

## Networks #2

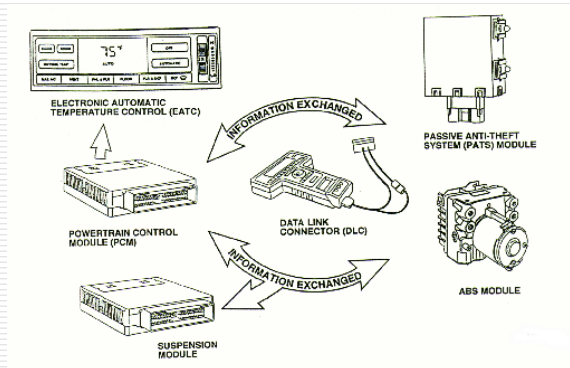
---

Matthew Whitten  
Brookhaven College

### SCP NETWORK

## SCP Characteristics

---

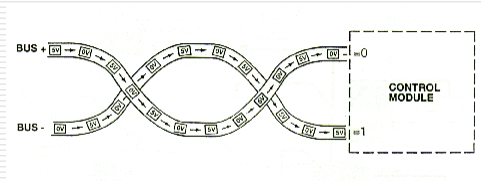


modules and scan tools can exchange data

## SCP NETWORK

## SCP Protocol

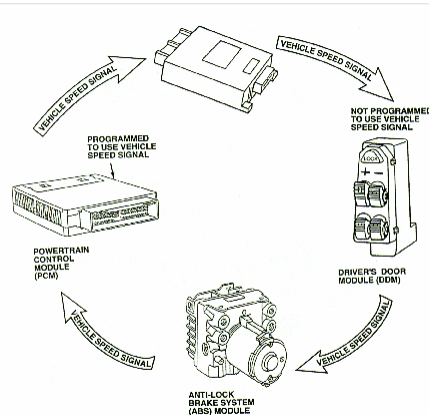
- ❑ wires are designated Bus + and Bus -
- ❑ the data bus wires are usually identified as circuit 914 (+) and circuit 915 (-) in Ford's wiring diagrams
- ❑ 5 volts represents a 1 and 0 volts represents a 0
- ❑ data is mirrored on each circuit
- ❑ each circuit can operate independently



## SCP NETWORK

## Functionally Addressed Messages

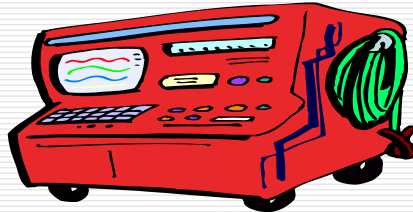
- ❑ each message is available to all modules
- ❑ modules are programmed to recognize only relevant or necessary data



## SCP NETWORK

## Physically Addressed Messages

- during diagnostics a specific module is addressed
- only that module recognizes the data request



## SCP NETWORK

## Network Symptoms

- during network diagnostics both 914 and 915 are tested for opens and shorts
- if 914 and 915 are shorted together a complete network failure will occur
- if 914 or 915 is shorted to ground the modules will not respond to NGS
- if 914 or 915 is shorted to power a complete network failure may occur
- if one wire is open the NGS data received may be invalid
- if both wires are open only those modules after the open will be unable to communicate
- if both wires are shorted to ground a complete network failure will result and all modules will operate in FMEM
- an internal module failure may result in complete network failure

## ISO 9141 NETWORK

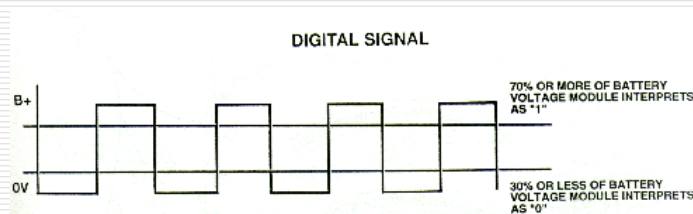
## ISO 9141 Characteristics

- ❑ the ISO 9141 network allows communication between the modules on the network and the scan tool
- ❑ there is no module to module communication on an ISO 9141 network
- ❑ ISO 9141's single wire is usually referred to as circuit 70 in Ford's wiring diagrams
- ❑ Still currently used on Ford Vehicles for diagnostic purposes only

## ISO 9141 NETWORK

## ISO 9141 Protocol

- ❑ a signal of 70% of battery voltage is a 1
- ❑ a signal of 30% of battery voltage is a 0
- ❑ relatively low baud rate



## ISO 9141 NETWORK

## Network Capabilities

---

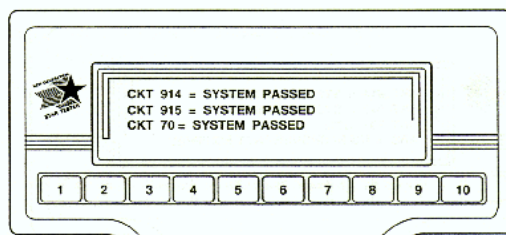
- ☐ access and display Diagnostic Trouble Codes (**DTC**)
  - ☐ access Parameter Identification Data (**PID**)
  - ☐ initiate Active Commands
  - ☐ test Network Communication
- 

## ISO 9141 NETWORK

## ISO 9141 Diagnostics

---

- ☐ since ISO 9141 usually communicates on circuit 70, diagnostics can only be performed if this circuit test passes



## ISO 9141 NETWORK

## UBP

## □ Universal Body Protocol

- Designed out of pc based UART network
- Universal Asynchronous Receiver-Transmitter.
- The system was unique in its design and was only used on the 2002 and 2005 Explorers
- It required either using the WDS or a special cable for the NGS if body systems diagnosis was required.

## ISO 9141 NETWORK

## Topography

Data Link Connector (DLC) (14489), pins 3, 7

