Secure, Rugged Wi-Fi Embedded OEM open board modules

BB-WLNN-xx-DP551 Series

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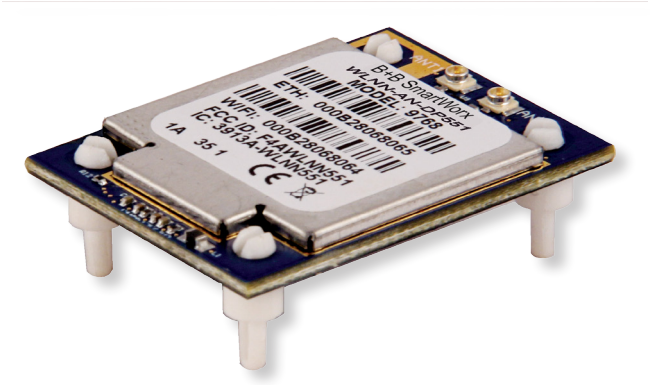

PRODUCT FEATURES

- Quick time to market and reduced integration costs
- 802.11a/b/g/n Wi-Fi (2.4 GHz, 5 GHz)
- Airborne PowerSave firmware reduces power consumption and extends battery life in mobile devices
- Extended operating temperature range (-40 to +85°C) and environmental specifications
- AirborneM2M SpeedLink roaming provides enhanced connection reliability
- Advanced Enterprise Class wireless security
- AirborneM2M PortFlex capability enables any combination of COM ports (UART, SPI, GPIO, Ethernet and 802.11 interfaces)
- FCC Part 15 Class B Sub C Modular Approval minimizes regulatory requirements
- Backwards compatible with previous generations of AirborneM2M embedded modules

AirborneM2M™ Embedded Dual Band Wireless Device Server and Ethernet Solution Modules Serial & Ethernet to 802.11a/b/g/n (2.4 GHz, 5 GHz)

The AirborneM2M line of highly-integrated 802.11 wireless modules allows OEMs to Wi-Fi enable devices used in a variety 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 a quick time to market.

Big Performance in Small, Ruggedized Package

The AirborneM2M series provides the industry's most rugged, highly-integrated, embedded WiFi module solution. AirborneM2M modules meet extended operating temperature specifications of the most demanding M2M applications.

Utilizing a 32-bit ARM9 processor and high-performance Atheros AR6203 802.11 radio, AirborneM2M modules deliver increased transmit power and receive sensitivity contributing to superior range performance.

SpeedLink™ Roaming

AirborneM2M 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

AirborneM2M incorporates support for both serial and Ethernet to WiFi 802.11 2.4 or 5 GHz communications. Utilizing AirborneM2M PortFlex 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).

The AirborneM2M modules are footprint and pin compatible with their predecessors. 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

Security protocols are important to mission-critical wireless M2M applications. The AirborneM2M multi-layered security approach addresses the requirements of enterprise-class networks and corporate IT departments. These advanced security features include wireless security (801.11i/WPA2 Enterprise); network security (EAP authentication and certificate support); communication security (SSH functionality and fully encrypted data tunnels); and device security (multi-level encryption capability to protect configuration data).

ORDERING INFORMATION

MODEL NUMBER	DESCRIPTION
BB-WLNN-ER-DP551	802.11a/b/g/n, 10/100 Ethernet Router (NAT Level 3), Advanced Enterprise Security
BB-WLNN-AN-DP551	802.11a/b/g/n, UART Interface, Advanced Enterprise Security
BB-WLNN-SE-DP551	802.11a/b/g/n, Serial Device Server, UART with RS-232/422/485 Driver Control, Advanced Enterprise Security
BB-WLNN-SP-DP551	802.11a/b/g/n, SPI Interface, Advanced Enterprise Security
BB-WLNN-EK-DP551	Design and Development Kit

ACCESSORIES - sold separately

BB-ACH2-DBAT-DP002 - 2dBi Portable (rubber duck), 2.4/5GHz Antenna

BB-ACH2-DBAT-DP003 - 3.8/5.5dBi Portable (rubber duck), 2.4/5GHz Antenna

BB-ACH0-CA-DP003-G - Airborne Ethernet Cable, RJ-45 to Hirose Connector

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orders@advantech-bb.com
eSales@advantech-bb.com

Headquarters: 707 Dayton Rd, PO Box 1040 Ottawa, IL 61350 USA (815)433-5100 or **(800)346-3119**/Toll Free Fax (815)433-5104
European Office: Westlink Commercial Pk, Oranmore Co. Galway Ireland +353 91 792444 Fax +353 91 792445

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SPECIFICATIONS

TECHNOLOGY		
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 (Client), Ad Hoc	
Channels		
	US/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	
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	
Receive Sensitivity - 802.11 a	54Mb/s = -74 dBm 36Mb/s = -80 dBm 18Mb/s = -86 dBm 6Mb/s = -90 dBm	
Transmit Power - 802.11a/b/g	802.11b = 15 dBm 802.11g = 12.6 dBm 802.11a = 17 dBm	
Security Protocols - client mode	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 Maximum Gain @ 5 GHz = 5.5 dBi Maximum Gain @ 2.4 GHz = 4.1 dBi	
Supply	3.3 VDC +/-5%, 650 mA (MAX)	
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	Operating Temperature: -40 to +85 °C Storage Temperature: -40 to +85 °C Relative Humidity: 5% to 95% (non-condensing)	
Interfaces	Dual UART (960K baud), RS-232/422/485, SPI (1-bit/8 MHz), 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	
MEANTIME BETWEEN FAILURES (MTBF)		
MTBF	524380 hours (all models)	
MTBF Calc Method	MIL 217F (Parts Count Reliability Prediction)	

APPROVALS, DIRECTIVES, STANDARDS	
North America	FCC Title 47 Part 15 Class B Sub C Intentional Radiator
CE - Directives (Europe)	2014/35/EU - Low Voltage Directive 2014/53/EU - Radio Equipment Directive (RED) Hereby, Advantech Advantech declares that the radio equipment type Wi-Fi 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 - Reduction of Hazardous Substances Directive (RoHS) 2012/19/EU - Waste Electrical & Electronic Equipment Directive (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 v1.8.5 - 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 (ITE) - 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 (ITE) - 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)

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