Product Brief:
HDG104-WiFi 802.11b/g System in Package

APPLICATIONS

Home Automation

The **HDG104 WiFi** solution is pre integrated on the **AVR32 MCU** platform and is perfect match developers that want to enter the home automation market such as AMR, surveillance, entrance control or general home appliances.

Industry Sensor Networks

HDG104 WiFi in combination with **AVR32** can easily be installed and used for Industry sensors or remote control thanks to the pre-integration of the EVK and the availability of WiFi infrastructure.

Media Applications

In all media applications the problem of how to access and change the media is easily solved with WiFi and with the high speed and security functions of 802.11, media such as mp3, IP-radio or video are transferred fast and secure.

"What do you want to connect?"

Picture: HDG104 WLAN 802.11b/g , Complete System in Package

KEY FEATURES INCLUDE:

- **Smallest Wi-Fi component in the market: 55mm2**
- **Lowest power consumption solution in the market for embedded applications.**
- **High RF output TX power (+17dBm) and RX sensitivity**
- **Supports multiple SW features incl 802.11e/i (Security, Quality of Service)**
- **External discrets needed: 19 + antenna**
- **External chips:40MHz (or from system)**
- **Pre-calibrated and programmed with MAC adr.**
- **No RF trimming needed**
- **32KHz from host CPU**

The HDG104 is a complete Wireless LAN System in-Package (SiP) with ultra low power consumption and high supply voltage handling, optimized for embedded devices such as wireless sensors for industrial and home control , AMR for smart and green energy control, remote device management such as location tracking and the growing segment of equipment and consumer electronic devices such as Portable Media devices, IP-radio, home security, wireless speakers and IP audio devices.

The HDG104 SiP format, with its complete system functionality, means quicker design cycles, lower risk and simplified manufacturing, all in a very small package (7,1× 7,7 mm). Lack of external components simplifies assembly test and reduces yield loss. The HDG104 SiP delivers a complete and fully tested and trimmed implementation of 802.11b/g functionality.

The HDG104 is fully FCC and CE compliant, and is internally tested to meet FCC/CE and a FCC/CE approval. The HDG104 solution is Pre- tested, calibrated and certified resulting in lowest possible production and system cost

• Data Rates: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54Mbps
• Modulation: QPSK, 16QAM, 64QAM DBPSK, DQPSK, CCK, OFDM with BPSK
• WEP and AES hardware encryption accelerator up to 128 bit.
• On-chip RF filter for the ISM band 2.4GHz
• An internal 32 kHz oscillator maintains real time in power save mode, allows the high frequency clock to be turned off.
• Extensive DMA hardware support for data flow to reduce CPU load.
• Low cost and low power consumption by use of Ultra Low Power (ULP) technology
• On-board 160 kB SRAM and 1 kB EEPROM eliminates need for external memory for firmware
• Internal Boot-ROM. This allows firmware to be downloaded into SRAM from the host
• Advanced power management for optimum power consumption at varying load.
• External interfaces SDIO and SPI
• Supply voltage 2.75-3.6 V
• RoHS Compliant

H&D Wireless

HDG104 is prepared, fully Tested, Pre-certified Pre-Integrated on AVR32 MCU platform

TECHNICAL SW/HW SUPPORT

H&D Wireless provide a unique SW API **(o)WL** © - a complete programming interface for embedded Wi-Fi applications .

SW API **(o)WL**©- details in H&D Wireless SW product brief

Support for the SW drivers, installation and SW development is provided by Atmel application support at www.atmel.com/avr32

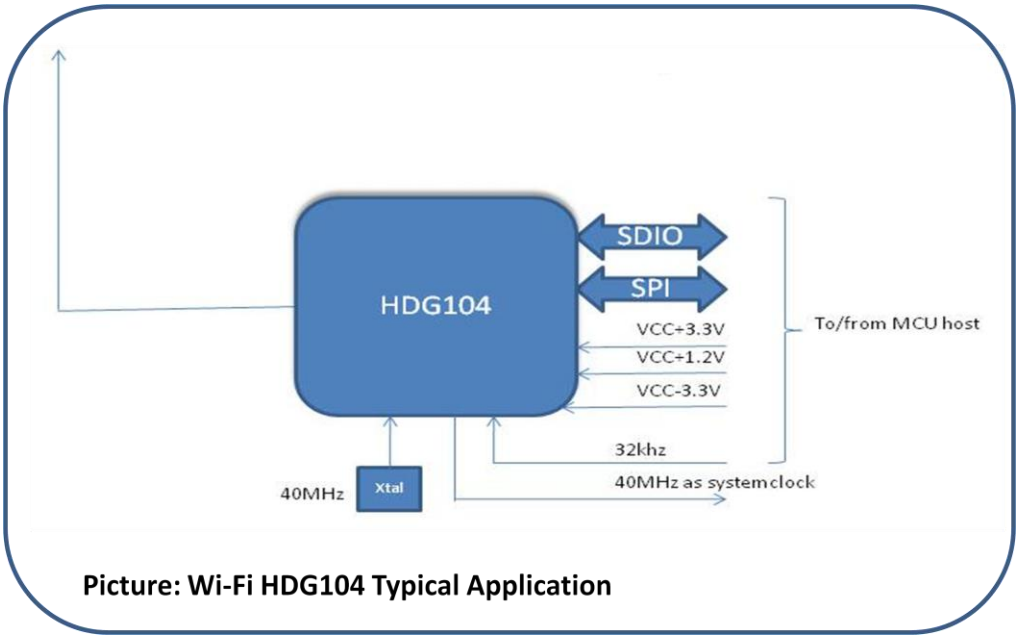
PERFORMANCE OF Wi-Fi

The WiFi solution **HDG104** is best in class and market leader in terms of solution size, power consumption in all modes, transmit/receive range, data transfer speed and cost.

TURNKEY SOLUTIONS

The reference designs provided are turnkey solutions that will work first time and can be modified and used for customers own products.

"What do you want to connect?"



Picture: Wi-Fi HDG104 Typical Application

Most of "things" to be connected to Internet use Microcontrollers. The H&D WiFi solution supported on Atmel MCU platforms will enable New applications with low design costs and quick TTM for Customers!

The HDG104 Solution + Atmel AVR 32BIT MCU offers:

- **Pre-tested**
- **Pre-calibrated**
- **Pre-certified (FCC,ETSI,WiFI)**
- **Pre-integrated onto Atmel MCU's**

HDG104 WLAN 802.11b/g Performance data

T_{amb}=25°C, VCC=VBAT_P=VBAT_32K=VPA=3.3 V, DVDD =1.2 V

Mode	Output Power	Power consumption	Comments
TX 802.11b	+17 dBm	725 mW	1, 2, 5.5, 11 Mbit/s
TX 802.11g	+14 dBm	590 mW	6, 9, 12, 18, 24, 36, 48, 54 Mbit/s
RX 802.11b	N/A	220 mW	
RX 802.11g	N/A	230 mW	
Power Save	N/A	0.4 mW	Receive only, 2s RX beacons
Sleep	N/A	0,2 mW	No receive, FW loaded, only LFC running
Soft Shutdown	N/A	0.15 mW	No receive, No FW loaded, only LFC running
Shutdown	N/A	0.05 mW	No FW loaded, DVDD OFF,

SERVICES AVAILABLE

Technical Support
Software and Setup
Hardware Support
Application Support
Customer application -

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ORDER INFORMATION

Part No#: HDG104
VCC: 2,7-3,6V

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Rev. C