WBD 200

Hardware Manual

Revision 1.2

12 August 2010

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Contents

Copyright 2
Notice 2
Trademarks 2
CONTENTS 3
PRODUCT DESCRIPTION 4
Features 4
WBD-200 DETAILS 5
CPU 5
RAM 6
Flash 6
Ethernet 6
LEDs 6
Reboot button 6
Connectors 7
GPIO Pins 8
Power 8
SPECIFICATIONS 9
Electrical 9
Mechanical 9
Environmental 9
SOFTWARE 10

Product Description

WBD-200 is a high performance PCBA built with the field-proven Atheros radio SoC chipset. The unit comes with 8MByte flash and Linux 2.6 board support package (BSP). Combined with proprietary PA MMICs, it provides the highest power performance of its class. It is designed and built to operate through the harsh temperature range of -30°C to +80°C. On board thermal sensor enable user remotely monitor the board temperature. This unit can be powered by a standard 12VDC supply via DC-Jack, passive PoE.

Figure 1 – Front View of the WBD-200

Figure 2 – Rear View of the WBD-200

Features

- Built-in high power 802.11 a Radio.
- SDRAM: 32Mbyte.
- Flash: 8MByte.
- Small Board Size: 70 x 90 mm.
- 9-21VDC supply, Passive PoE.
- MMCX Connector for RF Interface.
- LEDs: Power, Wireless, Ethernet.

WBD 200 Details

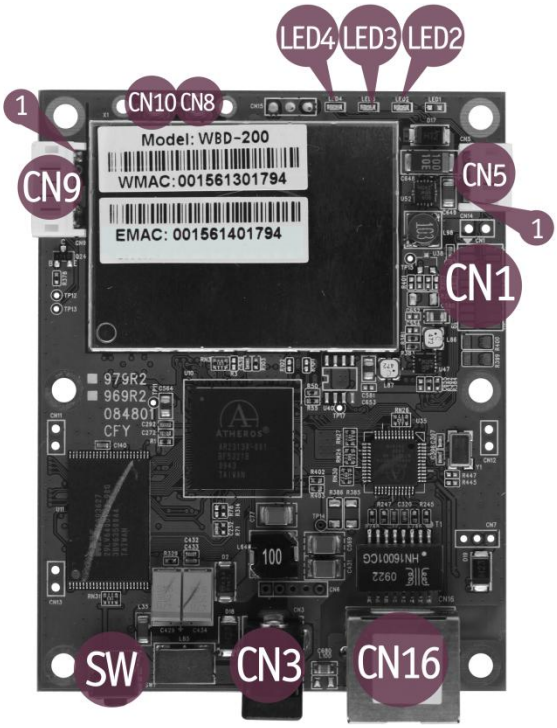

Figure 3 – WBD-200 Layout

Item	Signification
CN1	JTAG/UART connector (not soldered)
CN3	Power connector
CN5	LED connector
CN9	GPIO connector
CN8	Main antenna
CN10	AUX antenna
CN16	Ethernet Connector (passive PoE)
LED2	10/100Mbit LAN LED
LED3	WLAN activity LED
LED4	power LED
SW	Reboot button

CPU

AR5004X Solution Highlights:

- Universal wireless connectivity for seamless roaming between any 802.11-based network
- Uses digital CMOS technology exclusively, minimizing power consumption and cost while maximizing reliability
- Highly integrated 2-chip set
- Multiprotocol MAC/baseband processor that supports the RoC
- Wireless Multimedia Enhancements Quality of Service support (QoS)
- Super AG mode delivers up to 108 Mbps raw data rate with typical end user throughput exceeding 60 Mbps
- Super AG utilizes Adaptive Radio to automatically identify clear channels for maximum throughout and standards compatible operation
- Hardware encryption for the Wi-Fi Protected Access (WPA) and IEEE 802.11i security specifications, provides Advanced Encryption Standard (AES), Temporal Key Integrity Protocol (TKIP) and Wired Equivalent Privacy (WEP) without performance degradation
- Dynamic Frequency Selection/Transmit Power Control (DPS/TPC) for international operation
- Support for draft IEEE 802.11e, h, and j standards
- Atheros eXtended Range (XR) technology to give Wi-Fi products twice the range of existing designs
- Power-saving design improvements reduce system power consumption by 60%

AR2313A Multiprotocol MAC/baseband processor:

- Super AG mode includes dynamic 108 Mbps capability, real-time hardware data compression, Fast Framesâ ¢ and standards-compliant bursting
- Atheros eXtended Range (XR) technology
- Integrated Wake-on-Wireless and Wake-on-Theft capabilities
- Integrated analog-to-digital and digital-to-analog converters
- LEDs, GPIOs peripheral interfaces
- Low power operational and sleep modes

AR5112 Radio-on-a-Chip (RoC):

- Dynamic IF Dual Conversion architecture provides super-heterodyne performance at Zero IF prices
- Support for IEEE 802.11a
- Extended tuning range (4.900-5.850 GHz) for worldwide use
- Integrated power amplifier (PA) and low-noise amplifier (LNA)
- Eliminates all IF filters and most RF filters; no external voltage-controlled oscillators (VCOs) or surface acoustic wave (SAW) filters needed
- Increased sensitivity and multipath tolerance
- Enhanced transmit and receive chains

RAM

256Mbit (32MB) of 16-bit 166MHz SDRAM.

Flash

64 Mbit (8MB) of 3V supply Flash memory.

Ethernet

10/100 Base-TX Ethernet port (marked as CN16 in the *Figure 3 – WBD-200 Layout*) features automatic MDI/MDIX switching, full duplex 10/100 Base-TX operation with auto-negotiation, accepts power over Ethernet (PoE functionality) with 9-21V voltage power injectors.

LEDs

Device has 3 LEDs (refer to *Figure 3 – WBD-200 Layout* for detailed arrangement of the LEDs), LED1 is not soldered:

- LED2 – 10/100Mbit LAN LED
- LED3 – WLAN activity LED
- LED4 – power LED

Reboot button

Software reboot button (marked as SW in the *Figure 3 – WBD-200 Layout*) reboots or reset software to default configuration. For device reboot - press the reset button for less than 5 seconds to reboot the WBD-200. For device reset to factory defaults - press the reset button for more than 5 seconds to set the WBD-200 configuration to factory defaults. After this action the device reboots, and the factory default values are restored.

Connectors

The WBD-200 has 3 connectors, which pins are described in the tables below. Connector CN1 is not soldered. The connectors' pin #1 is marked with a small square on a PCB.

CN5 connectors pins:

CN5 Pin	Connection
1	3.3V
2	Ethernet PHY LED
3	WLAN LED
4	GPIO7

Table 1 – CN5 connections

CN9 connector's pins:

CN9 Pin	Connection
1	GPIO3 open-collector relay drive output
2	GPIO3
3	GPIO2
4	GND
5	3.3V
6	Vin (5-12V)

Table 2 – CN9 connections

CN1 connector's pins:

CN1 Pin	Connection	CN1 Pin	Connection
1	3.3V	2	GND
3	S_IN (UART Rx)	4	S_OUT (UART Tx)
5	GND	6	GND
7	GND	8	GND
9	TRST	10	GND
11	TDI	12	GND
13	TDO	14	GND
15	TMS	16	GND
17	TCK	18	GND
19	SRST	20	3.3V

Table 3 – CN1 connections (not soldered)

All signals are LVTTL 3.3V. A RS232 converter is necessary to use S_IN and S_OUT.

GPIO Pins

This table provides a list of GPIO pins with description:

GPIO	Description
GPIO0	I2C SDA to U43 LM75 temperature sensor
GPIO1	I2C SCL to U43 LM75 temperature sensor
GPIO2	available on connector CN9 pin #3
GPIO3	is available on connector CN9 pin #2 and connector CN9 pin #1 (open-collector relay drive output)
GPIO4	unused
GPIO5	unused
GPIO6	SW1 input
GPIO7	LED4 PWR LED and is available on connector CN5 pin #4

Table 4 – GPIO connections

Power

WBD-200 can be powered by connecting 12V@1A voltage power supply to DC jack (see

Figure 3 – WBD-200) or via Ethernet by using power injector. Insertion of power supply connector disconnects Ethernet power feed line. Power jack accepts DC 2.1/6.3 mm coaxial power connectors.

Specifications

Electrical

Input voltage	9-21V
Operating current	0.38A Typical @ 12V
Power consumption	6W

Mechanical

Dimensions	70 mm x 90 mm
Weight	50g

Environmental

Operating parameters

Temperature	-30°C to +80°C
Humidity	95% @ 55°C

Storage parameters

Temperature	-40°C to +85°C
Humidity	5% to 95% (non condensing)

Software

WBD-200 comes preloaded with WILIBOX WILI software. Device can be accessed from a web browser using the following parameters:

Device IP address:	**192.168.2.66**
Username:	**admin**
Password:	**admin01**

For more information refer to WILI User's Guide which can be found at http://www.wiligear.com website.