SRF: Surface Mount Wireless Serial Data Module

The SRF is designed for wireless transmission and reception of serial data in an easy to use surface mounted module. It has an on-board balun and chip antenna, which can be detached for applications where an external antenna is required.

The SRF makes use of Texas Instruments CC1110 or CC1111, a low-power System-on-Chip, which sports a micro-controller unit (MCU), memory, a sub-1GHz transceiver, an encryption engine and a USB controller (for the CC1111 based module). This chip has been pre-loaded with Ciseco firmware such that multiple SRF modules provide a wireless RF serial connection without any need for programmer or end-user configuration.

The SRF serial is a surface mount equivalent to the XRF, the SRF USB is a surface mount equivalent to the URF. The URF stick makes use of the SRF USB.

Applications

Low power wireless applications operating in the 868 and 915 MHz ISM/SRD bands

- Industrial monitoring and control
- Wireless sensor networks
- Wireless alarm and security systems
- Automatic meter reading
- Home and building automation
- Low power telemetry
- USB dongles

The SRF is not recommended or authorised for use in life support, surgical implantation, nuclear or aircraft applications or for any use or application in which the failure of a single component could cause substantial harm to persons or property.

Key Features

- Interface
  - Just 4 connections needed for transparent serial data mode (PWR, GND, RX, TX)
  - Baud rate selectable upto 115.2 kbaud
  - Full speed USB controller (12Mbps)
  - Radio
- 868 and 915 MHz ISM/SRD bands
  - 250kbps transfer rate

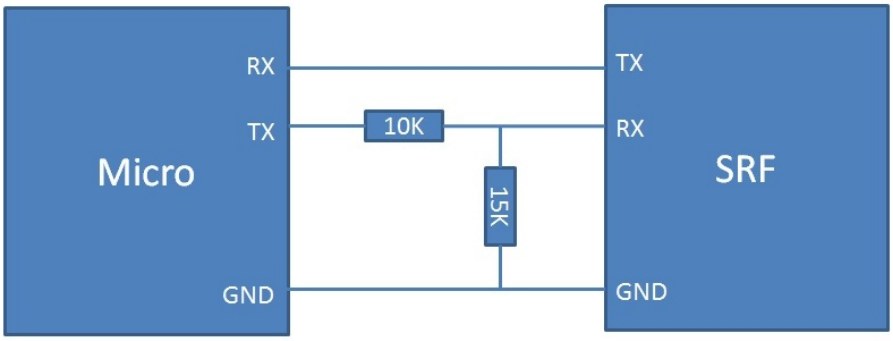
  - 0dBm (10 mW) power
- Low Power
  - Low current consumption (RX: 24mA; TX: 36mA @ -10dBm output power)
  - 123 ?A in sleep mode; 0.2 ?A in deep sleep mode
- Dimensions
  - 15.9mm wide, 26.4mm long (with chip antenna)
  - 15.9mm wide, 16.5mm long (without chip antenna)
  - RFM12B footprint
- General
  - RoHS
  - CE
  - WEEE

General Characteristics

Parameter	Value	Unit	Condition
Frequency	868.299683 or 915.000000	MHz	
Xtal frequency	48.000	MHz	
Data rate	1.19877	kBaud	
Modulation format	GFSK		
Transmit power	10	dBm	maximum
Receiver sensitivity	-110	dBm	At 1.2kB
Receiver filter bandwidth	62.5	kHz	
Open air range	300	M	
Wall penetration	3 – 5		Estimate for average

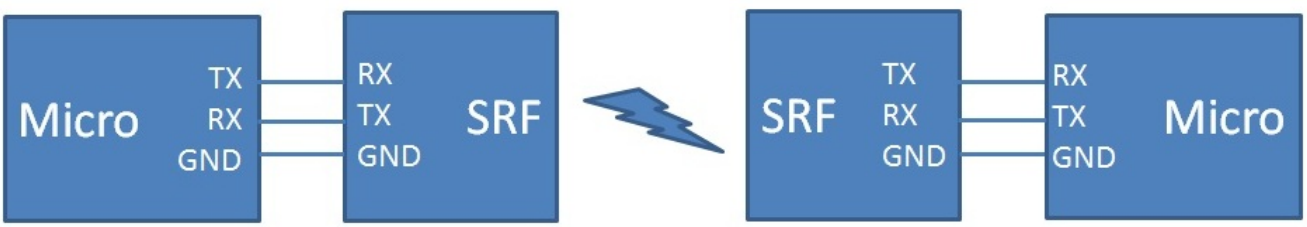
Usage

The SRF has been designed as a module that will typically be combined with a micro-controller and/or a computer to provide a wireless serial data port. In applications where the SRF is connected to a 5V micro-controller, a 10K and a 15K resistor can provide 5V to 3.3V level conversion for the data lines.

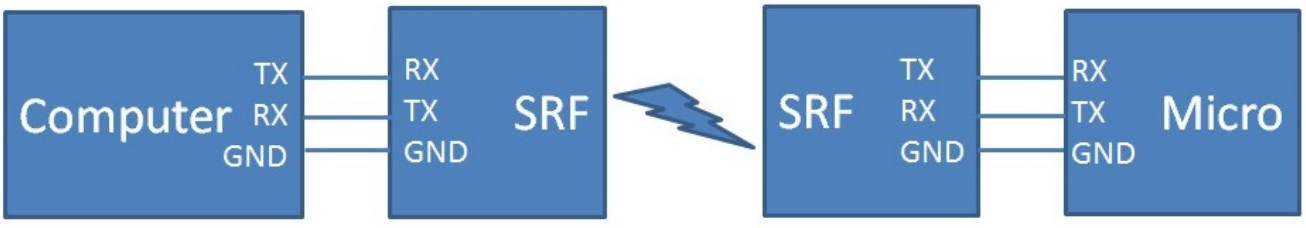


5V to 3.3V level conversion for data lines

In a typical application two micro-controllers will communicate over a wireless serial connection as shown in the diagram below. Data written to the serial port by one micro will be received on the serial port of the other micro and vice versa.



In another typical application, an SRF/USB is connected to a regular computer (e.g. laptop, server, gateway, etc.) and another is connected to a micro-controller. Data sent over the virtual serial port associated with the USB port on the computer will be received on the serial port of the micro-controller and vice versa.



The SRF can be applied in many other scenarios where serial data communication occurs. The above are just two examples.

See also

[Technical specification]

[Configuring the SRF]

[SRF Troubleshooting]