



Wireless Technology to Control and Monitor Anything from Anywhere™

SYNAPSE RF266 Module

The Synapse RF266PC1 is an IEEE802.15.4 RF module running the **SNAP**® network operating system that is **pin-compatible** with sockets already designed in for Digi International's XBee® and XBee-PRO® RF modules. The RF266 also includes an open source software layer that can understand AT commands that you may already be using or you can modify the software to fit your requirements.

This module supports data rates from 250kbps up to **2Mbps** and distances of up to **4000 feet** because of a high gain 20 dBm **transmit amp**; a built in **receive amp** provides a -107 dBm receive sensitivity.

These small, low-powered, 2.4 GHz transmitter-receiver modules are modest in power consumption – as low as **1.18 µA**. The RF266PC1 comes preloaded with the award-winning Synapse SNAP network operating system. The embedded Python virtual machine makes application programming fast and easy and you can send your code to the module over the air.



The RF266 also supports **SNAP Connect** – an easy way for you to add SNAP connectivity to your own applications.

The RF266 uses a processor that **runs up to 10 times as fast as competitors**, giving you the processing capability you need for demanding tasks. Typical applications include a wireless serial port, sensor monitoring, actuator control, or an intelligent embedded controller.

The RF266PC1 features include:

- Award Winning SNAP OS included
- 15 GPIO, and up to 4, 10-bit A/D inputs
- One UART port for control or transparent data
- Low power modes: 1.18µA (2.3µA with internal timer running)
- 128k flash, 58k free for over-the-air uploaded user apps
- FCC and IC certified
- Up to 4000 feet LOS range
- Socket-able or solder-able
- I²C support (master only)
- 4 PWM outputs
- 250 kbps to 2 Mbps Data Rate
- 2.4 GHz RF Frequency
- Spread Spectrum (DSSS) technology
- Receive Amplifier – 107 dBm received sensitivity
- Transmit amplifier (20 dBm)
- Chip antenna
- 4K internal EEPROM
- SPI support (3 wire and 4 wire, master only)

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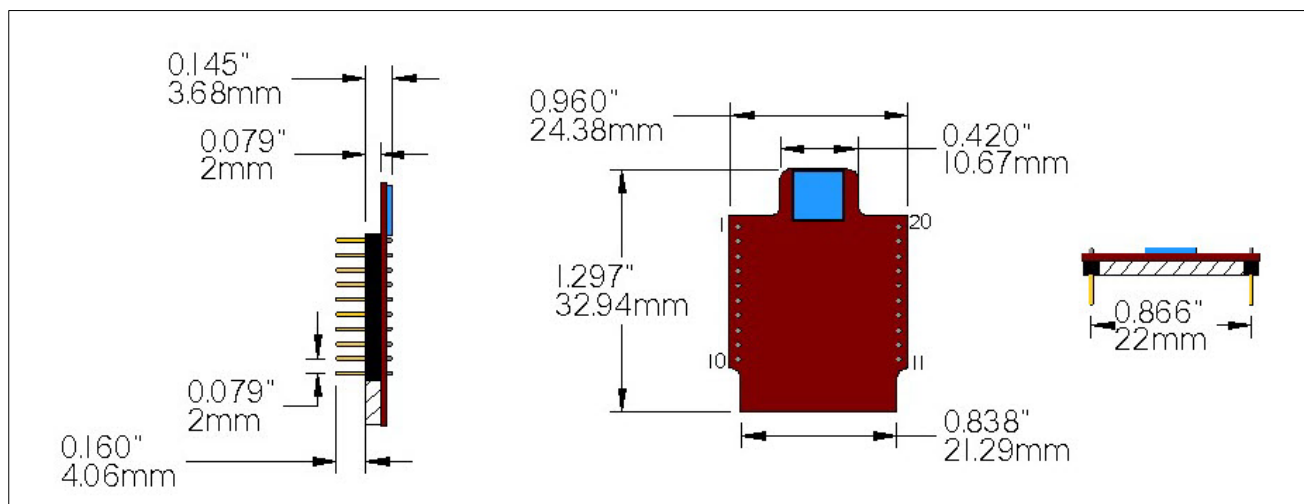
Part Selection

Part No.	Antenna	Receive Amp	Transmit Amp
RF266PC1	Chip	Yes	Yes

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Physical Dimensions



Specifications

Performance	
Indoor Range	Up to 200 ft. at 250 kbps
Outdoor LOS Range	Up to 4000 ft. at 250 kbps
Transmit Power Output	20 dBm
RF Data Rate	250kbps, 500kbps, 1Mbps, 2Mbps
Receiver Sensitivity	-107 dBm (1% PER)
Power Requirements	
Supply Voltage	2.7 – 3.6V
Transmit Current (Typ)	130 mA
Receive Current (Typ)	25 mA
Sleep Current (Typ)	1.18 μ A (internal timer off) 2.3 μ A (internal timer on)
General	
Frequency	ISM 2.4 GHz
Spreading Method	Direct Sequence
Modulation	O-QPSK
Dimensions	1.3" (H) x 1.0" (W)
Operating Temperature	-40 to 85 deg C.
Antenna Options	Chip
Networking	
Topology	Mesh (SNAP)
Number of Channels	16
Available I/O	
UARTS w/HW flow ctrl	1 Port
GPIO	15 total, 4 with 10-bit ADC
Agency Approvals	
FCC Part 15.247	Yes, Class B
Industry Canada (IC)	Yes

Pinout

RF Pin	ATmega128RFA1 Designation	RF266 Function
1	3.3V	Power Supply
2	IO_11 PD3 INT3 TXD1	IO_11, UART Data Out, Interrupt
3	IO_10 PD2 INT2 RXD1	IO_10, UART Data In, Interrupt
4	IO_21 PE5 INT5 OC3C	IO_21, PWM Output, Interrupt
5	RESET	Module Reset, Active Low
6	IO_20 PE4 INT4 OC3B	IO_20, PWM Output, Interrupt
7	IO_19 PE3 RTS0 OC3A AIN0	IO_19, PWM Output
8	-	No Connect
9	IO_9 PD1 INT1	IO_9, Interrupt, I ² C SDA
10	GND	Power Supply
11	IO_15 PD7	IO_15
12	IO_12 PD4 CTS1 ICP1	IO_12, CTS Output
13	IO_8 PD0 INT0	IO_8, Interrupt, I ² C SCL
14	-	No Connect
15	IO_37 PG5 OC0B	IO_37, PWM Output
16	IO_23 PE7 INT7 ICP3	IO_23, RTS Input, Interrupt
17	IO_31 PF7 ADC7	IO_31, ADC7 Input
18	IO_30 PF6 ADC6	IO_30, ADC6 Input, SPI MOSI
19	IO_29 PF5 ADC5	IO_29, ADC5 Input, SPI SCLK
20	IO_28 PF4 ADC4	IO_28, ADC4 Input, SPI MISO