APC USB Wi-Fi Device (AP9834) Technical Specifications

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General

Standards:
2.4GHz: IEEE 802.11b/g/n
5GHz: IEEE 802.11a/n,

The AP9834 Wi-Fi USB Device can be used with the AP9641 and AP9643 Network Management Cards (NMCs), but not the AP9640 card. It can also be used with the AP9000 series rack-mounted PDUs. It cannot be used with the AP9630/31/35 NMC 2.
The NMC 3 with the AP9834 Wi-Fi Device can be wired or wireless, not both. Not dual homed. Wireless is off by default.

Only one Wi-Fi Device can be connected.

All network protocols work the same whether connected via wired or wireless.

Setup can be done:
1. via a wired Ethernet connection
    a. Using the Web UI, Telnet/SSH
    b. Using FTP to send a config.ini file
2. via a wired console port connection using a command line interface (CLI).

The NMC 3 does not scan for available SSIDs; the SSID must be entered manually.

Enterprise level security username / password is stored securely on the NMC 3, not on the Wi-Fi Device.

Status LED on the Wi-Fi Device indicates connection progress/status. For more information, see the NMC 3 User Guide.

Firmware on the Wi-Fi Device is upgradable via the NMC 3's Command Line Interface (CLI). For more information, see the NMC 3 CLI Guide.

Security

No WEP
No open network (network without security)

Encryption Types

- WEP-PSK
- WPA-Mixed-PSK
- WPA2-AES-PSK
- WPA2-Mixed-PSK
- WPA2-TKIP-PSK
- WPA2-Mixed-Ent (EAP-PEAP, MSCAPv2)
- WPA2-AES-ENT (EAP-TLS)

TLS Ciphers

- AES_128_CBC_CIPHER
- AES_256_CBC_CIPHER
- AES_128_GCM_CIPHER
- AES_256_GCM_CIPHER
- AES_128_CCM_CIPHER
- AES_256_CCM_CIPHER

- AES_128_CCM_8_CIPHER
- AES_256_CCM_8_CIPHER
- CAMELLIA_128_CBC_CIPHER
- CAMELLIA_256_CBC_CIPHER
- CAMELLIA_128_GCM_CIPHER
- CAMELLIA_256_GCM_CIPHER
- SEED_CBC_CIPHER
- ARIA_128_CBC_CIPHER
- ARIA_256_CBC_CIPHER
- ARIA_128_GCM_CIPHER
- ARIA_256_GCM_CIPHER
- CHACHA20_POLY1305_CIPHER

Key Exchanges

- RSA_KEYSCHEME
- DH_DSS_KEYSCHEME
- DH_RSA_KEYSCHEME
- DHE_DSS_KEYSCHEME
- DHE_RSA_KEYSCHEME
- ECDH_ECDSA_KEYSCHEME
- ECDH_RSA_KEYSCHEME
- ECDHE_RSA_KEYSCHEME
- ECDHE_ECDSA_KEYSCHEME
- PSK_KEYSCHEME
- RSA_PSK_KEYSCHEME
- DHE_PSK_KEYSCHEME
- ECDHE_PSK_KEYSCHEME
- SRP_SHA_KEYSCHEME
- SRP_SHA_RSA_KEYSCHEME
- SRP_SHA_DSS_KEYSCHEME

Message Authentication

- AES_128_CCM_MAC
- AES_256_CCM_MAC
- AES_128_CCM_8_MAC
- AES_266_CCM_8_MAC

ECC Curves

- secp256r1
- secp256k1

Mechanical Specifications

The physical dimensions of the **Wi-Fi Device** are as follows:

Unpackaged	Dimension
Length	40 mm (1.6 in.)
Width	20 mm (0.8 in.)
Height	7.5 mm (0.3 in.)
Weight	6g (0.2 oz)

Packaged	Dimension
Length	235 mm (9.3 in.)
Width	142 mm (5.6 in.)
Height	13 mm (0.5 in.)
Weight	23g (0.8 oz)

Environmental Specifications

Item	Description
Operating temperature range	-40 deg. C to +85 deg. C
Storage temperature range	-40 deg. C to +85 deg. C
Humidity	95% max non-condensing

Note: The Wi-Fi Device supports a functional operating range of -40°C to +85°C. However, the optimal RF performance specified in this data sheet is only guaranteed for temperatures from -10°C to +65°C.

Hardware Electrical Specifications

Operating Ratings

Symbol	Min.	Typ.	Max.	Unit.
VDD	4.5	5	5.5	V

Power Consumption

Mode	Description	Typical	Max	Unit
Radio On	Wi-Fi On, and connected to a network	90	340[1]	mA

Note:
[1] Wi-Fi On, and connected to a network: Max 120 mA (340 mA burst of less than 5 ms).

RF Specification

Wi-Fi Specification

Conditions: VDD=5V; TEMP: 25°C.

2.4 GHz Band

Feature	Description
WLAN Standard	IEEE 802.11b/g/n, Wi-Fi compliant
Frequency Range	2.400 GHz ~ 2.497 GHz (2.4 GHz ISM Band)
Number of Channels	Ch1 ~ Ch14
Modulation	802.11 g/n : OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11b : CCK, DQPSK, DBPSK
*Output Power	802.11b /11Mbps : 17* dBm ± 1.5 dB
	802.11g /54Mbps: 17* dBm ± 1.5 dB
	802.11n /72Mbps: 16* dBm ± 1.5 dB
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -86 dBm, typical
	- MCS=1 PER @ -85 dBm, typical
	- MCS=2 PER @ -85 dBm, typical
	- MCS=3 PER @ -84 dBm, typical
	- MCS=4 PER @ -80 dBm, typical
	- MCS=5 PER @ -78 dBm, typical
	- MCS=6 PER @ -72 dBm, typical
	- MCS=7 PER @ -69 dBm, typical
Receive Sensitivity (11g) @10% PER	- 6Mbps PER @ -89 dBm, typical
	- 9Mbps PER @ -88 dBm, typical
	- 12Mbps PER @ -88 dBm, typical
	- 18Mbps PER @ -87 dBm, typical
	- 24Mbps PER @ -83 dBm, typical
	- 36Mbps PER @ -80 dBm, typical
	- 48Mbps PER @ -75 dBm, typical
	- 54Mbps PER @ -72 dBm, typical
Receive Sensitivity (11b) @10% PER	- 1Mbps PER @ -93 dBm, typical
	- 2Mbps PER @ -91 dBm, typical
	- 5.5Mbps PER @ -89 dBm, typical
	- 11Mbps PER @ -87 dBm, typical
Data Rates	802.11b: 1, 2, 5.5, 11Mbps
	802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps
Data Rate (20MHz, Long GI,800ns)	802.11n: 6.5, 13, 19.5, 26, 39, 52, 58.5, 65Mbps
Data Rate (20MHz, Short GI,400ns)	802.11n: 7.2, 14.4, 21.7, 28.9, 43.3, 57.8, 65,72.2Mbps
Maximum Input Level	802.11b : -10 dBm
	802.11g : -10 dBm

5 GHz Band

Feature	Description
WLAN Standard	802.11a/n, WIFI Compliant
Frequency Range	4.900 GHz ~ 5.845 GHz (5 GHz Band)
Channels	36~48, 52~64, 100~144, 149 ~165
Modulation	802.11a/n OFDM
Output Power	802.11a 19 dBm ± 1.5 dB
	802.11n 19 dBm ± 1.5 dB
Receive Sensitivity (11a, 20 Mhz channel spacing for all rates) @10% PER	6 Mbps OFDM PER @ -90.5 dBm, typical
	9 Mbps OFDM PER @ -90.5 dBm, typical
	12 Mbps OFDM PER @ -87.5 dBm, typical
	18 Mbps OFDM PER @ -85.5 dBm, typical
	24 Mbps OFDM PER @ -82.5 dBm, typical
	36 Mbps OFDM PER @ -80.5 dBm, typical
	48 Mbps OFDM PER @ -76.5 dBm, typical
	54 Mbps OFDM PER @ -73.5 dBm, typical
Receive Sensitivity (11n, 20 Mhz channel spacing for all rates) @10% PER	MCS 0 PER @ -90.5 dBm, typical
	MCS 1 PER @ -86.5 dBm, typical
	MCS 2 PER @ -84.5 dBm, typical
	MCS 3 PER @ -82.5 dBm, typical
	MCS 4 PER @ -78.5 dBm, typical
	MCS 5 PER @ -73.5 dBm, typical
	MCS 6 PER @ -71.5 dBm, typical
	MCS 7 PER @ -70.5 dBm, typical
Data Rate 20MHz, 800ns GI	802.11a/n: 6.5, 13, 19.5, 26, 39, 52, 58.5, 65Mbps
Data Rate 20MHz, 400ns GI	802.11a/n : 7.2, 14.4, 21.7, 28.9, 43.3, 57.8, 65,72.2Mbps
Maximum Receive Level @5.24 GHz	@ 6, 9, 12 Mbps -29.5 dBm
	@ 18, 24,36,48,54 Mbps -29.5 dBm

Certifications

Limitations

The AP9834 Wi-Fi Device is not authorized for use in safety-critical applications (such as life support) where a failure of the product would reasonably be expected to cause severe personal injury or death.

Regulatory Compliance

The AP9834 Wi-Fi Device embodies the ISM43340 RF Module and inherits the regulatory compliance certifications from it.

Regulator	Status
FCC	O7P-341
IC	10147A-341
RoHS	Compliant

FCC and IC Statements

Contains FCC ID: O7P-341

FCC Notice –
This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note; this equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generated, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

Industry Canada Statements

Contains IC: 10147A-341

IC RSS-210/RSS-Gen Notices-

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.

L'opèration est soumise aux deux conditions suivantes: (1) cet appareil ne peut pas provoquer d'interfèrences et (2) cet apparial doit accepter toute interfèrence, y compris les interfèrences qui peuvent causer un mauvis fonctionment de l'appareil.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Sous la règlementation d'Industrie Canada, ce transmetteur radio ne peut fonctionner en utilisant une antenne d'un type et un maximum (ou moins) gain approuvèes pour l'èmetteur par Industrie Canada. Pour rèduire le risqué d'interference aux autres utilisateures, le type d'antenne et son gain doivent être choisis de manière que la puissance isotrpe rayonnèe èquivalente (PIRE) ne dèpasse pas ce qui est nècessaire pour une communication rèussie.

The radio transmitter has been approved by Industry Canada to operate with the antenna types listed above with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Cet èmetteur de radio a ètè approuvè par Industrie Canada pour fonctionner avec les types d'antennes ènumèrèes ci-dessus avec le gain maximal admissible et impèdance d'antenna requise pour chaque type d'antenne indiquè. Types d'antennes ne figurant pas dans cette liste, ayant un gain supèrieur au gain

maximum indiquè pour ce type, sont strictement interdites pour l’utilisati

Worldwide Regulatory Certifications

The AP9834 has been certified in the following countries:

- Bolivia
- Canada
- China
- Columbia
- Honduras
- Myanmar
- Peru
- Thailand
- United Arab Emirates (UAE)
- United Kingdom
- Uzbekistan
- Venezuela
- Vietnam
- European Union countries:
  - Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Iceland, Liechtenstein, and Norway

Warranty

2 years repair or replace.

Revision History

Rev	Date	Author	Change
1	May 13th, 2021	G. Ware	Initial release
2	May 15, 2021	G. Ware	Added list of countries
3	May 17, 2021	G. Ware	Added picture, warranty, packaged and unpackaged weight & dimensions.
4	May 20, 2021	G. Ware	Incorporated feedback regarding explicit compatibility and non-compatibility, not specifying the console port as either USB or serial, since either are possible, specifying the console port is CLI.

http://www.apc.com

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