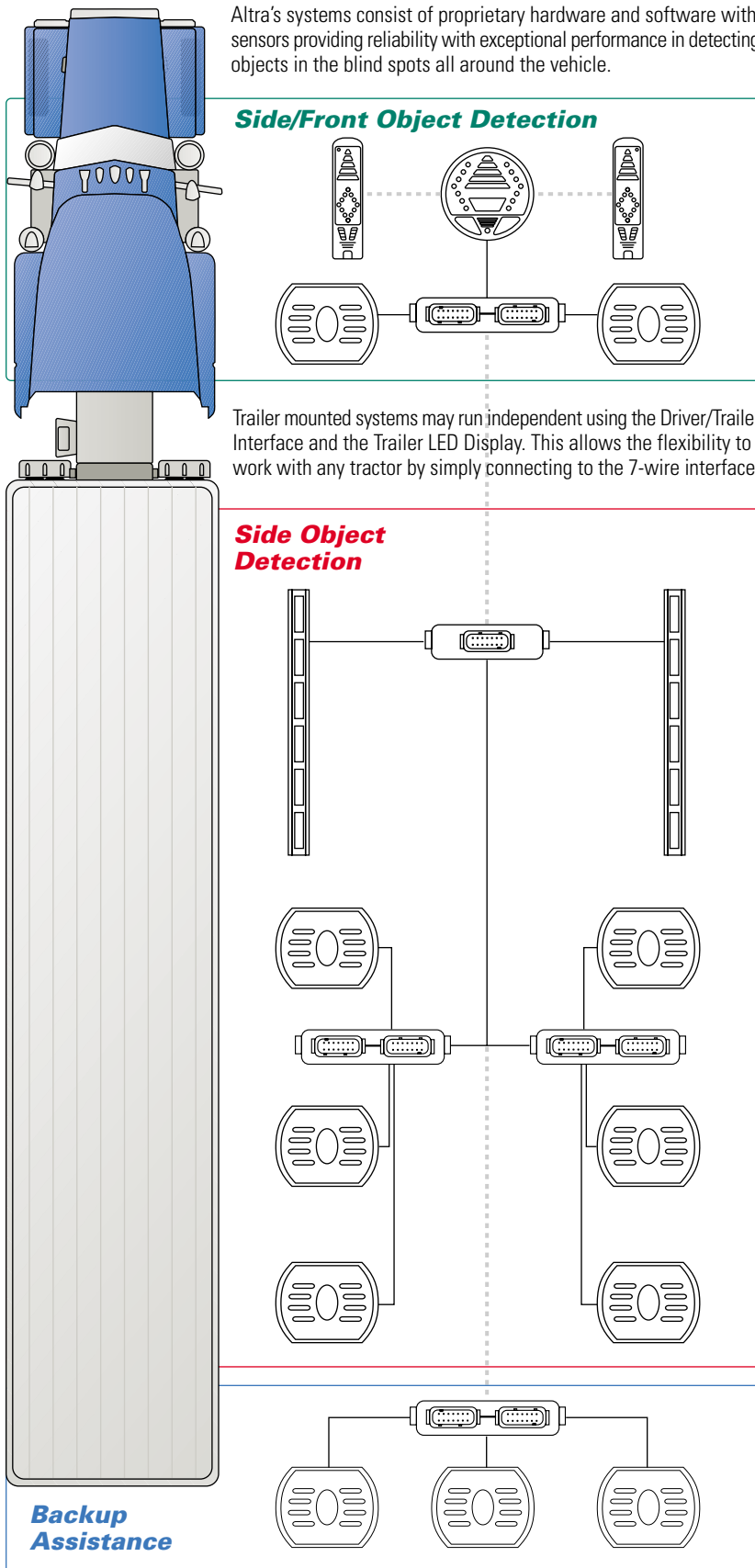
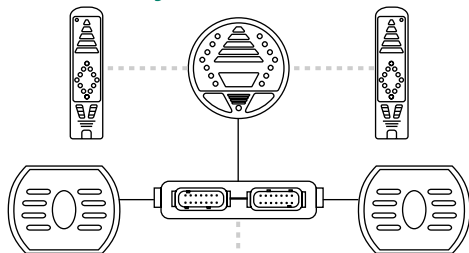


System Architecture

Altra's systems consist of proprietary hardware and software with sensors providing reliability with exceptional performance in detecting objects in the blind spots all around the vehicle.

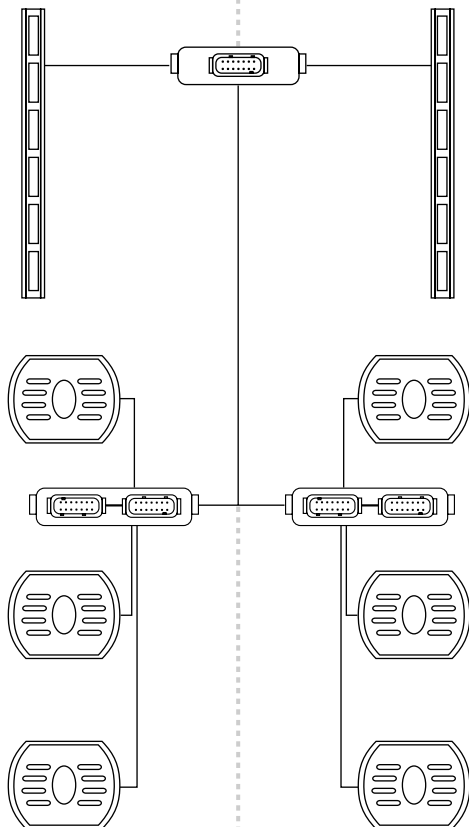


Side/Front Object Detection

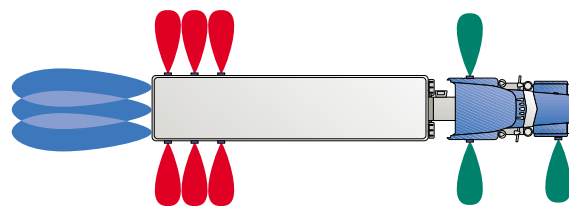
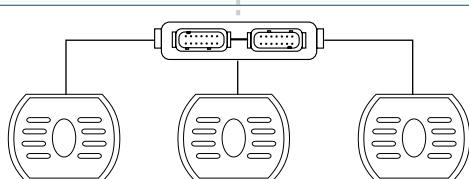


Trailer mounted systems may run independent using the Driver/Trailer Interface and the Trailer LED Display. This allows the flexibility to work with any tractor by simply connecting to the 7-wire interface.

Side Object Detection



Backup Assistance

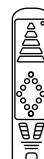


Driver Vehicle Interface (DVI)

The DVI is the display module mounted on the dash used to inform the driver of potential dangers found by the sensors. It is also used to display range information for the driver's use while backing up to a solid object and to present different types of alarms on trucks equipped with optional sensors (fire, door open, etc.). In some cases the DVI will be a single, gauge size unit mounted centrally in or on the dash. In other cases the DVI will be two pillar mounted displays containing the same functionality. In both cases the DVI also contains an audible alarm and loudness/brightness controls to adjust to the various driving conditions encountered.



or



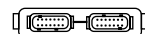
Trailer LED Display (TLD)

TLDs are mounted on both sides of the trailer in a position from which at least one of the displays can be seen at all times by the driver. When an object is detected in a sensor's coverage area, the driver is notified of the presence of the object and the range to the object by the illumination of lights on the Trailer LED display.



Sensor Signal Processor (SSP)

The Signal Sensor Processor communicates with the sensors and displays the results for the driver on the installed display device. The SSP mounts in the vicinity of the sensors. The SSP receives electronic signals from the sensors, processes the electronic signals (patent pending) to determine the range to objects in the vicinity of the sensor and transfers pertinent data to the DVI or DTI.



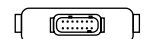
AltraSensor

Working in conjunction with the SSP, these sensors employ a proprietary technology to achieve superior detection capability. Achieving detection of many objects in excess of 20 feet away, Altra's system provides effective detection and early warning of potential hazards. The sensors are built to withstand shock, vibration and a wide range of temperatures and each sensor is designed to perform over a broad range of environmental conditions.



Driver/Trailer Interface (DTI)

The DTI is the display controller for the trailer-based system. It is packaged in a separate housing under the trailer and electrically connects to the standard seven-wire interface cable running between the tractor and trailer. The DTI's job is to process detection and range information received from the SSP and to communicate this information to the driver via the TLD.



All Altra Technologies Collision Warning System Components are rigorously tested and comply with SAE J1455.



Altra Technologies, Inc.
605 Lewis Avenue North
Watertown, Minnesota 55388 USA
phone (952) 955-2614 • fax (952) 955-2620

www.altratech.com

Part #ATT-Arch-9/02
© 2002, Altra Technologies, Inc.
Portions covered by patent #6,268,803 B1
and other patents pending.