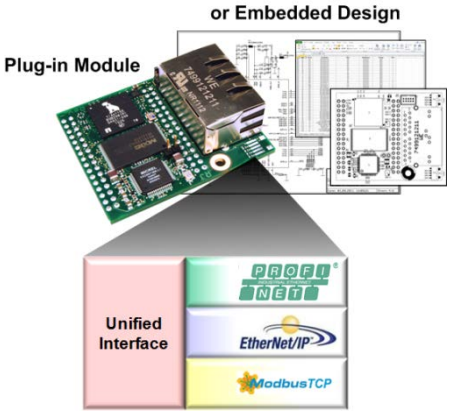
RapID™ Platform - ModbusTCP Network Interface

2-Port Connectivity Solution

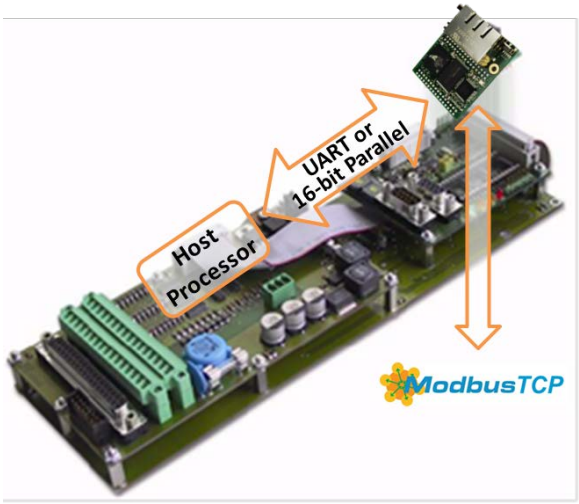
The *RapID Platform Network Interface* is a pre-tested module that manages the industrial protocol and network traffic with a single host processor interface



The interface contains everything needed including the communications controller, protocol stacks, Flash, RAM, and PHYs. All ModbusTCP 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 applications where space is limited, the module's design can be embedded directly into the field device. The RapID Platform Network Interface connects to a "Host" processor 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 incorporating a RapID Platform Network Interface 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. 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 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. Using this tool, it is a simple matter to specify 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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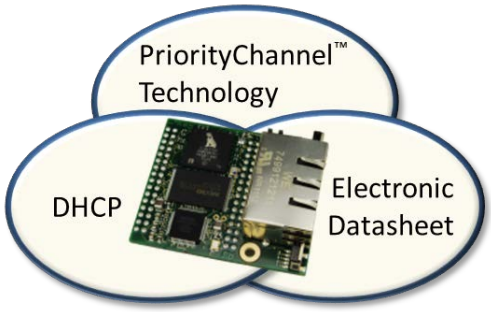
Easy, Reliable Network Integration



The RapID Platform Network Interface supports ModbusTCP communication with PriorityChannel™ technology. PriorityChannel™ is 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.

An additional benefit of the PriorityChannel™ technology is extremely low latency. The ModbusTCP protocol is a master/slave protocol requiring the slave device to respond to the master's commands. PriorityChannel™ ensures these commands will not be lost in unrelated network traffic and that they will be responded to with minimum delay. These benefits provide PriorityChannel™ based devices with a distinct competitive performance advantage.

Easy Evaluation, Fast Product Development

The Evaluation Kit available for the RapID Platform Network Interface 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, ModbusTCP communication can be evaluated using a PLC or Controller simulator. The communication path between Host and ModbusTCP controller can be completely verified before integrating the module into the actual field device hardware.

RapID-NIEK V0004

RapID-NI V2004 (UART)
RapID-NI V2104 (Parallel)

RapID Platform – ModbusTCP 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
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
ModbusTCP Data	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