (b) Horizontally, the sensors should be equally spaced if possible or symmetric to the center of the bumper. (c) The outer two sensors should be mounted about 15cm (5.9") from the corner of the bumper for better corner coverage. **Note:** The bumper surface for mounting the sensors should be as flat and vertical as possible. **Use the plastic sensor spacers with wedged thickness (included) if the surface of the bumpers is non-vertical.**

- Start with the front sensors, and then the rear sensors.** Refer to Fig. 1 and 2 for mounting height and position of the front and rear sensors.
- Work under the front and rear bumpers to check the internal structure of them before marking the positions for drilling holes. If the view is blocked, you may need to remove the bumpers.
- With chalk or marker, mark the position of sensors on the bumpers. Make sure that the sensors can be pushed all the way in and that you can feed the wires through.
- Drill the holes through the bumpers at the marks with the $\Phi 21$ mm drill bit included. **Note:** if drilling through metal bumper, you will need a bi-metal $\Phi 21$ mm drill bit (not included).
- If necessary, smooth the sharp edge of the holes with a polishing head or small round file.

- f.) Run the sensor wires into the holes drilled. Push the sensors into the holes. When pushing the sensors only apply pressure at the edges, not on the middle of the sensor to avoid damage to the sensor element. The sensors are tapered for a snug fit.
- g.) Adjust the sensors for non-vertical bumper surface by using/rotating the plastic sensor spacers with wedged thickness (included).
- h.) **For front sensors**, run the sensor wires from the front bumper into the inside of the vehicle through the existing wiring holes or rubber grommet in the fire wall, and then to the main control box in the back of the vehicle (hide the wire under the door or weather trim).
- i.) **For rear sensors**, run the sensor wires from the rear bumper into the trunk or inside of the vehicle through the existing small vent or rubber grommet in the rear of the trunk or vehicle, and to the main control box. **Note:** Do not cut the excess sensor wires to avoid signal loss.
- j.) Attach sensor wires to the vehicle body with cable/wire ties so that they will not get in the way of any moving parts and there are no loose wires hanging down.
- k.) Plug all sensors into their corresponding sockets at the main control box.

Testing Your New Parking Sensor System

For the rear sensors, back your vehicle slowly (about 3 miles per hour) to approximately 1.5m (4.9 feet) from a flat vertical surface such as a wall. Continue to back up slowly and check the performance against Chart 1. **For the front sensors**, do the same test while parking forward slowly with braking.

Note: have somebody watch the vehicle while you are doing the test.

Using the Display

The display has a built-in beeper (audible alert) with On/Off Switch. There are seven (7) LED Lights (2 Green, 3 Yellow, 2 Red) on each side of the two-digit distance display (Fig. 3). The color LED lights indicate both orientation of obstacle and Safe/Warning/Stop zone (Chart. 1).

Chart 1. Orientation of Obstacle, Distance Display, and Beeping (Audible Alert)

Obstacle Distance	Viewing from the Front of the Display			
	LEDs on the Left Side of the Display Responding to Rear Sensor A,B or Front Sensor E,F	Beeping	Digital Distance Display	LEDs on the Right Side of the Display Responding to Rear Sensor C,D or Front Sensor G,H
Safe Zone (> 2.0m)	No LEDs on	No	--	No LEDs on
Safe Zone (2.0-1.5m)	1 Green on	Starting to beep at 1.5m	Actual distance	1 Green on
Warning Zone (1.5-1.0m)	1 - 3 Green on	Fast	Actual distance	1 - 3 Green on
Warning Zone (1.0-0.7m)	3 Green/1 -2 Yellow on	Faster	Actual distance	1-2 Yellow/3 Green on
Stop Zone (0.7-0.3m)	3 Green/2 Yellow/1 - 2 Red on	Fastest	Actual distance	1 - 2 Red/2 Yellow/3 Green on
Stop Zone (0.3-0.0m)	3 Green/2 Yellow/2 Red on	Continuously	0.3 or 0.0	2 Red/2 Yellow/3 Green on

Warning

- To avoid collision with obstacle because of the inertia of vehicle while backing up/parking, keep your vehicle speed at about **3 miles per hour** and stop the vehicle immediately once you hear the continuous beeping. This is because even if you have applied brake, your vehicle will still go for some distance (inertia) before it comes to a complete stop.
- Because the back up parking system detects obstacle by emitting ultrasonic wave and receiving reflected ultrasonic wave from obstacle, the system may fail to give both visual and audible alert if an obstacle has smooth ball-shaped or sloped surfaces as such surfaces may not reflect ultrasonic wave back to the sensors. Drivers in these situations should pay more attention while parking their vehicles.
- In heavy falling rain or snow, the system may give alert as falling rain or snow may be detected as obstacles. Keep surface of sensors clean of snow, mud, dirt, and other debris.

Troubleshooting

Problem	Cause	Solution
Display doesn't light up when reversing or parking forward with braking	Display not plugged in. No power to the main control box. Faulty display.	Check display connection. Check main control box power connection. Replace the display. Contact Technical Support for help.
Display light up but system is not detecting any obstacle	Sensors not connected. Faulty display. Faulty main control box.	Check sensor connections. Replace the display. Replace the main control box. Contact Technical Support for help.
System showing distance but no beeping or system beeping but no distance display	Beeper turned off. Faulty display. Faulty main control box.	Turn on beeper. Replace the display. Replace the Main Control Box. Contact Technical Support for help.
System is not detecting any obstacle in front	System has no +12V from brake light.	Check main control box connection to +12V from brake light.
System is not detecting any obstacle in rear	System has no +12V from back up light.	Check main control box connection to +12V from back up light.
Wrong LEDs light up	Sensors are plugged into the wrong sockets at the main control box	Install the sensors in the bumper as labeled in Fig. 1 & 2 and plug sensors as labeled on the sensor wires into their corresponding sockets at the main control box (Fig. 3)
Display constantly shows 0.0 or beeps continuously	Object within 0.40m is detected. Faulty sensor(s). Faulty main control box	Unplug all sensors, and then plug back in one sensor at a time to find out which sensor is causing the problem. Adjust angle of the sensor. Refer to 4. Installation of the Sensors for details. Replace the sensor(s). Replace the main control box. Contact Technical Support for help.
Display shows a distance and beeps even there is no obstacle behind or in front	Ground is detected. Sensors angle is low. Sensors installed too low (mounting height below 0.5m)	Unplug all sensors, and then plug back in one sensor at a time to find out which sensor is causing the problem. Adjust angle of the sensor. Refer to 4. Installation of the Sensors for details.

For more installation related questions and Frequently Asked Questions (FAQs) with answers, and product photos, visit our Web site at <http://parkingsensors.net>

IMPORTANT

The Parking Sensor Systems sold and distributed by HY Technologies are only devices used to assist a driver while parking. They should not be considered as a substitute for driver responsibility when operating a vehicle. No warranty as to operational efficiency is granted. We don't guarantee or assume liability for collisions or damages that take place when parking your vehicle with the use of the Parking Sensor System. We will not be liable for any claims, actions, suit proceedings, costs, expenses, damages or liabilities arising out of the use of this product. By purchasing, installing and using such a Parking Sensor System, customers agree to take full responsibility of use of such System.

Returns and Warranty

We offer 12 month product warranty. This warranty excludes defects or damage due to misuse, abuse or neglect.

Returns/exchanges can be made within 15 days of your receipt of your order.

Note: You are responsible for the shipping cost to mail the defective parts, returns, exchanges, and items for Warranty back to us and for us to ship them to you.

Items for return must be in new, unused, re-sellable condition in their original condition, including the original packaging, manufacturer's containers, documentation, warranty cards, manuals, and all accessories.

Unopened returns are subject to a 15% re-stocking fee. Opened returns are subject to a 25% re-packing and re-stocking fee. Returns which are damaged or have parts missing may be subject to a greater re-stocking fee or returned to customer. Shipping to customer is not refundable.

Returns are not acceptable if the packaging is not in its original condition or the item has been used or installed. International orders are not returnable.

If a domestic or international shipment is refused by the customer or customs and returned back to us, a 15% restocking fee will apply less the shipping cost to the customer. It is the customer's responsibility to make all arrangements with us for refused shipments.

For your return to be processed, you need to contact our Customer Service by visiting our Web site (then click on the Contact Us link) to get your Return Merchandise Authorization Number (RMA#).

Customer Service and Technical Support

For customer service and technical support, visit our Web site as listed below, then click on the link [Contact Us](#).

Spare and Replacement Parts

To order spare and replacement parts for your system, visit our Web site as listed below, then click on the link [Replacement Parts](#).

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