



## OVERVIEW

The RIO128 is a unique "open architecture" high density rail-mounted input / output device. Ideal for use in all industries, the RIO128 supports industry standard Modbus ASCII and RTU protocols, as well as TCP protocol via optional network-to-serial converter (RAIL Network Adapter). This device is used for local and remote monitoring and control over wide-area Radio and Ethernet networks. A built-in RS-232 serial connector is available for interfacing with third-party radios and an optional network adaptor is available for networking.

Featuring 128 I/O points, the RIO128 is suitable for just about any application. The built-in RS-485 serial connector provides the ability to connect up to thirty-two RIO-128 devices for a total expansion to 4,096 I/O points.

This open architecture device not only ensures interoperability with other devices, it also provides compatibility with hundreds of popular SCADA / DCS software packages, PLCs, process controllers and instrumentation.

## KEY FEATURES

- ◆ 40 Discrete Inputs
- ◆ 40 Discrete Outputs
- ◆ 40 Analog Inputs (12 Bit Resolution)
- ◆ 8 Analog Outputs (12 Bit Resolution)
- ◆ Use Analog Inputs as Discrete Inputs
- ◆ I/O Expansion up to 4,096 Points
- ◆ RS-232 & RS-485 Serial Connections
- ◆ Modbus ASCII and RTU Protocols
- ◆ Modbus TCP via RAIL Network Adapter (RNA)
- ◆ 1200-38400 Baud Rate
- ◆ Non-Isolated 0-24V Single-Ended I/O
- ◆ Standard Din Rail Mounted Device
- ◆ Size: 16.13"W x 5.69"H x 2.83"D
- ◆ 3 Year Parts & Workmanship Warranty

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## RIO128 TECHNICAL SPECIFICATIONS

### General Specifications

Field I/O wiring terminations	Removable terminal block
Wire size	#28 - #16
Dimensions	16.13"W x 5.69"H x 2.83"D
Power	12 VDC Nominal (10-15 VDC); Less than 12 watts
Operating temperature	14°-158° F (-10°-70° C)
Humidity	5-85% RH (noncondensing)

### Analog Inputs

Quantity of analog inputs	40
Signal input levels, nominal	0-5V; 4-20mA externally with external 249 ohm .02% resistor
Resolution	12-bit
Maximum ratings	0-5V +/- .2V
Input impedance	511 Kohms
Overload / transient protection	None
Conversion rate	Up to 10-samples-per-second
Noise rejection (50/60Hz)	-30dB

### Analog Outputs

Quantity of analog outputs	8
Output types	0-5V into a 10 Kohm load
Resolution	12-bit

### Digital Inputs

Quantity of digital inputs	40
Input type	Closure-to-ground for on; biased with 10-15 VDC raw power via onboard 5.6 Kohm resistor
On/Off threshold	1.5 VDC
Input current	2.5mA
Conversion rate	120-samples-per-second with 100 mSec debouncing for on/off status
DI pulse counting rate	Sampled at raw 120-samples-per-second; maximum input pulse rate of 30 Hz

### Digital Outputs

Quantity of digital outputs	40
Output type, configuration	Darlington array sinking to common
Output switch current rating	Current capability to drive 12 or 24VDC, 80mA constant duty, 300mA inrush current, ice cube-type relays
Overvoltage/transient protection	None
Overload protection/fault current	None

### Communication

Serial ports	2
Serial port interfaces	
COM #1	RS-232 9 pin D male
COM #2	RS-485 removable terminal block, #28 - #16, 2 wire half duplex
Ethernet (optional)	1200-38400 baud RS-232 communications via optional serial-to-network converter [RAIL Network Adapter (RNA)]
Protocols	Modbus ASCII, Modbus RTU, Modbus TCP (requires optional RNA)
Serial port data rates	1200-38400 baud
Scan & control rate	10 Hz (93 Modbus "status" registers and 5 Modbus "control" registers)

### Input/Output (I/O) Processor

CPU	8051-class microcontroller
Memory	32K of Flash ROM and 1K of RAM

