

## RAK833 SPI and USB LoRa Gateway Concentrator mPCIe Module (based on SX1301 and FT2232H)

| The RAKwireless RAK83-SPI/USB is a complete and cost effective LoRa gateway solution offering up to 10 programmable parallel demodulation paths. It's perfect for smart metering fixed networks and IoT applications with up to 500 nodes per Km2 in moderately interfered environments.

The modules have the industry standard PCI Express Mini Card form factor, which enables easy integration into an application board.



## **RAK833-SPI/USB**

Target for development & femtocell gateways

- Supports both SPI and USB interface
- Includes FT3323H chips
- USB interface allows for easy integration with a lot of different controller boards in the development stage.
- With the USB port, you can easily access information of I2C, SPI, serials, and can do better troubleshooting.
- Without the FTDI, if any troubleshoot is needed then you have to go by soldering and can put the PCB in danger.

## **LoRa Gateway Frequency Band**

- 433 (433MHz - 435MHz)
- 470 (RX: 470MHz - 490MHz)(TX: 490MHz - 520MHz)
- EU 868 (865MHz - 872MHz)
- AS 923 (923MHz - 925MHz)
- AU 915 (915MHz - 928MHz)
- US 915 (902MHz - 928MHz)

## **Where to use RAK833-SPI/USB**

- Industrial router
- IoT Gateway
- VPN Router
- Industrial computer

## **Supports SPI and USB interface**

RAK833 refer Semtech's reference design of SX1301, add a 4 channel SPDT to switch SPI of SX1301 to PCI edge connector or FT2232H which converts SPI to USB2.0 interface

An SPI interface is provided on the PCIe\_SCK, PCIe\_MISO, PCIe\_MOSI, PCIe\_CSN pins of the system connector. The SPI interface gives access to the configuration register of SX1301 via a synchronous full-duplex protocol. Only the slave side is implemented.

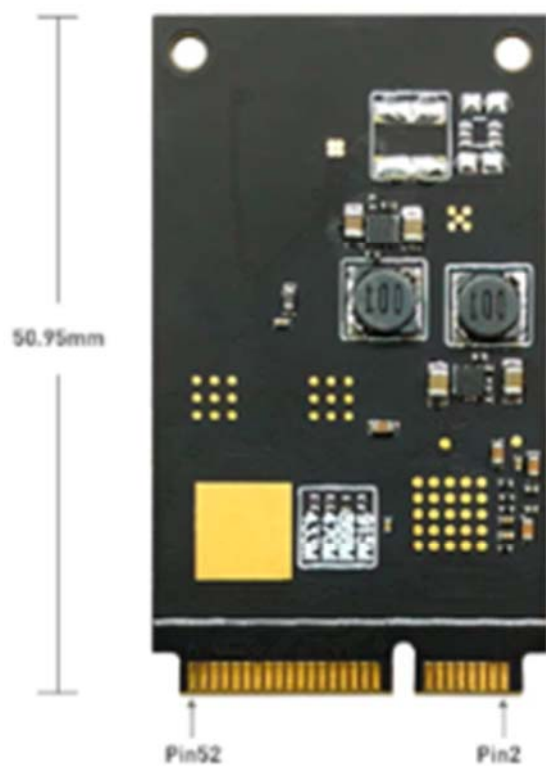
Supports high speed USB to SPI by FT2232H, it includes a high-speed USB2.0 compliant interface with maximum 480Mb/s data rate, representing the interface for any communication with an external host application processor. The module itself acts as a USB device and can be connected to any USB host equipped with compatible drivers. For more information, please refer to the data sheet of FT2232H.

## **Product Specification**

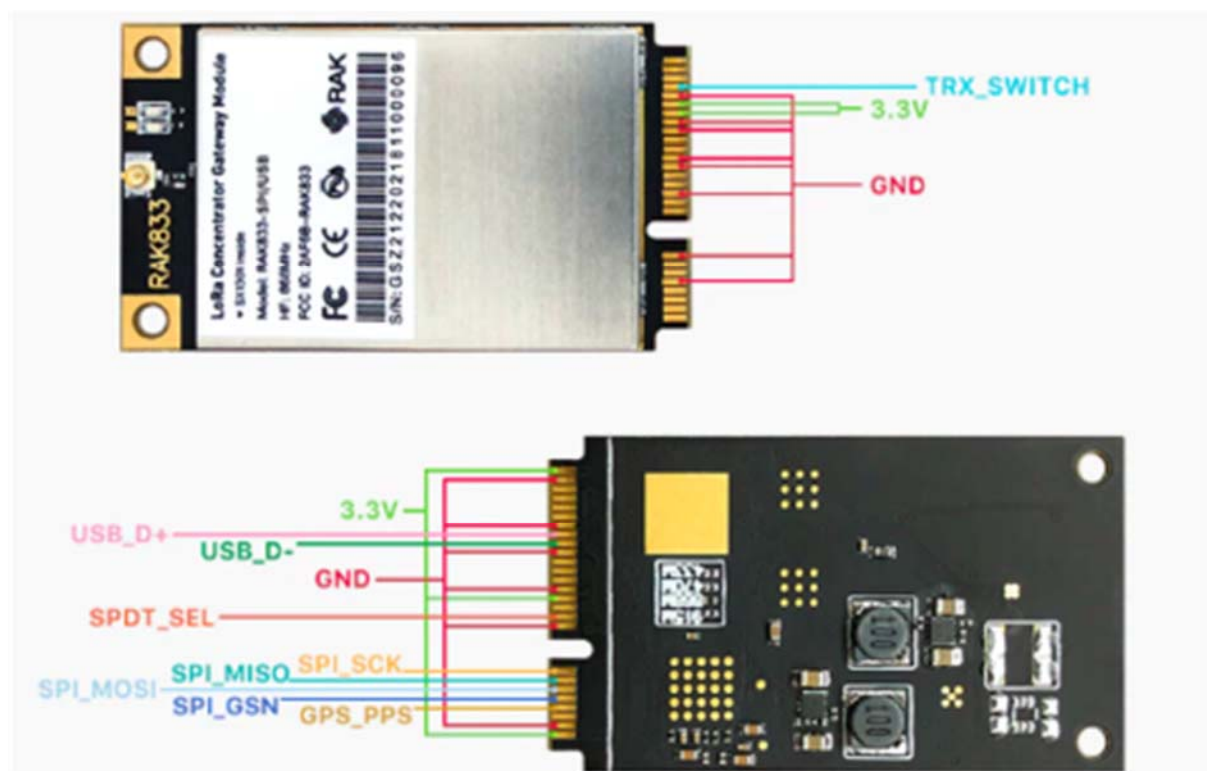
- Frequency band 868MHz & 915MHz
- Standard Mini PCI-e form factor with 52 Pin
- Voltage of Mini PCI-e is 3.3v which is compatible with 3G/LTE card of mini-PCIe type
- Max. Tx power is 25dbm & sensitivity - 136.5dbm
- Interfaces USB & SPI
- SX1301 base band processor emulates 49 x LoRa demodulators 10 parallel demodulation paths
- Module build in FT2232H to convert SPI interface of SX1301 to USB2.0



Top View



Bottom View



## Applications

- Smart metering
- Internet of Things (IoT)
- Security sensors network
- Agricultural monitoring

