SSRT-09-RS232
SSRT-19-RS232

Spread Spectrum RF Data Transceivers

The SSRT-x9-RS232 frequency hopping spread spectrum (FHSS) data transceiver represents state-of-the-art RF communications technology. Suitable for long range and short range applications, the SSRT-x9-RS232 achieves ranges of up to 3 miles open field with (included) 1/2 wave whip antenna at each end, and up to 20 miles with (optional) directional gain antenna.

The host interface is via a standard DB9-Female connector and is powered via standard dc barrel type socket. The SSRT-09-RS232 data interface is transparent and therefore suitable for any RS232 host operating at 9600bps (-09 model) or 19200bps (-19 model), 8data bits, no parity and a stop bit (9600,8,N,1). Simply "Connect and Communicate".

In addition to the abovementioned serial protocol the SSRT-x9-RS232 transceivers also supports 7 data bits, even (or odd) parity, 1 stop bit or 7 data bits, no parity, 2 stop bits.

The SSRT-09-RS232 and SSRT-19-RS232 versions offer over-the-air data rates of 9600bps and 19200bps respectively. Operation and appearance of the two versions are otherwise identical .

Features

- Half duplex RS232 communications at 9600 bps or 19200 bps (model dependent)
- High Noise Immunity Spread Spectrum Architecture, 902-928 MHz FM
- 7.5V to 15Vdc Operation, 170mA transmit mode, 80mA receive mode
- Available in a 19,200 bps version (SSRT-19-RS232) or 9600 bps (SSRT-09-RS232) versions.
- Available on 2.4GHz
- Network Addressable for multiple unit deployment
- AT command programmable special features and functions
- Transparent “Virtual Wire” operation
- Up to 3 miles open field range with 1/2 wave 'rubber duck' antenna (included)
- Up to 1800 ft in-building range with 1/2 wave 'rubber duck' antenna (included)
- Up to 20 miles range with gain antenna (optional)
- SMA antenna connector (reverse polarity)
- Durable, Attractive Anodized aluminum enclosure (OEM Custom Labeling Available)
- TX, RX and Power status LED's
- Highly versatile, compact package that delivers outstanding performance

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Quick Start Guide

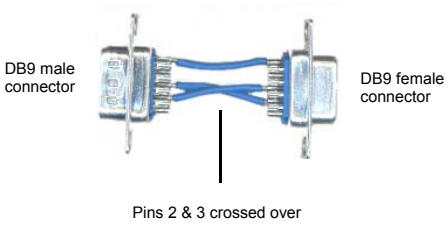
This quick start guide is often the only setup procedure required to put the SSRT-x9-RS232 RF data transceivers into operation. The advanced programmable features of the transceivers covered later in the manual are not required in order to setup a functional wireless data link .

Simple Setup

1. **Connect SSRT-x9-RS232 Serial port to Host Devices**
2. **Fasten the antenna**
3. **Apply Power**
4. **Configure the host devices for the applicable data rate (9,600 bps for SSRT-09-RS232 model or 19,200 bps for the SSRT-19-RS232 model)**
5. **Send Data**

Connection to DTE RS232 Host Devices

The serial port of the SSRT-x9-RS232 data transceivers are DTE configured DTE (Data Terminal Equipment). This is the same configuration as a PC's 9-pin serial port. With this considered, if the host device serial port is configured as a DTE, then a null modem (crossover) data connection is required between the host and the SSRT-x9-RS232 transceivers. A null modem cable or crossover cable will correctly connect data inputs to data outputs of the two devices.
If a straight though (serial extension) cable is used between the SSRT-x9-RS232 and DTE host then a null modem adapter must be inserted.



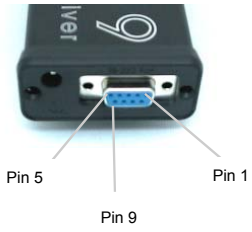
Null Modem Adapter

Connection to DCE RS232 Host Devices

As mentioned above, the SSRT-x9 serial port is configured as a DTE device. Connection, therefore, to DCE host devices requires a straight through serial cable and does not require and data crossover adapter.

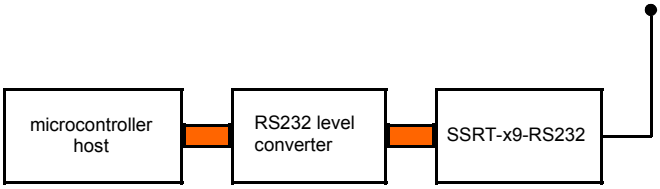
Serial Port Pin Assignment

SSRT-x9-RS232	Designation	Comments
1,6	N/C	Not used
2	RS232 data input	Connect to pin 3 on DTE host or pin 2 on a DCE host
3	RS232 data output	Connect to pin 2 on a DTE host or pin 3 on a DCE host
4	DTR	Used only for advanced functions
5	GND	Connect to host GND
7	RTS	Used only for advanced functions
8	CTS	Used only for advanced functions
9	+V supply	Alternative power supply connection



Connection to 5V TTL/CMOS Hosts

Connecting the SSRT-x9-RS232 transceivers to 5V level devices (or 3V level devices) such as microcontrollers is easily achieved through an RS232 level converter interface such as the MAX 232 or the MAX 3232 level converters. For basic operation, only a three wire interface comprising of **TXD, RXD and GND** is required between the SSRT-x9-RS232 and the host microcontroller serial port. (refer to the pin assignment table on the previous page for the SSRT-x9-RS232 pin-outs with the relevant pins being 2,3 and 5)



Note: A special RS232-to-TTL adapter cable (part # W232) which contains an RS232 level converter circuit built into the DB9 connector at the one end and a 10 pin IDC socket at the other end is available . Using the W232 cable eliminates the overhead of having to build your own level conversion.

W232 RS232-to-TTL adapter cable

Power Supply Connection

The SSRT-x9-RS232 transceivers require a linear DC power supply (such as a wall adapter) that delivers a voltage in the range from a 7V-15V DC and a current of at least 300mA. The DC socket of the SSRT-x9-RS232 is polarized where the 2.1mm center pin is positive. The SSRT-x9-RS232 transceivers do not have a separate power ON/OFF switch since power is easily applied or removed through plugging-in or unplugging the power jack.

Data Rate Configuration

The SSRT-x9-RS232 transceiver's data rates are fixed at either 9600 bits per second or 19200 bits per second depending on the model. The host's data rate should be configured for the same data rate as the SSRT-x9-RS232 transceiver and this will allow for continuous data transmission without the need for flow control. Data is always received and transmitted at the serial port as a start bit, 8 data bits and a stop bit. This allows for the following data configurations to be sent:

- 8-bit, no parity, 1 stop bit
- 7-bit, even parity, 1 stop bit
- 7-bit, odd aprity, 1 stop bit
- 7-bit, no parity, 2 stop bits

Status LED's

The end panel of the SSRT-x9-RS232 transceivers contain the operational status indicator LED's:

- Green LED…….Power ON indication
- Red LED……Transmitting data indication
- Amber LED……Receiving data indication

Antenna

The SSRT-x9-RS232 transceiver are supplied with 1/2 wave RPSMA articulating whip antenna. Indoor ranges of up to 1800 ft and open field ranges of up to 3 miles may be achieved with these antenna. For longer range applications (up to 20 miles open field) Yagi directional antenna may be used with the SSRT-x9-RS232 transceivers. These antenna are specially designed for the SSRT-x9-RS232 transceivers and may be ordered through our sales department. SMA terminated low loss antenna extension cables of varied lengths are also available.

The antenna position should always have as much free space around it as possible, should be kept well clear of large metal surfaces and should be as far away as possible from sources of radio interference and electrical noise.

Advanced Operation, Features and Functions

The SSRT-x9-RS232 radio data transceivers can be tailored to suite a broad range of special application requirements such as:

- Duty Cycle Power Saving
- Serial Baud Rate Configuration
- Flow Control Enable
- Various Operational Timing Configurations
- Network Address Configuration
- Packet Retries and Acknowledgement

These special features are set through AT command sequences sent to the radios and may be stored in non volatile memory.

Please refer to the AT command set manual for details on programming the radio for advanced functionality.