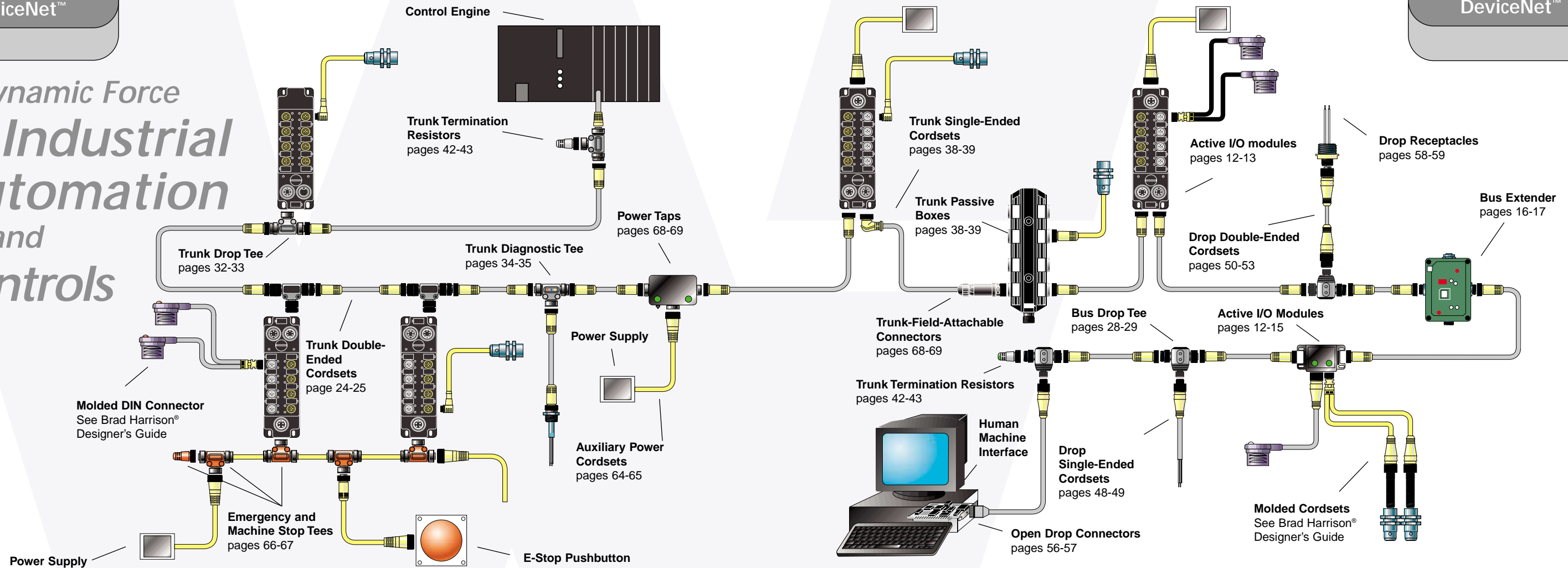


# A Dynamic Force in Industrial Automation and Controls



## WOODHEAD CONNECTIVITY AND DEVICENET

Woodhead Connectivity, through its leading connectivity brands SST®, applicom®, NetAlert™, Brad Harrison® and mPm™, gives the user or the designer of a DeviceNet system a complete solution – from scanner through media infrastructure to I/O connection. No other supplier provides a comprehensive backbone of connectivity while giving you the power to choose other elements of the control system. You select which control engine you want, whether it be PC or PLC-based; we get you onto the network. You choose which control architecture – centralized or distributed – you think makes the most sense. You choose which type of motor controllers, valve banks or sensors you want; we insure that the connectivity to these points is there. Woodhead Connectivity is the complete provider of DeviceNet connectivity from control engine to sensor.

## COMPONENTS AND ELEMENTS OF DEVICENET SYSTEM

### Control Engine

PC "soft controllers" or PLCs can act as the main control engines, taking the current I/O status off the network and solving these operations through the main control program. The new status of the I/O is then updated via the network interface to the actuators, starters and interface panels. Many times a central control engine acts as the DeviceNet "master" which initiates and controls many of the messaging sequences of the network.

### Scanners

The scanner resides in a controller whether it is a PLC or PC, and provides a network connection. The scanner exchanges a data table, which is loaded with the various values of the inputs and outputs, with the logic controller to solve the various logical expressions. Simultaneously the operation of the master and/or slave protocols is completed. The logical expressions are then re-exchanged with the data table for communication out to the various nodes and I/O residing on the network. The scanner generally supports all standard baud rates of the network.

### Active I/O Devices

These are otherwise called "smart" I/O devices which can be directly connected as nodes onto the DeviceNet network. Detailed information can be received back from the I/O devices with a sensor being able to report back such information as distance measurements, power status, last-time to maintenance, etc.

### Active I/O Modules

Active Modules serve to interconnect a variety of I/O devices, as a DeviceNet "node." This allows you to pick less costly standard sensors or outputs that are available from a variety of manufacturers and connect them onto the network providing short circuit protection while not disrupting DeviceNet communications. There are a variety of LED status indications on DeviceNet active modules. For example, not only is the status of an input or output indicated on the block, but a detection of a short circuit condition is displayed via an LED. Module communications indication is also done on the block with bus connection, MAC ID status monitoring information included in this functionality. Secondly the power status of the block will also be provided to the user.

### Media

DeviceNet uses a trunk and drop connection topology. The trunk is the main communications cable. Trunk length connection maximum lengths depend on the communication rate and cable type (thick, mid or thin). Drop connections are the media used to connect to the active nodes.

### Thin Media

Drops are branches off the trunk generally use "thin" cable and can be up to 6m (20ft) in length. "Drops" to the various nodes are connected via either "thin" or "mid" cabling.

### Thick Media

DeviceNet cable consists of a shielded twisted data pair and an independently shielded twisted power pair for the 24V DC bus power. These independently shielded pairs are then encased in an additional outer shield. Connections from the trunk line to the active nodes and are generally made via a 5-pole Mini-Change® connection using "thick" cable, which helps to prevent miswiring. For the standard round DeviceNet cable media either thick or mid cable can be used. Both ends of the trunk line MUST be terminated with 121 ohm resistors.

### Power Media

I/O modules with output connections require 24V DC auxiliary power which is fed through the block via a 4-pole Mini-Change® connection. Convention, for the purposes of safety, is to bring auxiliary power into the block via a female connector so as to never have "live" power available on the exposed pins of the connector. In some cases, emergency stop circuits are run through the same 4 pole connectors. Emergency-stop drop or power Tees as well as termination plugs are generally colored red for fast identification.

### Cordsets

Input and output connections from the multiports or modules to devices like sensors or valves are made with industry standard 12mm DC style connections.

### I/O connections

I/O connections can be made to the network via 1) Mini-Change® connections, 2) Micro-change connections or 3) Open style 1.5mm spacing 5-pole industrial rated ODVA-approved connections.