



WIRELESS RF MODULE MANUAL

27995

RECEIVER

27996

TRANSMITTER

27997

TRANSCEIVER

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PRELIMINARY DOCUMENTATION

This document is a preliminary manual for the part numbers indicated above.

Please visit the <http://www.parallaxinc.com> web site for downloadable PDF updates to this document and applications for these items.

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General

This manual covers three items:

- **27995** RF Receiver Module
It receives RF and outputs your data.
- **27996** RF Transmitter Module
It accepts your data and outputs RF.
- **27997** RF Transceiver Module
It receives RF and outputs your data (and)
It accepts your data and outputs RF.

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These RF modules are used to send remote control data back and forth between two or more Basic Stamps.

Reference the color label on the modules pin names.

Transmitter hook-up

1. Plug the transmitter into a solderless breadboard, do not solder directly to the pins of the module.
2. The module itself should be positioned vertically, so it is perpendicular to the bread board and any solid ground area you might have under it (this will give you more range).
3. Connect all pins labeled GND to ground. (Make sure the ground is common with your Basic Stamp.)
4. Connect the +5VDC pin to a clean, regulated +5VDC (+/- 5%) power supply. (If you are using a B.O.E. type of Parallax

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Board, you can connect it to the +5VDC supply on the board. Typically this will be the output of a 7805 voltage regulator.

5. Connect the TXD (Transmit Data) pin to any I/O on your Basic Stamp.
6. Apply power to the Stamp and the Transmitter. (Now your ready to start using your transmitter to send serial bytes.)
7. Using the **SEROUT** instruction, you can send a serial byte to a mating receiver or transceiver. **(Make sure you use a minimum baud rate of 600 and a maximum baud rate of 2400, we recommend using 1200.)**

Receiver hook-up

1. Plug the receiver into a solderless breadboard, do not solder directly to the pins of the module.
2. The module itself should be positioned vertically, so it is perpendicular to the bread board and any solid ground area

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you might have under it (this will give you more range).

3. Connect all pins labeled GND to ground. (Make sure the ground is common with your Basic Stamp.)
4. Connect the +5VDC pin to a clean, regulated +5VDC (+/- 5%) power supply. (If you are using a B.O.E. type of Parallax Board, you can connect it to the +5VDC supply on the board. Typically this will be the output of a 7805 voltage regulator.
5. Connect the RXD (Receive Data) pin to any I/O on your Basic Stamp. **(Make sure this pin is configured as an INPUT.)**
6. Apply power to the Stamp and the Receiver. (Now your ready to start using your receiver to receive serial bytes.)
7. Using the **SERIN** instruction, you can receive a serial byte sent by a mating transmitter or transceiver. **(Make sure you use a minimum baud rate of 600 and a maximum baud rate of 2400, we recommend using 1200.)**

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Transceiver hook-up

1. Plug the transceiver into a solderless breadboard, do not solder directly to the pins of the module.
2. The module itself should be positioned vertically, so it is perpendicular to the bread board and any solid ground area you might have under it (this will give you more range).
3. Connect all pins labeled GND to ground. (Make sure the ground is common with your Basic Stamp.)
4. Connect the +5VDC pin to a clean, regulated +5VDC (+/- 5%) power supply. (If you are using a B.O.E. type of Parallax Board, you can connect it to the +5VDC supply on the board. Typically this will be the output of a 7805 voltage regulator.

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5. Connect the TXD (Transmit Data) pin to any I/O on your Basic Stamp.
6. Connect the RXD (Receive Data) pin to any other I/O pin on your Basic Stamp. **(Make sure this pin is configured as an INPUT.)**
7. Apply power to the Stamp and the Transceiver. (Now your ready to start using your transceiver to send and receive serial bytes.)
8. Using the **SEROUT** instruction, you can send a serial byte to a mating receiver or transceiver. **(Make sure you use a minimum baud rate of 600 and a maximum baud rate of 2400, we recommend using 1200.)**
9. Using the **SERIN** instruction, you can receive a serial byte sent by a mating transmitter or transceiver. **(Make sure you use a minimum baud rate of 600 and a maximum baud**

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They are not in a finished product form. They are strictly intended for experimental purposes only. If you wish to use these modules in an actual product (a non-experimental capacity), the module must first be designed into the product, then the whole product must be approved by the FCC. For a list of FCC approved Labs that can test your final product for compliance contact RF Digital Corporation at (818) 541-7622 or visit the web site at <http://www.rfdigital.com>.

It is the responsibility of the user to be aware of the regulatory requirements in their area of operation and application. For exact information contact the FCC Office at:

Federal Communications Commission
<http://www.fcc.gov>

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rate of 2400, we recommend using 1200.)

Antenna and Grounding

- Do not allow the antenna to touch any surface or conductive material.
- Do not attempt to increase the length or change the antenna, as it will reduce performance and or damage the module.
- When ever possible, provide as much ground area under the module as possible. For example a copper clad circuit board that is one foot square, directly under the bread board the modules is mounted on, is perfect. Note it is very important to connect a thick ground strap (wire) from the module grounds to the ground area for it to be effective. A good ground as described may double your range and increase your range consistency.
- **Do not allow the antennas to touch.**

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USE OUTSIDE OF THE U.S.A. It is the responsibility of the user to be aware of the regulatory requirements in their area of operation and application. Contact your local regulatory agency and obtain compliance information.

For O.E.M. Design-In Guidance for the modules please contact:
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Single direction communication requires at least:

Option a: 1 Transmitter and 1 Receiver.
 Both must be of the same frequency

Option b: 1 Transmitter and 1 Transceiver.
 Both must be of the same frequency

Option c: 1 Transceiver and 1 Receiver.
 Both must be of the same frequency

Bi-directional communication requires at least:
 2 Transceivers. Both must be of the same frequency

Multi Point Communications can be achieved by:
 Placing one transmitter at each node that needs to send information.

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Operational Warnings

Do not expose the boards to direct outdoor environment. If they will be used outdoors, keep them away from water, moisture and direct sunlight.

The serial input and output pins operate at +5V and 0V logic levels. Do not attempt to connect directly to a computer RS232 port as this will damage the module. Typical levels at a computer RS232 port are +10V and -10V; these voltages would immediately damage the module. The module is intended to interface directly with the Basic Stamp, other +5V logic devices and controllers.

In classroom environments, many transmitters and receivers may be within communication range. When not in use, disconnect power from your project, including the module, to assure there is no chance for unintentional transmission. Transmissions from other devices can disallow other students to perform their wireless experiments.

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Placing one receiver at each node that needs to receive information.

Placing one transceiver at each node that needs to send and receive information. (All must be of the same frequency).

Regulatory Warnings

These modules (boards) are NOT FCC approved. They are designed to comply with the FCC Part 15 Rules and Regulations.

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Please go to
<http://www.parallaxinc.com>
for full documentation.

PRELIMINARY

End Of Document