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RapID PLATFORM—PROFINET WITH IRT NETWORK INTERFACE

2-Port, Class B and C, Net Load Class III Connectivity Solution



The RapID Platform Network Interface Is a Complete, Pretested Solution that Manages the Industrial Protocol and Network Traffic for a Host Processor

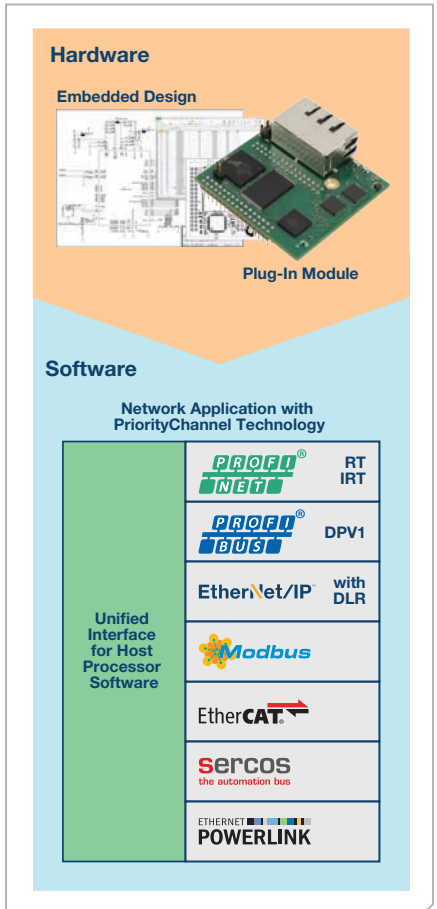
The network interface module or embedded design contains everything needed to participate in star, line, or tree network topologies, including the communications controller, protocol stacks, flash, RAM, Ethernet switch, and PHYs. A host processor connects to the network interface via a UART or 16-bit parallel interface. At the software layer the host connects to a unified interface so other protocols can be used without changing the host software. The network interface has passed PROFINET v2.3 certification for Class B and Class C devices and received Net Load Class III accreditation. Both advanced and legacy startup are supported so your field device will operate problem-free in any PROFINET network and will never disconnect from the network.

Easy Hardware and Software Integration

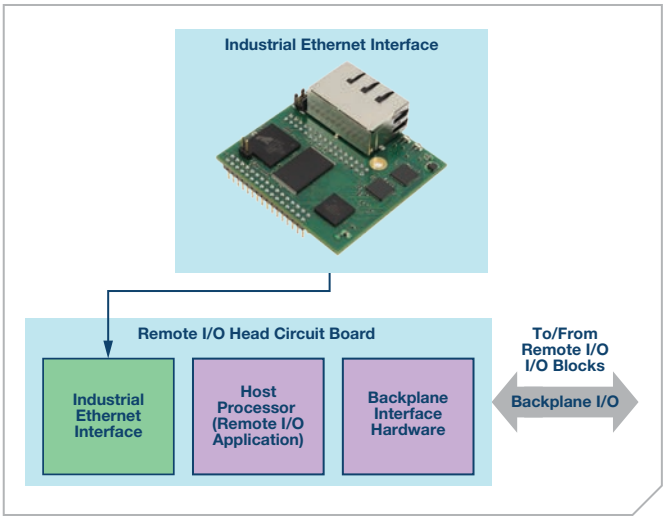
The network interface can be integrated into a design as either a module or an embedded design. As a module, the network interface plugs into a board using standard 2.54 mm pitch through-hole pins. When designing-in the module, hardware integration is as easy as connecting power/ground/reset and interfacing the host to the UART or 16-bit parallel interface.

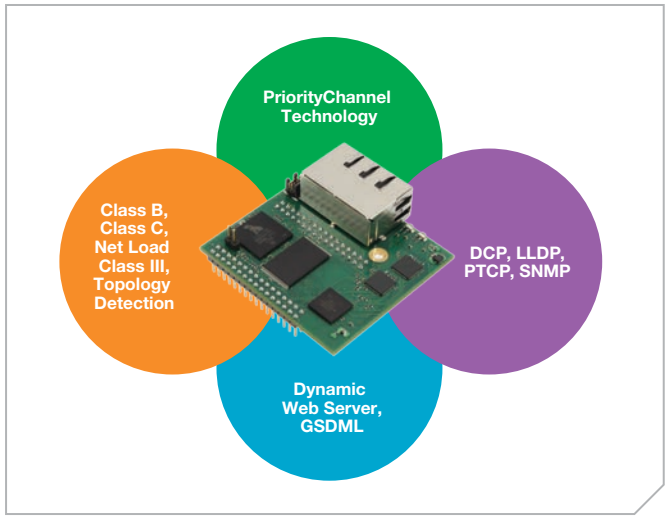
As an embedded design, the network interface hardware design can be integrated directly using the schematics provided. Also provided are the bill of materials and example layouts to minimize the hardware design effort. Software for the embedded design is provided as firmware that is downloaded to the flash. Whether using the 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 is also easy. Messages passed between the host and network interface follow a unified interface definition. A simple to use, Analog Devices supplied, PC-based tool configures the network interface, so the host only passes parameters between it and the network interface. From this tool, it is also easy to specify how parameters will be passed to the PROFINET controller using the GSDML file. Since the host is only passing parameters, the host software does not have to change if PROFINET network parameters change or if another industrial Ethernet protocol is used. There is also a sockets interface that supports direct Ethernet communication. Example c-code is provided to minimize the software effort for the host/network interface communication.



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Reliable, Flexible Network Integration

The network interface provides reliable PROFINET Class B and Class C communication with PriorityChannel®—a revolutionary technology that eliminates the effects of network traffic and ensures reliable, real-time network performance to net load Class III. It gives your device a significant competitive advantage, extremely low jitter, and a reliable connection that will not disconnect even with >95% network loading.

PROFINET support includes the precision time control protocol (PTCP) for synchronization of nodes in a network and the discovery and configuration protocol (DCP), which is required for all PROFINET devices and provides basic device configuration facilities, and the link layer discovery protocol (LLDP) so controllers can identify the devices attached to the network and the overall topology. Also included is the simple network management protocol (SNMP) along with the required management information bases (MIBs) to support network configuration and diagnostics, and the example GSDML file provided can be tailored to describe those features of the field device to a PROFINET controller. To assist with commissioning, a dynamic web server is provided so the field device's network information can be displayed or changed using a standard browser.



Fast Evaluation and Development

The RapID platform network interface evaluation kit provides a quick assessment for interfacing a host to the module. An application example is provided in order to demonstrate end-to-end, host-to-network interface-to-controller communication. Simply connect the host development board to the network interface evaluation board via the UART or 16-bit parallel interface. Once host-side communication is established, PROFINET communication can be evaluated using a PLC or controller simulator. The communication path between host and PROFINET controller can be completely verified before integrating the module into your field device hardware.

RapID Platform PROFINET Network Interface

Parameter	Details
Part Number	RapID-NI-V2007, RapID-NI-V2107
Host Processor	Any CPU or DSP
Host Processor Interfaces	UART (115.2 kbaud) 16-bit parallel (up to 12.5 Mbps)
Network Interface	Data transport: IEEE 802.3
	Data rate: 10 Mbps/100 Mbps
	Ports: 2
Temperature (°C)	–40 to +85
Power Supply	Voltage: 3.3 V_{DC}
	Power consumption: 1.6 W
TCP/IP	ARP, BSD socket, DNS, DHCP, TFTP, HTTP server, CGI, SNMP
PROFINET	Cyclic input data: 1440 bytes (max) Cyclic output data: 1440 bytes (max)
	Alarm types: process, diagnostic, return of submodule
	DCP, LLDP, VLAN Priority, PTCP
Compliance	RoHS, CE, PI

Analog Devices, Inc.
Worldwide Headquarters

Analog Devices, Inc.
One Technology Way
P.O. Box 9106
Norwood, MA 02062-9106
U.S.A.
Tel: 781.329.4700
(800.262.5643, U.S.A. only)
Fax: 781.461.3113

Analog Devices, Inc.
Europe Headquarters

Analog Devices GmbH
Otl-Aicher-Str. 60-64
80807 München
Germany
Tel: 49.89.76903.0
Fax: 49.89.76903.157

Analog Devices, Inc.
Japan Headquarters

Analog Devices, KK
New Pier Takeshiba
South Tower Building
1-16-1 Kaigan, Minato-ku,
Tokyo, 105-6891
Japan
Tel: 813.5402.8200
Fax: 813.5402.1064

Analog Devices, Inc.
Asia Pacific Headquarters

Analog Devices
5F, Sandhill Plaza
2290 Zuchongzhi Road
Zhangjiang Hi-Tech Park
Pudong New District
Shanghai, China 201203
Tel: 86.21.2320.8000
Fax: 86.21.2320.8222

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