AMBER WIRELESS

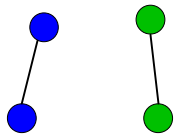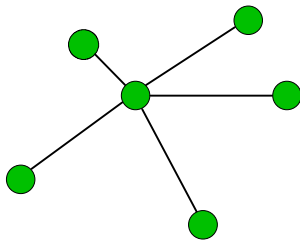# Compact Low-Cost Radio Module
868 MHz ISM Band

## Key Features

- Low-cost OEM radio module in 868 MHz ISM band

- Compact dimensions: 16 x 27.5 x 3.5 mm

- Supports low-power applications and WOR (wake-on radio)

- Integrated software stack with extensive functions

- Flexible addressing with up to 255 nodes in 255 networks

- Complies with requirements in R&TTE Directive 1999/5/EC

- Can be delivered in tape and reel

- Also available as USB stick version

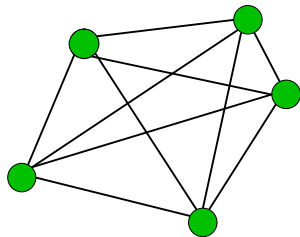- Integrated ceramic aerial, optional: external aerial connection

## Network Topologies

**Point-to-point**

**Point-to-Multipoint**

**Peer-to-Peer**

## Description

The AMB8420 is a compact and low-cost radio data transmission module for wireless half-duplex communication. The integrated microprocessor controls data communication, handling packet and checksum formation, addressing, monitoring of channel access and resending unreceived packets. The host system does not have to perform any radio-specific tasks.

The module can be configured in many ways and supports data transfer with fast channel and address switching. Measured field strength (RSSI value) offers the option of enhancing quality of the radio link.

The GUI for the freely available Windows application AMBER-ACC makes it easy to set operating parameters. A USB stick version is available to easily connect the AMB8420 to a PC system.

The AMB8420 is constructed on an SMD design and suitable for automatic component mounting. It can also be delivered in tape and reel packaging.

The AMB4420 and AMB2520 provide pin-compatible modules for the frequency ranges 433 MHz and 2.4 GHz. AMBER wireless also offers customer-specific solutions based on the AMB8420.
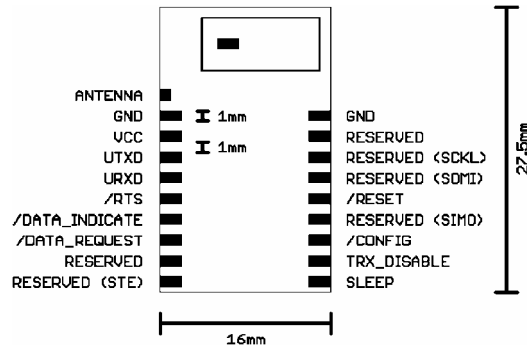
## Interfaces

The AMB8420 is connected to a host system via the UART interface with bit rates of up to 115.2 kbaud. Other pins can be used for data flow control and to switch between operating modes. An SPI interface is included. Using appropriate firmware, the module is also suitable for autonomously recording digital or analogue signals.

## Range of Application

Data collection, monitoring, remote control and sensor networks.
Its compact dimensions and low power consumption make the radio module ideal for battery-powered devices.

**AMBER WIRELESS**

## Dimensions



## Pin Assignment

| Pad Name | Description |
|---|---|
| VCC | positive supply voltage |
| GND | negative supply voltage |
| ANTENNA | Antenna connection (optional) |
| UTXD, URXD | UART transmit , UART receive |
| /RTS | ready to send/receive |
| /DATA_INDICATE | Signals incoming data |
| /DATA_REQUEST | Starts transmitting |
| SLEEP, TRX_DISABLE | selection of low-power mode |
| /CONFIG | Change into command-mode |
| /RESET* | Reset-Input |

## Specifications

| | | |
|---|---|---|
| Performance | Range* | up to 300 m (integrated antenna)<br>up to 500 m (external antenna) |
| | RF data rate | up to 250 kbps |
| | Interface data rate | up to 115.2 kBaud (UART) |
| | Output power | typ. 2 dBm e.i.r.p (10 dBm at 50 Ω) |
| | RF sensitivity | up to -102 dBm (-110 dBm at 50 Ω) |
| General | Power supply | 2.7 – 3.6 V |
| | Power consumption | TX: typ. 45 mA<br>RX: typ. 20 mA<br>Low Power: typ. 6 µA |
| | Dimensions | 16.0 x 27.5 x 3.5 mm |
| | Operating temperature | -30 to +85 °C |
| | Weight | < 2 g |
| | Antenna | integrated ceramic-antenna<br>external antenna connection (optional) |
| | Microprocessor | Texas Instruments MSP430F1232 |
| | RF transceiver | Texas Instruments CC1101 |
| RF technology | Addressing | up to 255 nodes on 255 networks |
| | Frequency range | 863.0 – 868.6 MHz |
| | Channel spacing | 50 kHz |
| | Modulation | 2-FSK, MSK |
| | Supported topologies | Point-to-Point, Point-to-Multipoint, Peer-to-Peer |
| Conformity | Europe | EN 300220, EN 301489, EN 60950, EN 50371 |

*  Range stated is calculated assuming line-of-sight. Actual range will vary based upon specific board integration, antenna selection, and environment.

## Related Products

- **AMB8420-EV**   Evaluation-Kit
- **AMB8460**   USB Stick based on AMB8420
- **AMB4420**   (434 MHz) / **AMB2520** (2,4GHz) short range radio module
- **AMB4400**   (434 MHz) / **AMB8400** (868 MHz) / **AMB2500** (2.4 GHz) RF transceiver without microprocessor

### Ordering information

| Item no. | Description |
|---|---|
| AMB8420 | 868 MHz RF module with integrated ceramic-antenna |
| AMB8420-TR | on Tape & Reel, Reflow solderable, packing unit 400pcs |
| AMB8420-2 | 868 MHz RF module to connect with external antenna |
| AMB8420-2-TR | on Tape & Reel, Reflow solderable, packing unit 400pcs |

### Contact