



## Factory Diagnostic Tools for Computers on Wheels

Automotive and commercial trucking technology has changed dramatically in recent years. The electronics in today's vehicles are evolving at a mind-boggling pace with ever greater sophistication and with an ever increasing volume of data monitored and/or collected by on-board systems. Most recently, on-board computers have gone beyond merely monitoring and storing data in a passive way. They now also make decisions and actively adjust vehicle performance to enhance the capabilities of vehicle operators. As these trends accelerate, it is not an exaggeration to say that our vehicles have become computers on wheels.

Throughout the vehicle, numerous computers monitor the states of switches and data output from various sensors and other components. These data course through the vehicle's nervous system by way of controller area network (CAN) buses. External data interfaces such as the OBD (On Board Diagnostics) and OBD-II ports are commonly used in automobiles to provide entry to and data access from some of these on-board networks. In commercial trucks, vehicle performance data are not only collected and stored internally but also may be transmitted in real time to the parent company so management can assess vehicle efficiency and driver behavior.

Examples of computer controlled vehicle technologies include:

- Airbags
- Anti-lock Brakes
- Cruise Control
- Brake Assist
- Stability Control
- Traction Control
- Anti-Collision
- Night Vision
- Proximity Sensors
- Security Systems
- Lane Control
- GPS Navigation Data

Data stored within the vehicle can be a valuable source of data relevant to accident investigation. Currently, the most common hardware/software tool to access data from automobile airbag systems is the Crash Data Retrieval (CDR) system.

Commercial vehicles generally have engine control modules (ECM) that monitor and manage engine and vehicle operations. The ECMs can also store data that, in addition to supporting maintenance and fleet operations, can be useful in accident reconstruction.

CDR and ECM capabilities can vary greatly between vehicles. Substantial expertise is required to access and interpret the data. The growing complexity of the data and the processes for retrieving and interpreting the data is a thorny issue that will only become more difficult as the scope of vehicle electronic systems widens.

Utilizing specialized hardware and software developed by the vehicle manufacturers themselves can sometimes provide better access to vehicle data than third-party CDR and ECM downloading tools. As part of our continuing effort to be the vanguard of vehicle accident reconstruction, ATA Associates is in the process of obtaining a variety of original equipment manufacturer (OEM) diagnostic scan tools to enable the best possible evaluation of accident related vehicle data.