BB-APMN-Q551

Dual Band (2.4 / 5 GHz)
Access Point Module or Client / Router
Embedded OEM board


BB-APMN-Q551

Features

- Quick time to market and reduced integration costs
- 802.11a/b/g/n Wi-Fi radio (2.4 / 5 GHz)
- AirborneM2M PowerSave firmware reduces power consumption and extends battery life in mobile devices
- Wide operating temperature range (-40 to +85 °C) and environmental specifications
- AirborneM2M Speed Link roaming provides enhanced connection reliability
- AirborneM2M PortFlex enables any combination of communication ports (UART, SPI, GPIO, Ethernet and 802.1 interfaces)
- Each port can be configured independently
- Backwards compatible with previous generations of AirborneM2M embedded modules

Introduction

The AirborneM2M™ line of 802.11 wireless access point modules allow OEMs to Wi-Fi enable devices used in an array of machine-to-machine (M2M) applications. Advantech delivers all the necessary RF technology networking stacks and advanced security features in a compact, single-board package, reducing integration costs for OEMs and providing quick time-to-market.

Top Performance in Small and Ruggedized Package

The AirborneM2M series delivers the industry's most rugged, highly integrated, embedded wireless access point Wi-Fi module solutions meeting extended operating specifications of the most demanding M2M applications.

Utilizing a 32-bit ARM9 processor and high-performance Atheros AR6203 802.11 radio, the module delivers increased transmit power and receive sensitivity for superior range performance.

SpeedLink™ Roaming

The AirborneM2M 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 and Easy to Integrate

AirborneM2M incorporates support for both wireless access point and serial to Wi-Fi communications. With AirborneM2M Port Flex capability, OEMs can configure via software any combination of UART, SPI, Ethernet, GPIO and 802.11 interfaces. Each individual port can be independently configured. A development kit is also available to aid developers (sold separately).

Future-proof

These AirborneM2M modules are footprint and pin-compatible with their predecessors. Advantech's commitment to maintaining hardware and software compatibility assures OEMs of a simple, future-proof, migration path even as wireless technology evolves.

Enterprise Class Security

Security protocols are important to mission critical wireless M2M applications. AirborneM2M Access Point's multi-layer security addresses the requirements of Enterprise-class networks and corporate IT departments. Advanced security features include wireless security (802.11i/WAP2 enterprise), authentication security using WPA2 (AES-CCMP) and device security (multi-layered encryption). The AirborneM2M Access Point includes a fully functional DHCP server to provide unique addresses for each authenticated client. Up to 10 clients can be supported on the local Wi-Fi network.

Ordering Information

Model No.	Description
BB-APMN-Q551	802.11a/b/g/n, 10/100 Industrial Wireless Access Point/Router/ Client Module: UART, SPI and RS-232/422/485 wired interfaces
BB-WLNN-EK-DP551	Design and Development Kit

Accessories – Sold Separately

BB-ACH2-DBAT-DP002 – 2 dBi portable, 2.4/5 GHz antenna, rubber duck

BB-ACH2-DBAT-DP003 – 3.8/5 dBi portable, 2.4/5 GHz antenna, rubber duck

BB-WLNN-EK-DP551

Specifications

Wireless Technology	
Technology	IEEE 802.11 a/b/g/n Wi-Fi
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
Channels	
USA/Canada:	11 Channels 802.11b/g 13 Channels 802.11a
Europe:	13 Channels 802.11b/g 19 Channels 802.11a
France:	4 Channels 802.11b/g
Japan:	14 Channels 802.11b 13 Channels 802.11g 23 Channels 802.11a
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
Receive Sensitivity 802.11 b/g	54 Mb/s = -72 dBm 36 Mb/s = -78 dBm 18 Mb/s = -84 dBm 6 Mb/s = -89 dBm 11 Mb/s = -86 dBm 1 Mb/s = -92 dBm
Receive Sensitivity 802.11 a	54 Mb/s = -74 dBm 36 Mb/s = -80 dBm 18 Mb/s = -86 dBm 6 Mb/s = -90 dBm
Transmit Power	802.11b = 15 dBm (31.6 mW) 802.11g = 12.6 dBm (18.12 mW) 802.11a = 17 dBm (50.1 mW)
Physical	
Antenna	Two (2) U.FL Coaxial Connectors, 50 Ohms Maximum Gain @ 5 GHz = 5.5 dBi Maximum Gain @ 2.4 GHz = 4.1 dBi
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
Network	
Network Access Modes	Access point, Infrastructure (Client), Ad Hoc
MAC	CSMA/CA with ACK, RTS, CTS
Network Protocols	TCP/IP, ARP, ICMP, DHCP, DHS, UDAP, TFTP, UDP, PING
Interfaces	Dual UART (960Kbaud, RS232/ 422/ 485, SPI (1-bit/8 MHz), 10/100 Ethernet, PortFlex
Digital I/O	8 GPIO
Security	
Security Protocols (AP and AdHoc modes)	Disabled, WEP 64 & 128-bit, WPA-PSK(TKIP), WPA2-PSK(AES)
Security Protocols (Client mode)	Disabled, WEP 64 & 128-bit, 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)

Power	
Supply	3.3VDC +/-5%, 650 mA (maximum)
Supply In-rush Current	1500 mA (maximum) for 400us
DC Characteristics	Operating Current (Tx, 802.11g) = 370 mA (typical) Operating Current (Rx, 802.11g) = 200 mA (typical)
Environmental	
Temperature/Humidity	Operating Temperature: -40 to +85 °C Storage Temperature: -40 to +85 °C Relative Humidity: 5 to 95% (non-condensing)
Meantine Between Failures (MTBF)	
MTBF	522001 hours (Model# BB-APMN-Q551) 524380 hours (Model# BB-WLNN-EK-DP551)
Calculation Method	MIL217F Parts Count Reliability Prediction Method
Regulatory – Approvals / Standards / Directives	
North America	FCC Title 47 Part 15 Class B Sub C Intentional Radiator, IOC RSS210
CE - Directives (Europe)	2014/35/EU - Low Voltage 2014/53/EU - Radio Equipment Directive (RED) Hereby, Advantech B+B SmartWorx declares that the radio equipment type Wi-Fi access point (module) is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.advantech-bb.com 2011/65/EU amended by (EU) 2015/863 Reduction of Hazardous Substances (RoHS) 2012/19/EU - Waste Electrical & Electronic Equipment (WEEE)
CE - Standards (Europe)	**EMC:** ETSI EN 300 328 v2.1.1 - EMC & Radio Spectrum Matters (ERM) Wideband Transmission Systems - 2.4 GHz ISM Band ETSI EN 301 893 v2.1.1 - EMC & Radio Spectrum Matters (ERM) Wideband Transmission Systems - 5 GHz ISM Band ETSI EN 301 489-1 v2.1.1 - Applied in accordance with the specific requirements of: ETSI EN 301 489-17 v3.1.1 - EMC & Radio Spectrum Matters (ERM) Broadband Data Systems EN 55032+AC, Class A - Information Technology Equipment - RF Emissions EN 55024 - Information Technology Equipment (ITE) - Immunity Characteristics - Limits and Methods of Measurement **Safety:** EN 60950-1 + A1 + A11 + A12 + A2 - Information Technology Equipment - Safety - Part 1 - General Requirements RF Exposure: EN 62311 - Assessment of electronic and electrical equipment related to human exposure restrictions for EM fields (0 Hz to 300 GHz)