RapID™ Platform - PROFINET IRT Network Interface

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

The *RapID Platform Network Interface* is a complete, pre-tested 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 start-up 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, Innovasic 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.
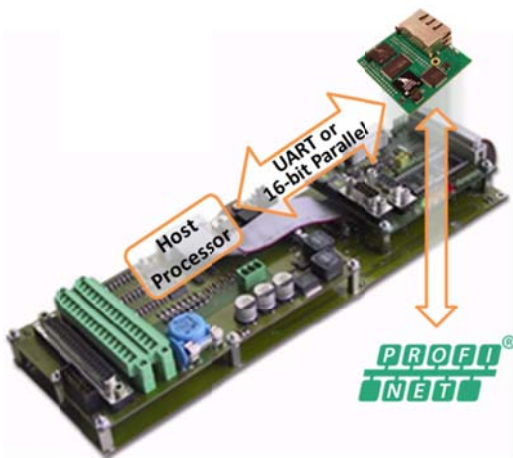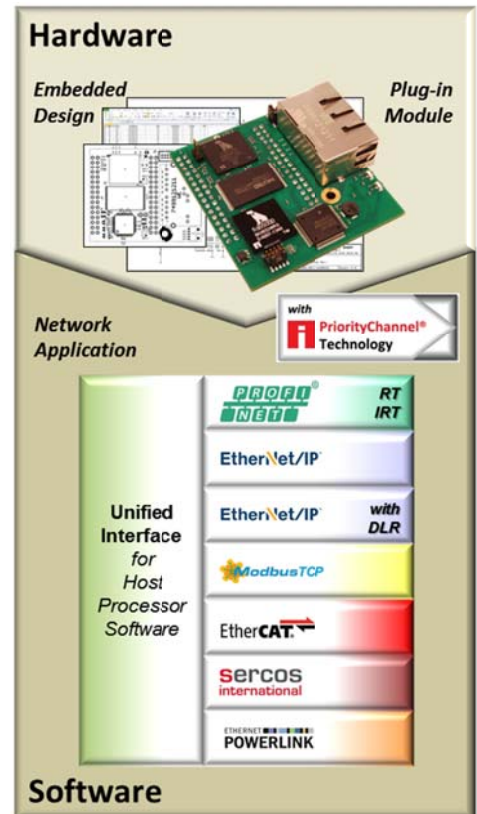
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Reliable, Flexible Network Integration

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 webserver is provided** so the field device's network information can be displayed or changed using a standard browser.
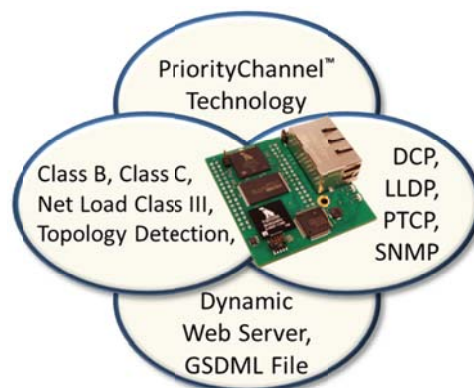
Fast Evaluation and Development

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-NIEK V0004

RapID Platform PROFINET Network Interface	
Parameter	**Details**
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: 10/100 Mbps
	Ports: 2
Temperature	-40C to +85C
Power Supply	Voltage: 3.3 VDC
	Power consumption: 1.6W
TCP/IP	ICMP, IGMP, ARP, SNTP, BSD Socket, DNS, DHCP, TELNET, TFTP, HTTP server, CGI, SNMP
PROFINET	Cyclic Input Data: 1440 bytes (max) Cyclic Output Data: 1440 bytes (max)
	Cycle time, Class B: 1 ms (min) Cycle time, Class C: 250 µs (min)
	Alarm Types: Process, Diagnostic, Return of Sub Module
	DCP, LLDP, VLAN Priority, PTCP
Compliance	RoHS, CE, PI

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