

CyberTAN Technology, Inc.

Model Name	WD112
Description	802.11n Hosted IoE Module with ST MCU
Version	Release 0.1
Date	February 05, 2016
Author	Cindy Fan

WD112

User Manual

Revision History

Date	Release	Author	Description
2016-02-05	0.1	Cindy Fan	First preliminary release.

Related Documents

Date	Author	Description
		Qualcomm Atheros QCA4002 datasheet
	IEEE.org	IEEE 802.11b/g/n specifications

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1. Introduction

WD112 is a hosted IoE Smart Network module that enables wireless internet connectivity for any device wishing to be monitored or managed remotely. The WD112 is architected for ultra-low power consumption, with near-zero power consumption in power down modes with fast wakeup.

This module comes with a single band 1-stream 11n radio Qualcomm QCA4002 and a ST STM32F411 processor in ARM Cortex-M4 operating at frequencies up to 100MHz. This module has an extra 2MByte flash memory, in addition to the flash memory internal to the MPU.

2. Features

- 2.412-2.484 GHz for worldwide market.
- IEEE 802.11n, single stream 1x1.
- Small size suitable for low volume system integration.
- Single Rx front end for multiple applications.
- Full security support: WPS, WPA, WPA2, WAPI, WEP, TKIP.
- On-chip memory
- Serial interfaces: 3x USART, 2x SPI, 3x I2C
- ROM API support
- 3 low-power modes and wake-up from low-power modes

3. Specification

Model Number	WD112
Product Type	802.11n hosted IoE module
Memory Sizes	Flash: 2MB External to MCU, 512KB internal to MCU 128KB SRAM internal to MCU.
Host Interface(s)	3xUSART, 2xSPI, 3xI ² C
Embedded MAC Address	Yes
WiFi Chip(s)	Qualcomm Atheros QCA4002
MCU	STM32F411
Package	38-pin QFN
Wireless Standard(s)	IEEE 802.11b/g/n
Spreading	IEEE 802.11b DSSS and 802.11g/n OFDM
Operating Frequency	2412~2484MHz ISM band
Antenna	One PIFA antenna and one on-board printed antenna.
Number of Channels	11 (US), 13 (EU), 14 (Japan)
Data Rates	802.11n: up to 135Mbps 802.11g: 54Mbps with fallback to 48, 36, 24, 18, 12, 9 and 6Mbps 802.11b: 11Mbps with fallback to 5.5, 1 and 1Mbps
Modulation Schemes	802.11g/n: 64QAM (up to 135Mbps), 16QAM (39/36/26/24Mbps), QPSK (19.5/18/13/12Mbps), BPSK (9/6.5/6Mbps) 802.11b: CCK (11/5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps)
Tx Power (typical)	Printed Ant.: 23.75 dBm for 802.11b, 24.18 dBm for 802.11g, 23.71 dBm for 802.11n MCS0 (HT20), 17.62 dBm for 802.11n MCS0 (HT40). PIFA Ant.: 20.13 dBm for 802.11b, 23.46 dBm for 802.11g, 22.96 dBm for 802.11n MCS0 (HT20), 17.17 dBm for 802.11n MCS0 (HT40).
Rx Sensitivity (typical)	-90dBm for 1Mbps @ 8% PER -82dBm for 11Mbps @ 8% PER -72dBm for 54Mbps @ 10% PER -67dBm for HT40, MCS7 @ 10% PER
Media Access Protocol	CSMA/CA with ACK
Supply Power	3.14V to 3.46V

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Power Requirements (typical)	Tx mode : 11Mbps: 240mA 54Mbps: 210mA 135Mbps: 220mA Rx mode : 11Mbps: 62mA 54Mbps: 62mA 135Mbps: 62mA
Low Power Modes	Sleep Stop Standby
Dimensions	16mm x 31mm (typical)
Regulatory Conformance	FCC Part 15b, Part 15c
RoHS Compliance	Yes
Operating Temperatures	-40 ~ 85°C
Software Functions	ROM API Support: Boot loader with boot options from flash or external source via USART

4. Mechanical Characteristics

4.1 Module Dimensions

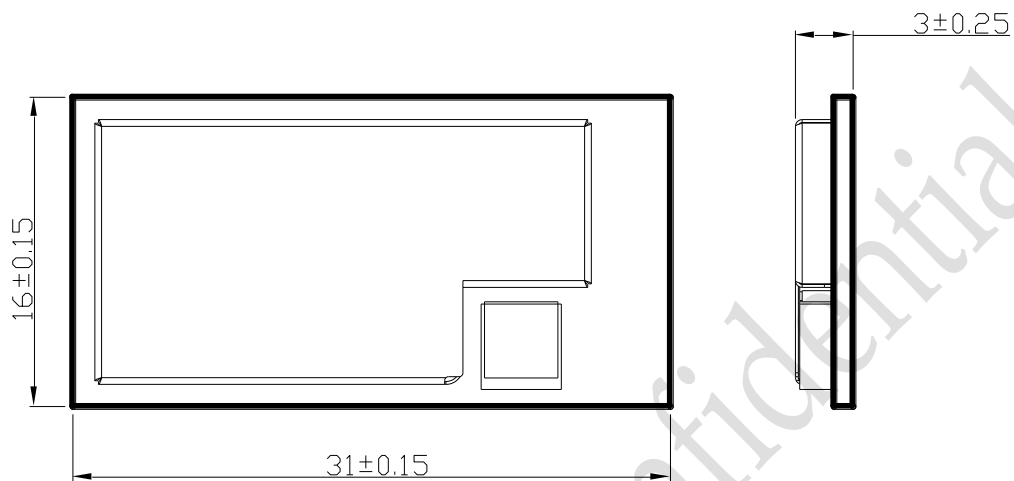


Figure 1: PCB Outline Top View (Unit: mm)

Note:

W: 16 ± 0.15 mm ; L: 31 ± 0.15 mm ; H: 3 ± 0.25 mm

5. Warranty

One year limited warranty.