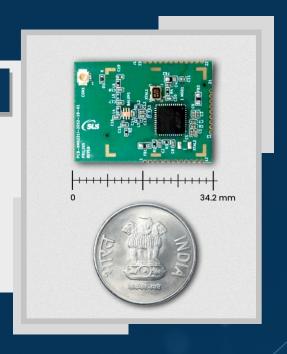# NEBULAE®
DESIGN TO CONNECT

NebuLink Node NM0221-I

NM0221-I is a SOC-based low-power wireless module by Nebulae that provides long-range connectivity for IoT devices. This module is engineered to support Wi-SUN and IEEE 802.15.4 PHY network. NM0221-I is ideal for applications which need self-forming and self-healing mesh networks. The module is ideal for IS16444 smart metering applications because it is equipped with sufficient memory and is WPC certified. NM0221-I's FOTA capability makes it suitable for remote security updates.

Specifications

Performance		
TX Power	+19.8 dBm	
RX Sensitivity (@ 1% PER)	**Data Rate**	**Value**
	38.4 kbps	-105 dBm
	100 kbps	-101 dBm
RF Range (Line of Sight)	1000 meters @38.4 kbps data rate	
RF Data Rate	38.4 ~ 100 kbps	

Processor Specifications	
Processor	32-bit ARM Cortex-M4 core with DSP instruction and floating point unit operating @40 MHz
Memory	1024 kB Flash Program, 128 kB RAM Data
Frequency Band	863~876 MHz
Mounting Type	1.27 mm Pitch SMD
Antenna Options	U.FL
Size (LxWxH in mm)	34.2 x 25 x 4.6

IO Specifications	
Serial Interface	1 x UART
Analog Input	2 x 12-bit 1 MSPS SAR ADC
Digital IO	25~27

Electrical Specifications			
Supply Voltage	1.62V~3.8V DC, 3.3V		
Current Consumption	Tx	868 MHz, CW, 20 dBm match, +3.3 V External PA supply	79.7~106.7 mA
		868 MHz, CW, 14 dBm match, External PA supply connected to DCDC output	35.3~41 mA
	Rx	38.4 kbit/s, 2GFSK, F = 868 MHz, Radio clock prescaled by 4	8.6~10.2 mA
Operating Temperature	-20° C to 85° C		
Storage Temperature	-30° C to 125° C		

Networking	
Protocol	802.15.4 PHY/MAC Zigbee, Thread, Proprietary Mesh, Wi-SUN

Applications

Smart Grid	Smart Energy Meter	Environmental Monitoring	Smart Street Lighting

Key Product Features

- Wireless communication module for use in embedded applications
- Frequency band: 863 MHz to 876 MHz
- Up to 1024 kB Flash Program Memory
- Up to 128 kB RAM Data Memory
- Support BPSK / DBPSK TX modulation format
- 32-bit Real Time Counter and calendar
- 2 × Watchdog timer with dedicated RC oscillator
- IEEE 802.15.4 compliant
- 12-bit 1 MSPS SAR analog to digital converter (ADC)
- Provides an OTA (Over the Air) firmware update mechanism
- Comes with U.FL connector to support external antenna

Contact us:
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