Night Vision with Pedestrian Detection

New Concept

At night time, the risk of a fatal traffic accident is almost four times higher for pedestrains. Autoliv's Night Vision System automatically detects pedestrians and highlight them on the Night Vision display in the vehicle. By analysing the scene content and the vehicle dynamics it also determines if the pedestrian is in danger of being hit by the vehicle and alert the driver in time to react. The system uses a single thermal sensor to significantly improve the driver's vision and give the driver the possibility to see what happens in the dark area beyond the headlights.

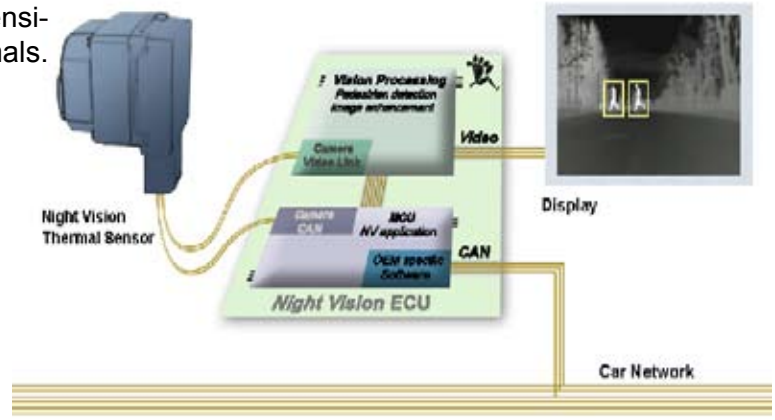
The sensor detects heat radiation from objects and is calibrated to be especially sensitive to the temperature of humans and animals.

Autoliv's technology is not dependent on any light source illuminating the objects and gives a superior detection range.

The pedestrian detection functionality is based on latest research results from statistical learning theory. All vision processing for pedestrian detection is done in the Night Vision Electronic Control Unit (ECU). An advanced context-based Automatic Gain Control is applied to provide the driver with a good TV-like image shown on a display in the car.

Key Driver Benefits

- Alert in high-risk situations with pedestrians
- Early detection of pedestrians
- Extended visibility range at night
- Improved situational awareness



Autoliv's Night Vision system consists of a single thermal sensor and an electronic control unit (ECU). The display concept in the car, as well as the Human Machine Interface for alerting the driver, are customer specific and developed in collaboration with Autoliv.

Technical Characteristics

Thermal Sensor

- 24 degrees horizontal field of view
- Focus distance 15m - infinity
- Highly sensitive camera with NETD < 100 mK
- Vanadium Oxide Bolometer (from FLIR Systems)
- IR spectral range 8 - 14 um
- 320 x 240 pixel resolution
- Dimensions 69 x 70 x 73 mm
- Weight 400 gram
- LVDS AC-coupled 125MBit/s video data link to ECU
- Low-speed 100kbit/s CAN interface to ECU

Electronic Control Unit

- DSP & FPGA architecture with 30 Hz real-time vision processing
- Full function current 1A (ECU) and 0,85A (Camera)
- Low-power mode, standby 100mA
- Dimensions 172 x 104 x 31 mm
- Weight 700 gram
- LVDS AC-coupled 125MBit/s video data link from camera
- High-speed 500kbit/s CAN interface to vehicle
- Fully differential colour analog video output (NTSC-M)

Key System Functions

- Pedestrian detection & driver alert
- Image enhancement
- Image brightness & contrast control
- System locked to specific vehicle

Autoliv Electronics
www.autoliv.com

North America & Asia
Stuart Klapper
Phone: +1-805-562-5900
E-mail: Stuart.Klapper@Autoliv.com

Europe
Christof Büttner
Phone: +49-831-295-1577
E-mail: Christof.Buttner@Autoliv.com

Sweden
Bo Wass
Phone: +46-13-4804410
E-mail: Bo.Wass@Autoliv.com