

Industrial IoT Access Point

Rugged Dual-Band 2x2 802.11ac Wave 2 WiFi

AP-WiFi-1200-US, AP-WiFi-1200-EU, AP-WiFi-1200-CA



Bands

- 2.4 GHz: 20/40 MHz
- 5 GHz: 20/40/80 MHz

Connectivity

- WiFi
- Bluetooth®

Features

- Dual-radio 2.4 and 5 GHz combined throughput up to 1 Gbps
- 4 external WiFi antenna ports
- Bluetooth® 5.0 radio with dedicated external antenna port
- Small, lightweight form factor for ease of installation
- Install your own software or firmware



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PCTEL's AP-WiFi-1200 Industrial IoT Access Point is ideal for demanding industrial and outdoor applications. Housed in a compact, easy-to-deploy enclosure and offering external antenna connectors, it can be used in a wide variety of applications and environments. With a wide temperature range it is ideal for outdoor deployments with a single Power-over-Ethernet (PoE) connection for power and backhaul. Capable of a total aggregate dual-radio rate of up to 1Gbps, this level of performance provides mobile users with a wireless experience that is equivalent to a wired connection. The AP-WiFi-1200 can be configured to join the Meshmerize hive as a Mesh Access point. (Refer to pages 3 and 4 for additional information.)

Rugged Design

Designed to meet the demands of any outdoor environment, the AP-WiFi-1200 Industrial IoT Access Point weighs just over 3.2 pounds (1.45 kg) with a footprint of only 7.84" x 5.79" x 2.50" (199 x 148 x 64 mm). Suitable for deployments between -40°C and +55°C including full solar loading of 1200 W/m² and it's able to withstand wind gusts up to 165 mph and with an IP67 rating, making it safe to operate in most types of weather. The low power consumption and high TX output power make it an ideal choice for all types of outdoor deployments where high-performance access points are required.

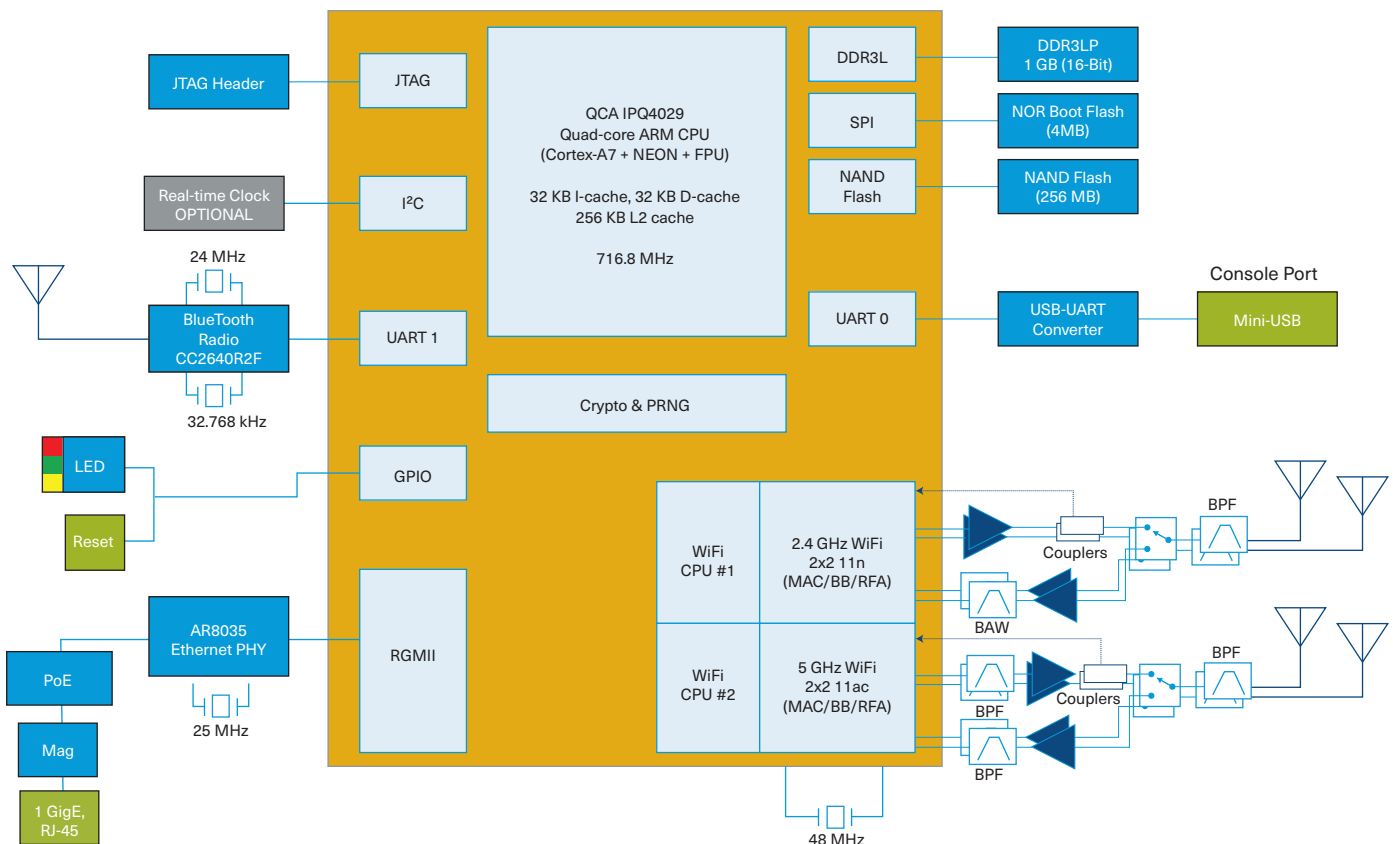
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Features and Benefits

Feature	Benefit
AP-1200	
Small Size and Weight	Can be easily mounted to walls or light poles where aesthetics is a concern.
802.11ac Wave 2 Radio	The 5 GHz radio can operate at high data rates up to 867 Mbps data rates, taking advantage of multi-user MIMO with up to 2 spatial streams.
Bluetooth® 5.1	On-board Bluetooth® radio with dedicated external antenna port.
4 External WiFi Antenna Ports	Provides flexibility in deploying approved PCTEL antennas listed below
Accessible Console Port	Console port for configuration and debugging. Accessible behind easily removable cover.
Simple Connection and Powering	Powered using a single Power-over-Ethernet (PoE) 1 Gbps Ethernet connection.
Hardware That Is Software Ready	Shipped pre-loaded with U-boot, the popular open-source bootloader for embedded Linux. The radios are calibrated, and the unit is tested and ready to be programmed with user code.
Mesh AP	
WiFi Modes: Mesh (Meshmerize), AP, Client, Monitor	Highly configurable Access Point for a wide variety of applications.
WiFi Security: WPA/WPA2/WPA3-Personal & Enterprise	
Network Configuration: Static IP, DHCP client, Bridge, NAT Gateway, VLAN, IPv4, IPv6	
Network Services: DHCP server, DNS, Firewall, Wireguard VPN, Meshmerize Hive	

Block Diagram AP-WiFi-1200 PCTEL Access Point Platform



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Specifications

PCTEL Model Numbers	AP-WiFi-1200-US AP-WiFi-1200-EU AP-WiFi-1200-CA
Radios (Dual Band Concurrent)	2.4 GHz: 802.11b/g/n, 2x2:2 5 GHz: 802.11a/n/ac Wave 2, 2x2:2
Channel Bandwidth	2.4 GHz: 20 MHz, 40 MHz 5 GHz: 20/40/80 MHz
TX Power (Preliminary)	2.4 GHz: 26 dBm Total, 23 dBm per path 5 GHz: 24 dBm Total, 21 dBm per path
PHY Rate	2.4 GHz: 300 Mbps (40 MHz) 5 GHz: 866.7 Mbps (80 MHz)
Bluetooth	5.1
Memory (DRAM / NAND / NOR)	1 GB / 256 MB / 4 MB
CPU Clock Speed	717 MHz
CPU Cores	Quad-Core CPU / 4x ARM Cortex A7 (IPQ4029)
Power Consumption	< 13 W
Antenna Ports	WiFi: 4 Single Band Ports, N-connectors Bluetooth: 1 Single Band Port, N-connector
Ethernet Interface	1 GbE (PoE, 802.3at Type 1 Class 3): -13 W
Mode Button	Software defined function
Console Port	USB 2.0 Type-B Mini
Dimensions (L x W x D)	7.84" x 5.79" x 2.50" (199 x 148 x 64 mm)
Temperature Range (Operational)	-40°C to +65°C -40°C to +55°C with Full Sun Load
Temperature Range (Storage)	-40°C to +85°C
Water / Dust Intrusion	IP67
Color	Pantone 428C
LED Status Indicator	Software defined operation status
Compliance	FCC, ISED, ETSI

Meshmerize Capabilities

Proactive multi-path routing protocol	Routes over multiple paths, significantly decreasing latency, and increasing reliability for mobile setups
Seamless mobility	Resilience to breaks in paths caused by movement and obstructions. When a path breaks, there are already other redundant paths carrying the msg
Self-healing time	Redundant multipath allows 0ms downtime handovers
Scalability	>100 nodes
Ethernet Backbone	Leverage wired LAN network of the mesh nodes if any, to reduce wireless mesh traffic
Traffic prioritization	Prioritized routing and packet redundancy based on QoS requirements
Optimized broadcasting	Smart wireless broadcasting for fine-balance between reliability and overuse of airtime
Cellular / Sat-links for backhaul	Intelligent path routing measuring backhaul latency to optimize network capacity
Multi-radio routing	Maintain throughput and minimize per hop latency throughout the mesh
Jamming Resilience	Increase robustness and resilience to jamming, use multiple channels for higher scaling
Wi-Fi AP mode	Support concurrent Mesh and Wi-Fi
Hive NMS	Simplify Mesh radio configuration, management and debug

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Transmit Power and Receive Sensitivity

Data Rate/ MCS	Spatial Streams	Single Path TX Power (dBm)	Total TX Power (dBm)	RX Sensitivity (dBm)
802.11a				
6 Mbps	1	21	21	-87
9 Mbps	1	21	21	-87
12 Mbps	1	21	21	-85
18 Mbps	1	21	21	-84
24 Mbps	1	21	21	-81
36 Mbps	1	21	21	-78
48 Mbps	1	21	21	-73
54 Mbps	1	21	21	-72
802.11n HT20				
MCS0	1	22	21	-86
MCS1	1	22	21	-84
MCS2	1	22	21	-83
MCS3	1	22	21	-79
MCS4	1	22	21	-76
MCS5	1	22	21	-72
MCS6	1	22	21	-70
MCS7	1	22	21	-69
MCS8	2		21	-88
MCS9	2		21	-85
MCS10	2		21	-83
MCS11	2		21	-79
MCS12	2		21	-76
MCS13	2		21	-72
MCS14	2		21	-71
MCS15	2		21	-69
802.11n HT40				
MCS0	1	22	21	-83
MCS1	1	22	21	-82
MCS2	1	22	21	-79
MCS3	1	22	21	-77
MCS4	1	22	21	-73
MCS5	1	22	21	-69
MCS6	1	22	21	-68
MCS7	1	21	21	-66
MCS8	2		21	-85
MCS9	2		21	-82
MCS10	2		21	-79
MCS11	2		21	-77
MCS12	2		21	-73
MCS13	2		21	-69
MCS14	2		21	-68
MCS15	2		21	-66

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Transmit Power and Receive Sensitivity

Data Rate/ MCS	Spatial Streams	Single Path TX Power (dBm)	Total TX Power (dBm)	RX Sensitivity (dBm)
802.11ac VHT20				
MCS0	1	22	21	-87
MCS1	1	22	21	-84
MCS2	1	22	21	-83
MCS3	1	22	21	-79
MCS4	1	22	21	-76
MCS5	1	22	21	-72
MCS6	1	22	21	-70
MCS7	1	22	21	-69
MCS8	1	21	21	-64
MCS9	1	20	21	-64
MCS0	2		21	-88
MCS1	2		21	-85
MCS2	2		21	-83
MCS3	2		21	-79
MCS4	2		21	-76
MCS5	2		21	-71
MCS6	2		21	-70
MCS7	2		21	-69
MCS8	2		21	-64
MCS9	2		20	-64
802.11ac VHT40				
MCS0	1	22	19	-83
MCS1	1	22	19	-82
MCS2	1	22	19	-79
MCS3	1	22	19	-76
MCS4	1	22	19	-73
MCS5	1	22	19	-69
MCS6	1	22	19	-68
MCS7	1	21	19	-66
MCS8	1	20	19	-61
MCS9	1	19	19	-59
MCS0	2		19	-85
MCS1	2		19	-82
MCS2	2		19	-79
MCS3	2		19	-77
MCS4	2		19	-73
MCS5	2		19	-69
MCS6	2		19	-67
MCS7	2		19	-66
MCS8	2		19	-61
MCS9	2		19	-59

Data Rate/ MCS	Spatial Streams	Single Path TX Power (dBm)	Total TX Power (dBm)	RX Sensitivity (dBm)
802.11ac VHT80				
MCS0	1	22	19	-80
MCS1	1	22	19	-79
MCS2	1	22	19	-76
MCS3	1	22	19	-73
MCS4	1	22	19	-70
MCS5	1	22	19	-66
MCS6	1	22	19	-64
MCS7	1	22	19	-63
MCS8	1	21	19	-57
MCS9	1	20	19	-53
MCS0	2		19	-82
MCS1	2		19	-79
MCS2	2		19	-76
MCS3	2		19	-73
MCS4	2		19	-70
MCS5	2		19	-66
MCS6	2		19	-64
MCS7	2		19	-63
MCS8	2		19	-58
MCS9	2		19	-56

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Compliance (FCC, ISED, ETSI) - Preliminary

Safety	IEC 62368-1 UL/CSA 62368-1
Radio Approvals	FCC Part 15.247, 15.407 EN 300 328 EN 301 893 RSS-210 RSS-247
EMI and Susceptibility	FCC Part 15.107, 15.109 EN 301 489-1, 489-17 ICES-003

FCC Compliance Statement

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.

Canadian Compliance Statements

This device contains license-exempt transmitters/receivers that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) L'appareil ne doit pas produire de brouillage;
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement

This radio transmitter, 26584-WIFIAP1200, has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Le présent émetteur radio, 26584-WIFIAP1200, a été approuvé par Innovation, Sciences et Développement Économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

PCTEL Model Number	Antenna Type	Gain at 2.4 GHz	Gain at 5 GHz
MHODB24490507NM-IP	Dual-band omni-directional antenna	5 dBi	7 dBi
BOA24006NM	2.4 GHz omni-directional antenna	6 dBi	NA

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For more information about
this product contact your
sales representative or visit
> pctel.com/industrial-iot-devices

Solving Complex Wireless Challenges

PCTEL, an Amphenol company, is a leading global provider of wireless technology solutions, including purpose-built Industrial IoT devices, antenna systems, and test and measurement products. Trusted by our customers for decades, we solve complex wireless challenges to help organizations stay connected, transform, and grow.

Product Usage

THE PRODUCTS ARE NOT DESIGNED, MANUFACTURED, OR INTENDED FOR USE, ALONE OR WITH OTHER PRODUCTS, IN ANY APPLICATION REQUIRING FAIL-SAFE PERFORMANCE OF THE PRODUCTS AND/OR IN WHICH A MALFUNCTION OR A FAILURE OF THE PRODUCTS COULD LEAD TO DEATH, PERSONAL INJURY, OR SERIOUS PHYSICAL OR ENVIRONMENTAL DAMAGE, INCLUDING BUT NOT LIMITED TO (A) SURGICALLY IMPLANTED DEVICES, LIFE SUPPORT MACHINES, LIFE PRESERVING MEDICAL DEVICES OR SYSTEMS, OTHER MEDICAL AND SURGICAL APPLICATIONS, OR ANY DEVICES, MACHINES, SYSTEMS, PRODUCTS, OR PROCESSES REQUIRING APPROVAL, TESTING OR CERTIFICATION BY THE U.S. FOOD AND DRUG ADMINISTRATION OR A SIMILAR GOVERNMENTAL ENTITY; (B) AIR TRAFFIC CONTROL OR AIRCRAFT SYSTEMS; (C) CONTROL EQUIPMENT FOR NUCLEAR OR OTHER POWER GENERATION FACILITIES; OR (D) MISSILE, NUCLEAR, BIOLOGICAL, OR CHEMICAL WEAPONS, OR OTHER MILITARY APPLICATIONS (EACH A **"PROHIBITED USE"**).

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