

ADAS Indicator

Brief

While assisting an Advanced Driver Assistance System (ADAS) project, it was determined there was no way for the Human Pilot to easily know the state of the AutoPilot. A sign was devised to show who the computer thinks is in control.



Autopilot ready for control handoff



Full Size Indicator Installed

Role

I was tasked with developing the hardware and software used by the device. I worked with a group of Engineers to determine the API necessary to perform all functions. All major custom components were produced in house.

Development

The sign needed to clearly indicate whether the computer or human is in charge. It also needed to indicate when handing-off between Pilots. Uninitialized and alarm states were also included. Digital LED lights allow color and brightness control. An Ambient Light Sensor (ALS) ensures the sign is properly lit at all times. A buzzer gives supplemental auditory alerts in times of distress.

Added Value

A secondary role for the sign was identified; as watchdog for the ADAS system. The human is notified within a quarter of a second if the heartbeat signal from the ADAS computer goes missing. In a failure the human can retake control of the vehicle quickly.



Medium Size Indicator



Small Size Indicator

Alternate Versions

There were two smaller versions of the sign created. One was simply smaller, while the other used for Hardware-in-the-Loop testing on the bench. To produce the most accurate results when simulating and emulating in the lab, a desk-bound version was created. Much smaller and silent, this version saw many more hours of operation.

Timeline: 6 weeks

Delivered: 3 Signs, API Documentation

Cost: ~\$7500