RF Serial Data Link UART - 2.4 GHz

Sunrom Part#
1418

Easily transfer serial data over 2.4 GHz RF with these reliable RF modem. Enables transparent bi-directional communication for microcontroller & computer for wireless data logging and sensor reading.

User's Manual

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http://www.sunrom.com/m/1418

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Introduction

This is a RF data modem working at 2.4 GHz frequency in half duplex mode with automatic switching of receive/transmit mode with LED indication. Receives and Transmits serial data of adjustable baud rate of 9600/115200 bps at 5V or 3V level for direct interfacing to microcontrollers.

RF modem can be used for applications that need two way wireless data transmission. It features high data rate and longer 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.

Typical Application

Features

- Automatic switching between and transmit and receive mode in RF
- Bidirectional UART serial data transfer
- Easy to use, Works out of the box without any configuration
- Transparent to microcontroller, No special programming or configuration required.
- Reliable and Sturdy operation
- FSK technology, half duplex mode, robust to interference.
- 2.4 GHz band, no need to apply frequency usage license.
- High sensitivity, reliable transmission range.
- Built in dual color LED indication for Transmit and Receive
- On Board voltage regulator which accepts 3.3V to 5V operating voltage
- Standard UART interface, TTL(3-5V) logic level.
- No tuning required, PLL based self tuned.
- Error checking(CRC) of data in built.
- Stable, small size, easier mounting.
- Built in UART Level convertor for 5V or 3.3V microcontrollers.
- On board jumper to select 9600 or 115200 baud rate
- On board frequency channel selection jumper to modify channel of operation, to avoid clashing of frequency for multiple pairs in same premises.

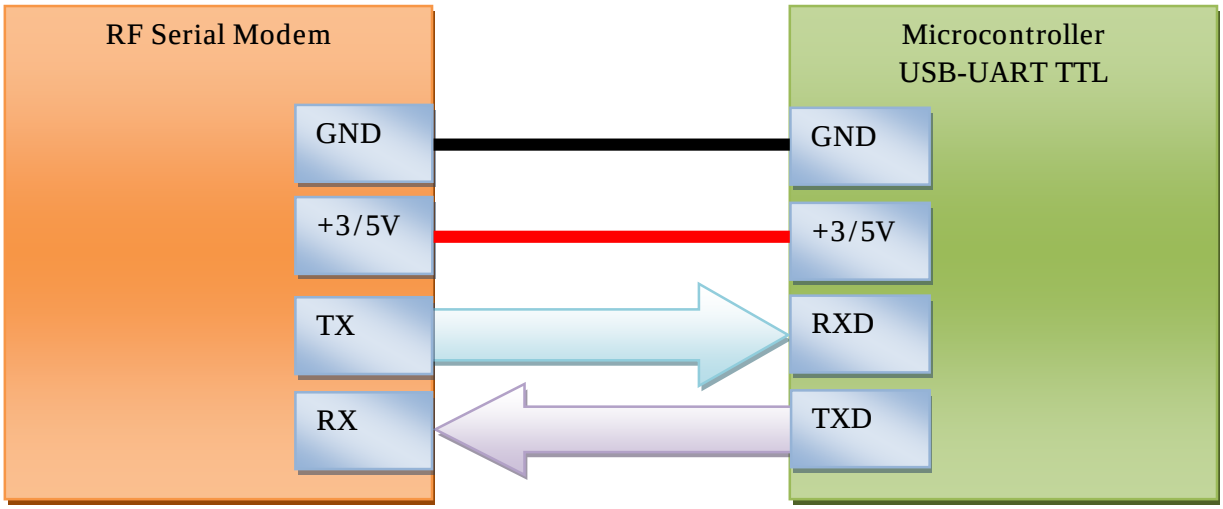
Applications

- 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

Interfacing with Microcontroller or USB-UART TTL

If you want to operate with microcontroller then it's very simple to connect just 4 pins of modules like below.

If you want to operate with a PC then use a typical USB-UART of TTL level(not RS232) with same connections like below.



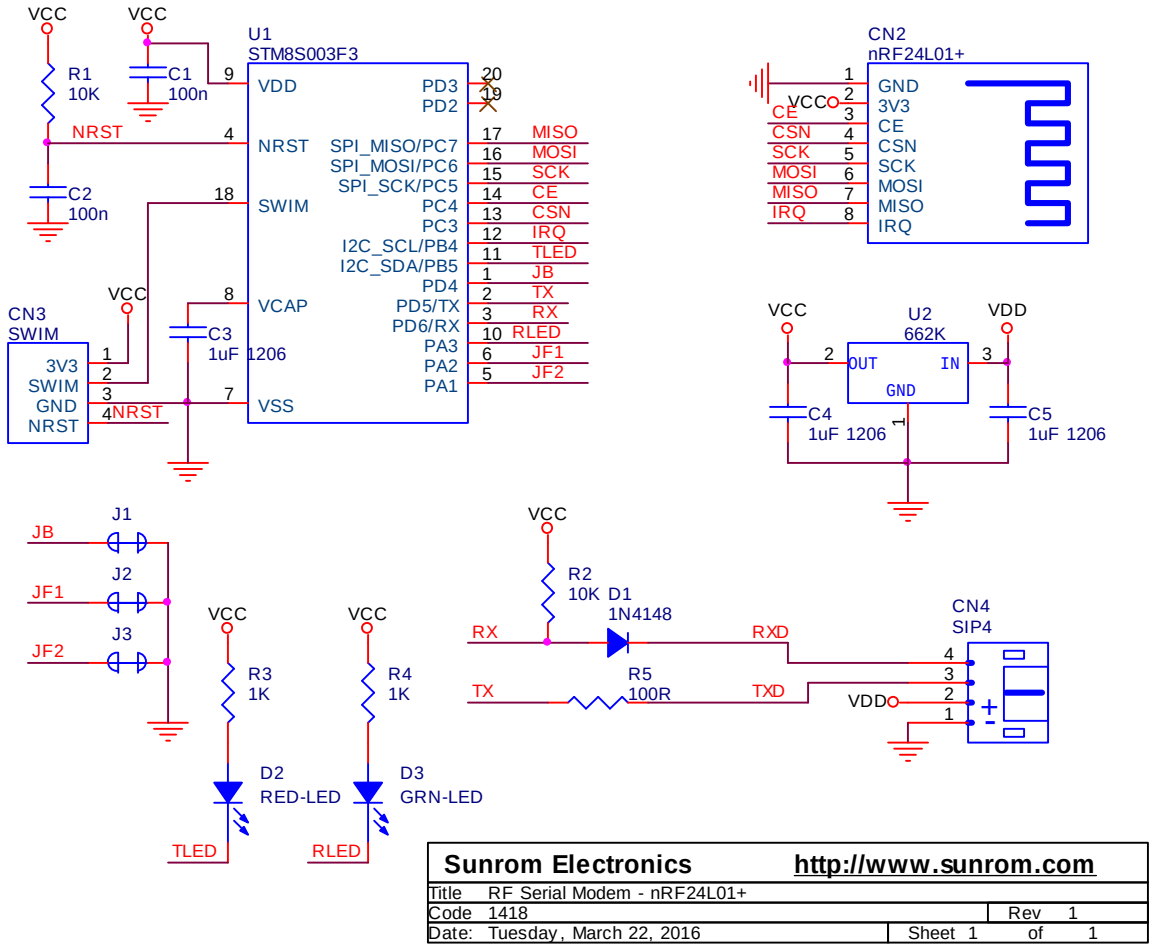
Specifications

Parameter	Value
Working Voltage	3.3V to 5V DC regulated power supply
Current Consumption	25 mA
Frequency of Operation	2.4 GHz
Serial Baud rate	9600 bps or 115200 bps depending on jumper setting
Baud rate format	8-N-1; 1 Start bit, 8 Data bits, 1 Stop Bits, No Parity
RF Bit rate	250 kbps
RF Power Output	0 dbm
RF range	50-70 meters
On Board controller	STM8S003F3
RF Chipset	nRF24L01+ Enhanced version

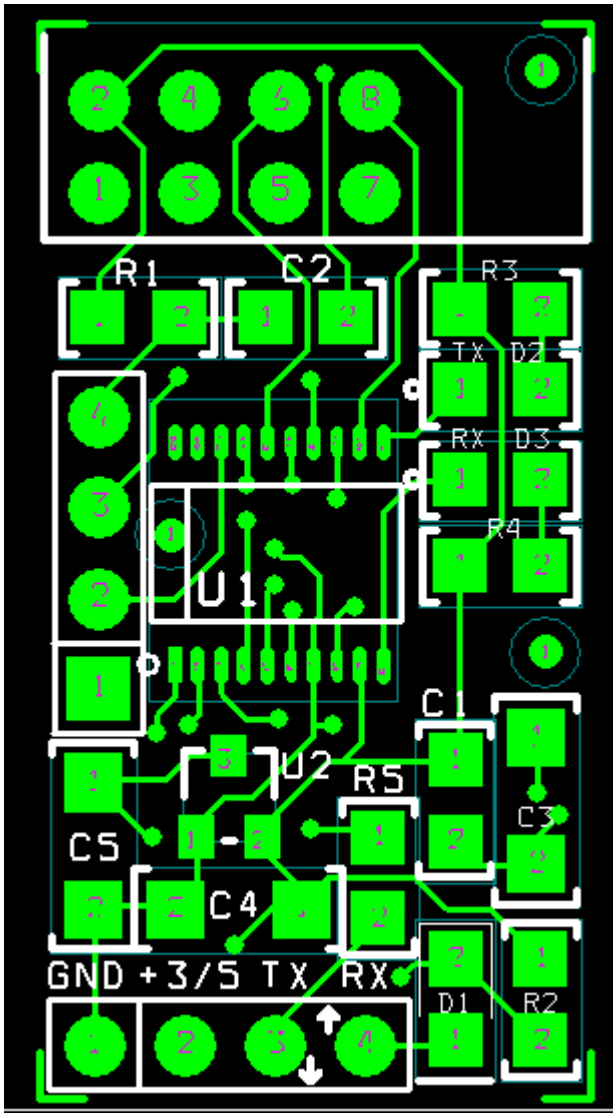
Module Pin Details

Pin	Details
GND	Common Ground
+3.3V/5V	Regulated positive power input 3.3V to 5V DC
TX	Transmit Output - UART TTL level - Connects to RXD pin of microcontroller
RX	Receive Input - UART TTL level - Connects to TXD pin of microcontroller

Board Schematic



Top Side Component Layout



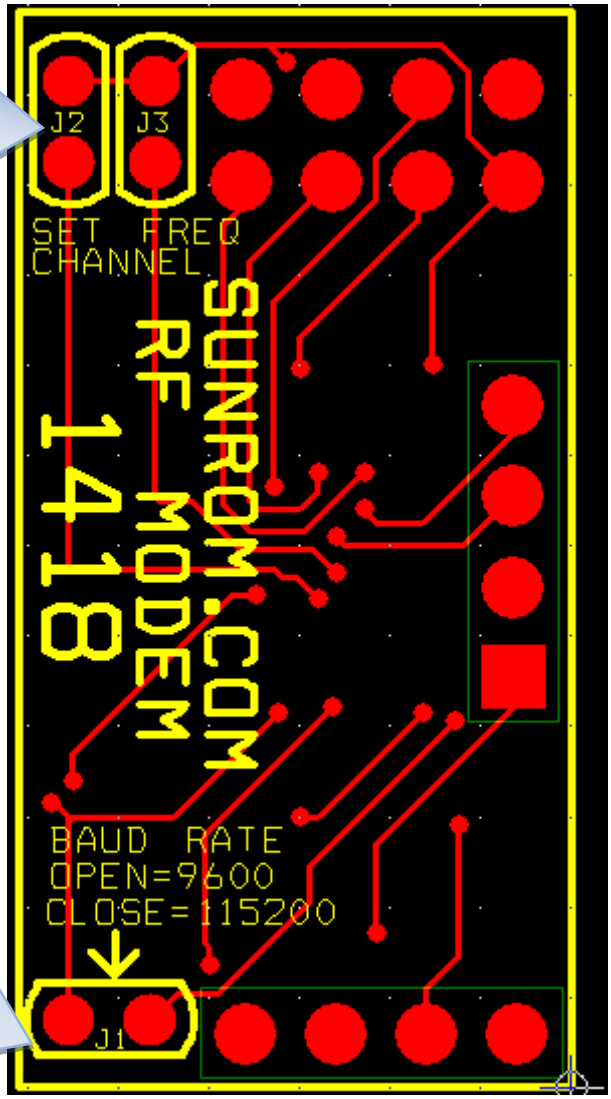
Jumper Settings

Frequency Channel

There are two jumpers to set frequency channel of operation. If you want to operate multiple pairs on same premises without interfering with each other you can set this frequency channel selection jumper. Default we provide it both open. Set a unique combination for the jumper like one short and one open or both short on pair you wish to operate. Changing this setting will deviate the frequency +/- 1 Mhz of operation from the default and only modules having same jumper setting will be able to communicate.

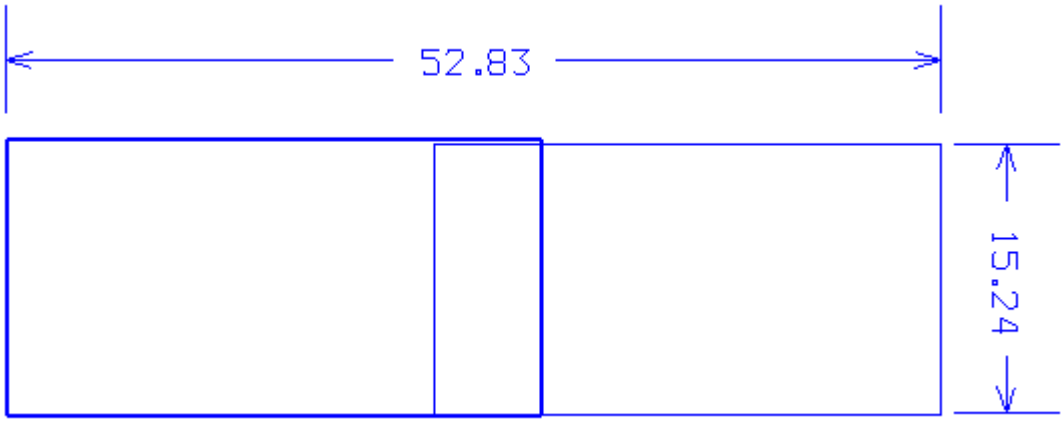
Baud Rate Setting

There is a PCB jumper on board on bottom side of PCB. We provided it open condition which means 9600 bps baud rate. You can short it with a soldering iron, if you want 115200 bps baud rate for module.



Product Dimensions

Board Dimensions in mm



Support

Sunrom Electronics offers **free technical support (www.sunrom.com/contact)** for customers, until the end of the product's lifetime, so if something goes wrong, we're ready and willing to help!

Technical Support is available by email only and scope is limited to problem faced during use of the use of product and does not cover end user programming and hardware troubleshooting.

Each product passes through strict quality checks before it reaches you. So if something is not working out right, the first thing to doubt is the connections or programming of your hardware.

Disclaimer

Sunrom Electronics assumes no responsibility or liability for any errors or inaccuracies that may appear in the present document. Specification and information contained in the present schematic are subject to change at any time without notice.