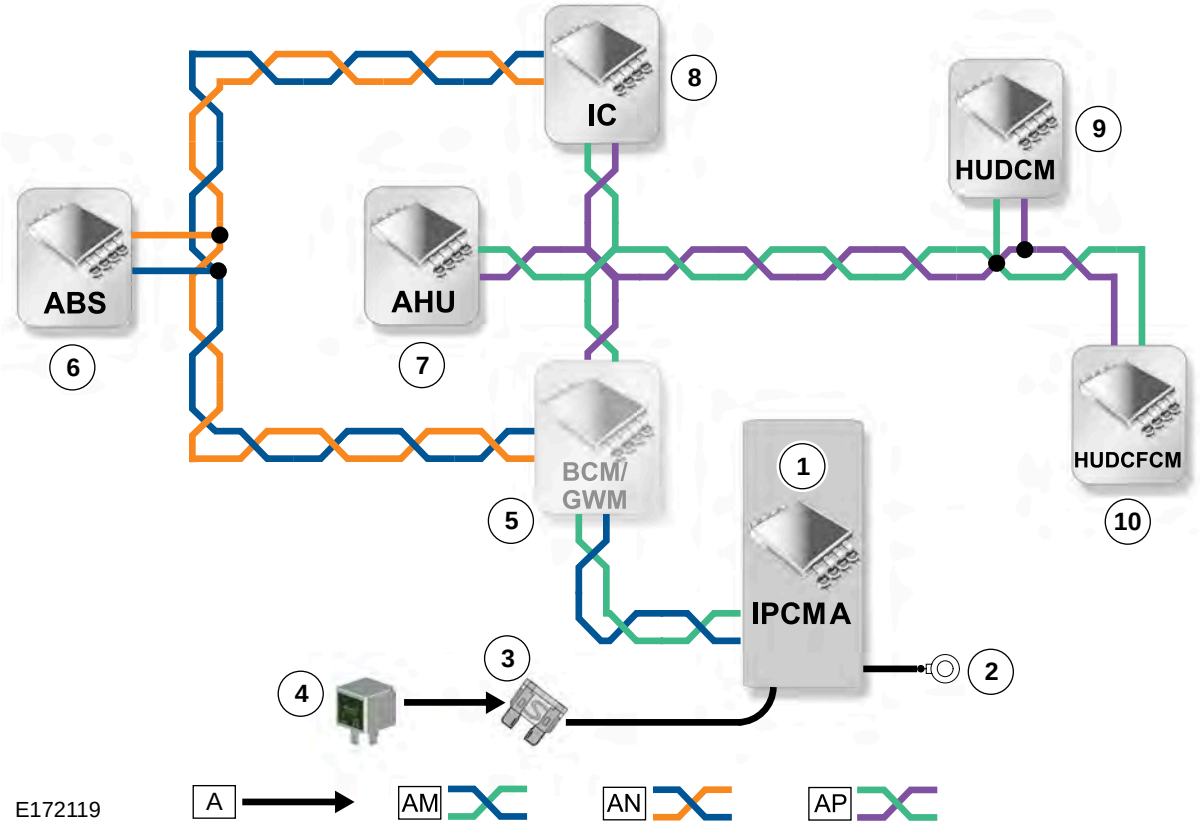
Traffic Sign Recognition Control Diagram



Item	Description	Item	Description
1	Image Processing Module	8	Instrument Cluster
2	Ground	9	Head Up Display Module
3	Fuse (RJB)	10	Head Up Display Cooling Fan Module
4	Relay (RJB)	A	Hardwired
5	Body Control Module / Gateway Module (BCM/GWM)	AM	Chassis HS CAN
6	Anti-Lock Braking System Control Module (ABS)	AN	Powertrain HS CAN
7	Audio Head Control Unit	AP	Comfort HS CAN

Lane Departure Warning

Lane Departure Warning (LDW) warns the driver, via a vibration in the steering wheel (haptic steering feedback), of an unintentional drift out of lane the vehicle is travelling in. A graphical warning informs the driver whether the vehicle is tracking left or right of the lane markers.

The Image Processing Control Module (IPM) continuously monitors the vehicle's position relative to the road markings. The LDW is triggered if the vehicle drifts from the center of the lane, and no obvious driver input maneuver is detected.

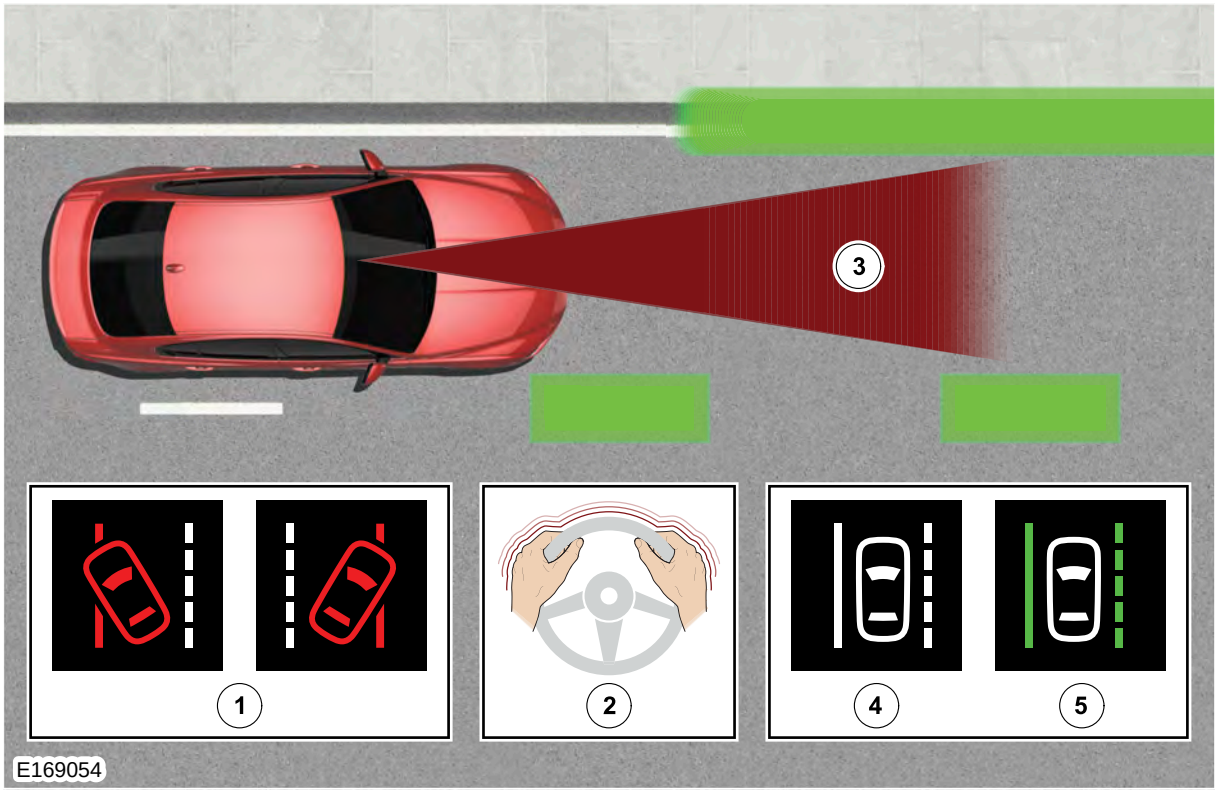
Recognized Driver Inputs:

- Accelerator pedal pressed
- Brakes applied
- Directional indicators switched on
- Significant steering angle change

Warnings:

- Steering wheel vibration
- Graphical warning, displayed in the instrument cluster

Instrument Cluster Display



Item	Description	Item	Description
1	Instrument Cluster graphical display	4	Stand-by mode
2	Haptic steering feedback	5	Operational Mode
3	Image Processing Control Module field of view		

Lane detection is determined by processing IPM data and making measurements against the road lane markers. Examples of lane markers are solid or broken white or yellow lines.

Lane monitoring is only possible when:

- Lane markers are clearly visible
- Vehicle speed is above 37 mph (60 km/h) and below 106 mph (172 km/h)

If vehicle speed is below 37 mph (60 km/h) or above 106 mph (172 km/h), the system is still on but not tracking. The driver can adjust the system's sensitivity between High, Normal or Off. This is carried out via the instrument cluster menu.

Normal Sensitivity:

- The system suppresses any warnings if driver intervention is detected
- LDW operates at speeds above 37 mph (60 km/h) and goes in to standby at speeds below 32 mph (52 km/h)

High Sensitivity:

- System will issue warnings when intervention is detected unless the appropriate direction indicator is activated
- LDW operates at speeds above 32 mph (52 km/h) and goes into standby at speeds below 26 mph (42 km/h)

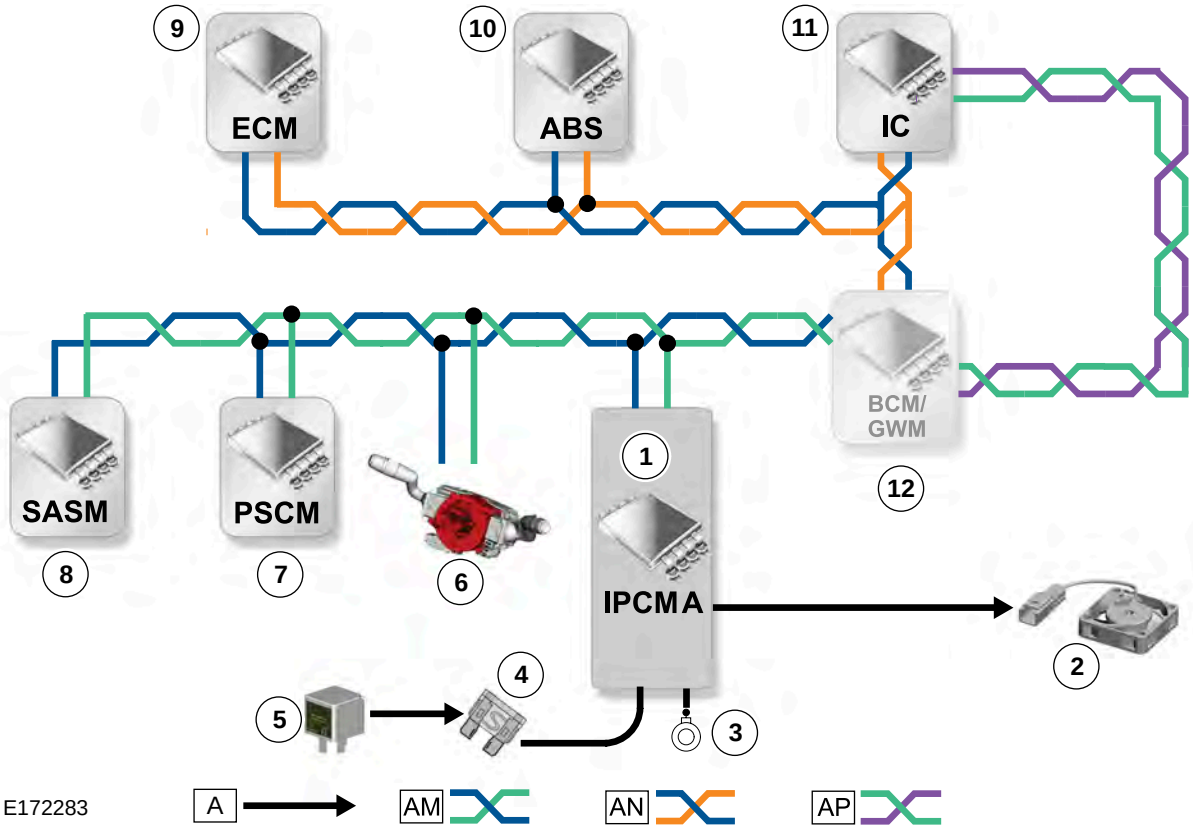
Standby Mode:

- Vehicle speed is not in the correct operating range
- Lane markers are not clearly visible
- The road is less than 8.2 ft. (2.5m) or greater than 18 ft. (5.5m) wide
- The road has sharp curves with radii of less than 650 feet (200m)
- The road undulates excessively
- The road has to many curves and normal sensitivity mode is selected

The performance of the LDW system can be affected by the following:

- Adverse driving conditions
- Impaired vision camera
- Worn, damaged or temporary lane markings
- Tight deviations of the roads and their gradients
- Driving towards very bright lights, including bright sunlight
- Driving very close to another vehicle
- A system fault

Lane Departure Warning Control Diagram



Item	Description	Item	Description
1	Image Processing Module	9	Engine Control Module
2	Image Processing Control Module Fan	10	Anti-Lock Brake Control Module
3	Ground	11	Instrument Cluster
4	Fuse	12	BCM/GWM
5	Relay	A	Hardwired
6	Clockspring	AM	Chassis HS CAN
7	Power Steering Control Module	AN	Powertrain HS CAN
8	Steering Angle Sensor	AP	Comfort HS CAN