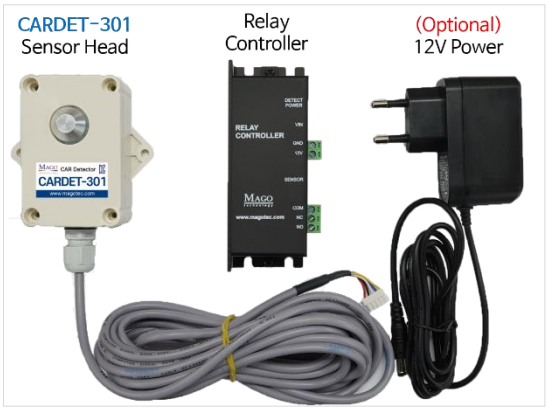
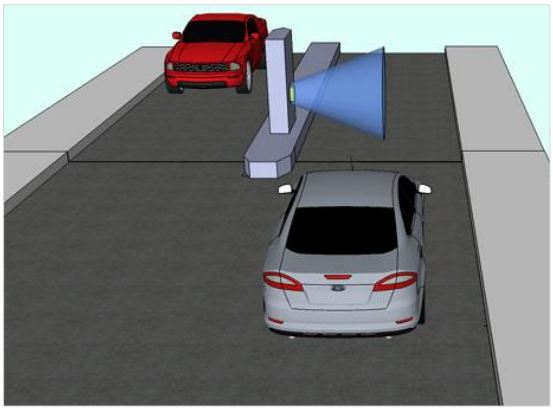
CARDET-301 Installation Manual (v3.0)



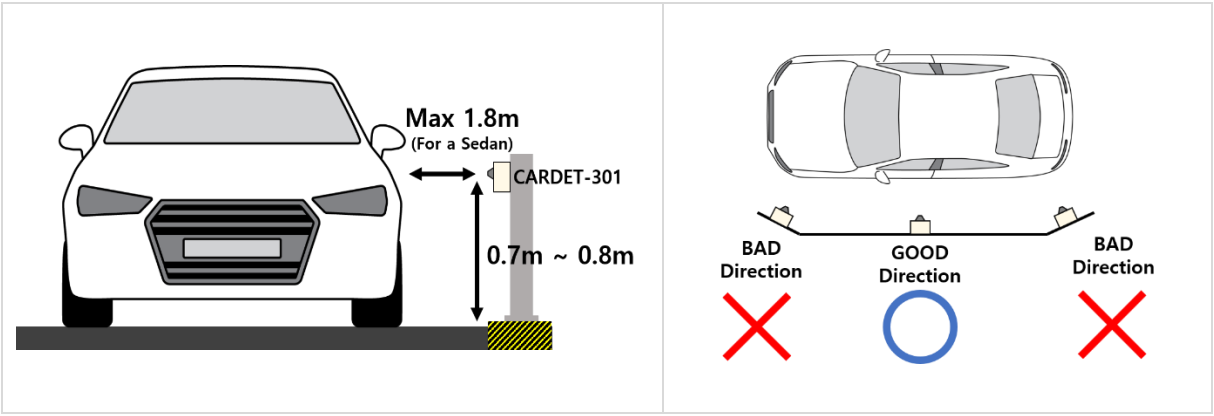


☑ **CARDET** makes the **MAGNETIC MAP** **on the spot** around the sensor when it **calibrates**, so **DO NOT TOUCH or MOVE** the sensor.

MAGO technology
2020.02.28 revision

1. Installations

CARDET-301 sensor is a synthetic vehicle detector that is comprised of a magnetic sensor and a digital integral proximity sensor.

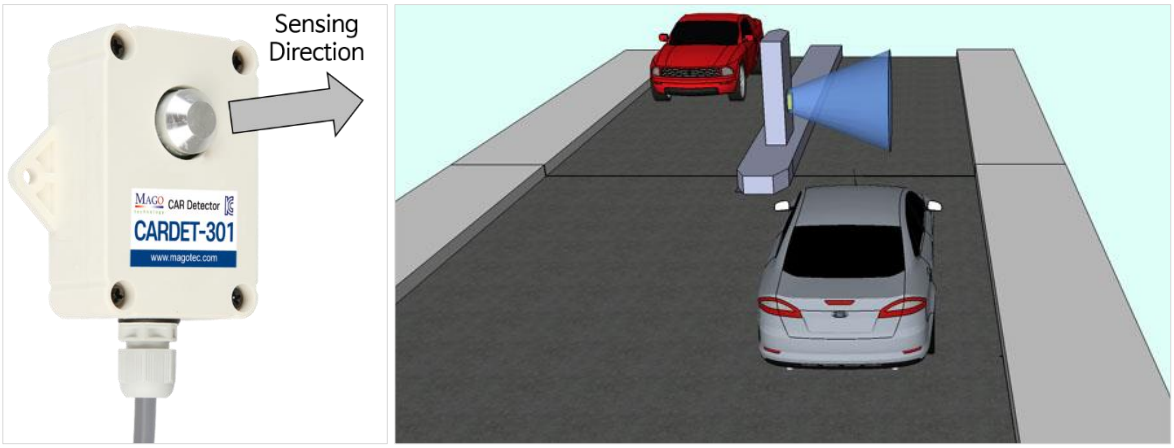


<Fig. 1 Installation of CARDET-301>

CARDET-301 sensor should be fixed on a stable fixture, and the installation height will be good at **70-80cm** from the surface of the road. The blue area of the above figure(right) describes the detection area.

The maximum detection distance between the sensor and a car is **1.8m for a full-sized sedan** (1.7 m for an economy car). The angle of the detection conic is ±30 degrees.

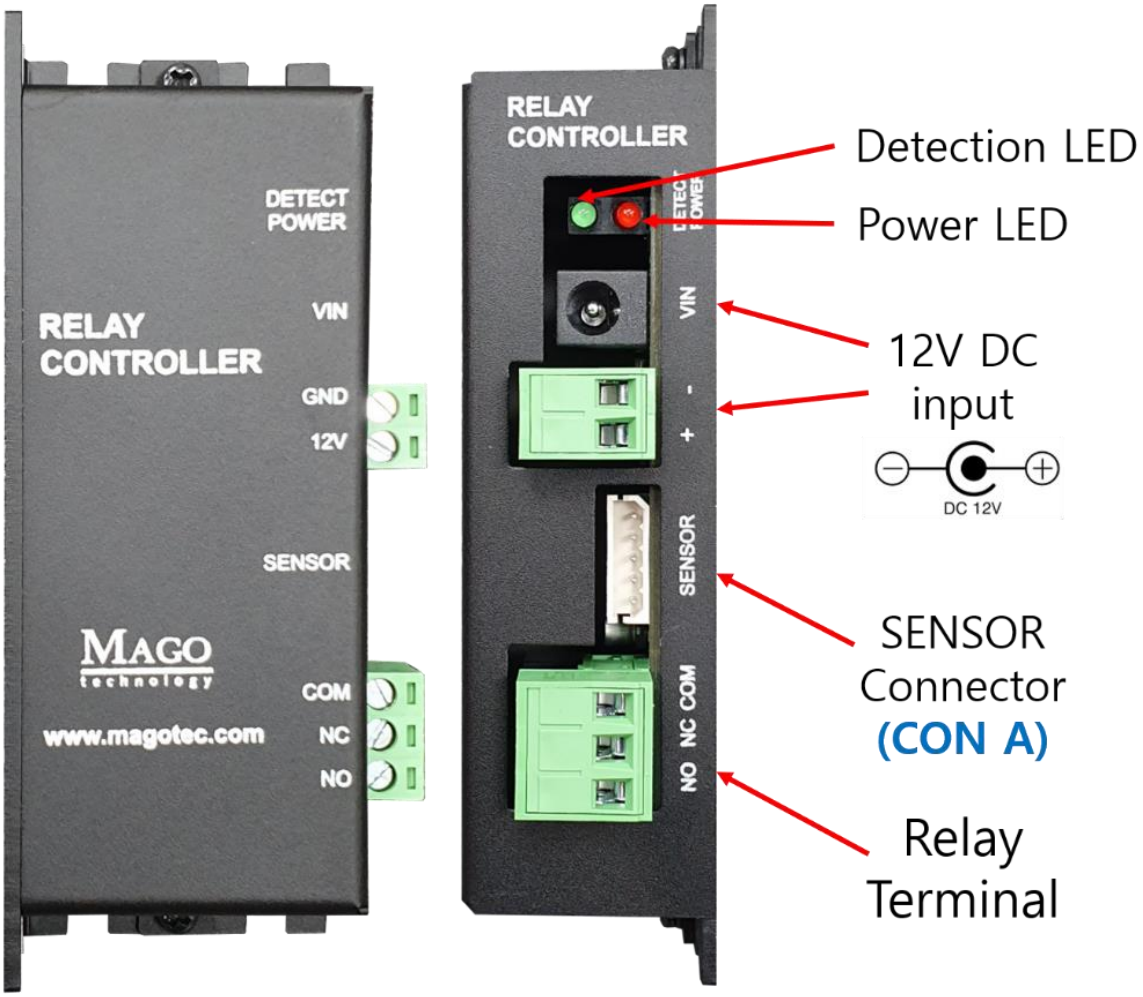
The direction of the sensor should be perpendicular to the side of a vehicle. Right of Fig. 1 showed the TOP view of an installation example.



<Fig.2 Installation direction of CARDET-301>

2. Sensor Interface

Fig.3 shows the picture of the relay controller for CARDET-301, the controller use **DC 12V** for the power supply, user can use a standard **DC 12V** adaptor (5.5 pi jack).



<Fig. 3 CARDET relay controller >

☑ The max capacity of the **power supply** should be **more than 1A**.

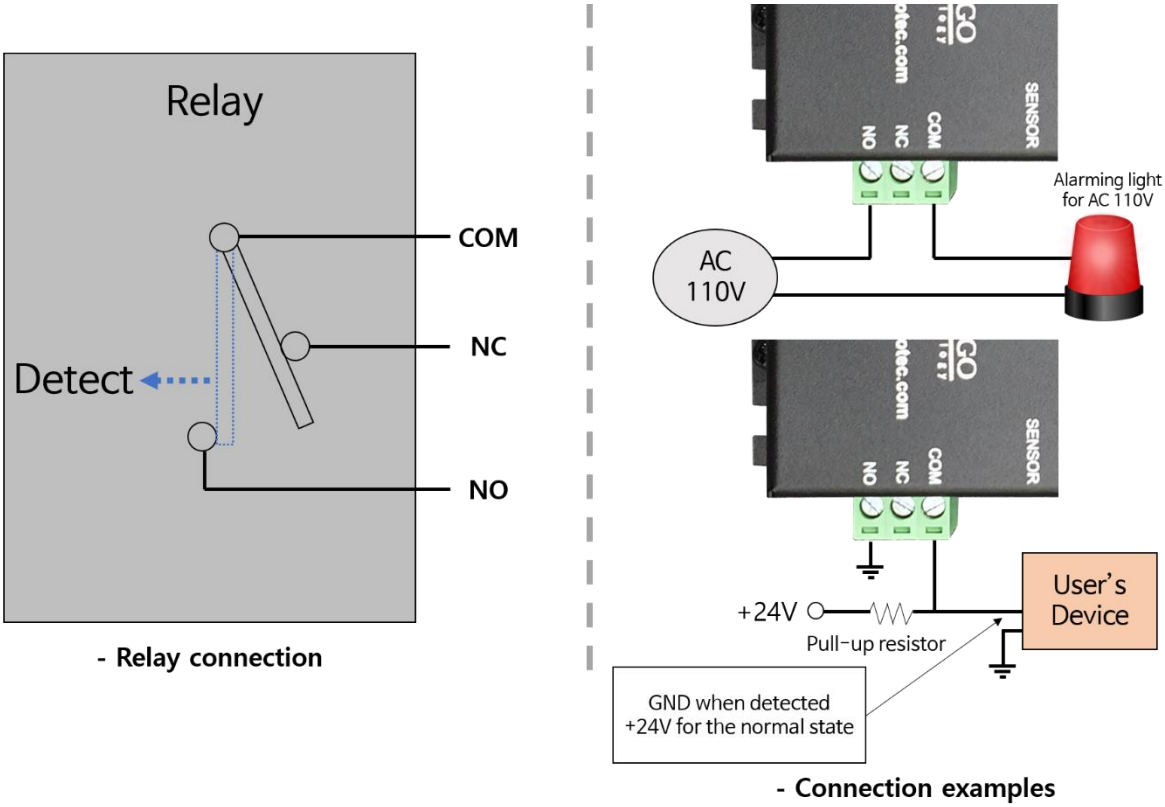
If user wants to extend the cable between the sensor head and the relay controller more than 80m, then user should use an adaptor that has a bigger current capacity. Please check the supply voltage drop inside the sensor head (12V) for the case of the cable extension.

The relay controller has a RELAY that makes it easy to interface it to the user's device. The RELAY has a following maximum electrical capability (table 1). Users can use both of **AC** and **DC** to the RELAY.

<Table 1 maximum electrical capability of the RELAY on the relay controller >

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

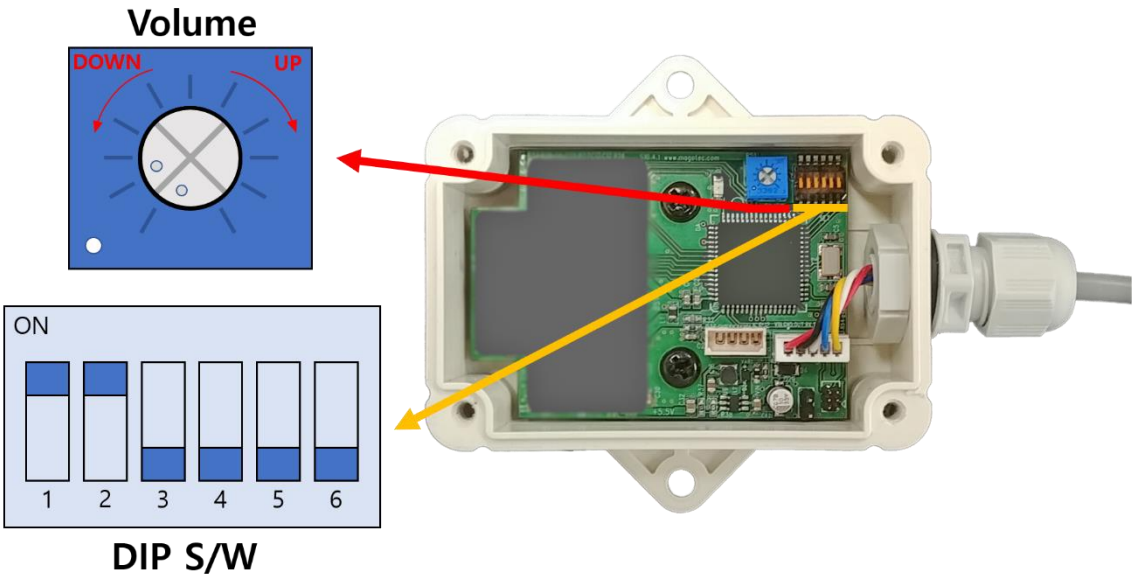
Here are two connection examples of the relay controller, the dry contact (RELAY) will enable you to interface easily CARDET to your system.



<Fig.4 Two examples of interconnection>

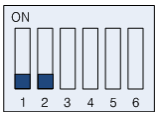
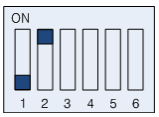
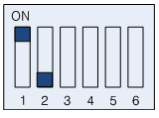
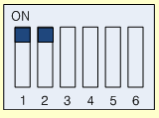
3. CARDET-301 Sensor output

If you open the upper cover of CARDET-301 sensor module, then you can find a DIP S/W and a small volume as following. User can choose the mode of operations among following 4 modes (table 2).



<Fig.5 **DEFAULT** setting of the DIP S/W >

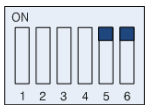
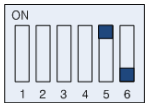
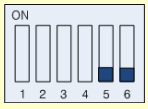
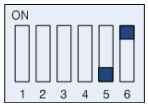
<Table 2 Setting of the output mode of CARDET-301 >

Detect mode	DIP S/W	The output of CARDET-301
mode A		**OFF➔ON:** When the proximity and magnetic sensors are both **on** **ON➔OFF:** When the proximity and magnetic sensors are both **off** **OFF** time delay can be adjusted by the volume on the PCB (0-10sec.)
mode B		**OFF➔ON:** When the proximity and magnetic sensors are both **on** **ON➔OFF:** Automatically **OFF** after the pre-defined time The width of the pulse can be adjusted by the volume (0.1 ~ 60sec.)
mode C		**OFF➔ON:** When the proximity is **on** (Don't care magnetic sensor) **ON➔OFF:** When the proximity and magnetic sensors are both **off** **OFF** time delay can be adjusted by the volume on the PCB (0-10sec.)
mode D (default)		**OFF➔ON:** When the proximity and magnetic sensors are both **on** **ON➔OFF:** When the proximity is **off** (Don't care magnetic sensor) **OFF** time delay can be adjusted by the volume on the PCB (0-10sec.)

❖ The third, forth toggle in DIP S/W is reserved for future use.

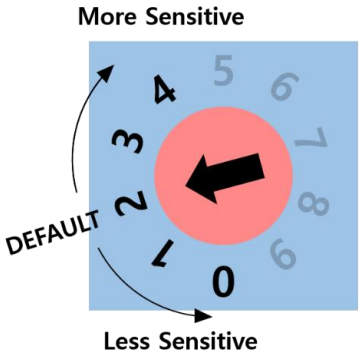
Table 3 shows the setting of the magnetic sensitivity for CARDET-301(The sensitivity of the proximity sensor is fixed, the detecting distance is between 10cm and 180cm.) Basically, the default setting of the CARDET-301 will work well in almost all environment, so do not change the sensitivity unless necessary.

<Table 3 Setting of the sensor sensitivity of CARDET-301 >

DIP S/W	Sensitivity	Remark
	Sensitivity 4	Least sensitive
	Sensitivity 3	-
	Sensitivity 2	**DEFAULT**
	Sensitivity 1	Most sensitive

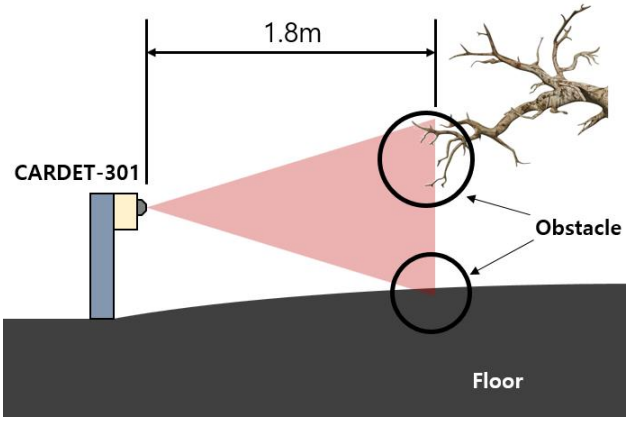
☑ Sensor should be RESET if the DIP s/w setting is changed.

The sensitivity of the proximity sensor can be adjusted by changing the rotary switch setting attached to the proximity sensor. The sensitivity defaults to 2 and the adjustment range is from 0 to 4 on the switch. High numbers make the sensor more sensitive. But low numbers make the sensor less sensitive.



<Fig.6 **Sensitivity setting** of proximity sensor >

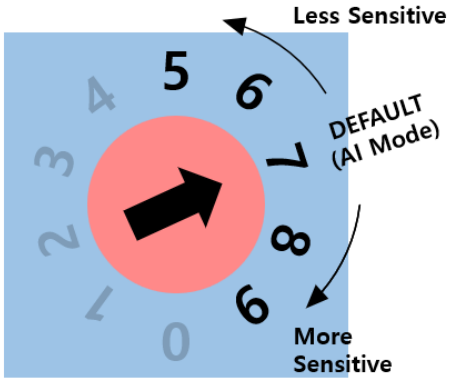
If the sensor is installed on an ascending slope or there is an object fixed within the detection range(Fig 7), you can set the proximity sensor to AI mode to prevent sensor malfunction.



<Fig.7 Example of CARDET-301 obstacle malfunction>

AI mode creates its own environment map for the first second, and the sensor detect vehicles except environmental elements using this map.

Refer to the figure below to change the rotary switch and reboot the sensor.



<Fig.8 **AI Mode setting** of proximity sensor >

4. Sensor Initialization

When a CARDET-301 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, cars should not pass in front of the sensor.

5. Warning

CARDET-301 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.

6. Specification

<Table 4 specification of CARDET-301 sensor head>

CARDET – 301 Sensor Specification					
Characteristics	**Min.**	**Typical**	**Max.**	**Unit**	**Remark**
Power supply		12		Volt	
Current consumption		65		mA	Sensor head only
Operation temp.	-20		+85	Degree	
Detection distance from the sensor head	0.1	1.3	1.8	m	1.8m for a sedan
Max. cable distance			80	m	Case of 1 A (DC12V)

Please contact to sales@magotec.com

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