RioExpress-*SC*™

Specialty Wireless I/O - Model G309

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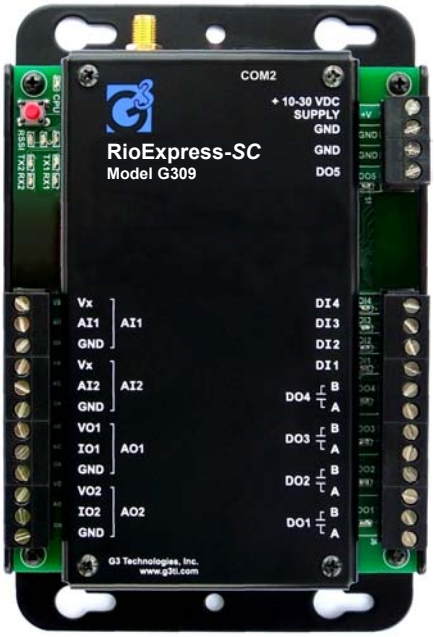

The RioExpress-SC is a user-friendly software-configurable Wireless I/O & Data Concentrator with integral high performance Spread Spectrum Radio and outstanding overall performance. Use it to reliably access remote or hard-to-reach Digital & Analog process signals for both monitoring and control. The RioExpress-SC is sister to the G308 RioExpress, and provides additional configuration features and flexibility.

- Use RioExpress-SC modules to replicate (mirror) analog and digital I/O signals for **Cable Replacement** with one configured as Master and up to 8 as Slaves (along with Modbus data access on Com2). See Fig. 1. In most cases the Slaves can be G308 or G309.
- Use the RioExpress-SC as a **MODBUS** Slave Wireless I/O with a Controller of your choice (PLC, RTU, PC & etc.) as Master. See Fig. 2.

Built for environmental tolerance and very low power consumption, it is ideal for use with **Solar Power** or other alternative-energy source.

FEATURES:

- Simple software configuration using G3 AXS config utility
- Exceptional wireless performance (900MHz or 2.4GHz) with advanced communication settings including Radio Repeater function.
- Two or more units replace multi-pair signal cables
  - Master unit acts as Modbus data concentrator with serial port access simultaneous to mapped I/O replicating.
  - Self-managed wireless Master/Slave communications
  - Configurable update rate & power-save modes
  - I/O count: 4 ea. DI, 4 ea. DO, 2 ea. AI, 2 ea. AO (Mirror I/O between Master and Slave or Map I/O between Master and multiple Slaves, bidirectional)
- Standard MODBUS Slave Wireless I/O end device
  - Point-to-point or point-to-multipoint
  - Addressable for up to 253 Slaves per RF Channel
  - I/O count: 4 ea. DI, 4 ea. DO, 2 ea. AI, 2 ea. AO (plus Battery Voltage monitoring, AI3)
  - DI1-2 also Pulse totalize/rate or "event capture"
  - DOs timed or latched
- Internal 24V transducer supply, and power-management settings
- Configurable Fail-Safe action for DOs & AOs upon Comm Fail
- Self-resetting fuses & all-around surge protection

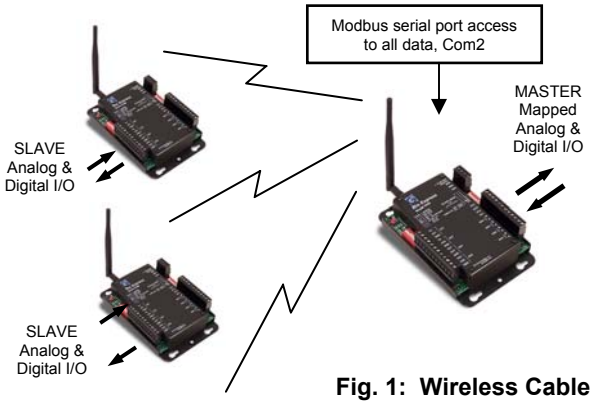

Fig. 1: Wireless Cable Replacement
One G309 Master, up to eight G308 or G309 Slaves

Typical Installation

Nema 4X Pkg

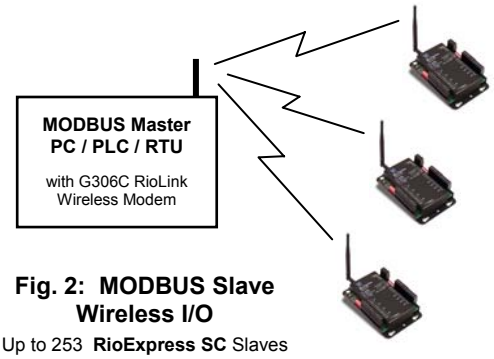

Fig. 2: MODBUS Slave Wireless I/O
Up to 253 **RioExpress SC** Slaves

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 **RioExpress-*SC*!**

G309-xx Specifications (see G309 User's Guide for more detailed info)

RADIO SPECIFICATIONS:	Antenna connector: RPSMA female, 50 ohms. *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)
Configurable features, G3 AXS	• 7 RF Net codes (Hopping Sequence or "Radio Channel") • 253 Device Address (per Channel) • Poll rates, power-save modes, comm fail timing and fail-safe options • Radio Repeater (this feature is not compatible with the G308 RioExpress).
Master/Slave comm.	With one configured as Master and up to 8 as Slaves: Self-managed data communications and I/O mapping (based on config. settings on Master), Master acts as data concentrator allowing Modbus polling (COM2) to read registers for all Slaves.
Modbus Slave	Standard Modbus Slave RTU protocol. Poll from any Modbus Master (PLC, RTU, etc), using compatible SS Radio Modem (i.e. Model G306C-xx Wireless Modem)
Comm. Fail Action	• Comm Fail time-out up to 18 hrs., one sec. increments • Comm Fail turns on DO5 open-collector sink driver (300mA, 30Vdc max load) • Fail-safe action on DOs and AOs (hold or go to selected value).
INPUTS & OUTPUTS (I/O):	
Digital Inputs (DI)	• 4 ea. Digital Inputs (DI1-4), non-latching, pluggable screw terminals • DI1-2 are also transition-sensing for totalize/rate or event-capture (not accessible with cable-replacement mode). • Optical coupled for surge and noise tolerance • Active low (power common), non-latching, approx. 4mA wetting current • Power-save mode includes optional DI power-down
Digital Outputs (DO)	• 4 ea. Digital Outputs (DO1-4), 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 (Timed DOs not accessible with cable-replacement mode). • Selectable "Comm Fail" action on DO1-4 (Hold current state, or go to pre-selected state) • DO5: Comm Fail turns on DO5 open-collector sink driver (300mA, 30Vdc max load)
Analog Inputs (AI)	• 2 ea. Analog Inputs (AI1-2), single ended • 0-5Vdc (1-5V) or 0-20mA (4-20mA), DIP Switch selected for each AI (under the cover) • 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; Select 12V or 24V. Power-save mode includes optional Vx power-down. • Third Analog Input (AI3) internally monitors power supply voltage; 0-32 Volt range (not accessible with cable-replacement mode).
Analog Outputs (AO)	• 2 ea. Analog Outputs (AO1-2), single ended • Both 0-5VDC (1-5Vdc) and 0-20mA (4-20mA) provided. Voltage outputs are recommended for low-power apps. • Overall accuracy 0.45% FS. Typical 0.2% at 25 degrees C. • Selectable "Comm Fail" action on Analog Outputs (Hold current value, or go to pre-selected value)
POWER INPUT:	
Input Voltage/ Power	10-30 Vdc, 5 Watts max.
Current, Power-Save (I_{PS})	I_{PS} = 9mA @ 12Vdc
Current, Receive/Standby (I_{RX})	I_{RX} = 40mA @ 12Vdc
Current, Transmit (I_{TX})	I_{TX} = 72mA @ 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 on COM1 & COM2, DIs, DOs and Comm Fail. LED Enable is toggled with Pushbutton, and has a 30 min. timeout.
Data Comm Port 2 (COM2)	4 pin latching header RS232, used for device configuration and Modbus Slave data access.
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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