ZigBee PRO Network Module

2.4 GHz ISM Band

Key Features

- Radio transceiver in the 2.4 GHz ISM band
- ZigBee PRO stack
- Small dimensions: 17 x 27.5 x 4 mm
- RX sensitivity typically -97 dBm
- Programmable output power
- Wide supply voltage range of 2 V to 3.6 V
- High performance 8051 microcontroller core
- Easy to use API via UART to an external processor
- AES-128 security module
- Integrated ceramic antenna, U.FL connector or RF pin
- Complies with the requirements of the R & TTE Directive 1999/5/EC
- Available in tape & reel packaging

Description

The AMBZ430 is a compact, powerful 2.4 GHz transceiver module. It combines the latest transceiver technology with a sophisticated antenna circuit in a compact module. With only a few external components, a complete ZigBee compatible network solution can be built. Due to its small size, outstanding performance at low power consumption and easy modular handling, the AMBZ430 is leading the way for the new generation of ZigBee OEM modules.

Together with the TI ZNP stack, the AMBZ430 allows simple integration of ZigBee connections into existing systems via a serial interface. The module takes on all of the tasks of the ZigBee protocol and keeps the resources of the host system free for other applications. The module is either controlled via a limited set of commands (simple API for simple ZigBee data transfer) or a full set of commands (AF or ZDO for the complete ZigBee-functionality).

The integrated 2.4 GHz transceiver offers full IEEE 802.15.4 compatibility as well as excellent receiver sensitivity and robustness, thus building a reliable interface to the antenna. The pre-qualified module enables its user to create a ZigBee product within the shortest possible time to market

The radio module is available with following antenna options: SMD ceramic antenna, as well as external antenna, connected either via U.FL connector or antenna pad.

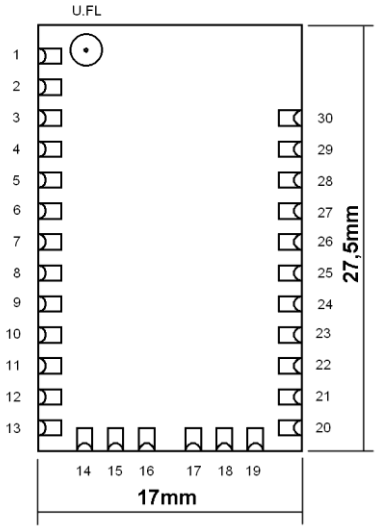
Microcontroller

The AMBZ430 provides a high-performance microcontroller with 8051 core. Different modes are available in addition to the rich periphery such as UART, SPI, timer, A/D converter, and more. The numerous GPIO pins, a random number and an interrupt generator provide other additional uses. The AMBZ430 also provides functionalities such as CRC calculation, acknowledgments, clear channel assessment, RSSI, an AES-128 security module and automatic MAC layer measurements.

Fields of application

Data collection, monitoring, remote controls, sensor networks and home automation. Due to the small size and the low power consumption, the AMBZ430 is perfectly suitable for battery-powered applications

Dimensions



Pin Assignment

No.:	Pad Name	Function
1	ANTENNA	External antenna connector
2	GND	Ground
3	VCC	Positive supply voltage
4	P1.6	TX
5	P1.7	RX
6	P1.5	Reserved (do not connect)
7	GND	Ground
8	P2.2	Debug Clock
9	P2.1	Debug Data
10	P2.0	CFG1 connect external to GND
11	P1.4	Reserved (do not connect)
12	P1.3	
13	P1.2	CFG0
14	RSVD	Reserved (do not connect)
15	RSVD	Reserved (do not connect)
16	RSVD	Reserved (do not connect)
17	RSVD	Reserved (do not connect)
18	P1.1	Reserved (do not connect)
19	P1.0	GPIO3
20	P0.7	Reserved (do not connect)
21	P0.6	GPIO2
22	P0.5	
23	P0.4	
24	P0.3	
25	P0.2	
26	GND	Ground
27	/RST	Reset input
28	P0.1	GPIO1/AIN1
29	P0.0	GPIO0/AIN0
30	GND	Ground
U.FL	ANTENNA	U.FL antenna connection

Specifications

Performance	Range*	Up to 250 m (integrated antenna) Up to 500 m (external antenna)
	RF data rate	Max 250 kbps (2 MChip/s chip rate)
	Interface data rate	Max 115200 Baud (UART)
	Output power	Typ. 4 dBm (@ 50Ω) Min -6 dBm, Max +10 dBm**
	RF sensitivity	Typ. -97 dBm
General	Supply voltage	2 – 3.6 V
	Current consumption (V_{DD} = 3V)	- TX: < 50 mA - RX: < 35 mA - Low Power: < 300 µA (LPM1), < 2 µA (LPM2)
	Dimensions	17 x 27.5 x 4 mm
	Operating temperature	-40 to +85 °C
	Weight	< 3 g
	Antenna	- w/ integrated ceramic-antenna (AMBZ420) - w/ external antenna connection (AMBZ420-1) - w/ U.FL connector (AMBZ420-2)
	RF transceiver	CC2530
RF technology	Standards	IEEE 802.15.4, ZigBee
	Frequency range	2394 – 2507 MHz, IEEE 802.15.4: 2405 – 2480 MHz
	Channel spacing	1 MHz, IEEE 802.15.4: 5 MHz (15 channels)
	Modulation	O-QPSK and DSSS
Conformity	Europe	EN 300 328, EN 300 440

* Range stated assumes line-of-sight. Actual range may vary depending on antenna choice, board integration and environment.
** Over the entire operating range (Temperature, Supply voltage, Frequency)

Related products

- **AMBZ430** (ZigBee Network Module w/ PA+LNA)

Ordering informationen

Item no.	Description
AMBZ420	ZigBee Network Module w/ integrated ceramic antenna
AMBZ420-1	ZigBee Network Module w/ antenna pad
AMBZ420-2	ZigBee Network Module w/ U.FL antenna connector
AMBZ420-x-TR	Module in Tape & Reel (packaging unit: 400)

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