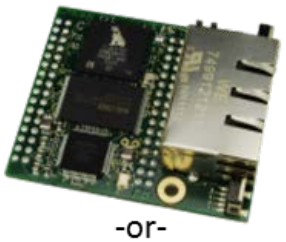
Profinet RapID™ Platform Network Interface

Connectivity Solution for 2-Port, Class B Devices

The *RapID Platform Network* Interface is a complete Profinet Industrial Ethernet interface available as a module or embedded design



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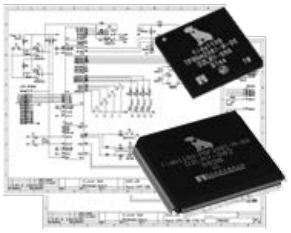
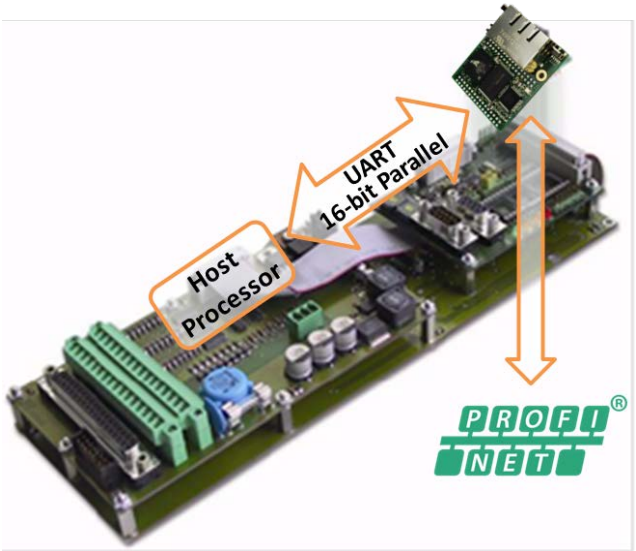


The interface contains everything needed including the communications controller, protocol stacks, Flash, RAM, and analog driver so the user does not need to know anything about the Profinet protocol. All Profinet capabilities are encapsulated on this small form factor device, and can be integrated into any type of automation equipment from complex control to a simple sensor or actuator. For small form factor applications the module's design can be integrated directly into the field device. The *RapID Network Interface* connects to a "Host" processor via a UART or 16-bit Parallel Interface. Profinet communication has been Class B certified at an accredited Profinet Interface Center and tested on the bus with numerous applications to provide problem-free operation with virtually any Profinet controller.

Easy Hardware and Software Integration

The *RapID Network Interface* can be integrated into a design as either a module or an embedded design. As a module, the *RapID Network Interface* plugs into a board using standard 2.54 mm pitch through-hole pins. When designing-in the module, hardware integration is as easy as connecting Power/Ground/Reset and interfacing the Host processor to the UART or 16-bit Parallel interface. The Ethernet physical interface is ready to plug into the network. Software for the module is provided as firmware that is resident on the flash.



As an embedded design, the *RapID Network Interface* connects to a board design using the schematics provided. Also provided are the Bill of Materials and example layouts to minimize the hardware design effort. Software for the embedded design is provided as firmware that is downloaded to the flash. Whether using the *RapID Network Interface* as a module or an embedded design, no software development is required and there are no license fees or royalties.

Software integration with a Host processor is also easy. Messages passed between the Host and *RapID Network Interface* follow a common interface definition when using either the UART or 16-bit Parallel interface. This interface simplifies communication for sending or receiving cyclic, acyclic data and alarms. Example C-code is provided to minimize integration effort on the Host.

Easy Network Integration

RapID Network Interface comes pre-loaded with the latest firmware for Profinet Class B communication and includes PriorityChannel™ technology to ensure reliable, real-time network performance. It is Class B

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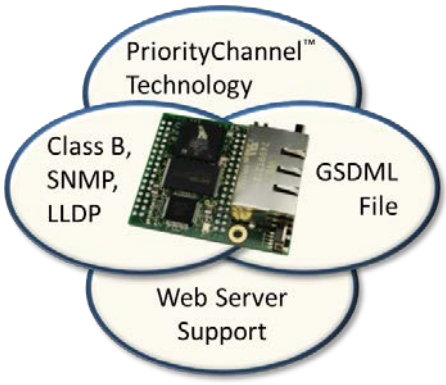
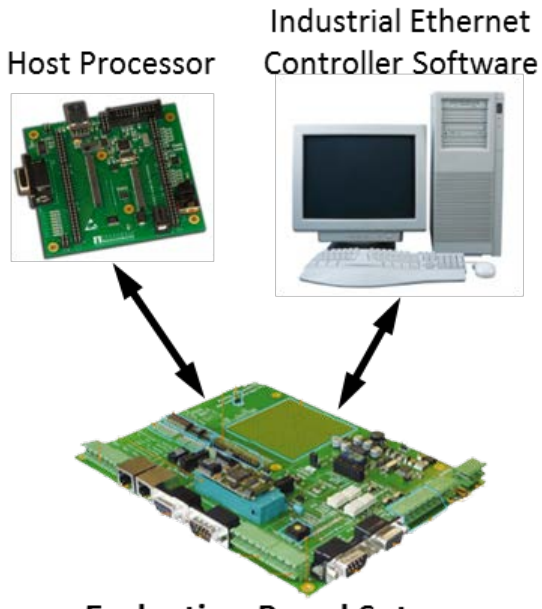
certified and includes support for the Link Layer Discovery Protocol (LLDP) so controllers can identify the devices attached to the network. Also included is the Simple Network Management Protocol (SNMP) along with the required Management Information Bases (MIBs) to support network configuration and diagnostics. The two protocols work together so devices can be easily added or removed from the network. When a device is added to a network, it is sometimes useful to retrieve information directly from the device. A Web Server is provided for this purpose. The server can be customized to show device and company-specific information.



A GSDML file is required for Profinet. This file describes a device's capabilities to the controller. The example GSDML file provided can be tailored to describe the exact features of the final product.

Easy Evaluation, Fast Product Development

The Evaluation Kit available for the *RapID Network Interface* provides quick assessment for interfacing a Host processor to the module. Simply connect the Host processor development board to the *RapID Network Interface* evaluation board via the UART or 16-bit Parallel interface. Once Host-side communication is established, Profinet communication can be evaluated using 3rd-Party, PC-based Tools. The communication path between Host processor and Profinet controller can be completely verified before integrating the module into the actual automation equipment hardware.



Evaluation Board Set-up

Parameter	Details
Host Processor	Any CPU or DSP
Host Processor Interfaces	UART (up to 520 kBaud) 16-bit Parallel (up to 12.5 Mbps)
Network Interface	Data Transport: IEEE 802.3
	Data Rate: 10/100 Mbps
	Ports: 2
Environmental Conditions	-40C to +85C
Power Supply	Voltage: 3.3 VDC
	Power consumption: 1.3W
TCP/IP	ICMP, IGMP, ARP, SNTP, BSD 4.4A socket, DNS, BOOTP, DHCP, TELNET, FTP, TFTP, HTTP (server & client), CGI, SNMP
Profinet	Cyclic Input Data: 1440 bytes Cyclic Output Data: 1440 bytes
	Cycle time: 1 ms (min.)
	Alarm Types: Process, Diagnostic, Return of Sub Module
	DCP, LLDP, VLAN Priority
Compliance	RoHS, CE, PI