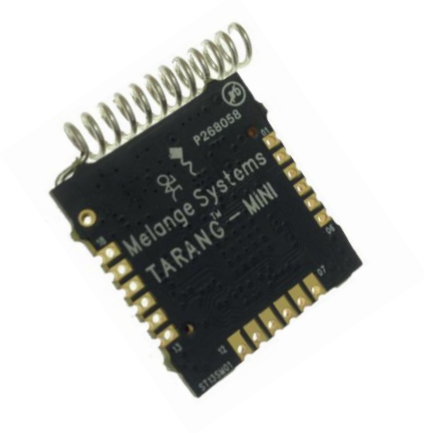
Melange Systems Pvt Ltd

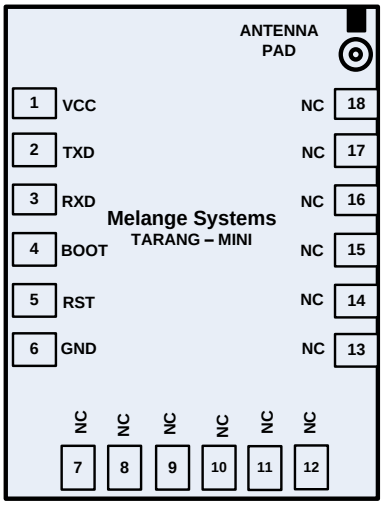
1. Module Interface Details

TarangMini module has 18-pin (3 X 6) 2mm pitch **Castellated Pads / Through- Hole Pins** distributed in three rows at the module edges. This connector / pads are used for interfacing the module with a microcontroller / RS232 level converter / USB to serial base board

Top View



Bottom View



2. Pin Definition

Pin	Name	Type	Function
1	VCC	P	Module Power Supply (3.3V to 3.6V)
2	DOUT	O	Serial data output from TarangMini
3	DIN	I	Serial data input to TarangMini
4	BOOT	I	H- Firmware update; L- Normal operation
5	RESET	I	Reset module (Active Low)
6	GND		Ground
7	NC		Reserved
8	NC		Reserved
9	NC		Reserved
10	NC		Reserved
11	NC		Reserved
12	NC		Reserved
13	NC		Reserved
14	NC		Reserved
15	NC		Reserved
16	NC		Reserved
17	NC		Reserved
18	NC		Reserved

3. Technical specification

Specification	TarangMini Module
Supply Voltage	3.3 to 3.6V
Operating Frequency	865 – 867 MHz
Current Draw, Receive	< 25 mA
Current Draw, Transmit	< 130 mA @ 19 dBm
Deep Sleep Current	Less than 10 uA
Maximum RF Output Power	+19 dBm
Serial Baud Rate (UART)	1200 - 115200
Operating Temperature	-10 to 70 degree c
Antenna Options	Spring / External
PCB Dimension (mm)	25 (L) x 22.5 (W) x 2.5 (H)

4. Software

TarangMini SM20LR03 module presently supports Melange Systems proprietary TarangNet™ (for point to point, point to multi-point) software stack. Module hardware can support other network stacks and will be enabled based on the requirements

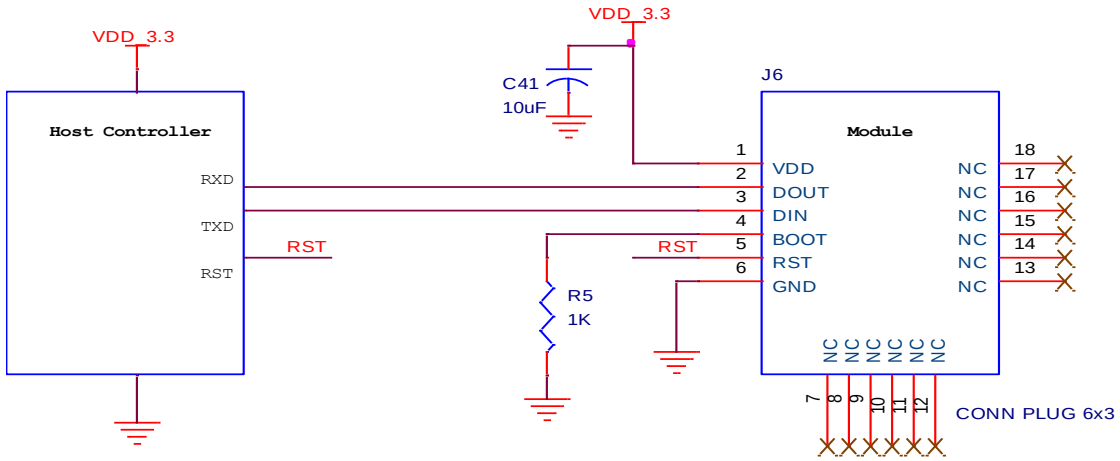
5. Communication Mode

TarangMini SM20LR03 module has standard UART interface to interface with external controller or a PC. Data sent to the module UART is packetized and wirelessly transmitted to the configured destination after adding the network header. Once configured, the module provides transparent communication between the interfaced devices. TarangNet™ supports point to point and point to multi point communication and has broadcast messaging feature

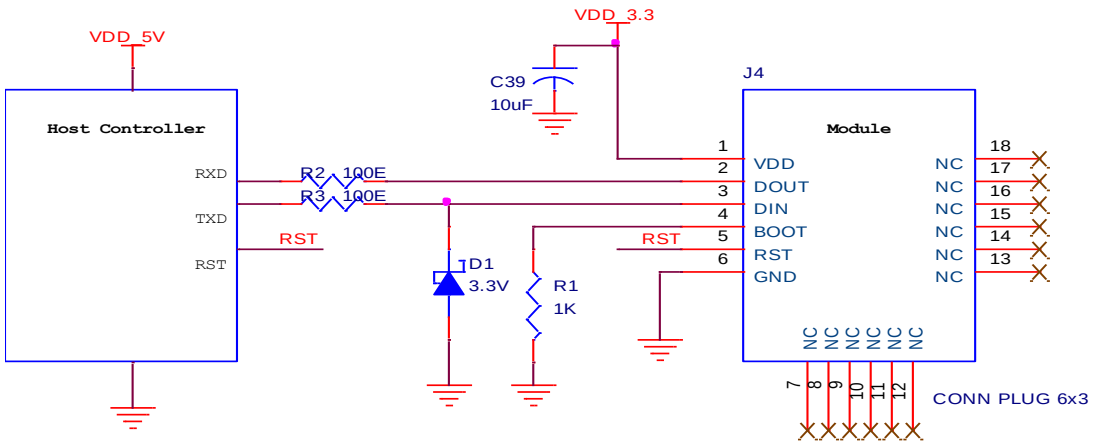
6. Configuration Mode

TarangMini SM20LR03 modules are configured using legacy AT styled command set (Ref. Section 11 for the commands list). Consecutive ''+++'' without a long delay brings the module in to configuration mode and allows access to most of the module parameters. A write request through the AT command writes the new parameters to the non-volatile memory, thus avoiding the configuration at every power cycle

7. TarangMini SM20LR03 interface with a Microcontroller

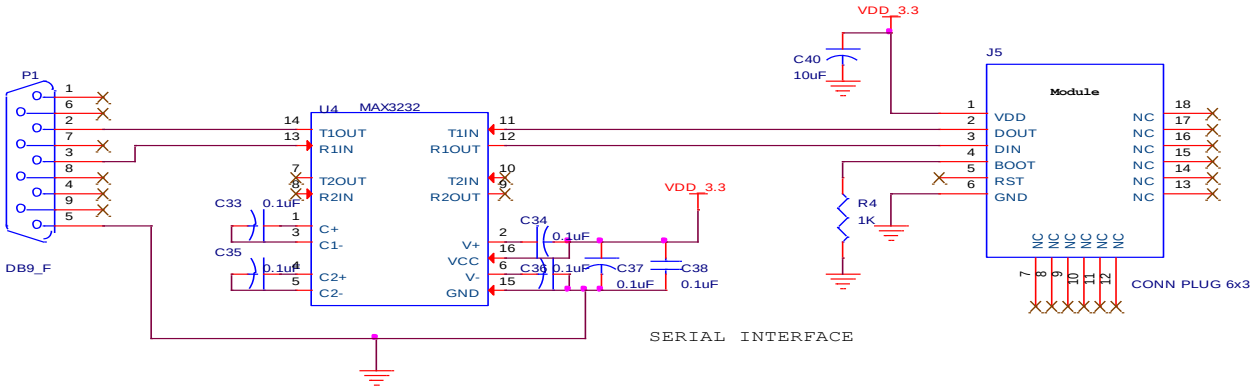


Microcontroller with 3.3V UART



Microcontroller with 5V UART

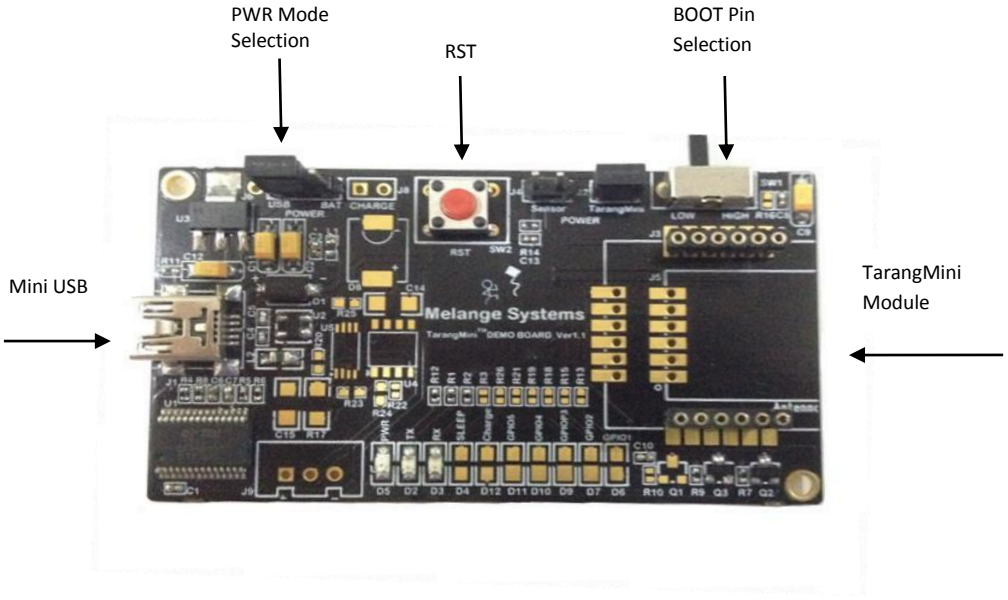
8. TarangMini SM20LR03 interface with a PC



SERIAL INTERFACE

9. Tarang Demo board

Tarang Demo board eases the evaluation and configuration of the TarangMini SM20LR01 module. Demo board has a USB interface and the board can be powered from the standard USB port, battery or an external 5V adapter.



TarangMini Demo Board

10. Testing and Configuration

TarangMini SM20LR03 modules can be configured, tested and programmed using any standard serial port terminal software and a Tarang Interface board.

a. Software pre-requisites

Download the TMFT software for Windows, available from http://melangesystems.com/tmft/tmft.rar
Download the Docklight Software from Windows, available from http://docklight.de/downloads/
Download the FTDI Driver for Windows

b. Bringing module to configuration mode

The TarangMini SM20LR03 can be configured using AT commands via the TMFT terminal interface or any terminal program.

- Download and install TMFT / any other terminal software
- Connect the Tarang Interface board with the module to the PC
- Start TMFT software. Available COM ports must be listed in the “COM Port Setup” pane. Select the interfaced COM port
- If the module is a standard non customized one, the parameters will default to Baud Rate-9600, Data bits-8, Parity-None, Stop bits-1, Hand shake-None
- Go to Tools Window tab- Click on Terminal
- Type “+++” (Without LF and CR)
- A functional module must respond with “OK” within 2seconds
- Now the module is ready to be configured and accepts further commands

11. AT Commands

AT Command	Description	Parameter and Range	Default	Example
ATGRD	Restore Defaults: Module is Configured to Factory settings	-		-
ATGWR	Write: Stores the set parameters to memory	-		-
ATGEX	Exit from AT command mode	-		Provides "EXIT" as response
ATNMY	8-bit Source Address: Set/Read the RF module 8-bit source address.	0 – 0XFFFF	0X1000	ATNMY1001
ATNDA	8-bit Destination Address: Set/Read the RF module 8-bit destination address.	0 – 0XFFFF	0X1000	ATNDA2000
ATNPI	8-bit PAN ID: Set/Read the PAN (Personal Area Network) ID	0 – 0XFFFF	0X1000	ATNPI3000
ATSBD	Interface data rate: Read / Set the serial interface data rate for communications between the RF module serial port and host.	[0-7] 0 - 1200 1 - 2400 2 – 4800 . . 7 - 115200	3 - 9600	ATSBD01
ATNCH	Set/Read the frequency channel	[0-9] 0. 865.1Mhz 1. 865.3Mhz . . 9. 866.9Mhz	0	ATNCH00
ATVFW	Read firmware version	-	-	-