

STO System Presentation

Easy Open and Easy Close tailgate

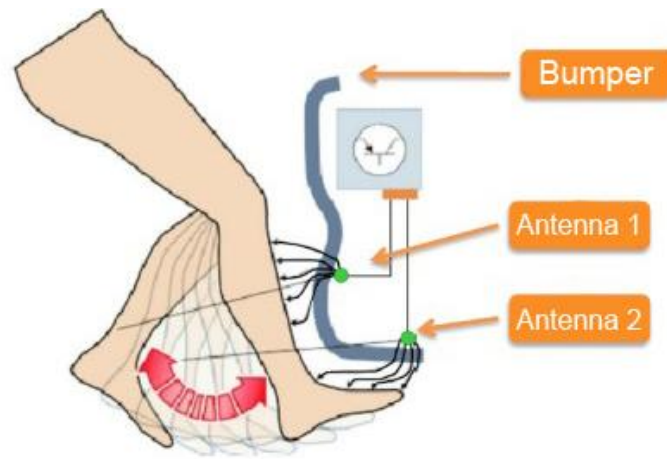
For when you've got your hands full

Combined with the Keyless-Go function and working with the Automotive Electronic Tailgate, the trunk can be opened simply by waving a foot under a sensor, making it enormously convenient when carrying a load of shopping. Closing the trunk is as easy as pressing a button or waving a foot again to shut the tailgate automatically. We call it STO system (Smart Trunk Opener).



The STO system through measure the capacitance changes of the antenna area which in the vehicle trunk as an input signal.

- The two antennas are installed in two positions of the bumper, one at high position, the other at low position.
- The antenna 1 is responsible for detect the capacitance changes between the antenna and human leg.
- The antenna 2 is responsible for detect the capacitance changes between the antenna and human leg.
- Detection distance: feet and legs to the antenna within 15cm.
- After ACC open, ACC will turn off the ECU power, the trunk will not open when driving.



➤ STO Antenna

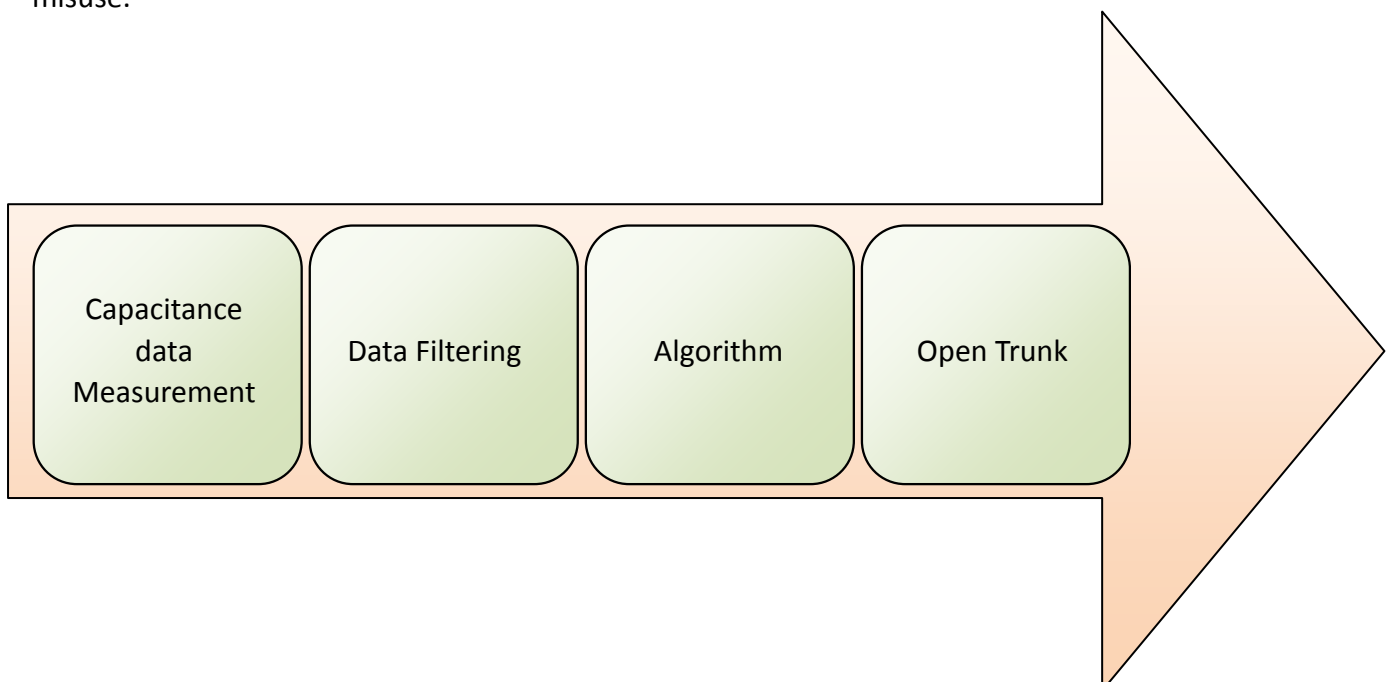
- The antenna is made of pure copper coaxial wire, has a very good detecting effect.
- The detection of the two antennas is completely independent, through the algorithm to increase the system reliability.



➤ Algorithm flow (Working Principle)

Program Algorithm

- Based on the algorithm, you can clearly distinguish between effective open action and misuse.
- Can effectively avoid the impact of external environment changes on the system functions.
- Body capacitance close to the shape of intelligent signal processing, enhance the identification for the misuse.



➤ Operating Mode

Silent Mode

- No detecting function, without any power consumption.

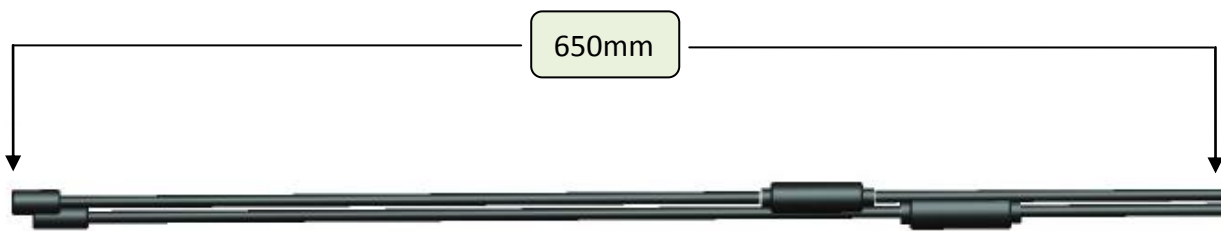
Standby Mode

- The measurement time is measured every 200 ms.
- Very low current consumption, dark current < 500μA.

Working Mode

- The measurement time is measured every 20 ms.
- In this mode, effective kick action can be identified.

➤ Antenna Structure



- The antennas are mounted on the inside of the bumper, and reduce the distance from the antennas to the inside of the bumper as much as possible.
- Antennas installation can be fixed with direct paste.
- It should be avoided that there are chrome bars or other metals between the two antennas.
- The distance between antennas and other metal (such as anti-collision beam), the vehicle body wiring harness should be over 50mm.
- Avoid harness with communication function through the antennas installation location.
- The position of the upper and lower antennas can not be reversed.

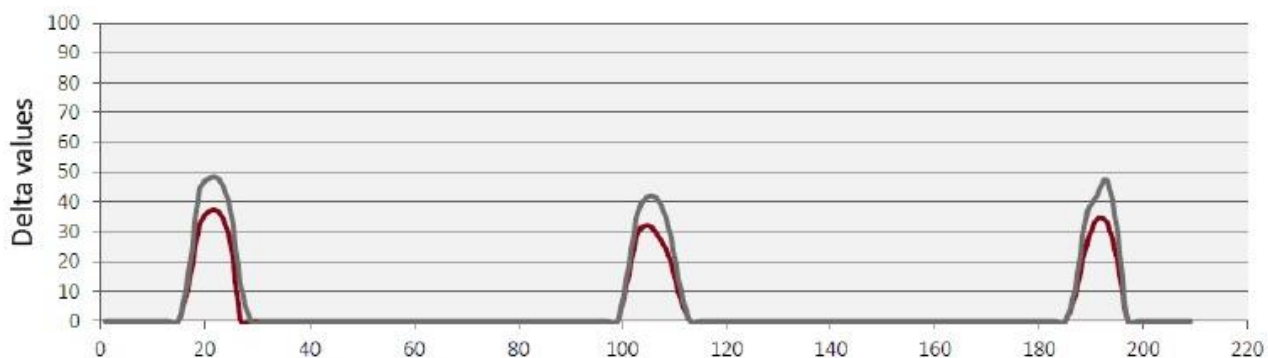
➤ Antenna Installation

- The harness of the sensor needs to be as short as possible. Antenna harness length can not exceed 220mm.
- The two antennas cannot be crossed.
- The two antennas should be connected to the ECU according to the shortest path.
- The antennas cannot wound into a ring.

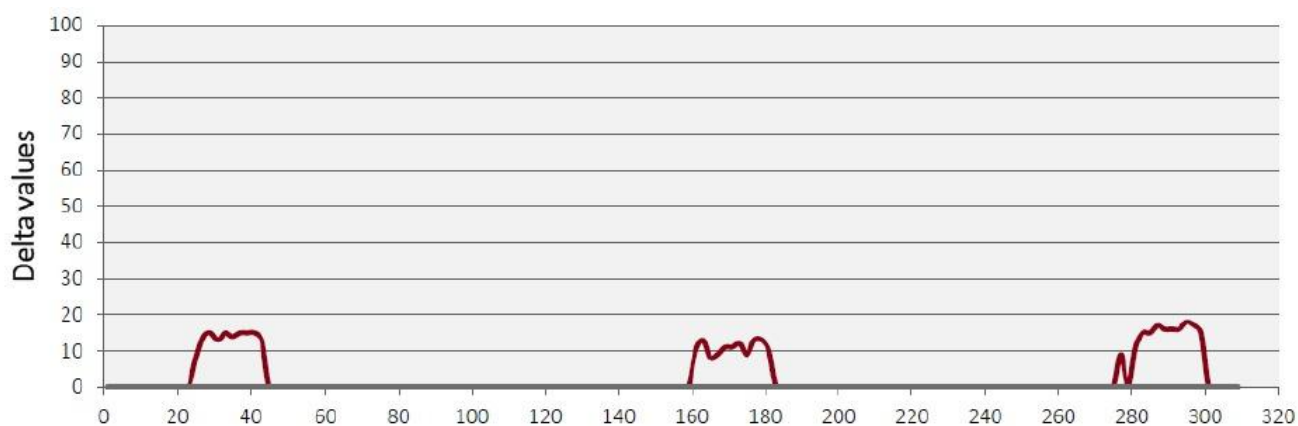
➤ Examination Verification

Test Result

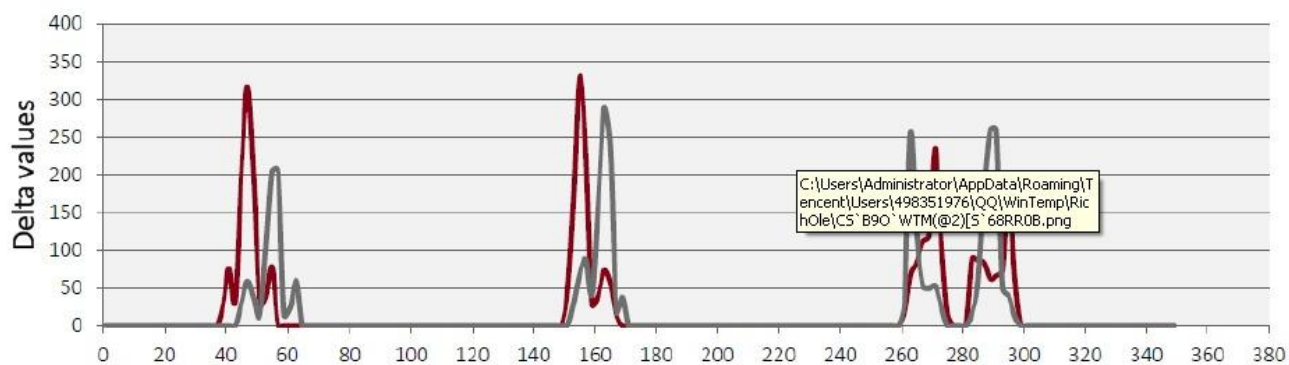
Standard kick action waveform



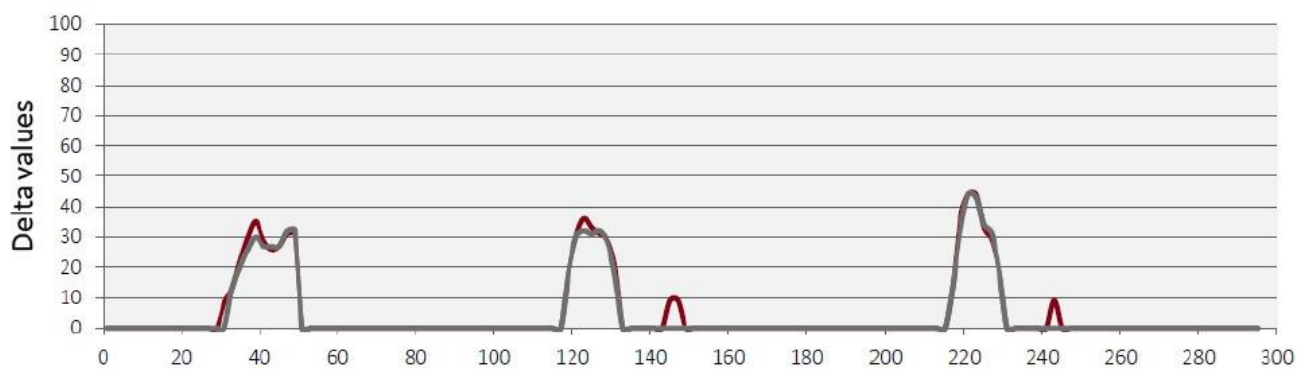
Human body stands close to the trunk waveform



Car wash waveform



Pick up the object waveform



➤ Technical Specifications

- Working Voltage: DC 8V ~ 16V
- Low power mode current consumption is less than 500uA
- Memory Current: 0.5mA
- Working Temperature: -40°C ~ +85°C
- Storage Temperature: -40°C ~ +95°C
- Dust-proof Rating: IP6KX
- Waterproof Rating: IPX7 and IPX9K

➤ Product Display

