

RapID™ Platform – ModbusTCP Network Interface

2-Port 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 communications is extremely robust and supports Innovasic's PriorityChannel™ technology. This means your field device will operate problem-free with any ModbusTCP controller and will never disconnect from the network.

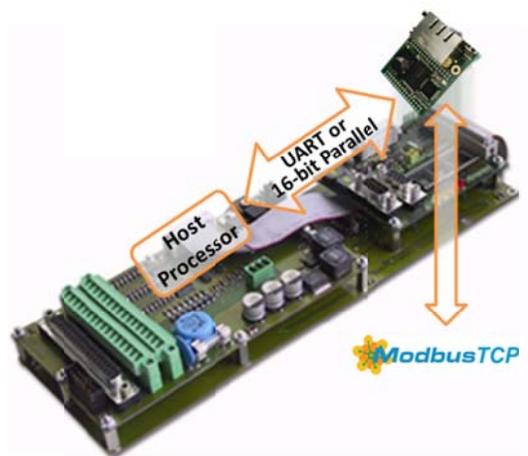
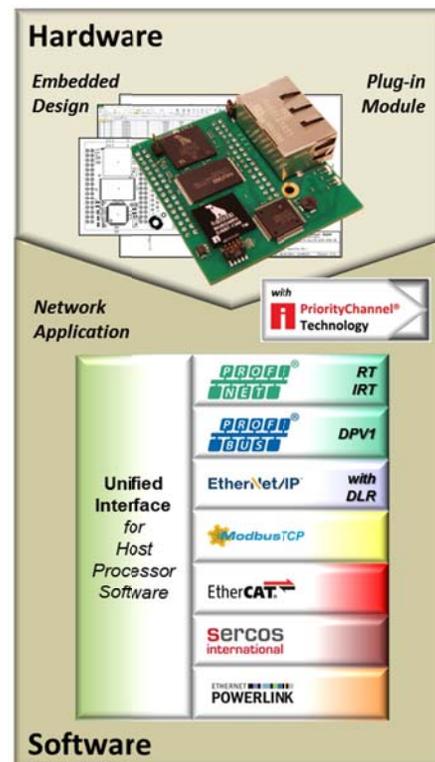
Easy Hardware and Software Integration

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 ModbusTCP register map and the associated host parameters. Since the Host is only passing parameters, the Host software does not have to change if ModbusTCP 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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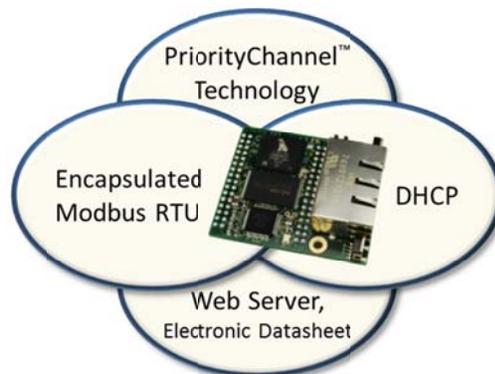
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Reliable, Flexible Network Integration

The *RapID Platform Network Interface* supports ModbusTCP communication with PriorityChannel™ – a revolutionary technology that eliminates the effects of network traffic and ensures reliable, real-time network performance. **It gives your device a significant competitive advantage**, extremely low jitter, and a reliable connection that **will not disconnect even with >95% network loading**.

ModbusTCP is a master/slave protocol with Modbus RTU encapsulated in a TCP frame. The protocol requires slave devices to respond to the master's commands, and these responses should be performed in a timely manner. With PriorityChannel's extremely low latency, ModbusTCP commands will not be lost in unrelated network traffic and these commands will be responded to with minimum delay. In addition, the *Network Interface* comes with an example Electronic Datasheet file that can be tailored to describe the features of the field device to a ModbusTCP master. To assist with commissioning, **a webserver is provided** so the field device's network information can be displayed on 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-master 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, ModbusTCP communication can be evaluated using a PLC or master simulator. The communication path between Host and ModbusTCP master can be completely verified before integrating the module into your field device hardware.



RapID-NIEK V0004

RapID Platform ModbusTCP Network Interface	
Parameter	Details
Part Number	RapID-NI V2012, RapID-NI V2112
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	ARP, BSD Sockets, DNS, DHCP, TFTP, HTTP server, CGI
ModbusTCP	Cyclic Input Data: 504 bytes Cyclic Output Data: 504 bytes
	Cycle time: 1 ms (min.)
	Function Codes: 01, 02, 03, 04, 05, 06, 07, 15, 16 and 17
Compliance	RoHS, CE