



Low Power 2.4GHz Transceiver Module **DEL-TRX2.405-2.480GHz**

The Transceiver Board is a **2.405 to 2.480GHz** multi-channel transceiver module. The module is an **IEEE 802.15.4 ZigBee™** compliant solution that satisfies the requirements of low-cost, low-power wireless sensor network (WSN) applications.

It provides a flexible and reliable module for users to develop solutions for their applications. Its small form factor minimizes the amount of RF tuning required and saves the valuable board spaces. The modules are easy to use, consume a minimal power and provide a reliable delivery of critical data between the devices.

The Low Power 2.4GHz Module operates within the **ISM 2.4 – 2.5GHz** frequency band and contains Integrates receiver, transmitter, voltage-controlled oscillator (VCO) and phase-locked loop (PLL).

The Transceiver Board provides a transceiver which is fully compatible to IEEE 802.15.4-2006 2.4GHz band PHY layer specifications.

It is a simple **SPI interface** slave device consisting of a 4-wire bus (SCLK, SI, SO, and SEN) that provide accesses to various subunits such as MAC/BB/RF control/status registers, TXFIFOs, RXFIFOs and security key table.

General Features

RF/Analog

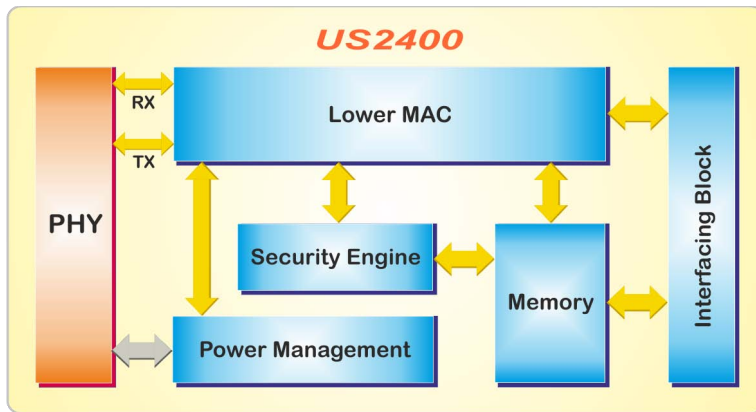
- ISM band 2.405 ~ 2.480 GHz operation
- IEEE 802.15.4-2006 specification compliant
- Single End RF input/output
- RF sensitivity: -94 dBm @ 250kbps
- Maximum RF input level: 3dBm
- High receiver and RSSI dynamic range
- RSSI range: 44dB @ 250kbps
- RF output power: 1 dBm typical
- RF output power control range: 40dB
- 1M/2M bps turbo mode supported
- Supply voltage: 2.4 to 3.6V
- Current consumption in RX Mode: 20.4mA
- Current consumption in TX Mode: 25.5mA
- Idle Mode: 6mA/Halt mode: 1.8mA
- Standby mode: 5.1µA/Deep sleep mode: 4µA
- Power down mode: 0.1µA
- 32 MHz reference clock output
- Digital VCO and filter calibration
- Integrated RSSI ADC and I/Q DACs
- Few external component count
- Board size: 23.7mmx13.2mm²



MAC/Baseband

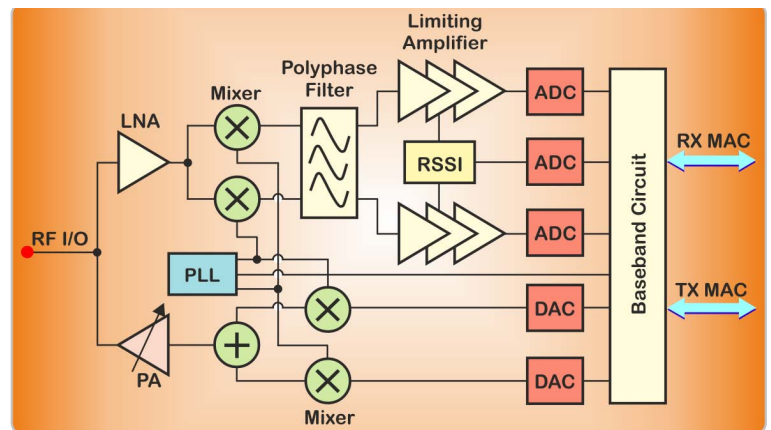
- IEEE 802.15.4-2006 specification compliant
- Hardware CSMA-CA mechanism, automatic ACK response and FCS check
- Programmable "Superframe" construction
- Functionally independent TX FIFOs, including beacon FIFO, transmit FIFO and GTS FIFOs
- Dual RX FIFOs
- Hardware security engine (AES-128)
- Various power saving modes
- Support all CCA modes and RSSI/LQI
- Simple 4-wire SPI interface

DEL-TRX2400 Chip Block Diagram

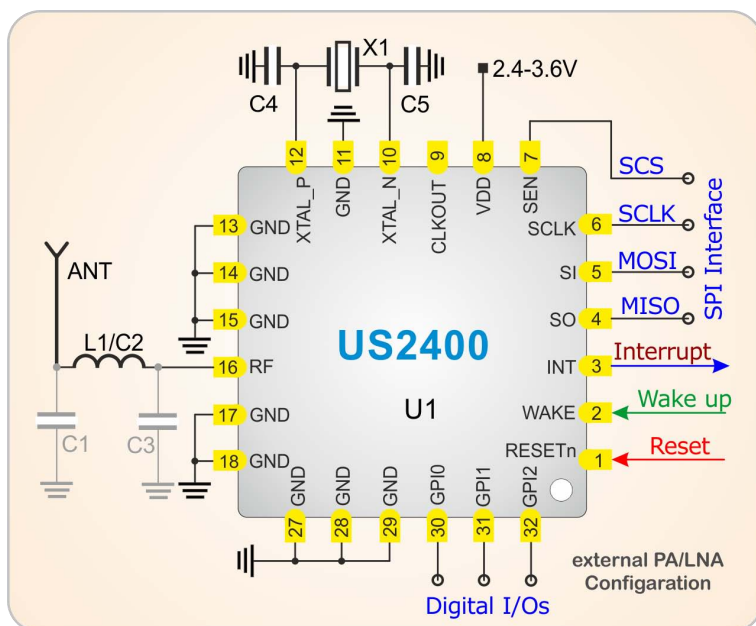


PHY Block Architecture

- The PHY (physical) block is compliant to IEEE 802.15.4-2006 ISM band standard
- The architecture is show in figure



DEL-TRX2400 Application Circuit



Applications

- Home/Building/Factory Automation
- Wireless Sensor Network
- ZigBee Systems
- 6LoWPAN Routing Protocols
- Wireless HART Communication
- RF Remote Controller
- Consumer Electronics
- Low Power Wireless Communication

Applicative support

- The OEM modules can be integrated in customer applications with minimum expenditure of time
- Hard- and Software- support possible