

# developing for DEVICENET software tools

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The DeviceNet™ network is an open, global, industry-standard communication network designed to provide a single-cable interface from a programmable controller directly to "smart" devices. These devices include sensors, push buttons, motor starters, simple operator interfaces, and drives. The use of DeviceNet technology is rapidly increasing world wide, creating valuable business opportunities for industrial hardware and software designers. Such third-party entities, large and small, introduce products to help meet the demand for DeviceNet-compatible products.

If you are such a designer/developer, Rockwell Automation can help you streamline your DeviceNet design process. Here is a summary of the DeviceNet development tools Rockwell Automation provides.

## Toolkits for Developing Embedded Applications

### *DeviceNet Master Stack and I/O Scanner Firmware Developer's Kit*

The DeviceNet Master Stack and I/O Scanner Firmware Developer's Kit (DeviceNet MSFDK) lets you add I/O scanner functionality to designs for embedded DeviceNet products. You receive the source code, Application Program Interface (API) definitions and comprehensive technical documentation.

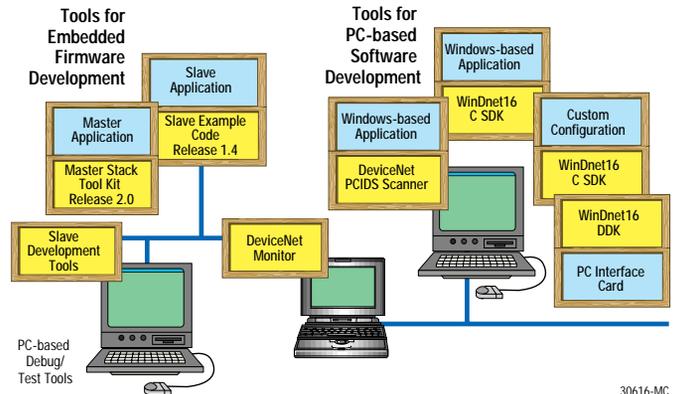
The source code features:

- ▶ Master I/O messaging for Bit-strobe, Poll, and Change of State/Cyclic
- ▶ Unconnected Message Manager (UCMM) proxy
- ▶ Toolkit development tools, including simulated environments that let you run the scanner stack on a PC as a DOS application

This kit uses two APIs for easy integration into systems containing various Controller Area Network (CAN) chips, host microprocessors, and operating systems, all without extensive source code modifications. The DeviceNet MSFDK is currently available at release 2.0 on 3.5-inch disk. You can order this kit through Rockwell Automation Value-Added Design Partners (VADPs) worldwide. For a list of VADPs, send an e-mail to [devicenet@ab.com](mailto:devicenet@ab.com). You can also fax your request to 440-646-4559, or call the Rockwell Automation Business Partner Programs Group at 440-646-5200.

### *DeviceNet Example Code*

The DeviceNet Example Code consists of two libraries of C source code routines that implement various aspects of DeviceNet protocol.



The Complete Line of Rockwell Automation's DeviceNet Development Tools

The first library, a peer-to-peer (dynamic I/O) example code library, contains C source code that shows you how the protocol operates. The code is not optimized for any particular microprocessor or CAN chip, but acts as a guide in adapting to a specific device/target central processing unit (CPU) combination.

The second library provides the C source code routines you need for a simple Group 2 Only slave device. This library supports the Explicit Message, I/O Poll, Bit-strobe and Change of State/Cyclic connections outlined by the Predefined Master/Slave Connection Set for a Group 2 Only slave device.

The DeviceNet Example Code, catalog number 9240-DNEXP, is currently available at release 1.4 on 3.5-inch disk.

## PC-based Tools for Testing and Debugging

### *DeviceNet Monitor Tool*

The DeviceNet Monitor Tool captures and displays all network activity and associated timing information, thereby streamlining both product development and troubleshooting. This tool features:

- ▶ An easy-to-read format of captured data, with optional time stamping
- ▶ Display filters that let you specify the displayed traffic
- ▶ A Save function for transferring data to disk files

The DeviceNet Monitor Tool is fully compatible with WinDNet16™, the Windows® 3.x and Windows 95 operating systems. It is currently available under catalog number 9240-MON16 at release 2.002 on 3.5-inch disk.

### *DeviceNet Slave Development Tools*

If you are developing a DeviceNet slave, here is a powerful Windows 3.1-based package consisting of three essential tools:

**Message Builder** - This window lets you select elements from the protocol structure, add the appropriate data, and trigger message-sending.

**Master Emulator** - This tool exercises a prototype slave under simulated runtime conditions.

**Traffic Monitor** - This tool captures all valid traffic on the wire, as long as it is within the buffering capability limits.

DeviceNet Slave Development Tools are compatible with various PC

interface cards from multiple vendors. These tools are currently available under catalog number 9240-DNSDT at release 1.1 on 3.5-inch disk.

## Toolkits for Developing PC-based Applications

### *WinDNet16 Driver Developer's Kit*

If you are involved in the manufacture of PC interface cards, you can use the WinDNet16 Driver Developer's Kit to create a driver .dll compatible with the WinDNet16 driver API. The .dll allows WinDNet16-compatible software to access the DeviceNet network through your card. The WinDNet16 Driver Developer's Kit provides all necessary descriptions of the WinDNet16 driver API in header files. You compile these files and link them to your interface card drivers, thereby creating the driver .dll for your card.

The WinDNet16 server .dll is a 16-bit Windows .dll that uses the DeviceNet protocol engine. This server is fully tested to release 1.3 of the DeviceNet specification. It is compatible with Windows 3.1 and Windows 95, and is also compatible with custom applications, including those written in C, C++™, Visual C++™, and Visual Basic™.

The kit includes several sample software applications, in both executable and source code versions, for testing the drivers you create. You also receive a sample .dll to help you understand how to write the code.

The WinDNet16 Driver Developer's Kit is currently available at release 1.003 on 3.5-inch disk. This kit does not require licensing, and is

available free of charge from Rockwell Automation Allen-Bradley. To obtain your copy, contact Ray Romito by phone at 440-646-3520, or by e-mail at raromito@ra.rockwell.com.

### *WinDNet16 Software Developer's Kit (9240-WINSDK), Version 1.003, Floppy*

The WinDNet16 Software Developer's Kit (SDK) is a library of C calling convention functions that link your application program to DeviceNet devices. The SDK software performs all connection-management and protocol-handling tasks, dramatically reducing both time and cost involved in linking application software to DeviceNet. Features include:

- ▶ 16-bit .dll compatible with Windows 3.x and Windows 95
- ▶ Standard API that supports PC cards from multiple vendors
- ▶ Sample test application and source code

The WinDNet16 Driver Developer's Kit, catalog number 9240-WINSDK, is now available at release 1.003 on 3.5-inch disk.

Unless otherwise noted in the product descriptions above, you can receive more information about these DeviceNet tools by contacting your local distributor or Rockwell Automation sales representative, or by using the appropriate telephone/fax number at the end of this publication. For additional technical information, contact Ray Romito by phone at 440-646-3520, or by e-mail at raromito@ra.rockwell.com. 