DENSO'S SAFETY TECHNOLOGIES

Technology to keep people **safe** wherever they **drive**

To help create an **automotive society free of traffic accidents**, we are working on diverse technologies. Most traffic accidents are caused by a driver's delay to recognize danger, misjudgment, and driving errors. DENSO delivers **"everyday confidence"** with products designed to prevent traffic accidents by helping the driver perceive dangers more easily and prevent errors, an **"extraordinary safety"** which is intended to minimize damage if a collision is unavoidable.

Phase	Everyday confidence		Extraordinary safety	
	Normal Driving	Danger	Pre-crash	In-crash/Post-crash
Assist	Automation/Information	Warning	Intervention	Protection
	The system controls the vehicle, and provides information when required. This eliminates difficulties and concerns about driving and reduces driver's fatigue.	The system warns and supports the driver in avoiding hazardous conditions.	The system controls the vehicle when the driver cannot avoid an imminent collision.	The system protects and quickly saves the occupants and pedestrians if the vehicle is involved in a collision.

Application

	Normal Driving	Danger	Pre-crash	In-crash/Post-crash
Forward	•Lane Keeping Assist •Adaptive Cruise Control •Full Speed Range Adaptive Cruise Control •Night Vision	•Forward Collision Warning •Lane Departure Warning •Lane Change Warning •Distance Alert •Driver Status Monitoring	Autonomous Emergency Braking	•Airbag •Pop-up Hood •Automatic Collision Notification System
Intersection	Automatic High Beam	Intersection Movement Assist		
Lane change		Blind Spot Detection	Electronic Stability Control	
Parking/Start	•Surround Monitoring System •Parking Assista	•Cross Traffic Alert •Collision Prevention against Pedal Mishit •Surrounding Obstacle Warning		

Two core technologies

▌Sensing technologies
Perceiving changes in driving conditions from three points of view: driving environment, driver and vehicle.

Driving environment
•Millimeter-wave Radar Sensor
•Vision Sensor
•Laser Radar Sensor
•Sonar Sensor
•Locater (Position locating technique)

Driver
•Driver Status Monitor

Vehicle
•Data Communication Module
•Wheel Speed Sensor
•Airbag Sensor
•Tire Pressure Monitoring System Sensor
•Pedestrian Collision Detection Sensor

▌Human Machine Interface (HMI) technologies
Providing information and control assistance without distracting the driver's attention by considering and utilizing the driver's five senses.

System
•In-vehicle Infotainment

Display
•Head-up Display
•Multi Information Display
•Multi Information Meter

Operation
•Remote Touch Controller
•Voice Recognition

Protecting lives, preserving the planet and preparing a bright future for generations to come.

DENSO