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# PROTON-16AI

## Wireless Smart RTU

CPU	ARM9 400MHz on Atmel AT91SAM9G25
Flash Memory	256 MB Nand Flash
SDRAM	28MB / 256 MB DDR2
Serial Port	<b>Baud Rate:</b> 300bps –921.6 Kbps <b>Parity Check:</b> None, Odd, Even <b>Data Bits:</b> 5,6,7,8 <b>Stop Bits:</b> 1, 2 <b>Connector:</b> 3 Terminal Block Connector <b>Protection:</b> 15KV ESD <b>Isolation:</b> Magnetic.
Ethernet	10/100/1000M Auto negotiation Protection: Built-in 1.5kV magnetic isolation
900 MHz Radio	<b>Modulation Frequency</b> 902 to 928 MHz. <b>RF Data Rate</b> 10 Kbps o 200 Kbps <b>Indoor/Urban Range</b> 610 m <b>Outdoor/ Line-Of-Sight Range</b> 35 km ( w/ 15 dB Grid antennas) <b>Transmit Power</b> 24 dBm (250 mW) <b>Receiver Sensitivity</b> -101 dBm @ 200 Kbps, -110 dBm @ 10 Kbps Spread Spectrum FHSS (Software Selectable Channels)
Wireless LAN	Compliance for IEEE 802.11 b/g/n <b>Wireless Security:</b> WEP, WPA, WPA2, TKIP, AES, 802.1x <b>TX Power 11b:</b> 15dBm /11g: 14dBm <b>RX Sensitivity:</b> -66 dBm@54 Mbps, -80 dBm@11Mbps <b>Transmission Rate :</b> 54 Mbps (max.) con auto fallback <b>Transmission Distance :</b> Up to 300 meters (@12 Mbps, in open areas) <b>Antenna Connector:</b> Reverse SMA <b>Topologies:</b> Access Point, Infrastructure and AdHoc
Analog Input	Set of 16 analog inputs <b>Isolation:</b> Optical Three independent return references <b>Maximum Operational Voltage:</b> 32 VDC <b>Maximum Input Current :</b> 100mA
Reading from Hart Instruments	<b>Hart Channels :</b> Two <b>Hart Configuration:</b> Point to Point or Multidrop <b>Input Resistance:</b> 150 ohm
Power Requirements	<b>Input Voltage:</b> 9- 32 VDC <b>Current Consumption:</b> under 500mA (Powered with 24 VDC)
Environmental	<b>Operating:</b> -10°C ~ 60°C (14°F ~ 140°F), 5~95% HR
Dimensions	45.3 mm x 107 mm x 89.6mm (W x H x D)
Supported Protocols	<b>Modbus RTU Master:</b> Supports Modbus commands 1,2,3,4,5,6,15 and 16 for baud rates from 110bps up to 115kbs using RS 485. User can configure up to 2000 commands in the port. <b>Modbus TC/IP Client/Server:</b> Supports Modbus Commands 1,2,3,4,5,6,15 and 16 allowing the configuration of multiple clients or multiple servers. Over 2000 commands can be configured for each client. <b>EtherNet/IP Tag Based Cacces:</b> Allows reading and writing tags in any of the Logix PLCs from Rockwell Automation. <b>HTTP:</b> The equipment could be accessed for configuration and status check from a Web Browser. <b>NTP Client:</b> Allows to add a time stamp to processed data.
Configuration	The embedded configuration tool, free of charge, is web page based and could be accessed from LAN and WLAN interfaces allowing programming and configuration of the unit.
HMI Interface	The Proton can provide the user with all the necessary tools for developing and using the embedded human machine interface (HMI).
Orderable Part Number	PRT-CMB-01, PRT-CMB-01-900, PRT-CMB-01-24, PRT-CMB-01-GSM, PRT-CMB-01-900-24, PRT-CMB-01-900-24, PRT-CMB-01-900-24



Front View



Lateral View



Rear View

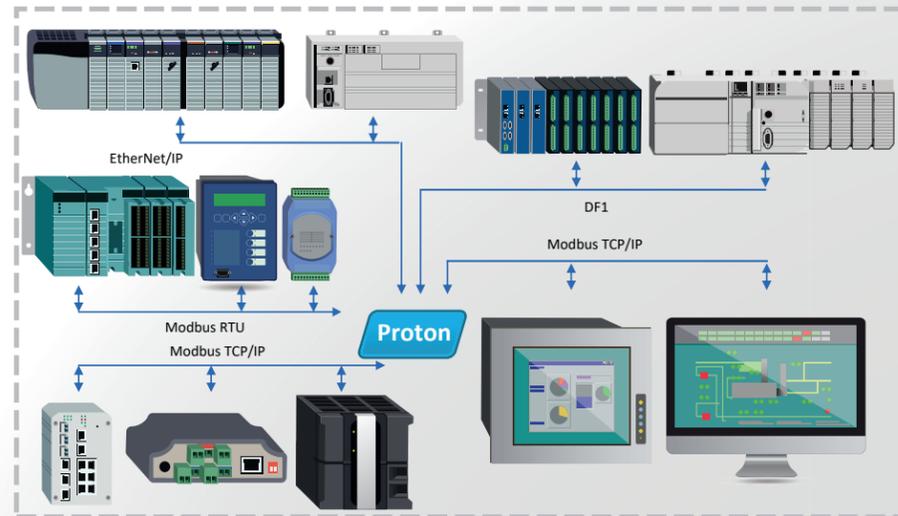


Specification and design are subject to change without notification  
 All product names referenced herein are registered trademarks of their respective companies

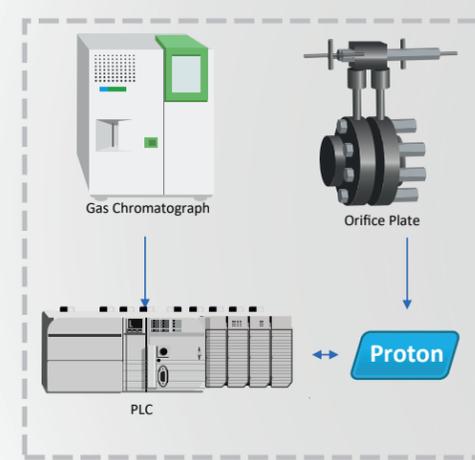
# PROTON-16AI

## Wireless Smart RTU

### Protocol Conversion



### Advanced Calculation



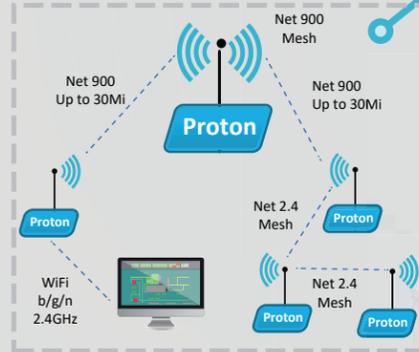
### Scripting



### Mobile HMI



### Wireless Communications



The Proton is a new and innovative device that includes many capabilities that allow it to assume the functions of several devices normally used in process control and data monitoring. The Proton can work as a remote terminal unit (RTU), Gateway, human machine interface (HMI) as well as a communication radio. Working as an RTU the Proton can manage a set of digital and analog input-outputs. The serial and Ethernet communication ports ruled by wide set industrial communications protocols (Modbus RTU y TCP, Ethernet IP, NTP, HTTP) allows the Proton to also work as a Gateway. Accessing the unit by a Web Browser gives the user the option to configure or visualize the embedded HMI. The Proton is equipped with a Wi-Fi radio that allows 24/7 access for configuration from several devices and can be ordered with a set of 900MHz and 2.4 GHz radios for short and long radio links in a point to point or mesh topologies.



### Protocol Conversion

The Proton allows the user to communicate multiple protocols using only one gateway. Communicating with these devices is made simple by using: Modbus RTU (Master or Slave), Modbus TCP/IP (using single or multiple clients/servers), or Ethernet/IP. It is possible to feed the registers using information read from inputs or to define outputs values or states per the communications register contents. All these protocols and features are available in a unique device with a unique part number, easing your procurement and spare parts inventory process

### Scripting

The Proton allows the user to program small scripts, making it easy to implement control logic dependent on the state of the communications with other devices through any of the supported communication protocols. The control logic could also be addressed for changing the digital output state or current magnitude of analog output or change the register content that could be part of a Modbus or IZINet protocol.

### Advanced Calculation:

In some situations, it is required to be able to make advanced calculation algorithms such as AGA3 or AGA8; for example, this gives the user full flow control, without the need of using an expensive flow computer. In these kinds of situations, the SPX5 can operate as a math coprocessor for your PLC by executing these and other types of calculations programmed using our scripting language.

### Wireless Communications

The Proton can communicate with other devices using WIFI 802.11 b/g/n standard. By using this channel, it is possible to configure the unit or get access to the human machine interface (HMI) once it has been configured. Also, there is the possibility to order the product provided with a set of up to two radios in 900MHz and 2.4GHz carriers in point to point or mesh topologies using the IZI Net supported protocols.

### Mobile HMI

The Proton can provide the user with all the necessary tools for developing and using the embedded human machine interface (HMI). By having access to this feature, the user could observe the saved register values or change the process variables magnitude from anywhere. The HMI access is granted from a computer, tablet or smartphone by using a web browser increasing the compatibility of the application with the selected visualization device.

### Reading from Hart Instruments

Two of the sixteen analog inputs of the Proton16AI can read information from instruments using the Hart Protocols. The readings can be configured as point to point or multidrop making it possible to read information from up to four instruments at the same time. The channel input resistance is 250 ohm.