AirborneM2M™ Dual Band (2.4 GHz, 5 GHz) Wi-Fi
Ethernet Bridge/Router – Embedded OEM & Carrier Board
Model BB-ABDN-ER-DP553

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FEATURES / BENEFITS

- 10/100 Mbps to 802.11a/b/g/n dual band (2.4, 5 GHz) Wi-Fi Ethernet bridge/router
- Enterprise class wireless security (WPA2-Enterprise, WPA, WEP, EAP)
- Up to 65 Mbps (band dependent)
- Wide operating temperature range: -20 to +80 °C
- OEM open board, industrial design
- USA, Canada, EU approvals
- Antenna, 5VDC power supply, USA power cord 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-ER-DP553, Wi-Fi Ethernet Bridge/Router, establishes wireless connections over both 2.4 GHz and 5 GHz bands. Whenever the 2.4 GHz airspace is overcrowded with competing wireless transmission, it can be switched over to 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).

Antenna, 5VDC power supply, and USA power cord included.

ORDERING INFORMATION

| MODEL NUMBER	DESCRIPTION
BB-ABDN-ER-DP553 *	**Ethernet Bridge & Router** Embedded OEM board 802.11a/b/g/n Dual band (2.4 GHz, 5 GHz

* 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, rubber duck, RP-SMA

ACCESSORIES – sold separately

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

MECHANICAL DIAGRAM

Dimensions = mm [in]
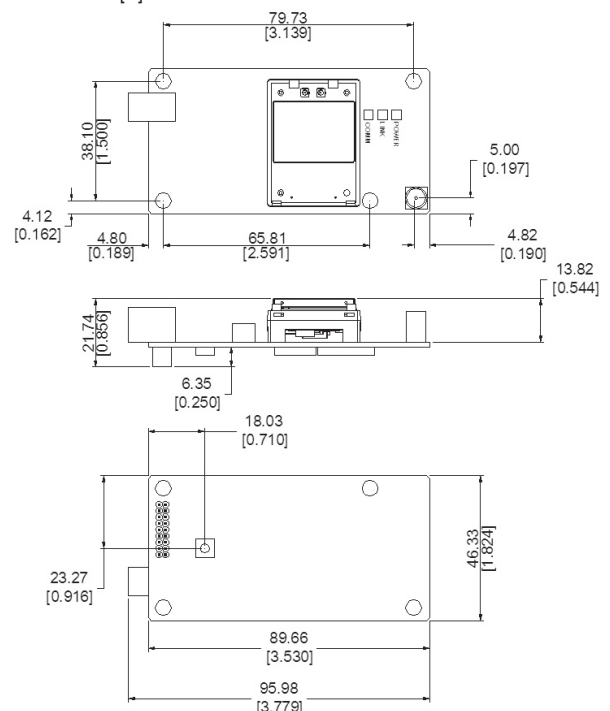
All product specifications are subject to change without notice.
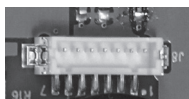BB-ABDN-ER-DP553_AirborneEthBr-Rtr-OpenBd_1819

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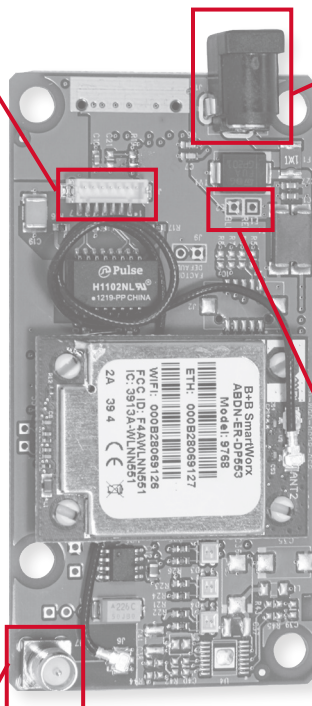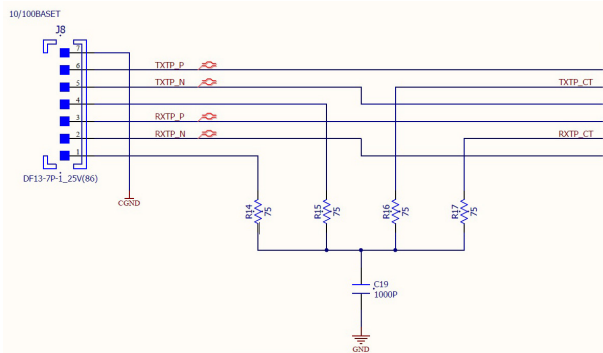### Model BB-ABDN-ER-DP553

ETHERNET PORT

J8 - Hirose# DF13-7P-1.25V(50)
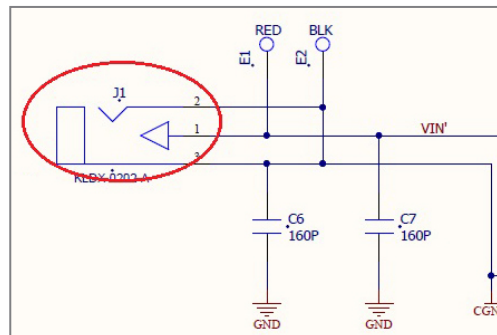**Mating Connector** - Hirose# DF13-7S-1.25C

Seven Pins
7 6 5 4 3 2 1

POWER

J1 - Switchcraft RAPC722X
Mating Connector - Switchcraft S760

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.
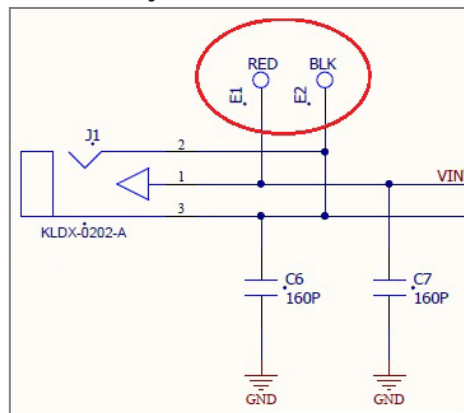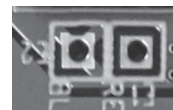
ANTENNA

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.

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SPECIFICATIONS

TECHNOLOGY

Technology	IEEE 802.11a/b/g/n compliant
Wired Interface	10/100 Ethernet port (bridge, router (NAT3) modes)
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 & 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	RP-SMA omni-directional 2dBi 2.4/5 GHz antenna (included)
Power Supply	5.0V DC (included)
Supply In-rush Current	3000 mA (maximum) for 20 ms

MEANTIME BETWEEN FAILURES (MTBF)

MTBF	489974 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	2014/35/EU - Low Voltage Directive 2014/53/EU - Radio Equipment Directive (RED) Hereby, Advantech B+B SmartWorx declares that the radio equipment type 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 - Reduction of Hazardous Substances (RoHS) 2012/19/EU - Waste Electrical & Electronic Equipment (WEEE)
CE - Standards	**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 (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
P$_{OUTB}$	Transmit Power Output 802.11b	11, 5.5, 2, 1	-	15.0 31.6		dBm
P$_{OUTG}$	Transmit Power Output 802.11g	6, 9, 12, 18, 24, 36, 48, 54	-	12.6 18.2		dBm
P$_{OUTA}$	Transmit Power Output 802.11a	6, 9, 12, 18, 24, 36, 48, 54	-	17.0 50.1		dBm
P$_{RSENB}$	Receive Sensitivity 802.11b	11	-	-86		dBm
		1	-	-92		
P$_{RSENG}$	Receive Sensitivity 802.11g	54	-	-72		dBm
		36	-	-78		
		18	-	-84		
		6	-	-89		
P$_{RSENA}$	Receive Sensitivity 802.11b/g	54	-	-74		dBm
		36	-	-80		
		18	-	-86		
		6	-	-90		
F$_{RANGEBG}$	Frequency Range	-	2401	-	2495	MHz
F$_{RANGEA}$	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.