Rio*Express*™

Industrial Wireless I/O - Model G308

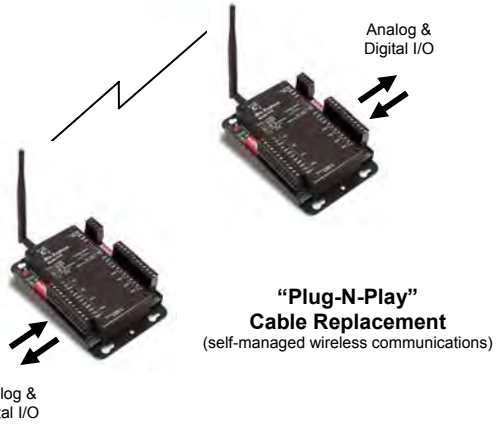
The Rio*Express* is an easy-to-use Wireless I/O module with integrated high performance Spread Spectrum Radio and outstanding overall performance. Use it to reliably access those remote or hard-to-reach Digital & Analog process signals for both monitoring and control.

- Use a pair of Rio*Express* modules to replicate (mirror) I/O signals for **Cable Replacement**.
- Use the RioExpress individually for stand-alone **MODBUS** Slave Wireless I/O.

Built for environmental tolerance and very low power consumption, it is ideal for use with **Solar Power.**

FEATURES:

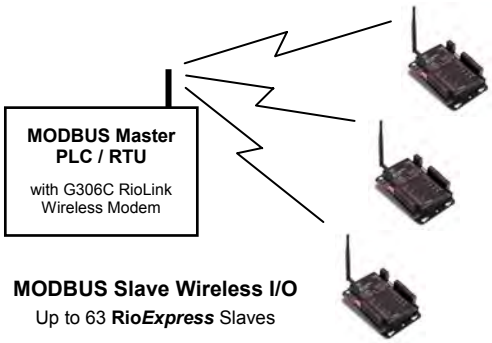
- Simple DIP Switch settings; no software configuration
- Exceptional Wireless Performance, 900MHz or 2.4GHz
- Advanced Communications and Power-Save features
- Internal 24V transducer excitation supply
- Two units replace multi-pair Signal Cable
  - True out-of-the-box operation
  - Self-managed wireless communications
  - Selectable update rate & power-save modes
  - I/O count: 4 ea. DI & DO, 2 ea. AI & AO (DIs & AIs become DOs & AOs on the other unit, bi-directional)
- Standard MODBUS Slave Wireless I/O end device
  - Point-to-point or point-to-multipoint
  - Addressable for up to 63 Slaves per Channel
  - I/O count: 4 ea. DI, 4 ea. DO, 2 ea. AI, 2 ea. AO
  - Plus Battery monitoring (AI3)
  - DI1-2 also Pulse totalize/rate or "event capture"
  - DOs timed or latched
- Self-resetting fuses & all-around surge protection
- Packaged for easy mounting and field wiring



"Plug-N-Play"
Cable Replacement
(self-managed wireless communications)

Typical Installation

Nema 4X Pkg



MODBUS Slave Wireless I/O
Up to 63 **Rio*Express*** Slaves

APPLICATIONS:

- Isolated I/O locations with no power or cabling
- Impractical or impossible I/O cable runs
- Remote I/O for PLC or RTU based systems
- Specific Monitoring/Control applications include:
  - Oil/Gas Wellhead & Facilities
  - Water/Wastewater
  - Solid Waste Landfills
  - Bulk storage tanks
  - Pumps & pump stations
  - Fixed and mobile machinery/vehicles
  - Environmental monitoring
  - Security

Is cabling impractical or too costly? Experience **Rio*Express*!**

G308 Rio*Express* – Specifications

RADIO PERFORMANCE:	Antenna Connector: RPSMA female, 50 ohm. *Antennas sold separate
Indoor/Urban Range (w/ 2.1 dB dipole antenna)	900MHz, up to 1500' (450m); 2.4GHz, up to 600' (180m)
Outdoor RF line-of-sight Range (w/ 2.1 dB dipole antenna)	900MHz, up to 7 miles (11km); 2.4GHz, up to 3 miles (5km)
Outdoor RF line-of-sight Range (w/ high gain antenna)	900MHz, up to 20 miles (32km); 2.4GHz, up to 10 miles (16km)
TX Power / RX Sensitivity	250mW / -109dBm (900MHz); 50mW / -107dBm (2.4GHz)
DATA COMMUNICATIONS:	
Data Rate (Throughput)	9600 baud (bps)
DIP Switch options	• 7 RF Net codes (Channels) • 63 Device Address (per Channel) • 4 poll rates (continuous, every second, every 10 seconds, every 60 seconds)
Master/Slave pair	Self-managed data communications (based on DIP Switch settings)
Modbus Slave	Standard Modbus Slave RTU protocol. Poll from any Modbus Master, using compatible SS Radio Modem (i.e. Model G306-04 Wireless Modem)
Comm. Fail Action	• DIP Switch selection for DO Hold/Off, AO Hold/Zero. • Comm Fail turns on DO5 open-collector sink driver (300mA, 30Vdc max load)
Inputs & Outputs (I/O):	
Digital Inputs (DI)	• 4 ea. Digital Inputs (DI 1-4), non-latching with pulse-stretch option, pluggable screw terminals • DI 1-2 are also transition-sensing for totalize/rate or event-capture (not available when used as cable-replacement pair). • Optical coupled for surge and noise tolerance • Active low (power common), non-latching, optional pulse stretching, approx. 4mA wetting current • Power-save mode includes optional DI power-down
Digital Outputs (DO)	• 4 ea. Digital Outputs (DO 1-4), Normally-open (N.O.) dry Relay contacts • Contact rating: 2 Amps 250Vac / 30Vdc General Purpose, Pilot Duty D150 • Modbus registers for Latched DOs or Timed DOs (not available with cable-replacement pair). • DIP Switch Selectable "Comm Fail" action on DO 1-4 (Hold current state, or Off) • DO5: Comm Fail turns on DO5 open-collector sink driver (300mA, 30Vdc max load)
Analog Inputs (AI)	• 2 ea. Analog Inputs (AI 1-2), single ended • 0-5Vdc (1-5V) or 0-20mA (4-20mA), DIP Switch selected for each AI • 12 bit resolution. Overall accuracy 0.25% FS. Typical 0.1% at 25 degrees C. • Over-voltage tolerance of +/-30Vdc. • Transducer power (Vx) is on screw terminal with each AI; DIP Switch selected 12V or 24V. Power-save mode includes optional Vx power-down. • Third Analog Input (AI 3) internally monitors power supply voltage; 0-32 Volt range (not available with cable-replacement pair).
Analog Outputs (AO)	• 2 ea. Analog Outputs (AO 1-2), single ended • Both 0-5VDC (1-5Vdc) and 0-20mA (4-20mA) provided. Voltage outputs are recommended for low-power applications. • Typical 0.2% @ 25 degrees C. Overall accuracy 0.45% FS (1-5V or 4-20mA range). • DIP Switch Selectable "Comm Fail" action on Analog Outputs (Hold current value, or Zero)
POWER INPUT:	
Input Voltage/ Power	10-30 Vdc, 500mA max.
Current, Power-Save (I_{PS})	I_{PS} = 7mA @ 12Vdc
Current, Receive/Standby (I_{RX})	I_{RX} = 38mA @ 12Vdc
Current, Transmit (I_{TX})	I_{TX} = 70mA @ 12Vdc
Actual installed current draw	Actual average current draw varies with Poll Rate and Power-Save settings. Also, Sensor and I/O Current loads add to the overall Supply Current requirements
MISCELLANEOUS:	
Operating Temperature	-40 to 85 degrees C., 5-95% non-condensing humidity
Diagnostics	LEDs: CPU status, RSSI, TX, RX, DIs, DOs and Comm Fail. LED Enable is toggled with Pushbutton, and has a 30 min. timeout.
Data Comm Port 2	4 pin latching header, used for factory testing only.
Surge protection	All power, serial port and I/O connections meet or exceed minimum standards for ESD, EFT, and Surge withstand per the international IEC 1000-4 standards
Certifications	FCC Part 15 Class A; CSA C/US Class I, Div.2 Groups A,B,C,D hazardous locations, Temp Code T4
PHYSICAL:	
Field Wiring Connections	All wire connections are pluggable screw terminals, 0.2" spacing.
Size & Weight	Dimensions, 6.3" long x 4.15" wide x 1.55" high overall; Weight 11 oz. (300g)
Mounting	Panel mounting, 5.7" x 2.6" rectangular pattern "key-hole", #6 or #8 pan-head screws recommended. Optional clip available for DIN Rail mounting.

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