

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

AVG AUTOMATION

140SAC-QDNET-010

DEVICENET SCANNER MODULE

Used with the applicable TSX Quantum DeviceNet configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: AVG Automation TSX Quantum DeviceNet Scanner Module Manual



TSX Quantum DeviceNet Scanner Module (RSNetWorX™ Version) Instruction & Operation Manual



Sales and Marketing ▼

343 St. Paul Blvd.
Carol Stream, IL 60188
Tel: (630)668-3900
FAX: (630)668-4676

Factory Customer Service/Order Entry ▼

4140 Utica Ridge Rd.
Bettendorf, IA 52722
Tel: (319)359-7501
(800)711-5109
FAX: (319)359-9094

Application Hotline

1 (800) TEC-ENGR (832-3647)

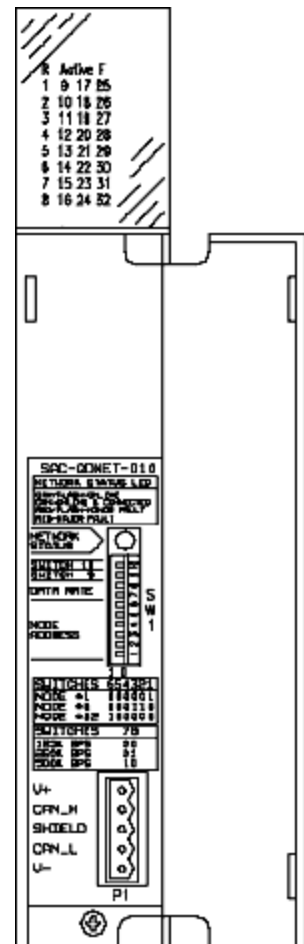
Visit our web site at: www.avg.net

DeviceNet Scanner for Modicon TSX Quantum PLCs

Lets you connect your DeviceNet devices to a Modicon TSX Quantum PLC

- A single-slot module that resides in a Modicon TSX Quantum PLC rack; can be local, remote or DIO rack.*
- Lets you connect up to 63 slave devices.
- Communicates directly with the PLC's backplane using 8 or 32 input and output registers.
- DeviceNet time can be saved by not transferring I/O values unless a change-of-state (COS) has occurred.
- DeviceNet transfer of I/O data can be scheduled (cyclic data).
- R4 Register Support (32 Register Mode) and 28 (8 Register Mode).

* Because DIO rack supports a maximum of 30 input registers, the scanner module in a DIO rack can be used only with 8 word configuration.



1. Introduction

The **Quantum PLC DeviceNet Scanner** acts as an interface between DeviceNet devices such as photoelectric sensors, proximity switches, valve manifolds, motor starters, process sensors, bar code readers, variable frequency drives, panel displays, and operator interfaces, and a **Modicon TSX Quantum PLC Processor**. It provides connection to a single DeviceNet network and communicates with DeviceNet devices over the network to:

- Read inputs from a device
- Write outputs to a device
- Download configuration data
- Monitor a device's operational status
- Update the scanner's exec

Information exchanged includes: Device I/O Data, Status Information, and Configuration Data.

1.1 DeviceNet Basics

DeviceNet is an open network standard. This means that users may specify, install, and use various products from a wide number of suppliers without the need to purchase special equipment, software, or licensing rights. Thus, the user can create a system from a variety of vendors, yet specific to the exact application, mainly using off-the-shelf parts.

DeviceNet is a low-cost communication link that connects 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 to a common network.

Networking devices eliminates the necessity for expensive hard wiring, and the attendant testing and maintenance that goes with it. It also reduces the cost and time needed to wire and install automation devices, while providing improved communication between devices, as well as important device-level diagnostics not easily accessible or available through hard-wired I/O interfaces.

1.2 DeviceNet Functionality

The DeviceNet bus topology is described as “Linear” (trunkline/dropline); power and signal reside on the same network. Nodes may be removed or inserted from the network without powering down the network.



IMPORTANT NOTE: *The scanner will not reestablish an active connection with a slave if the scanner and the slave are the only two nodes on the network and the slave is disconnected/reconnected.*

To reestablish active connections with this minimum 2 node network, disconnect then reconnect the scanner's DeviceNet connector.

1.2.1 Bus Addressing

Bus Addressing can be one of the following:

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

Multi-Master with Multi-Cast — Multi-Master addressing is where more than one unit acts as a master.

Master/Slave Special Case — Polled or change-of-state (exception-based). Rather than a Master going through a polling list (scanning), devices report data (input or output) on a COS (change-of-state) basis as the events occur. This mode is considered more efficient for discrete applications. Network traffic is reduced significantly.

2. Specifications

2.1 DeviceNet Parameters:

- Strobe, Poll, COS (Change-of-State), or Cyclic I/O Data for each Node
- Interscan Delay
- Scan List
- Background Poll Rate

2.2 PLC Processor-to-Scanner Communication:

- DIP Switch Selectable:
 - 8 I/O Configuration uses 8 Input and 8 Output registers
 - 32 I/O Configuration 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

2.3 Power Consumption:

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

2.4 DeviceNet Power 24 VDC, Nominal

2.5 Communication Rates 125 kbps, 250 kbps, 500 kbps

2.6 Messaging Capabilities (Master) Poll, Strobe, COS, or Cyclic

2.7 Isolation Optical isolation between Backplane and Network

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

2.9 Network Address 00-63

2.10 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% noncondensing
- Shock (unpacked):
 - Operating 30g
 - Nonoperating 50g
- Vibration (unpacked) 5g from 10 to 500 Hz



3. Hardware Configuration

THE NUMBERED SWITCHES AND INDICATORS THAT ARE CALLED OUT IN THE FIGURE BELOW ARE DISCUSSED IN GREATER DETAIL ON SUBSEQUENT PAGES — SEE PARAGRAPH WITH THE CORRESPONDING CALLOUT NUMBER (IN THE CIRCLE) FOR MORE INFORMATION.

