Airborne™ Embedded Dual Band M2M Access Point Module
Wireless Infrastructure Access Point/Wireless Router/Client 802.11a/b/g/n & Ethernet to 802.11a/b/g/n

APMN-Q551 The Most Secure, Rugged and Reliable Wi-Fi Access Point Modules

The Airborne line of highly-integrated 802.11 wireless access point 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 APMN-Q551 series delivers the industry's most rugged, highly-integrated, embedded wireless access point 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 Speed Link 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 wireless access point and serial to Wi-Fi communications. Utilizing Airborne's Port Flex 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 APMN-Q551 modules are foot print 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.

Security

Security features include built-in firewalls on the Ethernet and WLAN interfaces; secure communications.

Security Protocols for AP and AdHoc modes include WEP 64 & 128bit, WPA-PSK (TKIP), WPA2-PSK (AES).

When configured as a client, supported protocols include WEP 64 & 128bit, WPA-PSK (TKIP), WPA2-PSK (AES), WPA & WPA2 Enterprise (EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-FAST, LEAP) and a suite of Migration modes (wpa-leap64, wpa-leap128, wpa-psk64, wpa-psk128, wpa-psk128-tkip, wpa2-psk-tkip)

Supports Certificates and Private Key Upload and Storage (Multiple)
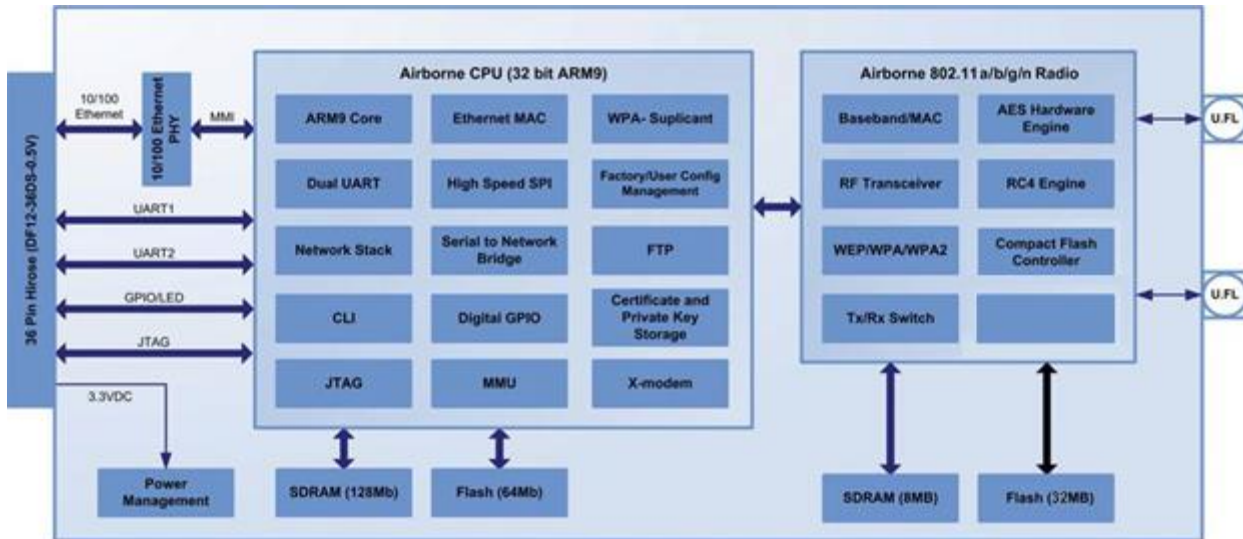
KEY FEATURES

- Quick time to market and reduced integration costs

- 802.11a/b/g/n Wi-Fi Radio with 32bit ARM CPU

- Airborne Power Save firmware reduces power consumption and extends battery life in mobile devices

- Extended Operating Temperature Range (-40°C to +85°C) and environmental specifications

- Airborne Speed Link roaming provides enhanced connection reliability

- On board certificate delivery and storage

- Fully integrated serial bridge and network stack

- Airborne PortFlex capability enables any combination of communication 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

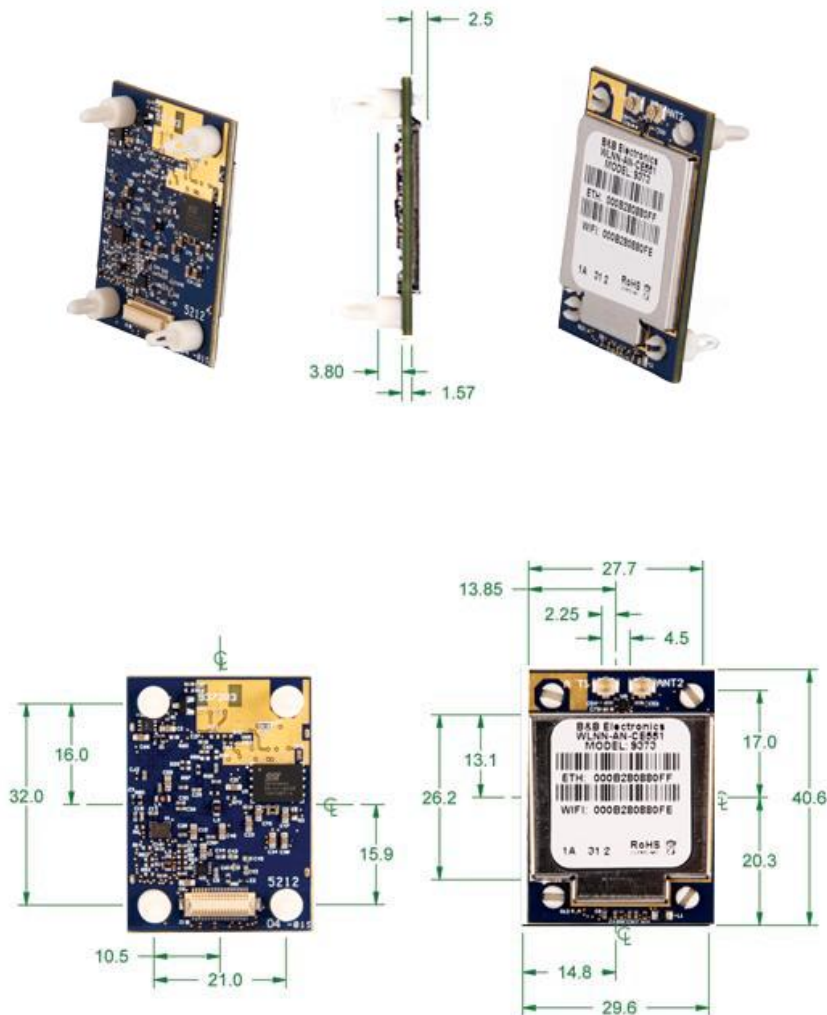- Backwards compatible with previous generations of Airborne embedded modules

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

B&B ELECTRONICS

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Block Diagram

Mechanical Outline

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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	Access Point, 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** **802.11 a** 54Mb/s = -72 dBm 54Mb/s = -74 dBm 36Mb/s = -78 dBm 36Mb/s = -80 dBm 18Mb/s = -84 dBm 18Mb/s = -86 dBm 6Mb/s = -89 dBm 6Mb/s = -90dBm 11Mb/s = -86 dBm 1Mb/s = -92 dBm
Transmit Power (max)	802.11b 15 dBm (31.6mW) 802.11g 12.6dBm (18.12mW) 802.11a 17 dBm (50.1mW)
Security Protocols (AP and AdHoc modes)	Disabled, WEP 64 & 128bit, WPA-PSK(TKIP), WPA2-PSK(AES)
Security Protocols (Client mode)	Disabled, WEP 64 & 128bit, WPA-PSK(TKIP), WPA2-PSK(AES), WPA & WPA2 Enterprise *(EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-FAST, LEAP)* and a suite of Migration modes *(wpa-leap64, wpa-leap128, wpa-psk64, wpa-psk128, wpa-psk128-tkip, wpa2-psk-tkip)* 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: -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

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Model #	Description
APMN-Q551	802.11a/b/g/n, 10/100 Industrial wireless access point/router/client: UART, SPI and RS-232/422/485 wired interfaces
WLNN-EK-DP551	Development Kit