CARDET-501 manual

V 1.0

MAGO Technology

2026.07.21

①	**CARDET-501** Head
②	Relay Controller
③	12V 1A Power(optional)

Sensor Characteristics

CARDET-501 sensor is a synthetic smart vehicle detector that is comprised of a **magnetic** sensor and a cutting-edge **RADAR** sensor. It was designed to detect the side wall of a vehicle which can replace a conventional loop coil.

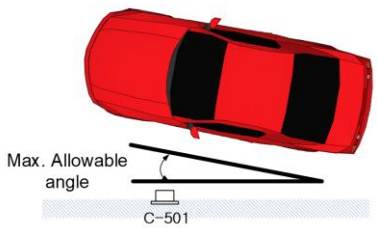
Sensing distance of a C-501

Operation Mode	Detection distance	Sensing method	Feature
LPR mode	0.1 ~ **2.5m**	**RADAR + Magnetic**	Fast detection
Bar control mode	0.1 ~ **2.5m**	**RADAR + Magnetic**	Reliability priority
Long distance mode	0.1 ~ **4.5m**	**RADAR**	Long distance detection

☑ In the long-distance mode, people can also be detected.

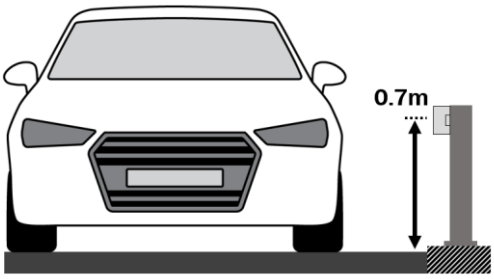
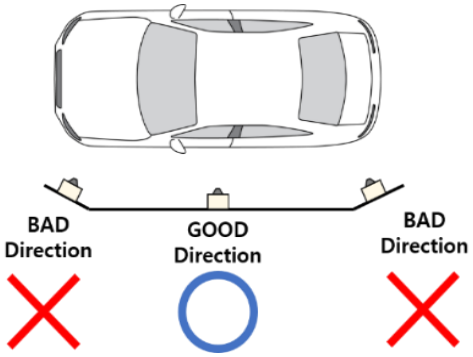
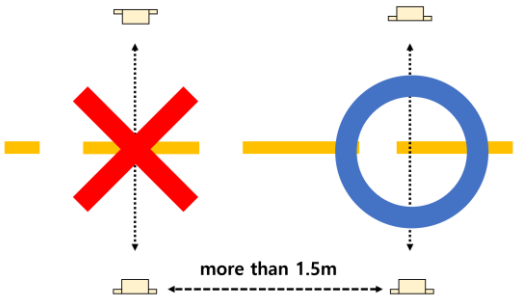
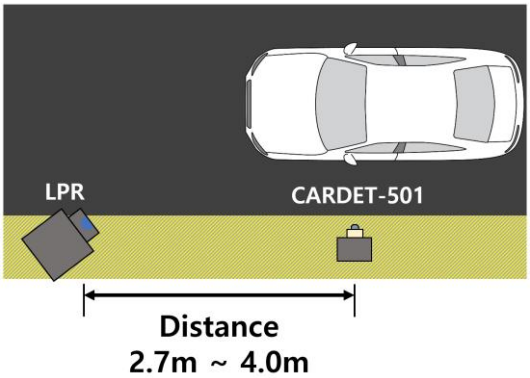
Allowable detection angle

Operation mode	Allowable detection angle	
	0.1 ~ 2.5m	**2.5 ~ 4.5m**
LPR mode	**± 25°**	
Long distance mode	**± 25°**	**± 10°**



⚠ Caution: Never touch or move a working sensor.

Installation

parameters	Description
Height	✓ The installation height will be good at **0.7 m** from the surface of the road. 
Direction	 ✓ The direction of C-501 must be orthogonal with the side wall of vehicle. ✓ Do not rotate the sensor which makes false detection characteristics.
Caution	✓ Do not install C-501 sensors face to face. ✓ Keep the distance between sensors at least 1.5m. ✓ Keep the distance between sensor and relay controller at least 0.5m 
Tigger for a LPR	✓ For LPR trigger mode, install the sensor **2.7m ~ 4.0m** in front the LPR box. (Distance may vary depending on vehicle speed.) 

Check before operation

- ✓ After fixing the sensor first, turn on the power with no people or vehicle in front of the sensor, then initialization will proceed for about 1 second.
- ✓ Do not move the sensor while it is in operation. The sensor must be fixed (do not attach it to a revolving door.)
- ✓ Please check the magnetic disturbance such as a big motor or a relay near the sensor.
- ✓ You can test the sensor by a large steel plate (30cm x 30cm or more) in an open space. In this case, **the detection distance can be shortened**, but there is no problem in real vehicles.

Caution for external case

- ✓ If you want to insert the sensor in user's additional case, then the case should have a wide hole for RADAR sensor in **CARDET-501**(upper 60%).
- ✓ If there is no hole for RADAR sensor, then the sensor does not operate.
- ✓ **Do not rotate** a **CARDET-501**, because the sensor has a horizontal radiation direction.
- ✓ When installing the sensor **on a slope**, please mount it so that the two flange **screw holes are parallel to the slope**.

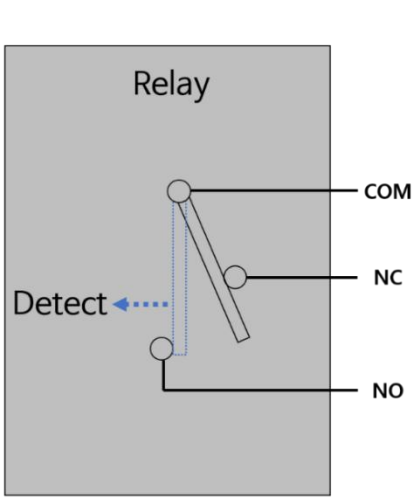
Connection to a Relay controller

- ✓ If user wants to extend the cable between the sensor head and the relay controller more than 80m, then user should use an adaptor that has a bigger current capacity (more than 2A). Please check the supply voltage drop inside the sensor head for the case of the cable extension.

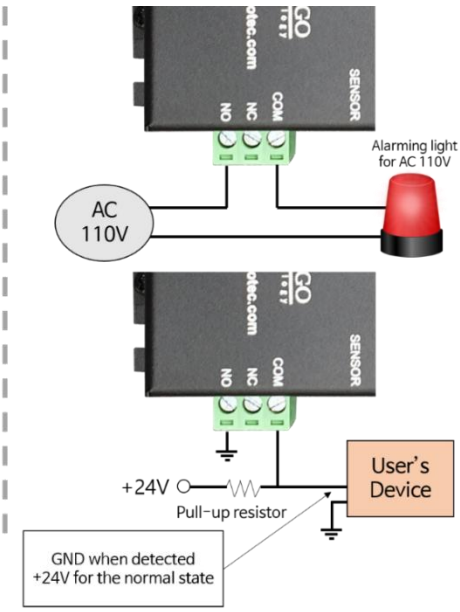
- ✓ The relay controller has a **RELAY (**dry contact switch**)** that makes it easy to interface it to the user's device. The **RELAY** has a following maximum electrical capability (following table). Users can use both of **AC** and **DC** for the RELAY.

	Max voltage	Max current	Max power
DC	30V	3A	90W
AC	220V	2A	440W

✓ Here are two connection examples of the relay controller, the dry contact (RELAY) will enable you to interface easily **CARDET** to your system.



- Relay connection



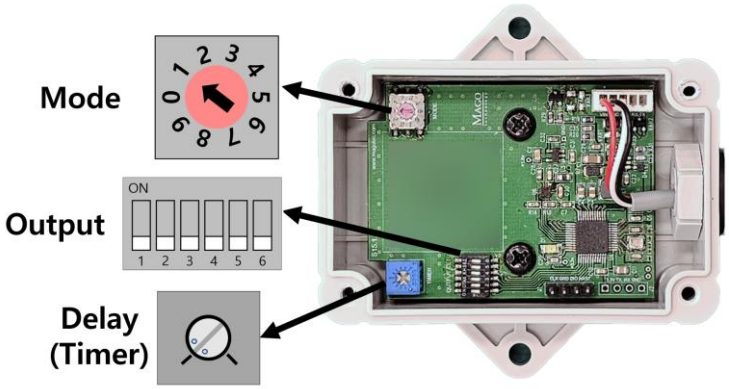
- Connection examples

✓ Normally (no vehicle) terminals **COM** and **NC** are connected, and if there is a vehicle to detect, then terminal **COM** and **NO** are connected (**COM** and **NC** are separated.)

Change of operation mode

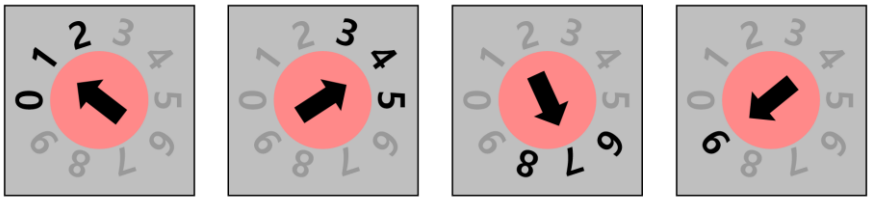
✓ If you open the upper cover of **CARDET-501** sensor head, then you can find a rotary and a DIP switches and a small volume as following. User can choose the mode of operations among following 4 modes (table 2).

✓ Power must be off when the switches are changed.



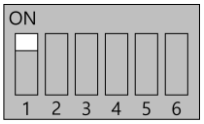
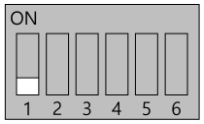
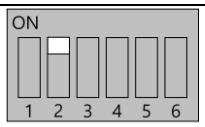
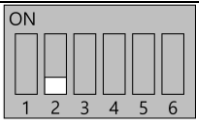
- ✓ User can change the operation mode and sensitivity of the sensor by following instruction.
- ✓ **CARDET-501** has four kind of operation modes (**LPR / Bar control / Long distance / parking**)
- ✓ Please be careful when adjust the small switch.

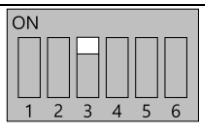
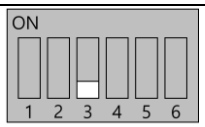
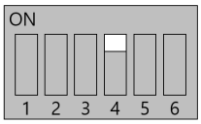
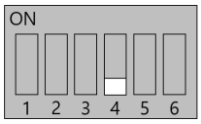
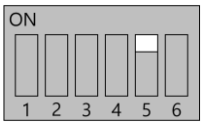
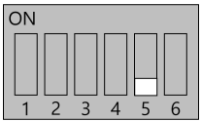
Mode	Number	Operation	Characteristic
LPR	**0-2**	**LPR mode** **0**(Low) – **1**(Medium sensitivity) – **2**(High)	Default
Bar Control	**3-5**	**Bar control mode** **3**(Low) – **4**(Medium sensitivity) – **5(**High)	Mode for bar-control (Rebound function is ON)
Long distance	**6-8**	**Long Distance mode** **6**(Low) – **7**(Medium sensitivity) – **8**(High)	Max. distance: **4.5m** Magnetic sensor is **OFF**
Parking	**9**	**Parking mode** **9**(Medium sensitivity)	Mode for parking (slow detection)



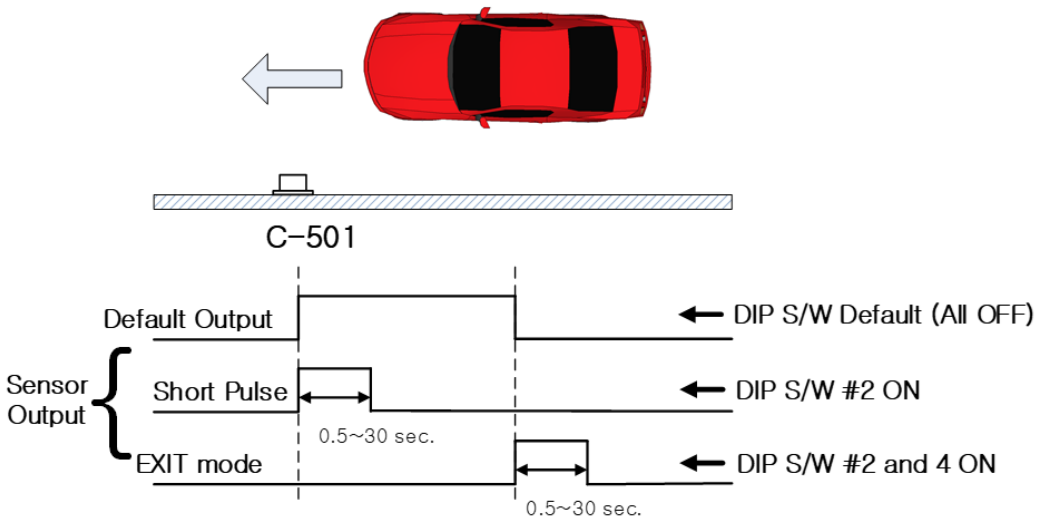
Output type

Please check the information below and change the settings if necessary.

DIP Num.	Function	setting	Description of sensor output
1	**MAGNETIC SENSOR ON/OFF**		**Magnetic sensor is OFF** Magnetic detection distance: Max. 2.5m
			**Magnetic sensor is ON** (In long distance mode, magnetic sensor is automatically OFF)
2	**SHORT PULSE**		**Output is ON only for a set time when a car is detected** Short pulse setting: min. 0.5 ~ max. 30 seconds
			**Output is ON continuously while a car is detected.** The time delay of OFF can be adjusted (max. 10 sec.)

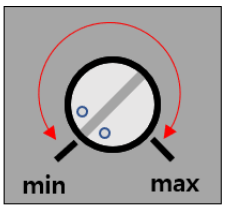
3	**INVERTED OUTPUT**		Car detected : **OFF**, Non-detected: **ON** (output inversely)
			Car detected : **ON**, Non-detected: **OFF** (default)
4	**REBOUND/ EXIT**		**Num. 2 is ON: EXIT mode(it makes a short fixed pulse output)**
			Num. 2 is OFF: REBOUND is ON
			**Rebound is OFF** (In bar control mode, **REBOUND** is automatically **ON**)
5	**MAGNETICS ENSITIVITY**		Magnetic sensitivity is **HIGH**.
			Magnetic sensitivity is **DEFAULT**.
6		**Reserved**	

❖ **REBOUND mode:** Even if the sensor is momentarily **turned off,** the sensor output **turns on immediately** when an object is detected (safety function for closing a parking bar)



[Timing diagram of the sensor output]

Setup for delay or timer



- ✓ You can adjust the OFF delay time or timer of the output signal by adjusting the parts below.
- ✓ Adjust by turning clockwise or counterclockwise using a small flat screwdriver.
- ✓ Turning it counterclockwise (left) decreases it, and turning it clockwise (right) increases it.

Sensor Initialization

- ✓ When a **CARDET-501** is powered on, the sensor executes the automatic calibration to make the magnetic map around it on the spot (approx. 1 sec.), so during the calibration, human or car should not be in front of the sensor.

Specification

Input voltage	**12V**	
Current consumption	SENSOR HEAD	**30mA**
	Relay Controller	**70mA (Max.)**
Operation temp.	**-20 ~ 85°**	
Time for booting	**1 second**	
Detection distance	**Max. 4.5m**(In long distance mode)	
Max cable length	**Max. 80m** (Power capacity must be more than 2A)	

Cautions

- ✓ CARDET-501 use Earth magnetic field, so it might make an incorrect operation against severe electromagnet noises, motorcycles, a large size truck, a motor beside the sensor, etc. User should design the whole system will be safe even if the sensor makes a false operation. There is no responsibility for the makers and distributors for safety issues.

Contact

Please contact to sales@magotec.com