Airborne™ Embedded Dual Band Wireless Device Server and Ethernet Solution Modules Serial to 802.11a/b/g/n & Ethernet to 802.11a/b/g/n

WLNN-XX-DP551 Series - The Most Secure, Rugged and Reliable Wi-Fi Modules

The Airborne line of highly-integrated 802.11 wireless modules allow OEMs to Wi-Fi enable devices used in an array of machine-to-machine (M2M) applications. B&B delivers all of the necessary RF technology, networking stacks and advanced security features in a compact, single-board package, reducing integration costs for OEMs and providing for a quick time to market.

Big Performance in Small and Ruggedized Package

The WLNN-xx-DP551 series delivers the industry's most rugged, highly-integrated, embedded Wi-Fi module solution. Airborne modules meet extended operating temperature and shock/vibration specifications of the most demanding M2M applications.

Utilizing a 32bit ARM9 processor and the high-performance Atheros AR6203 802.11 radio, the new Airborne modules deliver increased transmit power and receive sensitivity, contributing to superior range performance.

The new Airborne SpeedLink roaming feature provides enhanced connection reliability, enabling OEM devices to roam freely within a wireless network without loss of data or connection.

Flexible & Easy to Integrate

Airborne incorporates support for both serial to Wi-Fi and Ethernet to Wi-Fi communications. Utilizing Airborne's PortFlex capability, OEMs may configure via software any combination of UART, SPI, Ethernet, GPIO and 802.11 interfaces. Each individual port can be independently configured.

The WLNN-xx-DP551 modules are footprint and pin-compatible with their predecessors, dating back to the original introduction of the Airborne product family. Our commitment to maintaining hardware and software compatibility assures OEMs of a simple, future-proof migration path even as wireless technology evolves.

Enterprise Class Security

Our multi-layered security approach addresses the requirements of Enterprise-class networks and corporate IT departments. These advanced security features include wireless security (802.11i/ WPA2 Enterprise); network security (EAP authentication and certificate support); built-in firewalls on the Ethernet and WLAN interfaces; secure communications (built-in SSH functionality and fully encrypted data tunnels for secure management and data transfer); and device security (multi-level encryption capability to protect sensitive device configuration data).

A unique Airborne security feature is the onboard delivery of certificates to the module and management of all authentication processes without requiring interaction from the host. This substantially reduces the resource requirements for OEMs whose devices operate in Enterprise-Class wireless.

KEY FEATURES

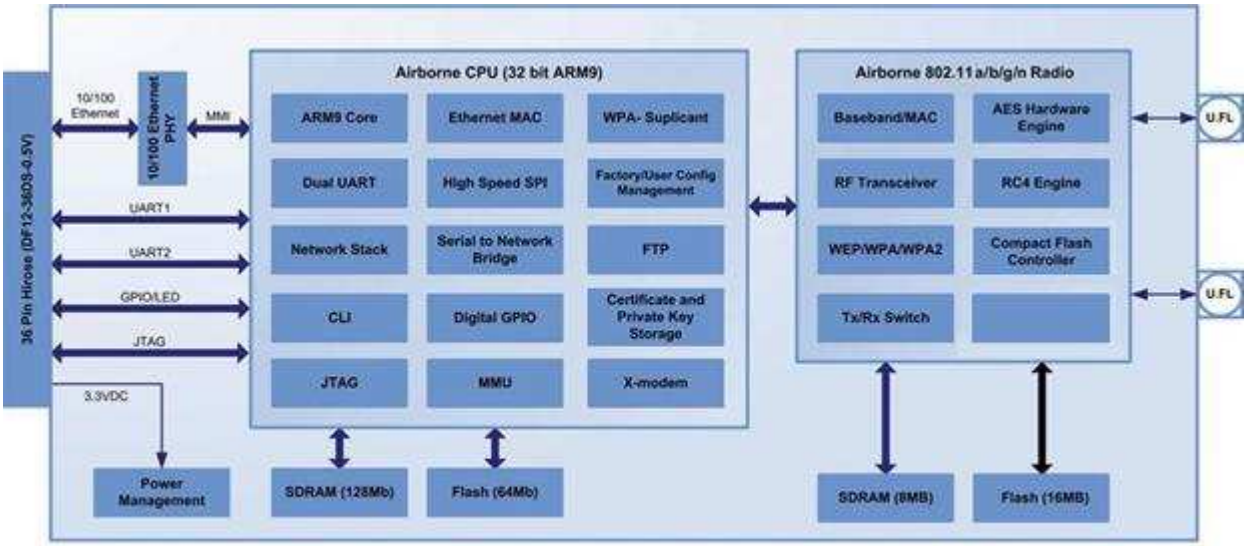
- Quick time to market and reduced integration costs
- 802.11a/b/g/n Wi-Fi Radio with 32bit ARM CPU
- Airborne PowerSave firmware reduces power consumption and extends battery life in mobile devices
- Extended Operating Temperature Range (-40°C to +85°C) and environmental specifications
- Airborne SpeedLink roaming provides enhanced connection reliability
- Advanced Enterprise Class wireless security (WPA2-Enterprise, WPA, WEP, EAP)
- Onboard certificate delivery and storage
- Fully integrated serial bridge and network stack
- Airborne PortFlex capability enables any combination of comm ports (UART, SPI, GPIO, Ethernet and 802.11 interfaces)
- Reduces need for RF, networking and communications expertise
- FCC Part 15 Class B Sub C Modular Approval minimizes regulatory requirements
- Backwards compatible with previous generations of Airborne embedded modules

Airborne embedded modules operate in a wide-range of M2M applications:

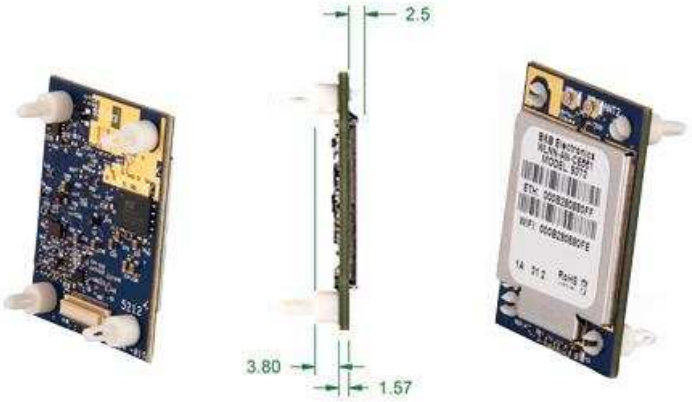
- Industrial Automation & Control
- Energy Management
- Medical devices
- Retail / Point of Sale products
- Vehicle Telematics
- Military Communications
- Material Handling & Logistics
- Test & Measurement
- Security & Access control

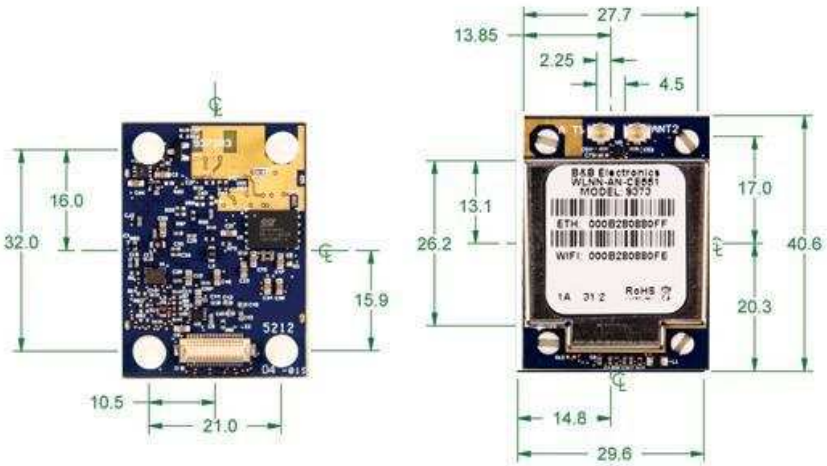
www.bb-elec.com orders@bb-elec.com support@bb-elec.com
International Office: 707 Dayton Road PO Box 1040 Ottawa, IL 61350 USA 815-433-5100 Fax 433-5104
European Office: Westlink Commercial Park Oranmore Co. Galway Ireland +353 91 792444 Fax +353 91 792445

Block Diagram



Mechanical Outline





Specifications

Technology	IEEE 802.11a/b/g/n, Wi-Fi compliant	
Frequency	2.4 ~ 2.4835 GHz (US/Canada/Europe) 5.150 ~ 5.350 GHz 5.725 ~ 5.825 GHz	
Modulation Technology	DSSS, CCK, OFDM	
Modulation Type	DBPSK, DQPSK, CCK, BPSK, QPSK, 16QAM, 64QAM	
Network Access Modes	Infrastructure, Ad Hoc	
Channels	USA/Canada: 11 channels 802.11b/g, 32 channels 802.11a Europe: 13 channels b/g	
Wireless Data Rate	802.11b = 11, 5.5, 2, 1 Mbps 802.11a/g = 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n = 65, 58.5, 42, 39, 26, 19.5, 13, 6.5 Mbps	
MAC	CSMA/CA with ACK, RTS, CTS	
Network Protocols	TCP/IP, ARP, ICMP, DHCP, DHS, UDAP, TFTP, UDP, PING	
Receive Sensitivity	**802.11 b/g** 54Mb/s = -72 dBm 36Mb/s = -78 dBm 18Mb/s = -84 dBm 6Mb/s = -89 dBm 11Mb/s = -86 dBm 1Mb/s = -92 dBm	**802.11 a** 54Mb/s = -74 dBm 36Mb/s = -80 dBm 18Mb/s = -86 dBm 6Mb/s = -90dBm
Transmit Power	802.11b 802.11g 802.11a	15 dBm (31.6mW) 12.6 dBm (18.12mW) 17 dBm (50.1mW
Security Protocols	Disabled, WEP 64 & 128bit, WPA (TKIP), WPA (AES), WPA2 (AES), 802.1x (EAP) Supplicant 802.11I, WPA & WPA2 Enterprise supplicants (EAP-TLS, EAP-TTLS(MSCHAPv2), EAPTTLS(MDS5), EAP-PEAPv0(MSCHAPv2, LEAP), EAP-FAST, LEAP) Supports Certificates and Private Key Upload and Storage (Multiple)	
Antenna	Two (2) U.FL coaxial connectors, 50 ohms	
Supply	3.3VDC +/-5%, 650mA (MAX)	
Supply In-rush Current	1500mA (MAX) for 400us	
DC Characteristics	Operating Current (Tx, 802.11g) = 370mA Typ. Operating Current (Rx, 802.11g) = 200mA Typ.	
Environmental	Operating Temperature: -40°C - +85°C Storage Temperature: -40°C - +85°C Relative humidity: 5% - 95% (non-condensing) Vibration: 20G peak-to-peak, 20Hz-2KHz swept Shock: 1500G peak-to-peak, 0.5mS duration	
Interfaces	Dual UART (960KBAUD), RS232/ 422/ 485, SPI (1bit/20MHz), 10/100 Ethernet, PortFlex	
Digital I/O	8 GPIO	
LED Indicators	4 indicator LED signals (RF_ACT, POST, CONNECT, RF_LINK), Signal Strength	
Connector	36 pin High Density SMT connector from Hirose (DF12-36DS-0.5V), 4mm Height	
Agency Approvals	North America: FCC Title 47 Part 15 Class B Sub C Intentional Radiator, IOC RSS210 Europe: CE ETSI EN300 328 RoHS & WEEE compliant	

Model Selection Guide

Model #	Description
WLNN-ER-DP551	802.11a/b/g/n, 10/100 Ethernet adapter, Advanced Enterprise Security
WLNN-AN-DP551	802.11a/b/g/n, UART interface, Advanced Enterprise Security
WLNN-SE-DP551	802.11a/b/g/n, UART with RS-232/422/485 Driver Control, Advanced Enterprise Security
WLNN-SP-DP551	802.11a/b/g/n, SPI interface, Advanced Enterprise Security
WLNN-EK-DP551	Development Kit