

Wireless Control

900 MHz and 2.4 GHz RF Control

Application Kit

Key Features

- Low power LP3500 with low-EMI Rabbit® 3000 microprocessor
 - up to 512K each of Flash and SRAM
 - 26 industrialized digital I/O
 - A/D inputs and PWM outputs
 - 6 serial ports, one relay
 - 2 dedicated function ports for easy connection to Serial Flash, keypad/display, and other devices
- Two MaxStream® license-free RF Modules, FCC approved
- Complete software libraries and samples
- ModBus control and PPP support for serving web pages
- RabbitWeb™ simplified html programming software with real-time refresh mechanism
- User-friendly interface for simple wireless set-up and configuration

Design Advantages:

- Reference application that uses a license-free wireless module to connect Rabbit-based devices
- Various RF topology support: peer-to-peer, point-to-point
- Easily scalable for commercial deployment applications
- Use of a non-Ethernet Rabbit single-board computer that can serve up web pages
- Royalty-free software modules

Applications

- Low-cost wireless embedded control applications
- Ideal for remote monitoring of equipment, devices, locations
- Data logging applications
- Wireless ModBus communication and control



Wireless Control Application Kit

The Wireless Control Application Kit provides a reference to interface a license-free 900 MHz or 2.4 GHz wireless data module to a new or existing Rabbit-based embedded system.

The Wireless Control Application Kit comes with samples, libraries and hardware to integrate low-cost wireless connectivity operating at frequencies of either 900 MHz or 2.4 GHz with a Rabbit device. The kit contains one Rabbit single board computer and two MaxStream RF modules for full application reference, which can also serve as a template for a robust wireless implementation where a serial connection is required. The Wireless Control Application Kit offers a serial connection alternative where wired cables are not practical to use as well as exemplifies the versatility and simplicity of adding wireless connectivity to an embedded application. Applications

include simple remote monitoring, proximity sensor readings, wireless I/O control, and data transmission.

The kit contains a low power LP3500 single board computer with a power-save mode that draws less than 100 μ A, 26 industrialized I/O, 8 A/D inputs w/ programmable gain, 6 serial ports and available keypad/display peripherals. It is then partnered with your choice of a low-cost 900 MHz 9XCite module featuring over-the-air throughput data rates up to 38.4 Kbps or the longer range 2.4 GHz 24XStream module with range of up to 3 miles (outdoor RF line-of-site) with the appropriate antenna.

A Modbus master PC application allows the user to control the single board computer as a Modbus wireless slave device, and it is designed to be easily portable for other ModBus slave devices. This allows any standard Modbus wired/wireless serial master application to control and monitor the digital and analog I/O in near real-time. In addition, we have implemented a PPP Host/Client direct wired/wireless connection to demonstrate how to use Point-to-Point Protocol (PPP) to make a direct connection over a wireless serial port. Using a direct PPP connection allows wired/wireless serial devices to utilize common protocols like HTTP, FTP, SMTP, POP3, etc. This can be especially useful for devices that only have serial interfaces and no Ethernet and/or WiFi. Using our RabbitWeb software module, the LP3500 can serve web pages accessible from to offer accessibility from the Internet.



MaxStream Partnership

Rabbit Semiconductor and MaxStream are teaming up to supply embedded control and wireless solutions for customers to develop a variety of wireless control systems. MaxStream's wireless modems are easy-to-use and provide reliable delivery of critical data between devices. The flexibility of MaxStream RF Modules creates the perfect fusion of range, power-conservation, performance and networking features to ensure accurate and reliable RF communications. For more information regarding MaxStream's products and services, you may visit their website at www.maxstream.net, email rf-xperts@maxstream.net, or call toll-free (866) 765-9885.

Wireless Control Application Kit			
Features	MaxStream 9XCite™ RF Modem	MaxStream 24XStream™ RF Modem	
Frequency	902–928 MHz	2.4000–2.4835 GHz	
Antenna	Integrated wire antenna	Integrated wire antenna	
Performance	Indoor Range	300 ft (90 m)	
	Outdoor Line-of Sight Range	up to 1000 ft (300 m)	
	Power Output	4 mW (6 dBm)	50 mW (17 dBm)
	RF Data Rate	9.6 or 38.4 Kbps	9.6 or 19.2 Kbps
	Interface Data Rate	up to 57.6 Kbps	up to 57.6 Kbps
	Receiver Sensitivity	-108 dBm (@ 9600 bps)	-110 dBm (@ 9600 bps)
Networking	Spread-Spectrum Type	FHSS (frequency hopping)	FHSS (frequency hopping)
	Supported Network Topologies	Peer-to-peer, Point-to-point, Point-to-multipoint	Peer-to-peer, Point-to-point, Point-to-multipoint, Repeater
	Filtration Options	<ul style="list-style-type: none"> • VID (vendor ID number) • Channels • Addressing 	<ul style="list-style-type: none"> • VID (vendor ID number) • Channels • Addressing
	Channel Capacity	7 frequency hopping or 25 single-frequency	7 hop sequences share 25 frequencies
	Addressing	65,000 network addresses per channel	65,000 network addresses per channel
Power (typical)	Supply Voltage	2.8–5.5 V DC (regulated)	5 ± 0.25 V DC (regulated)
	Transmit Current	55 mA @ 2.85 V	150 mA
	Receive Current	45 mA @ 2.85 V	50 mA
	Sleep Current	20 µA	26 µA
Operating Temperature	0°C to +70°C		
Connectors	One power connector and One DB9F connector		
Board Size	2.51" × 4.00" × 0.84" (64 mm × 102 mm × 21 mm)		
Certifications	CE, FCC, Industry Canada		
Features	LP3500		
Microprocessor	Rabbit® 3000 processor at up to 7.4 MHz		
Flash Memory	512K (2 × 256K)		
SRAM	256K		
Digital Inputs	16 protected to ±36 V DC		
Digital Outputs	10 total: 8 sink and 2 source 200 mA each, 36 V DC max.		
Relay	1 SPDT, 1 A, 30 V DC, bi-stable		
Analog Inputs	8 single-ended or 4 differential inputs: <ul style="list-style-type: none"> • 1 MΩ input Impedance • sampling rates up to 200 samples/s • 8 software controlled voltage ranges from 0–1 V to 0–20 V • resolution—11 bits (single-ended), 12 bits (differential) • accuracy—8 bits (single-ended), 9 bits (differential) 		
Analog Outputs	3 unfiltered, pulse-width modulated, 1 kΩ output impedance		
Serial Ports	Six 3.3 V CMOS-compatible ports		
Power	3–30 V DC, 20 mA max. @ 7.4 MHz, 100 µA max. @ 2 kHz		
Operating Temperature	–40°C to +70°C		
Humidity	5% to 95%, non-condensing		
Connectors	One 1 × 25, 0.1" pitch header, Two 1 × 17, 0.1" pitch headers, One 2 × 5 header for programming with 2 mm pitch, One 3-position screw-terminal header for relay		
Board Size	2.60" × 3.65" × 0.45" (66 mm × 93 mm × 11 mm)		
Pricing			
Wireless Control Application Kit	\$599	\$699	
Part Number	101-1159	101-1165	



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