



## DMI



The **Distance Measuring Instrument (DMI)** measures **ARAN chainage or linear distance traveled. It is the most basic and yet one of the most important measurements made by every ARAN vehicle. All data must be accurately referenced to its location on the road.**

### Linear Distance Location Referencing

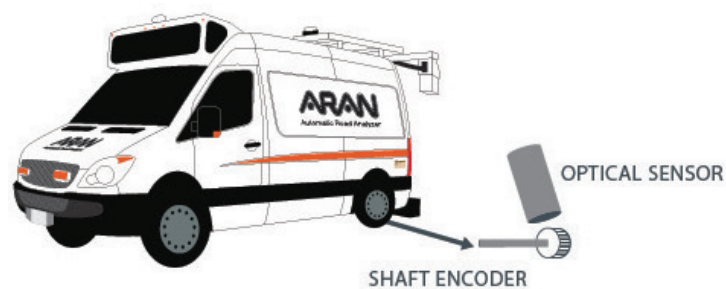
ARAN sub-systems use distance as their base for measurement and are not speed dependent as are many competitive time-based measurement systems. This feature allows the vehicle to move at variable speeds in traffic and collect data safely without data corruption due to speed changes. They are also not prone to slippage as with contact-based systems.

The DMI uses an optical shaft encoder driven from the rear wheel to produce a stream of 10,000 pulses per wheel revolution. These pulses are sent to the Central Data Acquisition Computer (CDAC) for use by all other ARAN sub-systems.

The DMI also measures velocity changes which are used with the inertial reference subsystem and GPS subsystem to precisely determine the vehicle's position in geographic space. This provides the geographic coordinates for CAD and GIS mapping applications.

### Features

- Provides essential chainage measurements
- Divides each wheel revolution into 10,000 pulses
- Measures linear distance within  $\pm 0.005\%$
- Links all data to linear location references
- Interfaces with Central Data Acquisition Computer
- Easy calibration to compensate for tire wear
- Provides distance trigger pulses to all ARAN subsystems
- Integrates with GPS and Inertial Reference System for geographic positioning
- Operator selectable Metric or Imperial units
- Simple, reliable operation
- Rugged environmentally-protected construction
- Adaptable to any vehicle



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