Ultra Low Power Wi-Fi® Solutions

Wi-Fi ® SoC, Wi-Fi ® Modules, Wi-Fi ® + BLE Modules

DA16200 SoC

Highly Integrated Ultra Low Power Wi-Fi System on Chip (SoC)

The DA16200 is a highly integrated ultra-low power Wi-Fi system on a chip (SoC), which contains an 802.11b/g/n radio (PHY), baseband processor, media access controller (MAC), on-chip memory, and a host networking applications processor all on a single silicon die. The SoC enables full offload capabilities, running the entire networking stack on chip, so that no external network processor, CPU, or micro-controller is required, though the SoC may optionally be used with a microcontroller.

A synthesis of breakthrough ultra low power technologies enables extremely low power operation in the SoC. Low power algorithms shut down every micro element of the chip that is not in use, which allows a near zero level of power consumption when not actively transmitting or receiving data. Such low power operation can typically deliver a year or more of battery life depending on the application. Advanced algorithms enable staying asleep until the exact moment required to wake up to transmit or receive.

The SoC is built from the ground up for the Internet of Things. It is ideal for door locks, thermostats, security video cameras, sensors, and other devices that require Wi-Fi where battery powered operation is desirable.

Evaluation boards and a complete software development kit (SDK) are available. The SDK includes sample applications, provisioning apps, AT command library, power management tools, and more.

A fully staffed, highly trained, worldwide application engineering support team is available to help you quickly integrate the SoC or its associated module into your product.
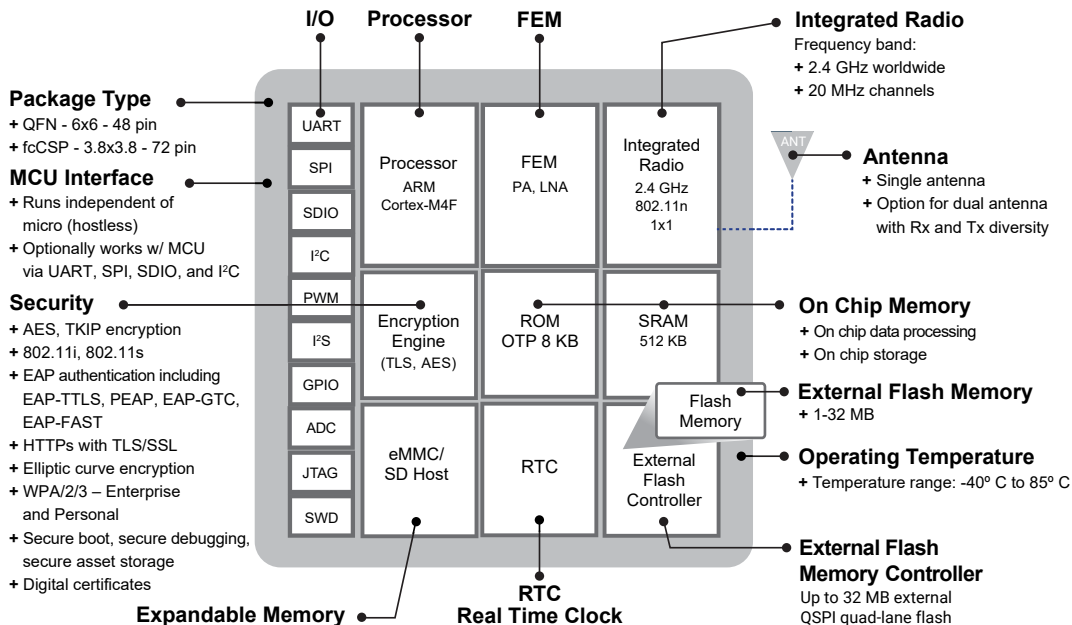
DA16200 SOC

Features	Benefits
Fully Featured AT Command set	• Ready2Go SW examples and applications • Quick and easy path for fast prototyping
Ultra Low Power	• Breakthrough VirtualZero™ technology • Virtually no power consumption in sleep state • Enables year-plus battery life • Ultra low power sensor wake-up
Superior Range	• Industry leading output power and Rx sensitivity for max range
Highly Integrated SoC	• 802.11b/g/n radio PHY, BB/MAC, PA, LNA w/ on chip SRAM • Up to 72 Mbps, MCS0-7
Full Offload	• SoC runs full OS & TCP/IP stack
Simple Setup & Provisioning	• Automatically find & configure new devices w/ smartphone app
Complete Software Stack	• Comprehensive networking software stack
Leading Security	• Multiple layers of commercial, industrial, and banking grade security • Hardware accelerated • Digital certificates • Elliptic curve encryption
OTA Firmware Update	• Enables field deployed device firmware updates
Multiple I/Os	• UART, SPI, SDIO, ADC, I²C, PWM, I²S, GPIOs, JTAG and SWD
eMMC/SD Expanded Memory	• Data logging, memory intensive applications

Block Diagram (SOC)

DA16200 Modules

Full Offload Highly Integrated Ultra Low Power Wi-Fi Modules

- The fully integrated module consists of the DA16200 SoC, 4MB flash memory, RF components including crystal oscillator, RF lumped filter, and either a chip antenna or a connector for an external antenna
- Single power supply voltage (3.3V)
- 37 pins including GPIOs, JTAG, RTC control, UART, power input, and 32.768kHz crystal
- DA16200 module SKUs:
  - DA16200MOD-AAC4WA32 with on board chip antenna
  - DA16200MOD-AAE4WA32 with external antenna connector (u.FL)
- Dimensions
  - Both modules have the same dimensions
  - 13.8 mm x 22.1 mm x 3.3 mm

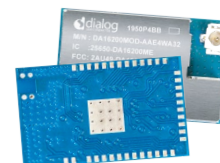### Module Types

On Board Chip Antenna
13.8 mm x 22.1 mm x 3.3 mm
DA16200MOD-AAC4WA32

External Antenna Connector (u.FL)
13.8 mm x 22.1 mm x 3.3 mm
DA16200MOD-AAE4WA32

Features	Benefits
Ultra Low Power	• Breakthrough VirtualZero™ technology • Virtually no power consumption in sleep state • Enables year-plus battery life • Ultra low power sensor wake-up
Superior Range	• Industry leading output power and Rx sensitivity for max range
Highly Integrated SoC	• 802.11b/g/n radio PHY, BB/MAC, PA, LNA w/ on chip SRAM • Up to 72 Mbps, MCS0-7
Full Offload	• SoC runs full OS & TCP/IP stack
Simple Setup & Provisioning	• Automatically find & configure new devices w/ smartphone app
Complete Software Stack	• Comprehensive networking software stack
Leading Security	• Secure boot • Secure debug • Secure asset storage • Hardware accelerated • TLS • Digital certificates • Elliptic curve encryption
OTA Firmware Update	• Enables field deployed device firmware updates
Multiple I/Os	• UART, SPI, SDIO, ADC, I²C, PWM, I²S, GPIOs, JTAG and SWD
eMMC/SD Expanded Memory	• Data logging, memory intensive applications

Block Diagram (SOC)

Country	On Board Chip Antenna	External Antenna Connector (u.FL)
US FCC	2AU49-DA16200MC	2AU49-DA16200ME
Canada IC	25650-DA16200MC	25650-DA16200ME
EU CE	CE & RoHS Compliance	CE & RoHS Compliance
South Korea KC	R-C-fci-DA16200M-C4WA3	R-C-fci-DA16200M-E4WA3
Japan TELEC	201-190886	201-190892
China SRRC	2020DP0489	2020DJ0161(M)

DA16600 Combo Wi-Fi + BLE Modules
Full Offload Highly Integrated Ultra Low Power Modules

- The DA16600 is a module solution for IoT applications featuring lowest power Wi-Fi + BLE

- The fully integrated module consists of:
  - Wi-Fi SoC: DA16200
  - BLE SoC: DA14531
  - 4MB Flash memory
  - 40MHz Crystal for Wi-Fi
  - 32KHz RTC Crystal for Wi-Fi
  - 32MHz Crystal for BLE
  - Chip antenna or u.FL connector
  - SPDT Antenna Switch

- Single power supply voltage (3.3V)

- DA16600 module SKUs:
  - DA16600MOD-AAC4WA32 - chip antenna
  - DA16600MOD-AAE4WA32 - external antenna connector (u.FL)

Module Types

On Board Chip Antenna
14.2 mm x 24.6 mm x 3.0 mm
DA16600MOD-AAC

External Antenna Connector (u.FL)
14.2 mm x 24.6 mm x 3.0 mm
DA16600MOD-AAE

Features	Benefits
Low Power Wi-Fi	• VirtualZero™ DA16200 SoC • 802.11n 1x1 low power 2.4 GHz • Up to 72 Mbps, MCS0-7
Low Power BLE	• SmartBond TINY™ DA14531 SoC • BT5.1 compliant BLE
Ultra Low Power	• Enables year-plus battery life • Breakthrough VirtualZero™ low power technology • Virtually no power consumption in sleep state • Ultra low power sensor wake-up • Runs on small batteries and coin cells
Wi-Fi/BLE Coexistence	• Built in, customizable, coexistence algorithms
Superior Range	• Wi-Fi: Industry leading output power and Rx sensitivity for max range • BLE: 4x range of BT 4.0
Full Offload	• SoC runs full OS & TCP/IP stack on module
Simple Setup & Provisioning	• Provision Wi-Fi connection simply with BLE • Automatically find & configure new devices w/ smartphone app
Complete Software Stack	• Comprehensive networking software stack
Leading Security	• Secure boot • Secure debug • Secure asset storage • Hardware accelerated • TLS • Digital certificates • Elliptic curve
OTA Firmware Update	• Enables field deployed device firmware updates
Multiple I/Os	• UART, SPI, ADC, I²C, PWM, I²S, GPIOs, JTAG and SWD

System Block Diagram
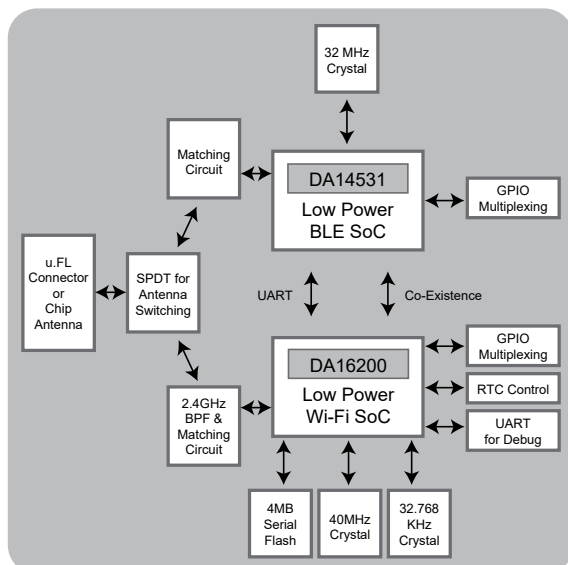
Country	On Board Chip Antenna	External Antenna Connector (u.FL)
US FCC	TBD	TBD
Canada IC	TBD	TBD
EU CE	CE & RoHS Compliance	CE & RoHS Compliance
South Korea KC	TBD	TBD
Japan TELEC	TBD	TBD
China SRRC	TBD	TBD

ULTRA LOW POWER WI-FI® SOLUTIONS

VirtualZero™

Leading Edge Low Power Technology

> 1 Year Battery Life

Three Sleep Modes
1. Unconnected (nanoamp)
2. Connected ultra low (microamp)
3. Connected ultra fast (microamp)

Ultra Fast Wake-up
Ultra Fast Return to Sleep
Extends battery life

Additional Features

Extended Range
> +20 dBm range booster mode
> -100 dBm Rx sensitivity

**Highly Integrated SoC**
+ No CPU or MCU required
+ Full offload
+ Runs network stack

Networking Capabilities		
Protocols	Complete software stack including TCP/UDP/IP, HTTP, HTTPs, DHCP client/server, DNS client/server, mDNS, DNS-SD, MQTT, CoAP	
Provisioning	Included smartphone app for iOS & Android; WPS 2.0	
Sensors	ADC: 4-channel SAR 12-bit	

WINNING COMBINATIONS
Analog + Power + Embedded Processing

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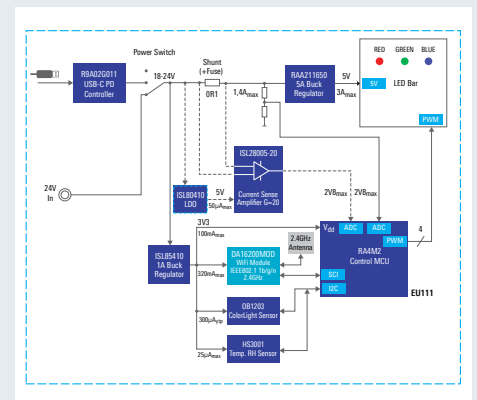
Electric Vehicle (EV) Charger Wall Box
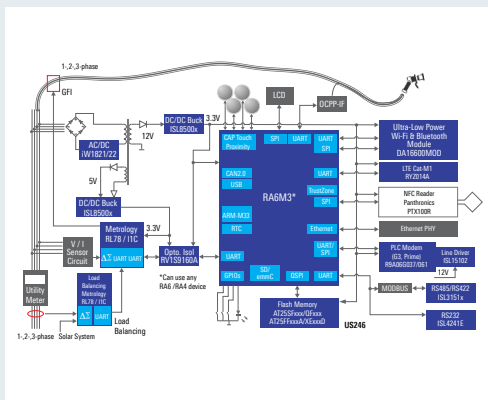
Smart Lock with Super-Low Power Wi-Fi and Bluetooth Low Energy
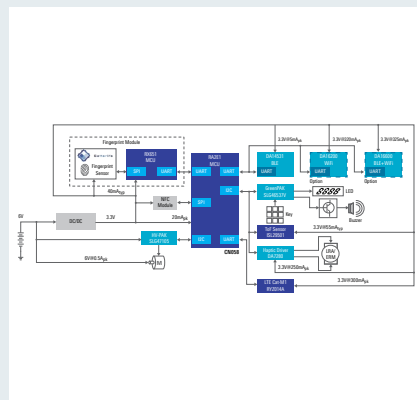
Portable Wi-Fi Controlled RGBW Lighting

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