

Technologies, Inc.

Product Comparison

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Radios	G303 RIO	G308 RioExpress	G309 RioExpress-SC
Digital Input	8	4	4
Analog Input	4	2	2
Digital Outputs	4	4 (Fail Safe Option)	4 (Fail Safe Option)
Analog Outputs	0	2 (Fail Safe Option)	2 (Fail Safe Option)
Pulse Inputs	1 (stand-alone)	2 (D11 & D12)	2 (D11 & D12)
Configuration Via	Dip Switch	Dip Switch	PC w/Software
Data Comm Options 1. 900MHz, 1 W Radio 2. 900MHz 250mW Radio 3. 2.4GHz 50mW Radio 4. RS485 5. RS232 6. FSK Modem	1-6	2,3	2,3,5
RS485 Comm	Standard part of base unit (use by itself, or as expansion Port w/ Radio)	No	No
Radio Repeat Option	Yes	No	Yes
Power Down Mode Option	No	Yes	Yes
Master/Slave Option	Slave Only	Yes	Yes
Number Slaves Supported	N/A	1	8
Sensor Power	12V or 24V Selectable	12V or 24V Selectable	12V or 24V Selectable
Switched Vx Option	No	Yes	Yes
Supply Voltage	10.5 – 16 VDC	10 – 30 VDC	10 – 30 VDC
Dimensions	8.3"L x 4.2"W x 1.6"H	6.3"L x 4.15"Wx 1.5"5H	6.3"L x 4.15"Wx 1.5"5H



The **RioLink Wireless Modem** ([../products/g306c-riolink/](#)) (model G306C) can be used on a Modbus Master (PLC/RTU/etc) serial data port to support wireless data communications with multiple Wireless I/O Slaves. The G306C is transparent to the data, simply converting bi-directional serial data communications to wireless. Also, a pair of Rio Link Wireless Modems can be used for RS232/485 Data Cable replacement.

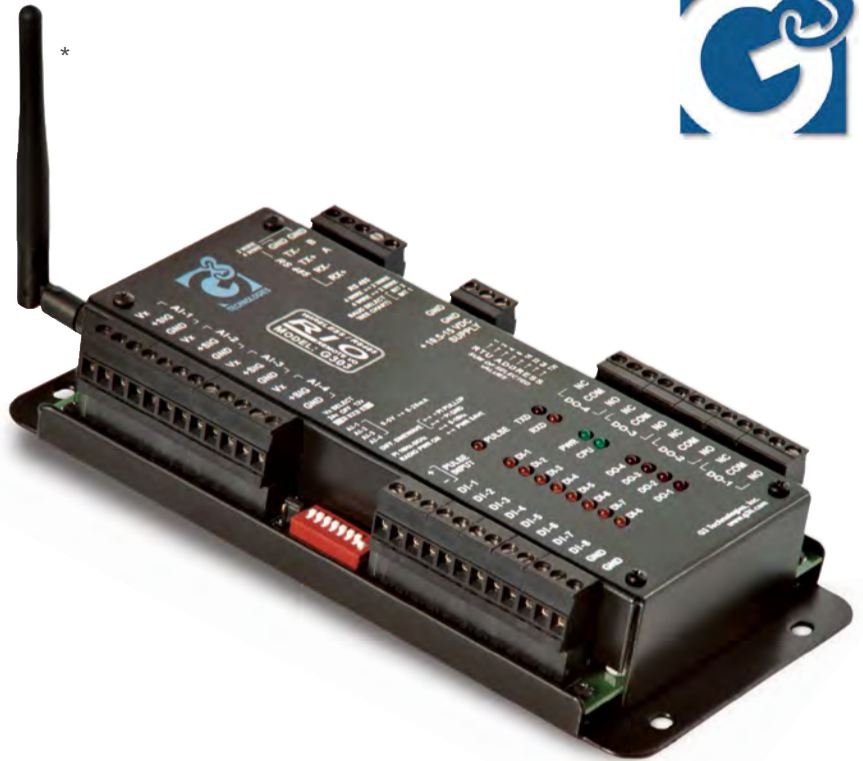
NOTE: All of these units are certified for use in Class I, Division 2, Groups A,B,C,D hazardous locations in USA and Canada.

G303™ RIO



The G303 Remote I/O (RIO) is a robust, economical solution for local and remote I/O requirements in SCADA and Process Control applications.

The G303 packs a powerful array of features particularly suited for many industrial applications. That, along with industry-standard MODBUS Protocol, makes the G303 a sure choice.



Features

- Integral communication options:
 - Spread-spectrum radio offers convenient and economical wireless data link
 - RS485 for wired multi-drop network or I/O expansion
 - RS232 or FSK modem for VHF/UHF radio systems and other general-purpose applications
- Industry-standard MODBUS communication protocol
- Very low power consumption, suitable for solar applications
- Internal 24v transducer excitation supply
- Self-resetting fuses on supply and analog power circuits
- Attractive mix of precision I/O providing application flexibility
- Surge-suppression on all external connections
- LEDs for I/O and diagnostics
- Packaged for easy mounting and connection

Applications

- I/O expansion for PC, PLC or RTU process control or SCADA systems
- Wireless I/O for hard-to-reach remote sites
- Well head automation
- Bulk storage facility monitoring and control
- Water, wastewater or petroleum pump station SCADA
- Facility security monitoring
- General SCADA applications



G303™ RIO Specs



The G303 is a single-board RIO unit offering the following combination of I/O signals and data communications:

- 1 ea. MODBUS serial data port: RS485 plus plug-on option of Spread Spectrum Radio, FSK modem or RS232.
- 8 ea. Digital Inputs (contact closure)
- 4 ea. Analog Inputs, plus internal power supply voltage monitor.
- 4 ea. Digital Outputs (relay contacts)
- 1 ea. Pulse Input (turbine or pulse meter). Totalizer and Rate.

By using wide-spread industry standards (RS485 and MODBUS) for serial data communications, the G303 is easily integrated into many common control/monitoring systems. Since the unit is designed for the simple task of reading inputs as raw integer values and driving outputs using pre-defined MODBUS functions, it requires no configuration. It can be treated as "another MODBUS end-device".

The G303 is also a low-power and environmentally tolerant device, making it suitable for Solar powered applications and outside installations. It is packaged for panel or DIN rail mounting, but is optionally available as a stand-alone Nema 4 rated package ready for field installation.

SERIAL COMMUNICATIONS:	
Data Comm Port	Comm port supports MODBUS RTU slave mode protocol, 8N1 byte structure, with DIP switch selected baud rates of 600, 1200, 9600, 19.2K. Integrated options are: <ul style="list-style-type: none"> • 900MHz or 2.4GHz spread-spectrum radio (9600 or 19.2K baud) along with 2 or 4 wire RS485 expansion. *Antennas are sold separate. • FSK modem for interface to audio input radios • RS232 for wired or third-party-radio networks. • RS485 wired multi-drop network
DISCRETE I/O:	
Digital Inputs (DI)	8 ea. digital inputs on screw terminals. Contact closure to Power Common (GND). Inputs are active low. Contact wetting current 5mA. Digital Inputs readable both as non-latching for realtime indication and 30 sec. hold for stretched short-duration events (minimum input 2mS).
Digital Outputs (DO)	4 ea. relay outputs. Form C contacts at screw terminals, 4000V contact-to-coil isolation, contacts rated 10A @ 30 VDC and 240VAC resistive, B300 and Q300 pilot duty.
Analog Inputs (AI)	<ul style="list-style-type: none"> • 4 ea. single-ended Analog Inputs 1-5 VDC (0-5V) or 4-20 mA (0-20 mA); 12 bit resolution; Overall accuracy +/- 0.25%; Input filter <1000Hz; Over-voltage tolerance +/-24V • On-board +24V DC/DC converter for transducer power (Vx). Available at screw terminal with each AI. Current limited by 100 mA self-resetting fuse. Jumper selection for Vx of +12V (supply voltage) or +24V.
Meter Pulse Input Total/Rate	<ul style="list-style-type: none"> • 1 ea. meter pulse input; 16 bit hardware register; MODBUS readable registers for both totalized counts and pulse rate in Hz. • DIP switch configuration for 3 types of meter signals <ol style="list-style-type: none"> 1. Sine-wave, turbine meter with inductive pick-up: Differential input with 20K ohm input impedance; Input sensitivity 80 mV p/p @ 10Hz and 2.0 V p/p @ 2.5 KHz 2. DC pulse, TTL or open-collector transistor: Single-ended, 0-5V or 0-12V; On-board pull-up for O.C. transistor; Switching approx 20% of Vcc; 1.5 KHz (symmetrical) freq. range 3. Dry contact input: 1.2 mA wetting current; 0-60Hz (symmetrical) freq. range; Contact debounce 7 ms
POWER:	
Supply Voltage	10.5 to 16.0 VDC, self-resetting 1A fuse
Voltage Monitor	An internal analog channel (AI-5) monitors supply voltage 0-16 VDC.
Transducer Power	Jumper selected 12V or 24 VDC transducer power, self-resetting 100 mA fuse.
Current Draw (typical @ 12Vdc)	Base unit 15 mA; Each energized DO relay 12 mA; Optional low-power SS radio rec. 25 mA, xmit 65 mA, 1W radio rec. 40mA, xmit 340mA. Optional RS232 or FSK Modem 15mA. Total current draw is sum of internal loads & any external loads being supplied. Max rating =600mA@12Vdc
CORE SYSTEM:	
Microprocessor	Microchip PIC18F876 processor, 3.6864 MHz, memory internal
Flash Memory	8KB internal, in-circuit programmable
Software	Standard code is non-configurable. Contact G3 Technologies for availability of custom versions for a variety of applications.
DIAGNOSTICS:	
LEDs/Software	LEDs for Digital I/O, Power, RXD, TXD, & CPU status. Software watch-dog timer, G3 VUE available for PC to exercise unit via serial port.
MISCELLANEOUS:	
RTU Address	8 bit MODBUS address, DIP switches
Operating Temp	-40 to 80 degrees C., 5-95% relative humidity, non-condensing.
Surge Protection	All power, serial port and I/O connections meet or exceed minimum standards for EDS, EFT and surge withstand per the international IEC 1000-4 standards.
Certification	FCC Part 15 Class A; CSA C/US Class I, Div 2, Groups A,B,C,D; Temp code T3C
PHYSICAL:	
Dimensions	8.4L x 4.2W x 1.6H
Enclosure	Powder coated aluminum, non-rated. Access of some DIP Switches require cover removal to meet Class I, Div 2.
Field Wire Connections	All wire connections are pluggable screw terminals, 0.2" spacing.
Mounting	2.4 x 7.75 mounting hole pattern for flat panel mount, or optional TS-35 DIN Rail mount.

RioExpress™

Industrial Wireless I/O - Model G308



The RioExpress 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.

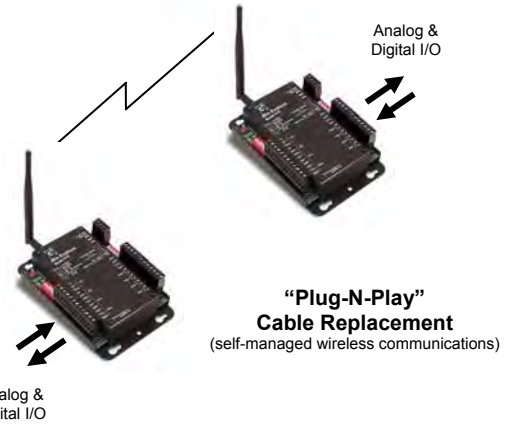
- Use a pair of RioExpress modules to replicate (mirror) I/O signals for **Cable Replacement**.
- Use the RioExpress individually for stand-alone **MODBUS Slave Wireless I/O**.

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



FEATURES:

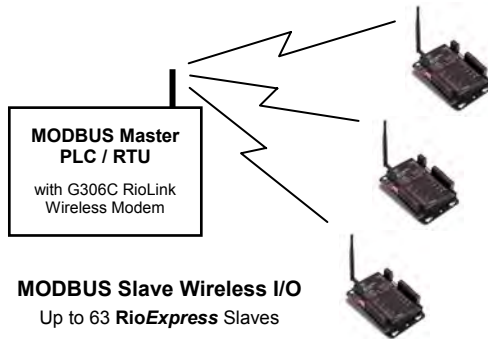
- Simple DIP Switch settings; no software configuration
- Exceptional Wireless Performance, 900MHz or 2.4GHz
- Advanced Communications and Power-Save features
- Internal 24V transducer excitation supply
- Two units replace multi-pair Signal Cable
 - True out-of-the-box operation
 - Self-managed wireless 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



Typical Installation



Nema 4X Pkg



MODBUS Master PLC / RTU

with G306C RioLink Wireless Modem

MODBUS Slave Wireless I/O

Up to 63 RioExpress 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!***

G308 RioExpress – 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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.

G308_DataSheet_2016-02-01

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RioExpress-SC™

Specialty Wireless I/O - Model G309



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

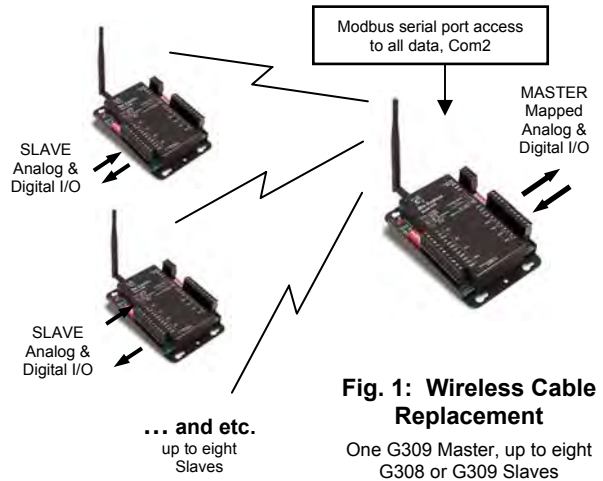
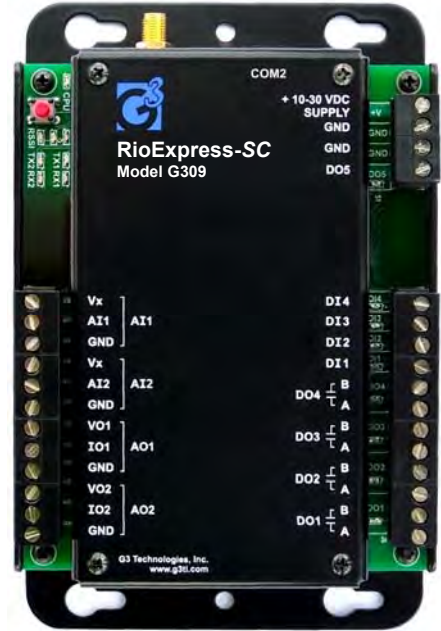


Fig. 1: Wireless Cable Replacement

One G309 Master, up to eight G308 or G309 Slaves



Typical Installation



Nema 4X Pkg

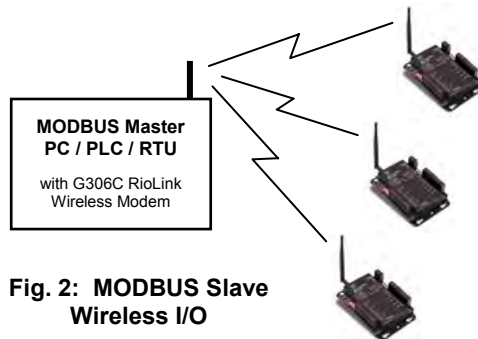


Fig. 2: MODBUS Slave Wireless I/O

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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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, Receiver/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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Rio LINK™

Industrial Wireless Modem – Model G306C

900MHz / 2.4GHz SS RF Modem – RS232 / RS485

The Model G306C wireless modem is an industrial grade high performance spread-spectrum (FHSS) radio with selectable RS232 or RS485 data interface.

The Rio-Link modem provides out-of-box wireless connectivity for serial data between RS232 and/or RS485 devices, and is transparent to the user's protocol. It provides an easy and reliable data link between points where wiring is impractical or impossible. Models are available for 900MHz or 2.4GHz ISM band frequencies, and either 9600 or 19.2K baud data rates.

The Rio-Link is also system-compatible with Wireless I/O units from G3 Technologies. It is used to interface the Master Controller's Modbus serial port to the Wireless I/O data communications network, and can also be used to connect third-party Modbus slave devices into the same wireless network.

By using Rio-Link, virtually any Modbus Master Controller (PC, PLC, Touch-screen Controller, RTU, & etc) or HMI package (G3's VUE, Wonderware, Citect, Intellution, Cygnet, Lookout, & etc) can communicate with G3's Wireless I/O units (models G303 RIO, G308 RioExpress, G309 RioLogic, & etc).



KEY FEATURES

- Long Range Performance:
 - Indoor/urban Range: up to 1500 ft.
 - Outdoor line-of-sight Range:
 - up to 7 miles w/ 2.1 dB gain dipole antenna
 - up to 20 miles w/ high-gain antenna
- Advanced Networking & Security:
 - 7 ea. Freq. Hopping Channels for system separation
 - Peer-to-peer radio network (no master/slave dependencies)
 - Point-to-point and point-to-multipoint topologies supported
 - Configurable for advanced Repeater function
 - Data interface: RS232, RS485 2-wire, RS485 4-wire
- Easy to use:
 - Transparent data communications
 - No configuration needed for out-of-the-box operation
 - Easy DIP Switch selection for RS232 or RS485 data interface
 - Power input on Sub-D (DB9) serial port connector, or separate 2-pos latching connector.
 - Advanced configuration via X-CTU (free download)
- Exceptional Price-to-Performance value

APPLICATIONS

- Use a pair of Rio-Link Wireless Modems for transparent plug-and-play wireless data communications between devices with RS232 or RS485 serial ports.
- Master Controller interface to G3 Wireless I/O slave modules
- Stand-alone Repeater for hard-to-reach Wireless I/O.
- Remote monitoring, Sensor data capture, general SCADA applications.

*Is cabling impractical or impossible? Experience the reliability and security of **Wireless!***

G306C Wireless Modem – Specs: (See User's Guide for more detailed info)

RF PERFORMANCE:	Antenna connection: RP-SMA female, 50 ohms * Antennas sold separate																																																								
Indoor/Urban Range (w/ 2 dB dipole antenna)	900 MHz, up to 1500 ft (450 m); 2.4 GHz, up to 600 ft (180 m)																																																								
Outdoor RF line-of-site Range (w/ 2 dB gain dipole antenna)	900 MHz, up to 7 miles (11 km); 2.4 GHz, up to 3 miles (5 km)																																																								
Outdoor RF line-of-site Range (w/ high gain antenna)	900 MHz, up to 20 miles (32 km); 2.4 MHz, up to 10 miles (16 km)																																																								
Tx Pwr / Rx Sensitivity	250mW / -109dBm (900MHz); 50mW / -107dBm (2.4GHz)																																																								
SERIAL COMMUNICATIONS:	Serial Port connection: Sub-D (DB9) female (see pin assignments below), surge protected																																																								
Data Rate (Interface and throughput baud rate)	9600 baud (standard), optional 19.2K baud (slightly degraded RF range)																																																								
Sub-D (DB9) pin assignments (RS232 DCE, RS485 2-wire, RS485 4-wire & Power Input)	<table border="0"> <thead> <tr> <th></th> <th>DCE</th> <th>2-wire</th> <th>4-wire</th> <th></th> <th>DCE</th> <th>2-wire</th> <th>4-wire</th> </tr> <tr> <th>Pin#</th> <th>RS232</th> <th>RS485</th> <th>RS485</th> <th>Pin#</th> <th>RS232</th> <th>RS485</th> <th>RS485</th> </tr> </thead> <tbody> <tr> <td>1 =</td> <td>n/c</td> <td>n/c</td> <td>n/c</td> <td>6 =</td> <td>n/c</td> <td>n/c</td> <td>n/c</td> </tr> <tr> <td>2 =</td> <td>RXD</td> <td>T/R-</td> <td>T-</td> <td>7 =</td> <td>n/c</td> <td>n/c</td> <td>R+</td> </tr> <tr> <td>3 =</td> <td>TXD</td> <td>n/c</td> <td>R-</td> <td>8 =</td> <td>CTS</td> <td>T/R+</td> <td>T+</td> </tr> <tr> <td>4 =</td> <td>n/c</td> <td>n/c</td> <td>n/c</td> <td>9 =</td> <td>+Vin</td> <td>+Vin</td> <td>+Vin (Supply voltage pos.)</td> </tr> <tr> <td>5 =</td> <td>GND</td> <td>GND</td> <td>GND (Supply voltage neg.)</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		DCE	2-wire	4-wire		DCE	2-wire	4-wire	Pin#	RS232	RS485	RS485	Pin#	RS232	RS485	RS485	1 =	n/c	n/c	n/c	6 =	n/c	n/c	n/c	2 =	RXD	T/R-	T-	7 =	n/c	n/c	R+	3 =	TXD	n/c	R-	8 =	CTS	T/R+	T+	4 =	n/c	n/c	n/c	9 =	+Vin	+Vin	+Vin (Supply voltage pos.)	5 =	GND	GND	GND (Supply voltage neg.)				
	DCE	2-wire	4-wire		DCE	2-wire	4-wire																																																		
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1 =	n/c	n/c	n/c	6 =	n/c	n/c	n/c																																																		
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5 =	GND	GND	GND (Supply voltage neg.)																																																						
RS232 handshaking	None: TX data and RX data only (RTS is not used & CTS is fixed active)																																																								
NETWORKING & SECURITY:																																																									
Frequency Range	ISM 902-928 MHz or 2.4000-2.4835 GHz																																																								
Spread Spectrum	FHSS (Frequency Hopping Spread Spectrum)																																																								
Supported Network Topologies	Peer-to-peer (no master/slave dependencies), Point-to-point, Point-to-multipoint and Multi-drop																																																								
Network Channels (software selectable)	7 Channels (selects RF hopping sequence). "Net Codes" 0-6. Default = "0" (see SOFTWARE CONFIGURATION below)																																																								
Network Filtration Layers	VID, Hopping Channel and Destination Address																																																								
Advanced Functions (optional)	Repeater & Power-save modes (see SOFTWARE CONFIGURATION below)																																																								
POWER:	Power connection: Sub-D (DB9) pins 9 & 5, or 2 position latching plug.																																																								
Supply Voltage (+Vin)	10-30 VDC, 100mA max, self-resetting 500mA fuse, over-voltage & reverse-voltage protected																																																								
Input Current (typical @ 12Vdc)	900 MHz: Standby/RX = 35mA, TX = 85mA 2.4 GHz: Standby/RX = 45mA, TX = 90mA																																																								
PHYSICAL:																																																									
Mounting	Panel mount w/ 4 screws 1.0" x 3.5" rectangular pattern, or DIN rail w/ optional clip																																																								
Dimensions	3.0"W x 3.75"L x 1.3"H plus connectors & mounting ears (3.93"W x 4.25"L x 1.35"H overall)																																																								
Weight	6.8 oz. (200 g)																																																								
MISCELLANEOUS:																																																									
Diagnostics	LEDs for PWR, RTS, TX data, RX data (RTS not used)																																																								
Operating temperature	-40 to 85 degrees C. with 5% to 95% non-condensing humidity																																																								
Certifications	FCC: Part 15.247, ID "OUR9XSTREAM" (900MHz), "OUR24XSTREAM" (2.4GHz) CSA C/US Class I, Div.2, Groups A,B,C,D hazardous locations, Temp. Code: T4																																																								
PART NUMBER DESCRIPTION:																																																									
G306C-04	900 MHz, 100mW, 9600 baud (most popular model)																																																								
G306C-06	900 MHz, 100mW, 19.2K baud																																																								
G306C-08	2.4 GHz, 50mW, 9600 baud																																																								
G306C-10	2.4 GHz, 50mW, 19.2K baud																																																								
SOFTWARE CONFIGURATION:	The G306C Wireless Modem is fully functional right out-of-the-box, without any software configuration. Simple DIP Switch settings select RS232 (factory default) or RS485 data interface. To select a different Network Channel ("0" is default) or to configure advanced software features, refer to the G306C User's Guide for use of X-CTU configurator (free download).																																																								
USE LIMITATION	WARNING... this product is not to be used for personal protection or for any form of life support.																																																								

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