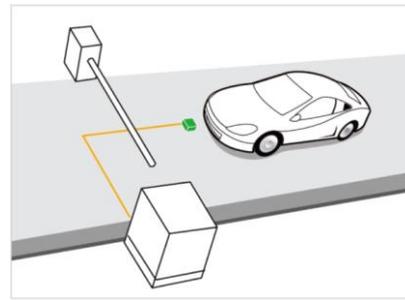


Answers for FAQ about CARDET



2017.09.29 revision

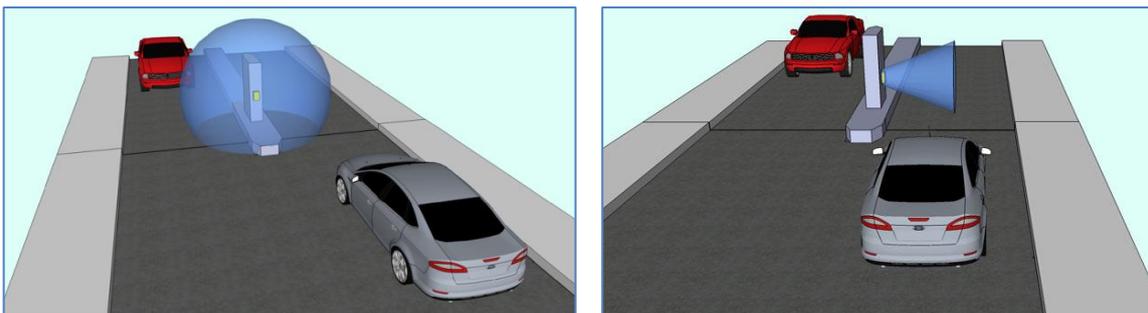
1. Technology of CARDET

1.1 FS magnetic sensor - whole different magnetic sensor

❖ FS (Feedback Stabilizing) Magnetic Sensor

The most crucial characteristic for the magnetic based sensor using vehicle detection is **to maintain the original detection area and sensitivity** against various noises including EMI on the road. It cannot be accomplished merely by amplifying and adjusting the sensitivity of 3-axis magnetic module.

The magnetic sensor inside **CARDET** has the unique technology of **FS (FEEDBACK STABILIZING)** magnetic sensing properties, so it can maintain the original detection areas and sensing characteristics against various magnetic noises on the road. Also **FS magnetic sensor in CARDET** has digital adaptive algorithms those were optimized to the car detection on the road. **FS magnetic sensor** shows the **superior stability and performance** than conventional 3 axis-magnetic sensors.



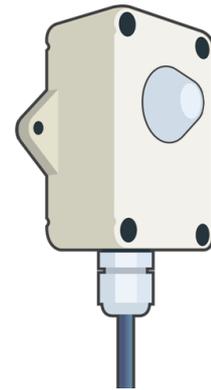
Detection areas of CARDET-101 and CARDET-301 (BLUE SPACES)

CARDET keeps the detection area (**BLUE SPACE in the figure**) under heavy EMI and magnetic noises on the road, and it detects only the vehicles those passes through the exact detection area. **CARDET-301** is the sole magnetic based car detection sensor that has a **directional detecting characteristic** in the world.

1.2 Digital Integral Proximity Sensor

❖ DI (Digital Integral) Proximity Sensor

The proximity sensor inside **CARDET-301** is not a conventional analog ultrasonic sensor, it has its own **DSP** and innovative digital algorithms for the stable performance on any conditions. **MAGO technology** developed the innovative **DI (Digital Integral) measurement method** for proximity sensor to detect vehicles on the road without misoperation, it has a special structure of extracting the exact signal from the target object under various noises on the road.



Also **DI proximity sensor** embeds the edge technology of **adaptive filter** for the variation of the environment and the sensor adapts to the circumstances such as temperature, humidity and wind blowing automatically. **DI proximity sensor** shows the superb performance and stability than the conventional analog ultrasonic sensor that uses the simple threshold.

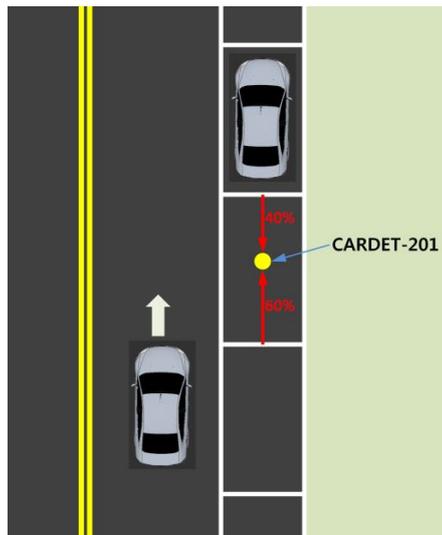
1.3 Organic combination of FS magnetic and DI proximity sensor

❖ Signal Processing Technology

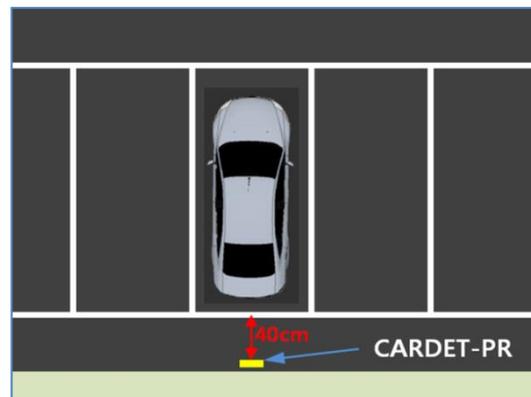
MAGO technology also **mass produces** the cutting-edge product of military MAD (Magnetic Anomaly Detector) sensor for the ground operation, and **CARDET** is a good example of application of military technology to commercial product. **MAGO** technology has the top level signal processing technologies of **hybrid application between analog and digital technology**.

2. Selection guide for CARDET

- **CARDET-101** has the non-directional sensing area, meanwhile **CARDET-301** has the uni-directional sensing area. For the case of **CARDET-101**, it also detects the car that **passes in the backside** of the sensor. **CARDET-301** is proper if user want to detect the vehicle that passes through the specific areas.
- **CARDET-201** is the model for vehicle sensor for parallel parking space. It is installed under the surface of the ground, and it does not affected by long term parking and other passing cars beside the sensor.



Installation of CARDET-201



Installation of CARDET-PR

- **CARDET-PR** is the multi-purpose car detecting sensor that has the **DI proximity sensor**. It can be installed for normal parking space as the figure.
- The power source of **CARDET** is **DC 12V**, and **table 1** shows the consumptions of current for the each models.

Table 1. Current consumption of CARDET models

Models	Current	Voltage
CARDET-101 Head	60mA	DC12V
CARDET-301 Head	90mA	DC12V
CARDET-PR Head	30mA	DC12V
Terminal board	20mA	DC12V

- For the application of **controlling cross bar** or **triggering for LPR**, it is recommended to use the **CARDET-301** which can produce exact timing.

- **CARDET** has an exceptional long life time.
- **CARDET** is guaranteed for **1 year free repair service** except user's fault and natural disasters, and the shipping cost should be discussed.

3. Installation of CARDET

- **CARDET-101** can be installed at the shoulder of the road, and also can be possible to place it under the road. **CARDET-301** can be installed on the fixed structure at the shoulder of the road. **CARDET-201** can only be placed under the surface of the ground.

Table 2. Installation of CARDET's

models	buried under the road	installed beside the road
CARDET-101	possible	possible
CARDET-201	possible	-
CARDET-301	-	possible
CARDET-PR	-	possible

- For the case of installation at the shoulder of the road, the proper height for **CARDET (101,301)** is 70~80cm from the surface of the road.
- **The maximum distance of detection (CARDET-101, 301)** will be 1.8 meters for the regular sedan (between the sensor and the side surface of the car). In the case of **CARDET-PR**, also it is possible to max. 1.8 meters.

Table 3. Max. detection distance of CARDET(version 2.0)

Models	Max. distance	remark
CARDET-101	1.8m	Movement detection mode
	1.5m	Existence detection mode
CARDET-201	-	-
CARDET-301	1.8m	sedan
CARDET-PR	1.8m	-

- **CARDET** makes **15 seconds self-calibration** once after the power is on, do not move cars around the sensor during calibration. **CARDET-PR** does not need to calibrate, so it works immediately after power-on.
- Do not move the sensor head after power-on. Fix the sensor head first, and power-on later, please.