AirborneM2M™ Dual Band (2.4 GHz , 5 GHz)

Wi-Fi Serial Server – Embedded OEM & Carrier Board

Model BB-ABDN-SE-DP553

www.advantech.com

FEATURES / BENEFITS

- Serial to 802.11a/b/g/n dual band (2.4 GHz, 5 GHz)
- Transmit data rate: up to 65 Mbps
- Wide operating temperature range: -20 to +85 °C
- Open board design
- USA, Canada, CE / EU approvals
- Enterprise Class wireless security (WPA2-Enterprise, WPA, WEP, EAP)
- AirborneM2M Management Center (AMC) device discovery, management and control application software
- 2.4 / 5 GHz, 2 dBi, RP-SMA omni-directional antenna included

AirborneM2M Enterprise Wi-Fi boards are built for networking equipment in an array of machine-to-machine (M2M) applications. The small compact form factor makes it easy and cost-effective to integrate into your solution.

Dual-Band Wi-Fi – Model BB-ABDN-SE-DP553, Wi-Fi Serial Server board, establishes serial to wireless connections over both 2.4 GHz and 5 GHz bands. Whenever the 2.4 GHz airspace is overcrowded with competing wireless transmissions, it can be switched over to the 5 GHz band to keep data flowing.

Enterprise Class Security – Security protocols are important to mission-critical wireless M2M applications. AirborneM2M multi-layered security approach addresses the requirements of Enterprise-class networks and corporate IT departments. 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-ABDN-SE-DP553 *	**Commercial Wi-Fi Serial Server** Embedded OEM board module 802.11a/b/g/n Dual band (2.4 GHz, 5 GHz) (1) RS-232/422/485 serial port

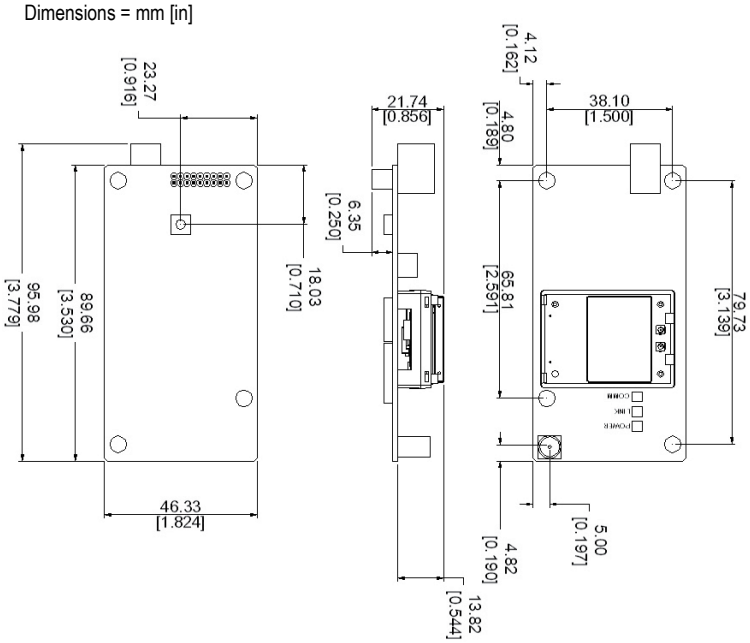
* Included with product:
BB-CP-SDS-NA – Power cord, USA
BB-PS-WDS – 120/240 VAC, 5 VDC, 10 W, 2.1 mm power supply
BB-ACH2-DBAT-DP002 – 2 DBi, 2.4/5 GHz antenna, RP-SMA
Serial Cable Assembly

ACCESSORIES – sold separately

BB-ACH2-DBAT-DP003 – 3.8/5.5 dBi, 2.4/5 GHz, RP-SMA antenna (alternative antenna)

MECHANICAL DIAGRAM

Dimensions = mm [in]



All product specifications are subject to change without notice.
ABDN-SE-DP553_AirborneSerSvr_WiFiEmbOEMBoard_2320ds

AirborneM2M™ Dual Band (2.4 GHz, 5 GHz) Wi-Fi Serial Server – Embedded OEM & Carrier Board

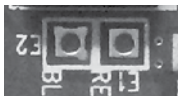
Model BB-ABDN-SE-DP553

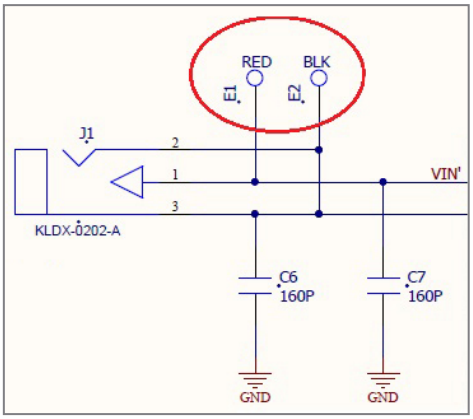
PADS

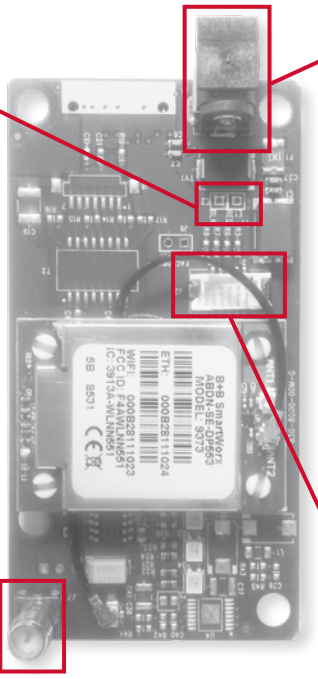
Pads can be used to connect power instead of barrel jack.

On the board:

E2 is on the Left.
E1 is on the Right.

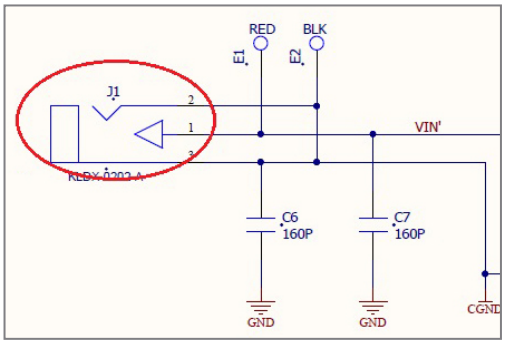






POWER

J1 - Switchcraft RAPC722X
Mating Connector - Switchcraft S760



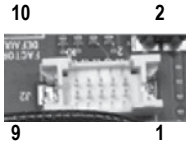
ANTENNA

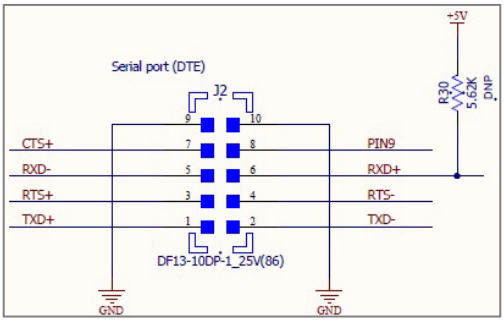
NOTE: ANT 2 on the WiFi module is connected to J6 on the mother board using the included cable assembly. ANT 2 and J2 connectors are limited-use U.FL connectors.

If you desire to move these connections, use caution as damage may occur. J2, the main antenna connection, is an RP-SMA. The WiFi module is certified for use with the antenna listed in the accessory section.

SERIAL PORT

J1 - Hirose DF13E-10P-1.25V (51)
Mating Connector - DF13-10DS-1.25C





J2 position	RS232	RS422	RS485	RS485 (2-wire)
1	TXD	TXD+	TXD+	TXD+/RXD+
2	-	TXD-	TXD-	-
3	RTS	RTS+	-	-
4	-	RTS-	-	-
5	RXD	RXD-	RXD-	TXD-/RXD-
6	-	RXD+	RXD+	-
7	CTS	CTS+	-	-
8	-	CTS-	-	-

AirborneM2M™ Dual Band (2.4 GHz, 5 GHz)

Wi-Fi Serial Server – Embedded OEM & Carrier Board

Model BB-ABDN-SE-DP553

SPECIFICATIONS

TECHNOLOGY	
Technology	IEEE 802.11a/b/g/n compliant
Serial	(1) RS-232/422/485 Serial Port
Modulation Technology	DSSS, CCK, OFDM
Modulation Type	DBPSK, DQPSK, CCK, BPSK, QPSK, 16QAM, 64QAM
Network Access Modes	Infrastructure (Client), Ad Hoc
Environmental	Operating Temperature: -20 to +80 °C Storage Temperature: -20 to +85 °C Relative Humidity: 5 to 95, non-condensing
LED Indicators	3 Indicator LEDs (Power, LINK, COMM)
POWER	
Security Protocols	Disabled, WEP 64 & 128-bit, 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,Private Key Upload and Storage (multiple)
Antenna	RP-SMA Omni-directional 2dBi 2.4/5 GHz Antenna (included)
Power Supply	5.0V DC
Supply In-rush Current	3000mA (maximum) for 20ms
MEANTIME BETWEEN FAILURES (MTBF)	
MTBF	444758 hours
MTBF Calc. Method	MIL 217F Parts Count Reliability Prediction
REGULATORY	
ECCN Code	5A992 ext. a
Commodity Code	8517620050
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 B+B SmartWorx declares that the radio equipment Wtype Wi-Fi embedded OEM board 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 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)

SPECIFICATIONS - continued

RF CHARACTERISTICS

SYMBOL	PARAMETER	RATE Mb/s	MIN.	AVERAGE dBm / mW		PEAK dBm / mW		UNITS
POUTB	Transmit Power Output 802.11b	11, 5.5, 2, 1	-	15.0	31.6			dBm
POUTG	Transmit Power Output 802.11g	6, 9, 12, 18, 24, 36, 48, 54	-	12.6	18.2			dBm
POUTA	Transmit Power Output 802.11a	6, 9, 12, 18, 24, 36, 48, 54	-	17.0	50.1			dBm
PRSENB	Receive Sensitivity 802.11b	11	-	-86				dBm
		1	-	-92				
PRSENG	Receive Sensitivity 802.11g	54	-	-72				dBm
		36	-	-78				
		18	-	-84				
		6	-	-89				
PRSENA	Receive Sensitivity 802.11b/g	54	-	-74				dBm
		36	-	-80				
		18	-	-86				
		6	-	-90				
FRANGEBG	Frequency Range	-	2401	-		2495		MHz
FRANGEA	Frequency Range 802.11a	-	4910 5150 5470 5725	-		4990 5350 5725 5825		MHz

SUPPORTED DATA RATES BY BAND

BAND	SUPPORTED DATA RATES (Mb/s)
802.11b	11, 5.5, 2, 1
802.11a/g	54, 48, 36, 24, 18, 12, 9, 6
802.11n	65, 58.5, 42, 39, 26, 19.5, 13, 6.5

OPERATING CHANNELS

BAND	REGION	FREQ. RANGE GHz	NO. OF CHANNELS	CHANNELS
802.11b[1,2]	US/Canada	2.401 - 2.473	11	1 - 11
	Europe	2.401 - 2.483	13	1 - 13
	Japan	2.401 - 2.483	13	1 - 13
802.11g[1,2]	US/Canada	2.401 - 2.473	11	1 - 11
	Europe	2.401 - 2.483	13	1 - 13
	Japan	2.401 - 2.483	13	1 - 13
802.11a[3]	US/Canada	5.15 - 5.35	11	36, 40, 44, 48, 52, 56, 60, 64, 149, 153, 157
		5.470 - 5.725	8	100, 104, 108, 112, 116, 132, 136, 140
		5.725 - 5.825	2	161, 165
	Europe	5.15 - 5.35 5.47 - 5.725	19	36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140
	Japan	5.150 - 5.250	4	36, 40, 44, 48 (known as W52)
		5.250 - 5.350	4	52, 56, 60, 64 (known as W52)
		5.470 - 5.725	1	100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140 (known as W56)
	China	5.725 - 5.825	5	149, 153, 157, 161, 165

NOTE - OPERATING CHANNELS:
1. Only channels 1, 6 and 11 are non-overlapping.
2. Channel count denotes number of non-overlapping channels. Channels shown represent non-overlapping channel numbers.