

Long Range, Low Power Module 2.4 GHz

FEATURES

- Best-In-Class RF range
- Up to 5000 m range
- Suitable for long distance applications with low data rates
- Robust RF protocol stack
- Command mode
- Ultra low energy consumption in Low Power Mode ($< 1 \mu\text{A}$)

INTERFACES

The AMB2220 is connected to a host system via the UART interface with a configurable bit rate of 300 to 115200 baud.

An SPI interface can be implemented upon request (separate firmware).

Using appropriate firmware, the module is also suitable for autonomously recording digital or analogue signals.

RANGE OF APPLICATION

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



- Surface mounted wireless module
- 2.4 GHz frequency band
- Up to 5 km range
- 10 mW output power
- Low Power optimized
- Compact dimensions: 17 x 30.8 x 4 mm
- Integrated AMBER RF stack with extensive functions
- Flexible addressing (up to 255 nodes in 248 networks)
- Conforms with EU RED 2014/53/EU
- Available on Tape & Reel for SMT assembly

The AMB2220 is a compact radio data transmission module for wireless half-duplex communication specially designed for long range applications with low data rates.

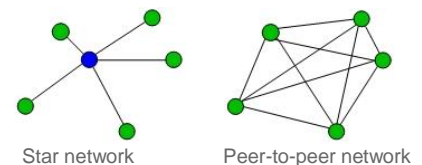
The integrated microprocessor controls data communication, handling packet and checksum generation, addressing. The host system does not have to perform any radio-specific tasks.

An opportunity to assess the quality of the radio link is also provided by using the measured field strength (RSSI value).

The freely available graphical user interface makes it easy to set operating parameters.

Network Topologies

The embedded software protocol stack supports star and peer-to-peer networks.



The AMB2220 is designed as a SMT device and is suitable for automatic component assembly. The module can also be delivered in tape and reel packaging.

The integrated microcontroller offers enough of free space to implement customer specific applications on request.

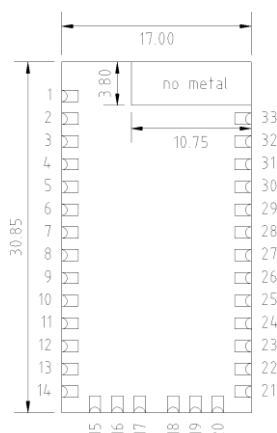
Specifications

Performance	Range*	Up to 500 / 5000 m (AMB2220 / AMB2220-1)
	RF data rate	high sens 1.5 to 12 kbps, normal sens: up to 72 kbps
	Packet Size	Payload 26 Bytes or 240 Bytes in fragmentation mode
	UART data rate	300 bps to 115200 bps
	Output power	Up to 7.5 dBm e.r.p. (10 dBm at 50 Ω)
	RF sensitivity	Down to -113 dBm (@1.5 kbps, radiated) Down to -115 dBm (@1.5 kbps, 50 Ω)
General	Power supply	1.9 – 3.6 V
	Absolut max. rating **	-0.3 V – 4.0 V ***
	Power consumption	Tx: typ. 38 mA, Rx: typ. 10 mA, Low Power: typ. < 1 μA
	Dimensions	17 x 30.8 x 4 mm
	Operating temp.	-40 to +85 °C
	Weight	Approx. 3 g
RF technology	Antenna	External antenna port (50 Ohm) or integrated antenna
	Addressing	Up to 255 nodes on 248 networks
	Frequency range	2.4015 to 2.4775GHz
	Modulation	FSK
Conformity	Topologies	Star, Peer-to-Peer
	Europe	EN 300 440, EN 301 489, EN 60950, EN 62479

* Range stated assumes line-of-sight and an antenna height of 6 m above ground. Actual range may vary depending on antenna choice, board integration and environment as well as the data rate.

** Stress above the absolute maximum ratings may cause permanent damage to the device. These are stress ratings only, operating at these conditions is not implied.

*** There are so called "5 V tolerant" pins, among others the UART pins, that are resistant up to Supply Voltage + 4.0 V.



Pin Nr	I/O	Description
1, 3, 33	I	Ground
2	I/O	RF-Pad
7	I	Power Supply
8	I	/Reset
10, 20	I	Wakeup-Pin (selectable)
22	O	UART TX
23	I	UART RX
17	O	LED_TX
18	O	LED_RX

ABOUT AMBER WIRELESS

AMBER wireless GmbH, established in 1997, is a German electronics company. AMBER specializes in the design and manufacturing of wireless connectivity solutions including compact short range RF modules for rapid implementation of cable-free data links. We have become one of the leading suppliers for low power ISM/SRD products in Europe. AMBER provides high-quality and cost-effective wireless modules and devices as well as custom design services.

SERVICES AVAILABLE

- Technical Support
- Custom Design Services
- Software / App Development
- Hardware Support

For more information on any of our products or services please visit our website:

www.amber-wireless.com

Ordering Information

Item No.	Description
AMB2220	Radio Module 2.4 GHz, integrated antenna
AMB2220-1	Radio Module 2.4 GHz with 50 Ohm RF Pad
AMB2220-TR	Radio Module 2.4 GHz, integrated antenna, Tape & Reel



Germany
 Phone +49.651.993.550
 E-Mail info@amber-wireless.de
 Internet www.amber-wireless.com