

Wireless ZigBee® Network Module

ADVANCE INFORMATION

This document contains information on a new product. Specifications and information herein are subject to change without notice.

Product Description

The RC2300xx-ZNM ZigBee Network Module is a compact surface-mounted module with a complete embedded ZigBee® network protocol stack supporting wireless star and mesh topologies based on IEEE 802.15.4 compliant PHY and MAC layers. The network module features an easy-to-use serial interface and API for configuration of the module and for sending ZigBee packets.

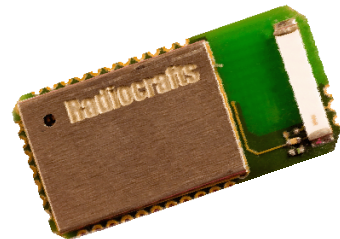
The module operates in 16 channels in the 2.45 GHz world-wide license-free ISM band. The complete shielded module is only 12.7 x 25.4 x 2.5 mm with integrated antenna (RC2300AT-ZNM) or pins for external antenna (RC2300-ZNM).

The API gives access to 2 digital and 4 analogue I/Os, 8 channel 14 bit ADC, timers, and non-volatile memory (EEPROM).

Using a ZigBee network module drastically reduces development time and gives a fast-track to a ZigBee compliant product. The ZigBee application can be implemented on any small external MCU (typically 4k Flash) or embedded controller with tools and compilers the developer is already familiar with.

Applications

- Wireless sensor networks
- Home automation / Building automation
- Smart metering / AMI / AMR
- Asset tracking
- OEM equipment
- Fleet and inventory management



Features

- Compact API command set for ZigBee network configuration and data communication
- API available via UART or SPI serial interface
- Complete shielded module with integrated antenna
- 12.7 x 25.4 x 2.5 mm compact module for SMD mounting
- IEEE 802.15.4 compliant PHY
- Support all devices (Coordinator, Router and End Devices)
- 4 kB EEPROM available for external MCU
- I/O expansion with 2 digital and 4 analogue I/O pins
- On-board 32.768 kHz real time clock (RTC), 4 SW timers available through serial interface
- High performance direct sequence spread spectrum (DSSS) RF transceiver
- 16 channels in the 2.45 GHz ISM band
- 2.0 – 3.6 V supply voltage, ultra low power modes (only available using SPI)
- Conforms with EN 300 440 and EN 300 328 (Europe), FCC CFR 47 part 15 (US), ARIB STD-T66 (Japan)

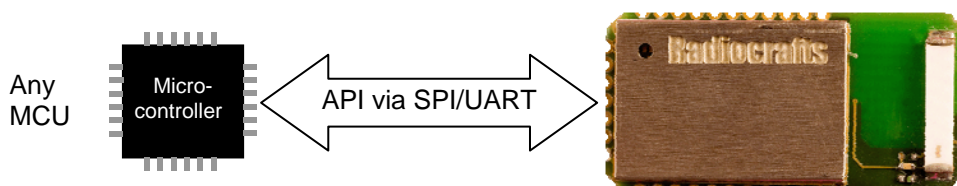
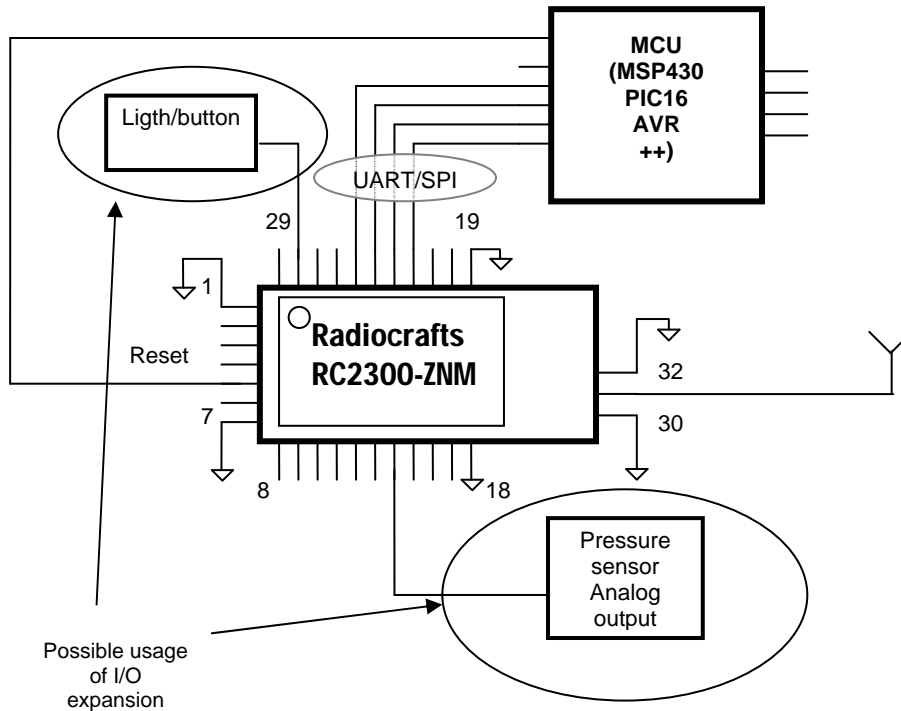
Specifications (3.0V, 25°C)

		Min	Typ	Max	Unit
General:	Frequency Range	2.400		2.4835	GHz
	Number of channels		16		
	Data Rate		250		kbit/s
TX mode:	Output Power (programmable)	-24		0	dBm
	2 nd /3 rd harmonic		-56/-60		dBm
Rx Mode:	Sensitivity (PER = 1%)		-92		dBm
	Adjacent Channel Rejection		29		dB
	Alternate Channel Selectivity		53		dB

Operating conditions

Power Supply:	Supply Voltage	2.0		3.6	V
	Current Consumption, RX		27		mA
	Current Consumption, TX, 0 dBm		25		mA
	Current Consumption, Power Down		0.6		µA
Temperature range:		-40		85	°C

Application Circuit



Application user example

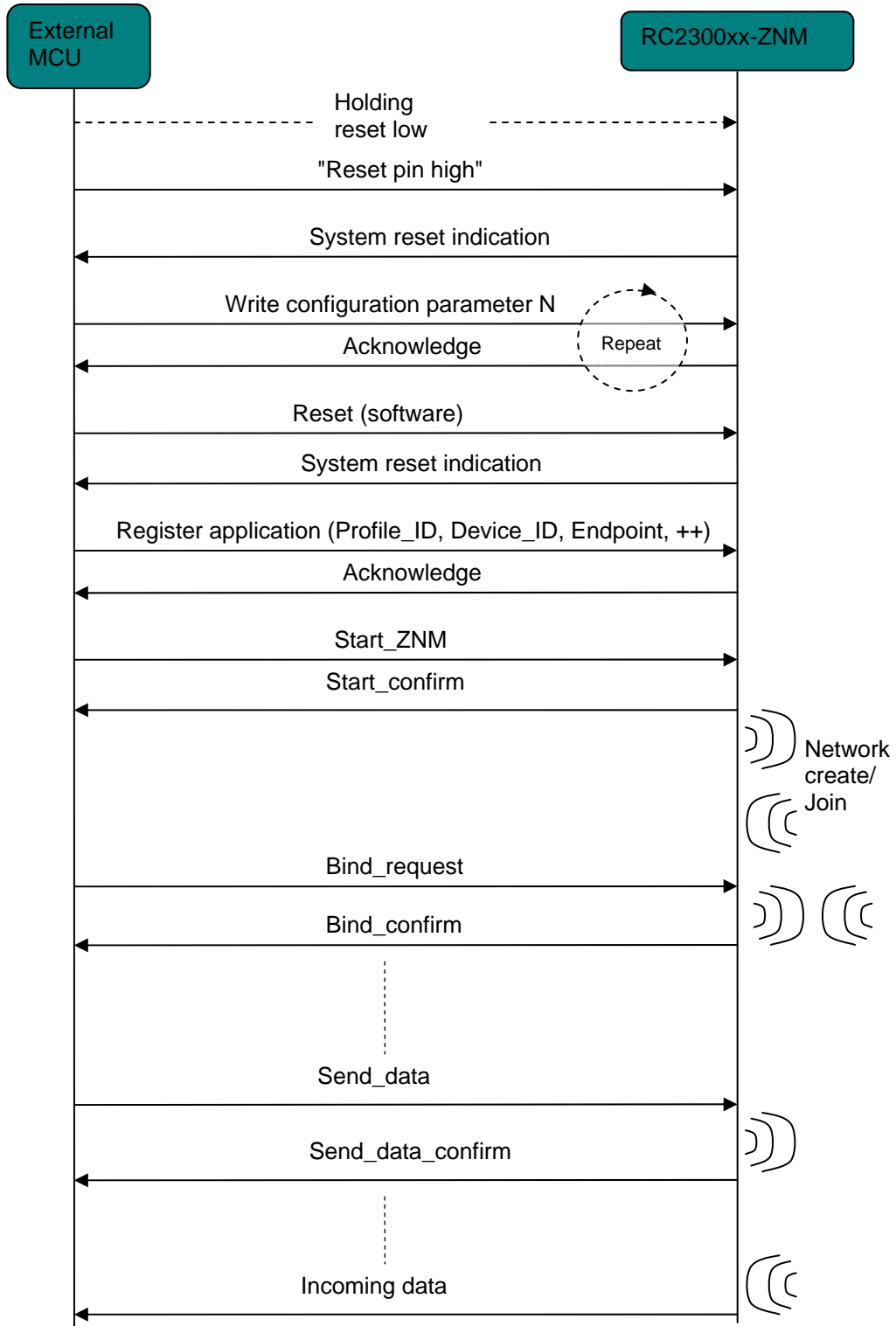


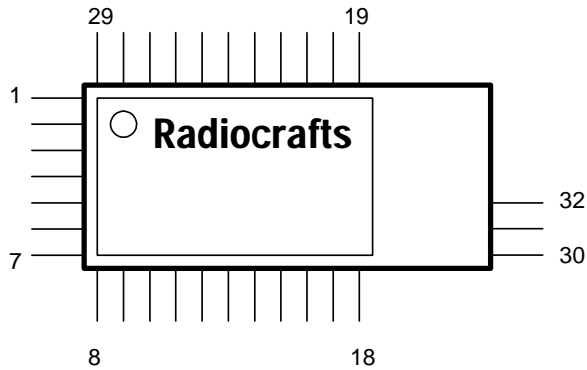
Figure 1. Message Sequence Chart (MSC) between RC2300xx-ZNM and external MCU

Embedded resources

PHY/MAC: Chipcon CC2430

ZigBee stack: ZNM implementation based on Z-stack from TI

Pin Assignment



Pin Description

Pin no	Pin name	Description and internal MCU connection
1	GND	System ground
2	VCC	Supply voltage input
3	NC	Not connected
4	NC	Not connected
5	NC	Not connected
6	RESET_N	Reset. Active low with internal pull-up.
7	GND	System ground
8	CFG0	Configuration pin 0 (1=use internal 32kHz crystal-default)
9	CFG1	Configuration pin 1 (1= SPI, 0=UART)
10	NC	Not connected
11	NC	Not connected
12	A3	Analogue input, A3
13	A4	Analogue input, A4
14	A1	Analogue input, A1
15	A2	Analogue input, A2
16	NC	Not connected
17	NC	Not connected
18	GND	System ground
19	GND	System ground
20	NC	Not connected
21	NC	Not connected
22	RXD/SO	UART/SPI
23	TXD/SI	UART/SPI
24	RTS/CS	UART/SPI
25	CTS/SS	UART/SPI
26	SRDY	Slave ready, for SPI flow control and power management
27	MRDY	Master ready, for SPI flow control and power management
28	GPIO_1	Digital I/O, 20 mA sink/source capability
29	GPIO_0	Digital I/O, 20 mA sink/source capability
30	GND	System ground
31	RF	RF I/O connection to antenna, 50 Ohm. Do not connect for integrated antenna variant (AT).
32	GND	System ground

