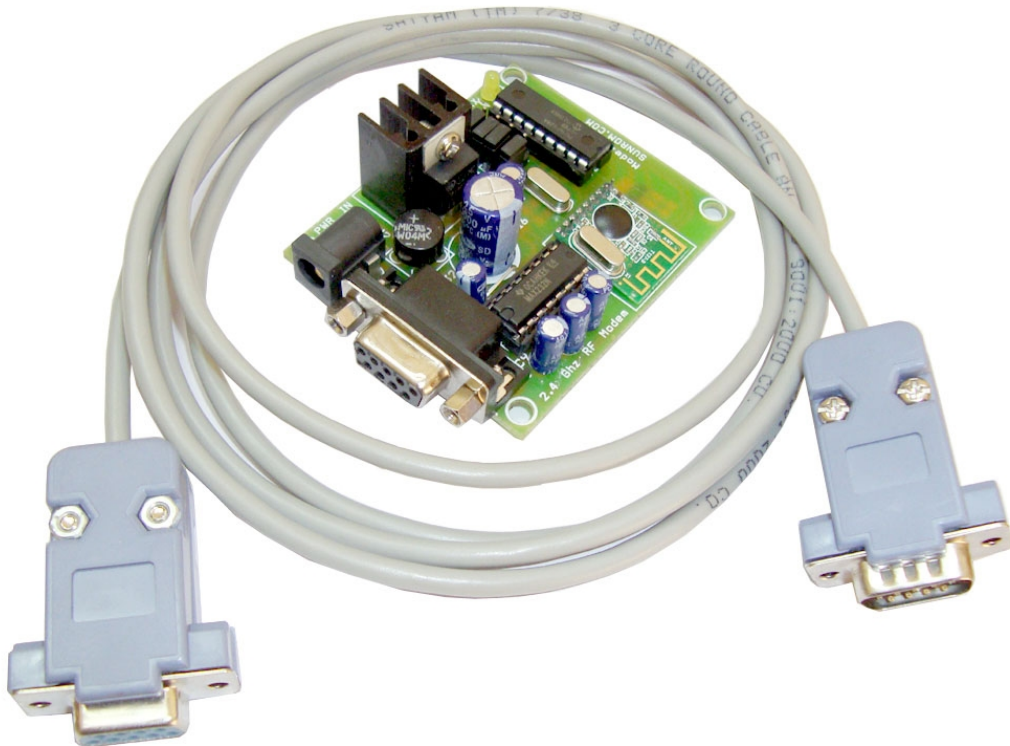


## Wireless Serial RF Modem, 2.4 Ghz, 30 mts range, RS232

RF modem can be used for applications that need two way wireless data transmission. It features adjustable data rate and reliable transmission distance. The communication protocol is self controlled and completely transparent to user interface. The module can be embedded to your current design so that wireless communication can be set up easily.



### Features

- Automatic switching between TX and RX mode.
- FSK technology, half duplex mode, robust to interference.
- 2.4 GHz band, no need to apply frequency usage license.
- Protocol translation is self controlled, easy to use.
- High sensitivity, reliable transmission range.
- Standard UART interface, RS232 Serial Port level.
- Stable, small size, easier mounting.
- No tuning required, PLL based self tuned.
- Error checking(CRC) of data in built.



## Applications

- Sensor Networks / Data collection
- Wireless metering
- Access control / Identity discrimination
- IT home appliance
- Smart house products / Security Systems
- Remote control / Remote measurement system
- Weather stations

## Specifications

Name	Min	Typ	Max	Unit
Working Voltage	9	12	15	V DC
Frequency of Operation		2.4		GHz
Output RF Power		1		dbm
Typical Operating Range		30		meters
UART baud rate (8 bit data, no parity, 1 stop bit)		9600/4800/38400/19200		Bps
Output Data Level		RS232 (+12V/-12V)		PC Serial Port

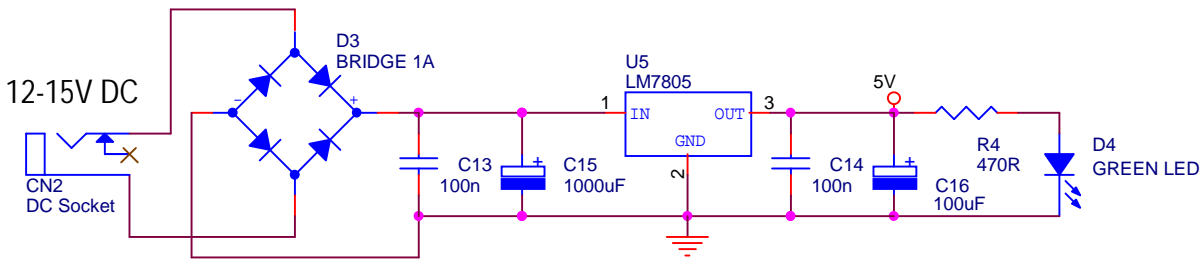
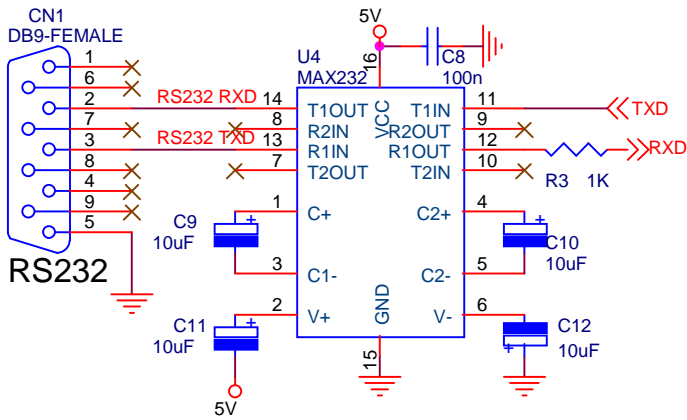
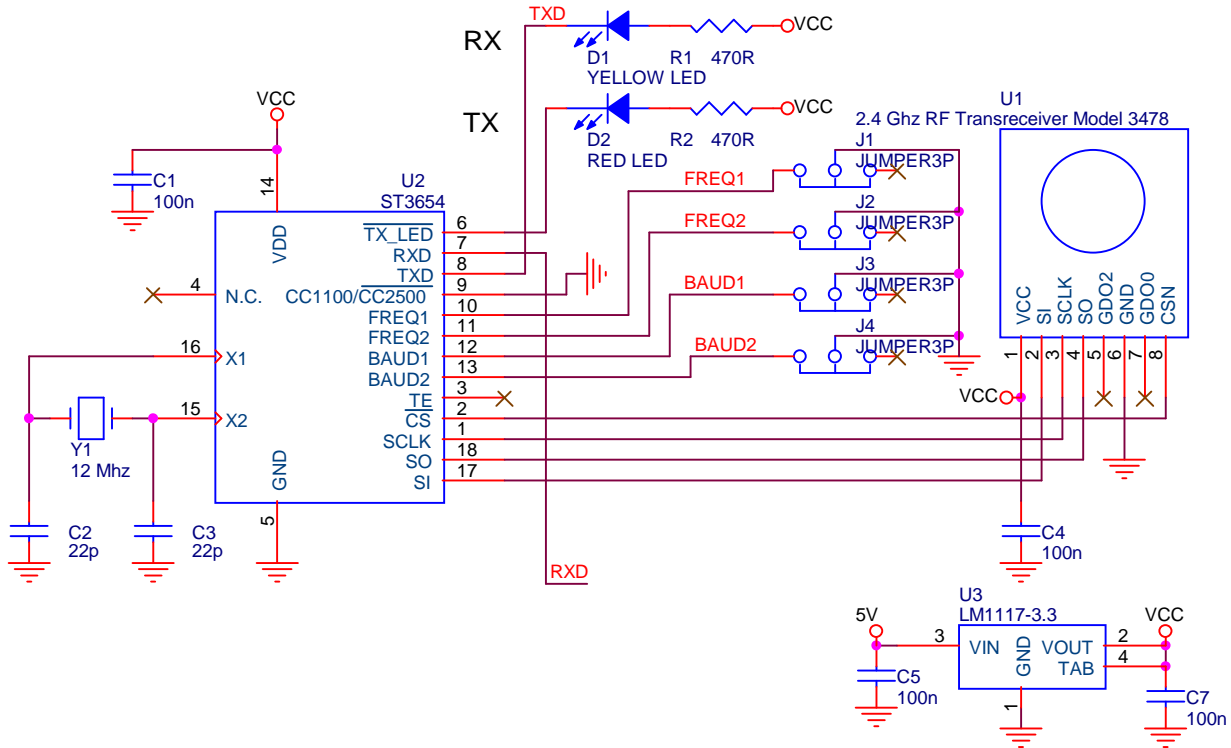
## Operation

This module works in half-duplex mode. Means it can either transmit or receive but not both at same time. After each transmission, module will be switched to receiver mode automatically. The LED for TX and RX indicates whether IC is currently receiving or transmitting data. The data sent is checked for CRC error if any. If chip is transmitting and any data is input to transmit, it will be kept in buffer for next transmission cycle. It has internal 64 bytes of buffer for incoming data.

When you power on the unit, the TX LED will briefly blink indicating that initialization is complete and it is ready to use.

The RX LED is directly on TX OUT pin to indicate that actual data is received and it is sent to output pin.

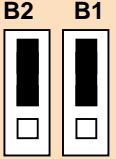
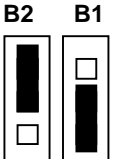
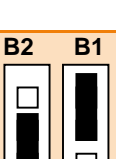
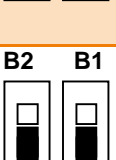
# RF Modem Schematic



<b>Sunrom Technologies</b>		<a href="http://www.sunrom.com">http://www.sunrom.com</a>	
Title RF Data Modem 2.4 Ghz			
Code 1253		Rev 1	
Date: Thursday, January 19, 2012		Sheet 1 of 1	

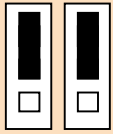
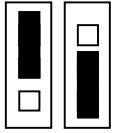
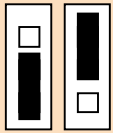
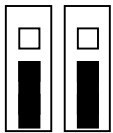
## Baud Rate Setting

Baud rate has to be set when unit is OFF, as the jumper setting are read only during power up. Modifying during power up will have no effect on operation of module.

Jumper position	State	Baud Rate
	B2 = OFF B1 = OFF	9600 bps
	B2 = OFF B1 = ON	4800 bps
	B2 = ON B1 = OFF	38400 bps
	B2 = ON B1 = ON	19200bps

## Frequency channel setting

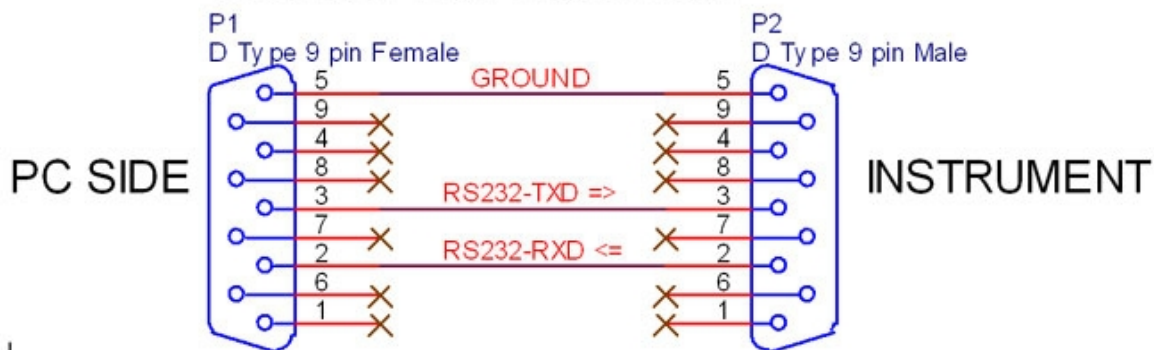
Setting Frequency Channel can be used to have multiple sets operating at same time but without interfering with each other. The pair having same Channel setting will be able to communicate with each other. Frequency channel has to be set when unit is OFF, as the jumper are read only during power up. Modifying this setting during operation will have no effect on operation of module.

Switch	State	Mode
F2 F1 	F2 = OFF F1 = OFF	CHANNEL #1
F2 F1 	F2 = OFF F1 = ON	CHANNEL #2
F2 F1 	F2 = ON F1 = OFF	CHANNEL #3
F2 F1 	F2 = ON F1 = ON	CHANNEL #4

## Serial Cable connections for RS232 interfacing (Provided with product)

To use with a PC serial port, use a serial cable of male-female type with pins 2,3,5 connected to 2,3,5 straight(no cross over cable). This cable is supplied with product.

### Sunrom 3 core serial cable



## Power Requirement of Receiver

The unit needs around 200mA power to operate at 12V. You can use any readymade 12V 500mA DC Adapter or design a transformer plus rectifier based 12V DC power for the board. You can also use just the 12V transformer as the board has bridge and capacitor to convert to DC.

We recommend SMPS based 12V 1A DC Adapter for 24 hours operation as it is efficient and does not generate heat as compared to transformer based adapters. Product page is here

<http://www.sunrom.com/power-supplies/dc-adapters/12v-1a-dc-smps-adapter>



There is not polarity for the DC pin as the board has diode bridge onboard.

## Connecting to PC

Use the supplied serial cable to connect to PC's serial port. Use Hyperterminal software which comes with Windows XP or use any other Terminal software with following settings.

Data Rate: 9600      Data Bits: 8      Parity: None      Stop Bit: 1      Flow Control: None

One of the Terminal software can be downloaded from <http://www.sunrom.com/files/Terminal.exe>

## Related Products

1. RF module used in this RF Modem



**RF Transceiver - 2.4 GHz – 30 mts Range Model 3478, Antenna Onboard  
CC2500 chip based**

Products Page: <http://www.sunrom.com/p-797.html>

2. ST3654 serial interface IC used in this RF modem

**ST3654 - Serial Interface IC for RF Transreceivers**

Products page: <http://www.sunrom.com/p-1000.html>



If you are interested in knowing RF related working details you can search for CC2500 in google. This will lead you to texas instrument site with details of the ICs and lots of application notes.