



# ISUZU N SERIES ADVANCED DRIVER ASSISTANCE SYSTEMS (ADAS)

## INTRODUCTION

According to the results of Australia's largest ever road transport and trucking survey, no fewer than 70 per cent of truck fleets list vehicle and driver safety as a top priority. Regardless of fleet or business size, the desire for improved safety is a genuine concern for everyone operating on or around our road network.

Isuzu Trucks has strong history of responding to customer need and has done so yet again by adding the Isuzu Intelligent Safety Suite with Advanced Driver Assistance Systems (ADAS) to the current range of MY21 N Series range of light-duty trucks.

Isuzu's smart new ADAS suite of features represents the next generation of truck safety, designed to observe changing traffic conditions and assist drivers in maintaining a safe distance from other road users, pedestrians, cyclists, or other objects.

ADAS works to help avoid collisions with a combination of warning alerts and automations that activate when an imminent impact or potentially dangerous change in driving environment is detected.



## HITACHI STEREO CAMERA SYSTEM

Isuzu's ADAS system is powered by Hitachi-supplied stereo camera hardware. Like your eyesight, it has a Dual Optical Sensor Camera which gives it the ability to sense 3D and depth perception. The camera has been positioned in the middle of the cabin to provide superior coverage as opposed to cameras positioned at the top or bottom of the cab. This hardware combined with the software within the vehicle, supports key new features in Isuzu's ADAS suite.

## INTELLIGENT SAFETY

|                                                                                |                                          |              |
|--------------------------------------------------------------------------------|------------------------------------------|--------------|
| <b>ACTIVE SAFETY<br/>ADVANCED DRIVER<br/>ASSISTANCE<br/>SYSTEMS<br/>(ADAS)</b> | Advanced Emergency Braking               | <b>(AEB)</b> |
|                                                                                | Forward Collision Warning                | <b>(FCW)</b> |
|                                                                                | Distance Warning System                  | <b>(DWS)</b> |
|                                                                                | Lane Departure Warning                   | <b>(LDW)</b> |
|                                                                                | Traffic Movement Warning                 | <b>(TMW)</b> |
|                                                                                | Electronic Stability Control             | <b>(ESC)</b> |
|                                                                                | Anti-Skid Regulator                      | <b>(ASR)</b> |
|                                                                                | Anti-Lock Braking System                 | <b>(ABS)</b> |
|                                                                                | Customisable Speed Limiter               | <b>(CSL)</b> |
|                                                                                | Hill Start Aid (MT model only)           | <b>(HSA)</b> |
|                                                                                | Automatic Lighting System (Front & Rear) | <b>(ALS)</b> |
|                                                                                | Cab Tilt Warning                         | <b>(CTW)</b> |

### **FORWARD COLLISION WARNING (FCW)**

A dual optical sensor (stereo camera) monitors the forward environment of the vehicle to detect 3 dimensional objects such as vehicles / pedestrians / bicycles / other obstacles. The control system uses the parallax between two cameras to determine distance and relative speed, similar to human eyesight. There are 3 clear stages in the complete process that also includes AEB.

1. **FCW Detection Zone** - Where the potential obstacle is detected.
2. **FCW Warning Zone** - If system determines a potential collision, it will warn the driver to apply the brakes.

### **ADVANCED EMERGENCY BRAKING (AEB)**

Following the first 2 stages contained in FCW, AEB is stage 3 and the last stage in the process.

3. **AEB Braking Zone** - If the driver does not react the system can autonomously apply the vehicle brakes.

In this case the ADAS will send a signal to the brake control unit to apply pressure to the vehicle brakes. The vehicle brake lights will illuminate automatically. The ability to avoid or mitigate a collision depends on relative speeds and detection time.

Under normal operating conditions the system is designed to avoid a collision with a speed difference up to 50 km/h. Will reduce collision impact for speed differential of more than 50 km/h. Effective even at night (clear conditions).

### **DISTANCE WARNING SYSTEM (DWS)**

Designed to ensure the operator is travelling at a safe distance from the vehicle ahead. The driver can pre-set desired minimum distance by selecting one of four available settings. The system will warn the driver if the preset distance is reached.

### **LANE DEPARTURE WARNING (LDW)**

Lane Departure Warning detects lane markings or road edge, and if the driver is wandering out of lane, an audible and visual warning is provided. Driver can select two sensitivity settings, or switch OFF. Helps to prevent collision with traffic in adjacent lanes.

### **TRAFFIC MOVEMENT WARNING (TMW)**

Traffic Movement Warning system monitors stationary vehicles in front. If the vehicle immediately ahead moves ahead more than set distance, without the truck moving, a warning will sound. Handy at traffic lights and pedestrian crossings. Operating condition: When the vehicle in front is more than 5-m away from the stop position.

### **ELECTRONIC STABILITY CONTROL (ESC)**

Using driver input data from accelerator and steering sensors, along with vehicle control status input from yaw rate sensor under the driver's seat, and wheel speed data, the Electro-Hydraulic Control Unit (EHCUC) will make an assessment of vehicle control.

The system will determine if the vehicle is in one of 3 potential scenarios; understeer, oversteer or roll-over.

In each case the EHCUC will disable driver control, reduce power and/or apply braking force to an applicable wheel brake.

### **ANTI-SKID REGULATOR (ASR)**

Anti-Skid Regulator detects wheel speed differential speed on a loose or low friction surface, i.e. Either one rear wheel is spinning faster than the other or both rear wheels faster than the front. In each case the system will reduce torque and/or applies brake pressure to the spinning wheel to improve traction.

### **ANTI-LOCK BRAKING SYSTEM (ABS)**

Using driver input from the brake switch, along with vehicle wheel speed sensors, the ABS will determine if a wheel is locked and not turning. Using this information, the EHCUC will release the locked wheel brake and re apply pressure to reduce locking and maintain control, allowing the driver to effectively steer and brake at same time.

### **CUSTOMISABLE SPEED LIMITER (CSL) (NPR, NPS, NQR MODELS)**

The speed limiter device has a function by which the engine control module (ECM) controls the fuel injection volume on the basis of the vehicle speed signal and the engine speed, so that vehicle speed cannot exceed the set value.

### **HILL-START AID (HSA)**

Designed as support for manual transmission models in a hill start scenario. When the switch is on and the brake pedal is applied on a hill, the brake pressure is maintained after the brake pedal is released. The brake pressure is released after 8mins or when the clutch is released.

Manual Transmission 4x2 Models ONLY.

### **AUTOMATIC LIGHTING SYSTEM (ALS) (FRONT & REAR)**

When the light control switch is in the auto position, the auto light control unit determines the brightness of the outside of the vehicle, automatically turns on the vehicle lights in 2 stages:

1. **Dusk** - Front and rear parking lamps.
2. **Dark** - Headlamps and tail lamps.

The lights will automatically turn off when the key is removed from the vehicle.

### **CAB TILT WARNING (CTW)**

To improve safety, the cab tilt warning is adopted on all models with a tilting cab. If the cab tilt is not fully locked, the cab tilt warning light is displayed in the multi-information display and an alarm sounds.



### **FOR MORE INFORMATION**

Contact your local Isuzu Trucks dealer to find out more or visit [isuzu.com.au](http://isuzu.com.au).