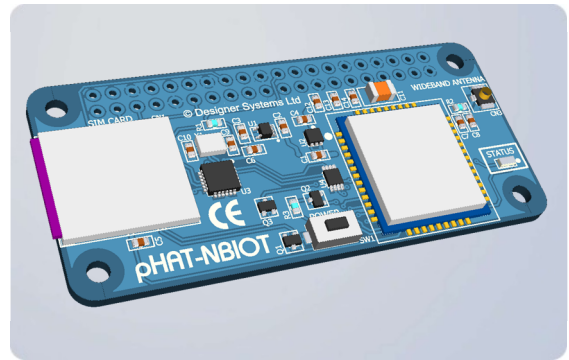


pHAT-NBIOT

LTE Cat NB1 modem module

for Raspberry-Pi boards



pHAT-NBIOT is a multi-band LTE Cat NB1 module that works on bands B1-5, B8, B12, B13, B17-20, B25, B28 & B66 supporting single/multitoned data and Small-Message-System (SMS) functionality. Specifically designed for the Raspberry-Pi Zero user (can also be used on all the other Raspberry-Pi variants) the pHAT-NBIOT features I²C communication to leave the Raspberry-Pi UART for other functions eg. Sensors, debug etc.

pHAT-NBIOT features full AT command control over the embedded I²C to UART bridge allowing the Raspberry-Pi to create UDP/TCP/MQTT data links with downlink transfers at up to 25.5kbps.

The compact form factor, low power consumption and extended temperature range make pHAT-NBIOT a best choice for M2M applications when using Raspberry-Pi modules.



Key Benefits

- ✓ Compact LTE Cat NB1 module with ultra-low power consumption.
- ✓ Data transfer rates up to 25.5kbps supporting embedded Internet service protocols for M2M applications.
- ✓ Text and PDU mode Small-Message-System (SMS) support.
- ✓ Standard 3GPP Rel. 13 AT command set with extended commands for embedded Internet Service Protocols.
- ✓ Manual power on/off button or IO controlled power on/off for embedded applications.
- ✓ SC16IS750 I²C to UART bridge supports serial speeds up to 115.2kbps.
- ✓ U.F.L antenna and micro-SIM interface for 1.8/3.0V SIM cards.



Multi-Band NB-IoT



External UFL Antenna



Extended temperature Range: -20°C ~ +85°C



Fully Raspberry-Pi compatible



Supports M2H interfacing



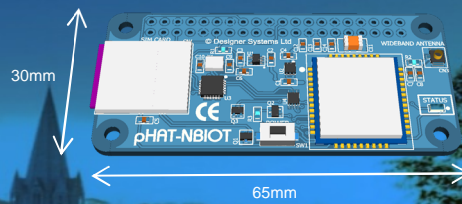
Supports M2M interfacing



Ultra-low Power Consumption

pHAT-NBIOT

LTE Cat NB1 modem module



Frequency Bands

Multi-band:

B1/B2/B3/B4/B5/B8/B12/B13/
B17/B18/B19/B20/B25/B28/
B66

Data

Data Rate:

Single Tone:

25.5kbps (DL)/16.7kbps (UL)

Multi-Tone:

25.5kbps (DL)/62.5kbps (UL)

Protocols:

UDP/TCP/LwM2M/MQTT/
DTLS/SNTP

SMS (TBC)

Text and PDU mode

SIM Card

Support:

Micro SIM (3.0/1.8V)

Type:

Push-push card

Antenna

Impedance:

50ohm

Connection:

UF.L socket

Indication

Blue STATUS LED:

TBC

I²C and IO:

I²C Signals:

SDA, SCL & IRQ (GPIO25)

IO Signals:

PWR_CTL (GPIO23) [power on/off]

WAKE_UP (GPIO17) [wake module]

Voltage level:

3.3V

I²C Pullups:

None (within Raspberry-Pi)

I²C Speed:

100kHz and 400kHz

I²C address:

0x4C

Connection:

40pin Raspberry-Pi header

Controls

Power Button:

Tactile (Hold to power on/off)

I²C-UART Modem Bridge

Bridge device:

SC16IS750

Modem serial speed:

1200 – 115200 bps

Modem protocol:

8 data, no parity, 1 stop

Modem flow control:

None

Electrical & Sensitivity

Supply Voltage:

4.5V ~ 5.5VDC

Power Consumption:

1mA @ 5VDC Idle

80mA @ 5VDC Peak

Output Power:

23dBm ± 2dB

Sensitivity:

-129dBm Typ.

General Features

Supplied with Wideband antenna

3GPP Rel.13 AT command set

Firmware update over UART

Temperature range: -20°C ~ +85°C

Dimensions: 65 x 30 x 4mm

Weight: 12g approx.

Carriers

Vodafone (Global)

T-Mobile (North America)

Approvals

RoHS Compliant

RED Compliant

CE (Europe)