Collaborative Automation by Schneider Electric

TSX Quantum DeviceNet Scanner Module

Bridge between Modicon and DeviceNet

- **Single-slot module in Quantum PLC rack**
- **Up to 63 slave devices per module**
- **8 or 32 bit input and output registers**
- **Transfer I/O values only upon change-of-state**
- **Scheduled control of transfer of I/O data**
- **Read inputs & write Outputs to devices**
- **Download configuration data**
- **Monitor Device operational status**
- **Update scanner's firmware**
- **Compatible with Unity**

Convenient Interface to devices on DeviceNet such as Photo electric sensors, proximity switches, valve manifolds, motor starters, process sensors, barcode readers, variable frequency drives, panel displays and operator interfaces

AVG

How does the DeviceNet Scanner communicate with the various components on the network?

One reason DeviceNet is gaining in favor among users lies with its flexibility in communicating with external devices. Explicit messaging support allows editing device parameters from within your PLC program. Cyclic data support allows the user to define data refresh rates, which is ideal for manufacturing applications. Change-of-state data support is ideal for high-speed applications, where throughput and node prioritization is key. With change-of-state operation, there is no output of information from an actuator/sensor unless something has changed. This frees the network from “housekeeping” duties. DeviceNet bus addressing can be conducted in several different modes:

*** Peer-to-Peer with Multi-Cast:** Peer-to-peer networks are generally token-pass networks. Each device can send messaged only when it has the token. The token gets passed based on the node number (round robin) or possibly via a user-defined priority list. There is no sense of mastership or priority and it is not deterministic. The Multi-Cast feature allows one-to-many and many-to one relationships to be built dynamically.

*** Multi-Master with Multi-Cast:** This is where more than one unit acts as a master.

*** Master/Slave Special Case:** This is “polled” or “change-of-state” (exception-based). Rather than a Master going through a polling list (scanning), DeviceNet sensors/actuators report data (input or output) on a change-of-state (COS) basis as the events occur. This method is considered more efficient for discrete applications.

What sort of I/O Data Exchange does DeviceNet support?

The DeviceNet scanner communicates with the Modicon TSX Quantum PLC processor via discrete and block transfers over the backplane. A DeviceNet product may behave as a client, server, or both. The scanner communicates with the scanned devices via strobe, polled, change-of-state, and cyclic messages. It uses these messages to solicit data from or to deliver data to each device on the network. Data received from the devices, or input data, is organized by the scanner and made available to the PLC processor. Data received from the PLC processor, or output data, is organized in the scanner and sent on to the network devices.

*** Strobed:** Multi-cast message starts the scan cycle. Strobable slaves respond, based on their latency.

*** Polled:** The Master interrogates each sensor/actuator according to the “polling list.” Polls are sent out even as strobe responses are being received, as bandwidth allows.

*** Cyclic:** Devices report data on a user-configured, time-increment basis (input or output). Cyclic data production is considered more efficient for applications with slowly changing analog I/O.

*** COS:** A device reports its data only when there is a change. This is considered more efficient since only data changes are transmitted. It can be used along with Poll or Strobe.

Specifications

DeviceNet Parameters:

* Strobe, poll, COS (Change-of-State), or Cyclic I/O data for each node
• Interscan delay
• Scan list
• Background poll rate

PLC Processor-to-Scanner Communication:

DIP Switch Selectable
8 I/O: uses 8 Input and 8 Output registers
32 I/O: uses 32 Input and 32 Output registers
DeviceNet Data
8 I/O Configuration: up to 28 words of input and output from the network.
32 I/O Configuration: up to 124 words of input and output from the network.

Power Consumption:

DeviceNet Current Load:
90 mA (max.)
Backplane Current Load;
400 mA @ 5 VDC (max.)

DeviceNet Power:

24 VDC, Nominal

Communication Rates:

125 kbps, 250 kbps, 500 kbps
Messaging Capabilities:
(Master) Poll, Strobe, COS, or Cyclic

Isolation:

Optical isolation between Backplane and Network

Module Location:

Any I/O slot in Quantum PLC rack, local, remote, or DIO

Network Address:

00-63

ENVIRONMENTAL CONDITIONS:

Operating Temperature
32 to 140 °F (0 to 60 °C)
Storage Temperature
-40 to + 185 °F (-40 to +85 °C)
Humidity
5 to 95% non condensing
Shock (unpacked):
Operating 30g
Non operating 50g
Vibration (unpacked)5g from 10 to 500 Hz

DeviceNet Scanner ... The Power of one!

An "Open" network-no need for "specials"

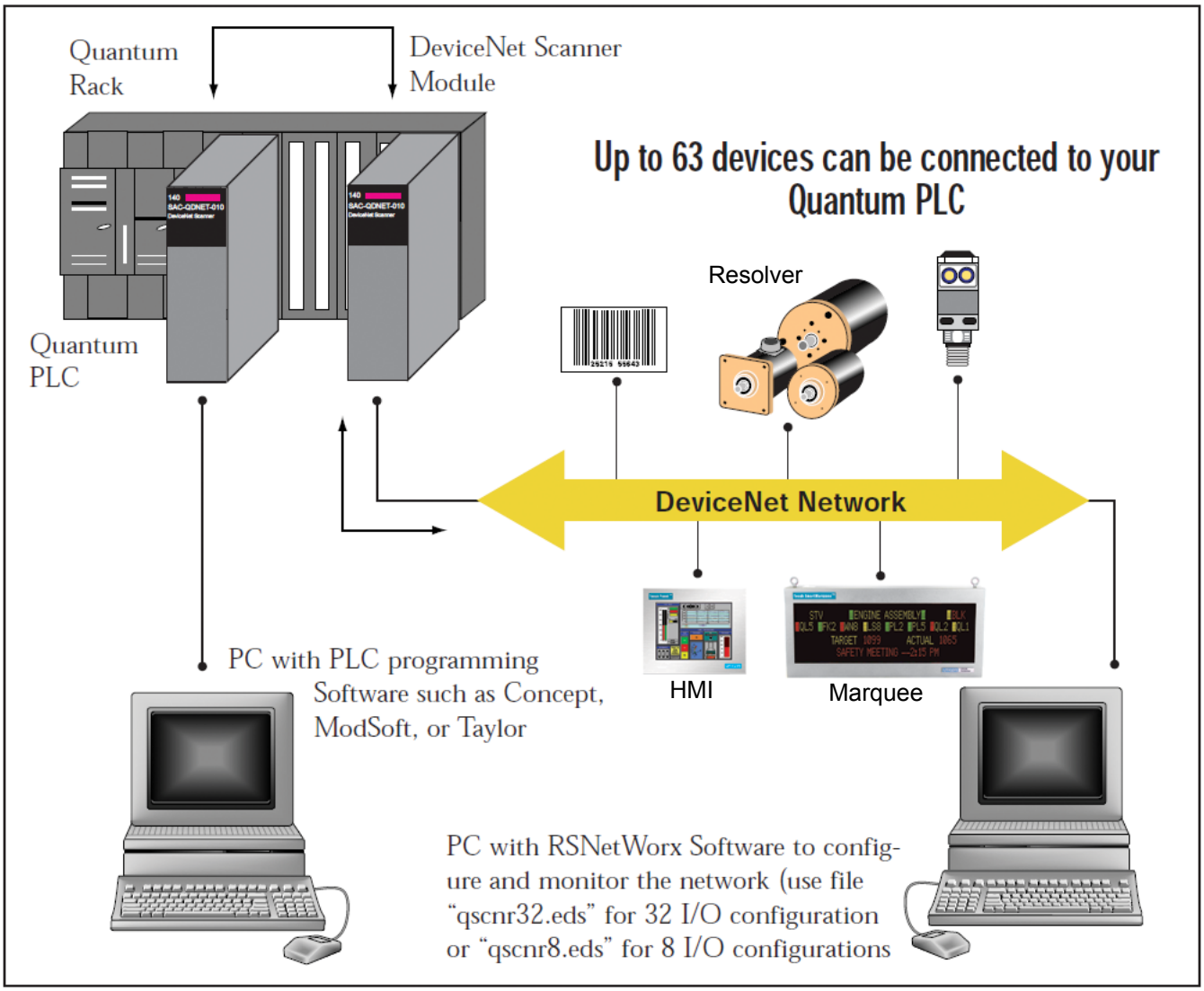
AVG Automation's DeviceNet Scanner lets you connect a wide variety of industrial devices, such as limit switches, photoelectric sensors, proximity sensors, valve manifolds, motor starters, process sensors, bar code readers, variable-frequency drives, panel displays, and operator interfaces from over 150 manufacturers world-wide, directly to your Modicon TSX Quantum PLC.

Simpler wiring saves installation / maintenance / repair costs.

The DeviceNet Scanner knows what's connected, and where. Each component on the DeviceNet has its own unique address that can't be used by any other on the network.

All communications occurs on a single DeviceNet cable. Instead of the discrete wiring from your PLC to each sensor or actuator in your application, with DeviceNet, adding or removing a component is simplicity itself. Just "tee off " from the cable wherever you need to install a sensor or actuator, drop a line, and you're running. This all adds up to reduced wiring costs and a quicker installation.

Need to remove a component? Just disconnect it. DeviceNet doesn't have to be "taken down" to change.



Other CAPP Products on Modbus, Modbus TCP/IP and Modbus Plus

Collaborative Automation by Schneider Electric

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- PLC plug-in modules
- Press Automation Controls

- Operator Interfaces
- Message Displays
- Marquees

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