DeviceNet is a digital, multi-drop network that connects and serves as a communication network between industrial controllers and I/O devices. Each device and/or controller is a node on the network. DeviceNet is a producer-consumer network that supports multiple communication hierarchies and message prioritization. DeviceNet systems can be configured to operate in a master-slave or a distributed control architecture using peer-to-peer communication. DeviceNet systems offer a single point of connection for configuration and control by supporting both I/O and explicit messaging. DeviceNet also has the unique feature of having power on the network. This allows devices with limited power requirements to be powered directly from the network, reducing connection points and physical size.

DeviceNet follows the Open Systems Interconnection (OSI) model, an ISO standard for network communications that is hierarchical in nature. Networks that follow this model define all necessary functions from the physical implementation up to the protocol and methodology to communicate control and information data within and across networks.

DeviceNet uses a trunk-line/drop-line topology that provides separate twisted pair busses for both signal and power distribution. The possible variants of this topology are shown in below. Thick or thin cable can be used for either trunklines or droplines. End-to-end network length varies with data rate and cable thickness.
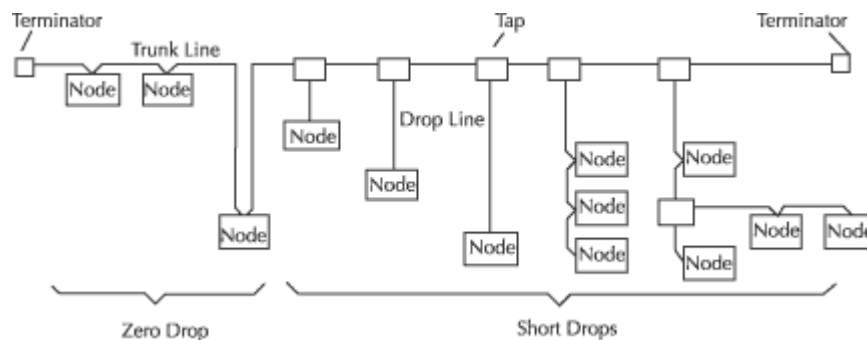
DeviceNet supports both isolated and non-isolated physical layer design of devices. An opto-isolated design option allows externally powered devices (e.g. AC Drives starters and solenoid valves) to share the same bus cable. The DeviceNet Specifications contain additional information concerning component requirements, protection from mis-wiring, and examples.

Where is it used and with what products?
DeviceNet is one the the world's most used fieldbus networks and is predominately used within the Factory Automation Industry and with many types of products from Robotics, PLC's, Drives, Inverters, etc.. Originally founded by Rockwell Automation, this protocol is now mainly used in the United States, and is now also gaining popularity throughout Europe & Japan & China.

DeviceNet & AnyBus
HMS has many different types of products supporting DeviceNet. The embedded AnyBus-M Master/Scanner Interface, AnyBus-S Slave/Adapter Interface, an enhanced AnyBus-S Adapter Interface with AC/DC Drive Profile. An Embedded AnyBus-IC Single Chip Solution. AnyBus-PCI Master/Scanner & Slave/Adapter Interfaces. AnyBus Communicator Serial to DeviceNet Gateway and AnyBus-X Bridge/Gateway giving you a choice to bridge DeviceNet with any of 14 other fieldbus networks. Added to this are DeviceNet configuration and simulation tools.

DeviceNet Facts

Network Size:	Up to 64 nodes
Network Length:	Selectable end-to-end network distance varies with speed 125 Kbps 500 m (1,640 ft) 250 Kbps 250 m (820 ft) 500 Kbps 100 m (328 ft)
Data Packets:	Any amount of Assemble I/O data or explicit messages
Bus Topology:	Linear (trunkline/dropline); power and signal on the same network cableBus
Addressing:	Peer-to-Peer with Multi-Cast (one-to-many); Multi-Master and Master/Slave Polled or change-of-state
System Feature:	Removal and replacement from the network under power

DeviceNet AnyBus Products

Embedded Products
- AnyBus-M Master/Scanner
- AnyBus-S Slave/Adapter
- AnyBus-S AC/DC Drive Profile

Embedded Products
- AnyBus-IC Single Chip Controller

PC Interface Products
- AnyBus-PCI Master/Scanner
- AnyBus-PCI Slave/Adapter
- Master Simulator

Networking Products
- AB Communicator Serial Gateway

Networking Products
- AnyBus-X Bridge/Gateway

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