Cisco Industrial Wireless 3700 Series Access Points

Cisco IW3700 Series Access Points with industrial environmental qualifications, unique protocol capabilities, and industry-leading 802.11ac Wi-Fi performance:

- Qualified for extreme industrial and outdoor environments.
- Ideal for rail, transportation, mining, oil and gas, manufacturing, and demanding outdoor applications.
- Extended operational temperature range.
- Compact but rugged IP67-rated housing to protect against liquid and dust ingress.
- Vibration-rated M12 Ethernet and DC power connectors.
- Versatile RF coverage with external type N antenna connectors.
- Integrated support for PRP, DLEP and PROFINET protocols.

Dual-band 2.4-GHz and 5-GHz radios with 802.11ac Wave 1 support on the 5-GHz radio

Operational flexibility:

- Lightweight mode for controller-based deployment.
- Autonomous and Workgroup Bridge (WGB) support.

Troubleshooting forensics for faster interference resolution and proactive action:

- Classifies more than 20 different types of interference, including non-Wi-Fi interference, within 5 to 30 seconds.
- Automatic remedial action and less manual intervention.
- Historic interference information for back-in-time analysis and faster problem solving.
- 24-hour monitoring with remote access reduces travel and speeds resolution.
- Cisco Spectrum Expert Connect mode provides real-time, raw spectrum data to help with difficult-to-diagnose interference problems.
- Air quality index in Cisco CleanAir technology provides a snapshot of network performance and the impact of interference.

Robust Security and Policy Enforcement

- Industry's first access point with non-Wi-Fi detection for off-channel rogues.
- Supports rogue access point detection and detection of denial-of-service attacks.
- Management frame protection detects malicious users and alerts network administrators.
- Enables policies to prohibit devices that interfere with the Wi-Fi network or jeopardize network security.

The Cisco® Industrial Wireless 3700 (IW3700) Series Access Points deliver industry-leading performance and a high-density experience for industrial and outdoor use. The IW3700 offers industrial-grade environmental qualifications while providing higher speeds for video and other bandwidth-intensive applications and extending support to a new generation of Wi-Fi clients, such as smartphones, tablets, and high-performance laptops that have integrated 802.11ac support.

In its first implementation, 802.11ac Wave 1 provides a rate of up to 1.3 Gbps, roughly triple the rates offered by high-end 802.11n access points. This provides the necessary foundation for industrial, enterprise, and service provider networks to stay ahead of the performance, and bandwidth expectations and needs of their wireless users.

Due to its convenience, wireless access is increasingly the preferred form of network connectivity for industrial users. Along with this shift, there is an expectation that wireless should not slow down users' day-to-day work but should enable a high-performance experience while allowing users to move freely around the corporate environment.

The IW3700 offers a scalable and secure mesh architecture for high-performance Wi-Fi services, and can also serve as an advanced static or mobile Workgroup Bridge (WGB).

High-density experience

Building on Cisco's heritage of RF excellence, the Cisco IW3700 Series Access Points use a purpose-built innovative chipset with best-in-class RF architecture. This chipset provides

a high-density experience for industrial and enterprise networks designed for mission-critical, high-performance applications. The IW3700 is a series of flagship access points, delivering environmentally qualified key requirements of industrial applications, industry-leading performance for highly secure wireless connections and a robust mobility experience that includes:

- 802.11ac with 4 x 4 Multiple-Input Multiple-Output (MIMO) technology with three spatial streams that offer sustained 1.3-Gbps rates for more capacity and reliability than competing access points.
- Cisco ClientLink 3.0 technology to improve downlink performance to all mobile devices, including one, two, and three spatial stream devices on 802.11ac while improving battery life on mobile devices, such as smartphones and tablets.
- Cisco CleanAir® technology enhanced with 80-MHz channel support provides proactive, high-speed spectrum intelligence across 20-, 40-, and 80-MHz wide channels to combat performance problems due to wireless interference.

The new Cisco IW3700 Series Access Points sustain connections at higher speeds farther from the access points than competing solutions, resulting in up to three times more availability of 1.3-Gbps rates and optimizing the performance of more client devices. The IW3700 carries forward the industry-leading features of the Cisco Aironet® 3700 Series.

Cisco also offers the industry's broadest selection of 802.11n and 802.11ac antennas, delivering optimal coverage for a variety of deployment scenarios. Cisco Flexible Antenna Port technology uses software configurable for either single- or dual-band antennas. It allows you to use the same antenna ports for either dual-band antennas to reduce footprint or single-band antennas to optimize radio coverage.

The Cisco IW3700 Series Access Points provide an arsenal of features and capabilities to ensure continuous connectivity for static and mobile industrial applications, such as Programmable Logic Controllers (PLCs), Automated Guided Vehicles (AGVs), container handling equipment, and high-performance train-to-trackside links. These unique capabilities can enable autonomous operation of critical mobile assets in industries such as manufacturing, mining, and transportation and deliver a high-reliability solution for applications that cannot tolerate even the shortest losses in wireless connectivity, including in a roaming environment:

- Fast WGB Roaming leverages the IEEE 802.11v Fast BSS Transition amendment to ensure consistent throughput and stable rate shifting for connections to assets that are moving at high speeds.
- The Parallel Redundancy Protocol (PRP) allows the distribution of traffic over two parallel wireless connections to achieve the highest level of resilience and reduction in delay variation. In addition, Roaming Coordination enables the WGB to control its parallel connections in a way in which roaming handovers on the two interfaces are programmatically decoupled from one another.
- A Dynamic Link Exchange Protocol (DLEP) client allows an external device to perform intelligent upstream path selection, thus enabling Radio-Aware Routing (RAR).

Additional enhancements relevant for industrial applications include prioritized PROFINET protocol transport support and the ability to automatically negotiate bridge pair roles via Wireless Bridge Autonegotiation (WBAN).

Product specifications

Table 1 lists the specifications for the Cisco IW3700 Series Access Points.

Table 1. Product specifications

Item	Specification
Part numbers	**Cisco IW3700 Series Access Points with Regulatory Domain Code** • IW3702-2E-x-K9: 2 antenna connectors on top and bottom for directly attached external antennas (4 antenna connectors total) • IW3702-4E-x-K9: 4 antenna connectors on the same side for other external antennas **Cisco IW3700 Series Universal Access Points** • IW3702-2E-UXK9: 2 antenna connectors on top and bottom for directly attached external antennas (4 antenna connectors total) • IW3702-4E-UXK9: 4 antenna connectors on the same side for other external antennas **Regulatory Domains: (x=regulatory domains)** • Domain codes available for the IW3700 Series are x=A, B, D, E, M, Q, R, S and Z; additional regulatory domains are supported by the universal access points. • Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit https://www.cisco.com/go/aironet/compliance. **Mounting Accessories** • AIR-ACCPMK3700=: Pole mounting kit, vertical pole only (2 to 3 inches in diameter), does not require band installation tool • AIR-ACCPMK3700-2=: Pole mounting kit, for poles with 2 to 16 inches in diameter • AIR-ACCDMK3700=: DIN rail mounting kit **Powering Accessories** • AIR-PWRINJ1500-2=: PoE+ power injector, for indoor environments • AIR-PWRINJ-60RGD1=: PoE+ power injector, for outdoor environments, with North American plug • AIR-PWRINJ-60RGD2=: PoE+ power injector, for outdoor environments, international version without AC plug • AIR-PWRINJ-60-PMK=: Pole mount kit for AIR-PWRINJ-60RGD1= and AIR-PWRINJ-60RGD2= • AIR-PWRADPT3700NA=: AC to DC power adapter, with North American plug[1] • AIR-PWRADPT3700IN=: AC to DC power adapter, international version without AC plug[1] **Power and Network Cables** • CAB-PWR-M12-10=: M12 DC power cable, 4 pins, A-Code, 10 ft • CAB-ETHRJ45-M12-10=: M12 to RJ-45 Ethernet cable, 8 pins, X-Code, 10 ft **Cisco Smart Net Total Care™ Service for the Cisco IW3700 Series Access Points** • CON-SNT-IW37022E and CON-SNTP-IW37022E: Smart Net Total Caret for IW3702-2E • CON-SNT-IW37024E and CON-SNTP-IW37024E: Smart Net Total Care for IW3702-4E **Cisco Wireless LAN Services** • AS-WLAN-CNSLT: Cisco Wireless LAN Network Planning and Design Service • AS-WLAN-CNSLT: Cisco Wireless LAN 802.11n Migration Service • AS-WLAN-CNSLT: Cisco Wireless LAN Performance and Security Assessment Service
Software	Cisco Unified Wireless Network Software Release with AireOS Wireless Controllers: • 8.0.120.0 or later for the Cisco IW3700 Series Access Point Cisco IOS Software Release • 15.3(3)JA5 or later for the Cisco IW3700 Series Access Point
Supported wireless LAN controllers	• Cisco 2500 Series Wireless Controllers, Cisco 3500 Series Wireless Controllers, Cisco Wireless Controller Module for ISR G2, Cisco Wireless Services Module 2 (WiSM2) for Catalyst® 6500 Series Switches, Cisco 5500 Series Wireless Controllers, Cisco Flex® 7500 Series Wireless Controllers, Cisco 8500 Series Wireless Controllers, Cisco Virtual Wireless Controller
802.11ac Wave 1 capabilities	• 4 x 4 MIMO with 3 spatial streams • Maximal-Ratio Combining (MRC) • 802.11ac beamforming • 20-, 40-, and 80-MHz channels • PHY data rates up to 1.3 Gbps (80 MHz with 5 GHz) • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • 802.11 Dynamic Frequency Selection (DFS) • Cyclic Shift Diversity (CSD) support

[1] Expected release date August 2017

Item	Specification
802.11n version 2.0 (and related) capabilities	• 4 x 4 MIMO with 3 spatial streams • Maximal-Ratio Combining (MRC) • 802.11n and 802.11a/g beamforming • 20- and 40-MHz channels • PHY data rates up to 450 Mbps (40 MHz with 5 GHz) • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • 802.11 Dynamic Frequency Selection (DFS) • Cyclic Shift Diversity (CSD) support
Data rates supported	**802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps** **802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps** **802.11n data rates in 2.4 GHz:**

MCS[2] Index	GI[3] = 800 ns	GI = 400 ns
	20 MHz Rate (Mbps)	20 MHz Rate (Mbps)
0	6.5	7.2
1	13	14.4
2	19.5	21.7
3	26	28.9
4	39	43.3
5	52	57.8
6	58.5	65
7	65	72.2
8	13	14.4
9	26	28.9
10	39	43.3
11	52	57.8
12	78	86.7
13	104	115.6
14	117	130
15	130	144.4
16	19.5	21.7
17	39	43.3
18	58.5	65
19	78	86.7
20	117	130
21	156	173.3
22	175.5	195
23	195	216.7

802.11ac data rates (5 GHz):

MCS Index	Spatial Streams	GI = 800ns			GI = 400ns		
		20 MHz Rate (Mbps)	40 MHz Rate (Mbps)	80 MHz Rate (Mbps)	20 MHz Rate (Mbps)	40 MHz Rate (Mbps)	80 MHz Rate (Mbps)
0	1	6.5	13.5	29.3	7.2	15	32.5
1	1	13	27	58.5	14.4	30	65
2	1	19.5	40.5	87.8	21.7	45	97.5
3	1	26	54	117	28.9	60	130

[2] MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, modulation, coding rate, and data rate values.
[3] GI: A Guard Interval (GI) between symbols helps receivers overcome the effects of multipath delay spreads.

Item	Specification							
	4	1	39	81	175.5	43.3	90	195
	5	1	52	108	234	57.8	120	260
	6	1	58.5	121.5	263.3	65	135	292.5
	7	1	65	135	292.5	72.2	150	325
	8	1	78	162	351	86.7	180	390
	9	1	-	180	390	-	200	433.3
	0	2	13	27	58.5	14.4	30	65
	1	2	26	54	117	28.9	60	130
	2	2	39	81	175.5	43.3	90	195
	3	2	52	108	234	57.8	120	260
	4	2	78	162	351	86.7	180	390
	5	2	104	216	468	115.6	240	520
	6	2	117	243	526.5	130	270	585
	7	2	130	270	585	144.4	300	650
	8	2	156	324	702	173.3	360	780
	9	2	78	780	780	-	400	866.7
	0	3	19.5	40.5	87.8	21.7	45	97.5
	1	3	39	81	175.5	43.3	90	195
	2	3	58.5	121.5	263.3	65	135	292.5
	3	3	78	162	351	86.7	180	390
	4	3	117	243	526.5	130	270	585
	5	3	156	324	702	173.3	360	780
	6	3	175.5	364.5	-	195	405	-
	7	3	195	405	877.5	216.7	450	975
	8	3	234	486	1053	260	540	1170
	9	3	260	540	1170	288.9	600	1300
Frequency band and 20-MHz operating channels	**A (A regulatory domain):** • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels **B (B regulatory domain):** • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.720 GHz; 12 channels • 5.745 to 5.825 GHz; 5 channels **C (C regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.745 to 5.825 GHz; 5 channels **D (D regulatory domain):** • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels **E (E regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) **H (H regulatory domain):** • 2.412 to 2.472 GHz; 13 channels				**M (M regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.805 GHz; 4 channels **N (N regulatory domain):** • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels **Q (Q regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels **R (R regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.660 to 5,805 GHz; 7 channels **S (S regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels • 5.745 to 5.825 GHz; 5 channels **T (T regulatory domain):**			

Item	Specification
	• 5.150 to 5.350 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels **I (I regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels **K (K regulatory domain):** • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.620 GHz; 7 channels • 5.745 to 5.805 GHz; 4 channels • 2.412 to 2.462 GHz; 11 channels • 5.280 to 5.320 GHz; 3 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels **Z (Z regulatory domain):** • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels
Note: Customers are responsible for verifying approval for use in their individual countries. Not all regulatory domains are available for the IW3700. To verify approval and to determine availability of the regulatory domain that corresponds to a particular country, visit https://www.cisco.com/go/aironet/compliance.	

Maximum number of nonoverlapping channels	**2.4 GHz**
	• 802.11b/g:
	  ◦ 20 MHz: 3
	• 802.11n:
	  ◦ 20 MHz: 3
	5 GHz
	• 802.11a:
	  ◦ 20 MHz: 25
	• 802.11n:
	  ◦ 20 MHz: 25
	  ◦ 40 MHz: 12
	• 802.11ac:
	  ◦ 20 MHz: 25
	  ◦ 40 MHz: 12
	  ◦ 80 MHz: 6

Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.	

Receive sensitivity	• 802.11b (CCK)
	  ◦ -101 dBm @ 1 Mbps
	  ◦ -98 dBm @ 2 Mbps
	  ◦ -92 dBm @ 5.5 Mbps
	  ◦ -89 dBm @ 11 Mbps
	• 802.11g (non HT20)
	  ◦ -91 dBm @ 6 Mbps
	  ◦ -91 dBm @ 9 Mbps
	  ◦ -91 dBm @ 12 Mbps
	  ◦ -90 dBm @ 18 Mbps
	  ◦ -87 dBm @ 24 Mbps
	  ◦ -85 dBm @ 36 Mbps
	  ◦ -80 dBm @ 48 Mbps
	  ◦ -79 dBm @ 54 Mbps
	• 802.11a (non HT20)
	  ◦ -93 dBm @ 6 Mbps
	  ◦ -93 dBm @ 9 Mbps
	  ◦ -93 dBm @ 12 Mbps
	  ◦ -92 dBm @ 18 Mbps
	  ◦ -89 dBm @ 24 Mbps
	  ◦ -86 dBm @ 36 Mbps
	  ◦ -82 dBm @ 48 Mbps
	  ◦ -80 dBm @ 54 Mbps
	2.4 GHz
	• 802.11n (HT20)
	  ◦ -90 dBm @ MCS0
	  ◦ -90 dBm @ MCS1
	  ◦ -90 dBm @ MCS2
	  ◦ -88 dBm @ MCS3
	  ◦ -85 dBm @ MCS4
	  ◦ -80 dBm @ MCS5
	  ◦ -78 dBm @ MCS6
	  ◦ -77 dBm @ MCS7
	  ◦ -90 dBm @ MCS8
	  ◦ -90 dBm @ MCS9
	  ◦ -89 dBm @ MCS10
	  ◦ -86 dBm @ MCS11
	  ◦ -82 dBm @ MCS12
	  ◦ -78 dBm @ MCS13
	  ◦ -77 dBm @ MCS14
	  ◦ -75 dBm @ MCS15
	  ◦ -90 dBm @ MCS16
	  ◦ -89 dBm @ MCS17
	  ◦ -87 dBm @ MCS18
	  ◦ -84 dBm @ MCS19
	  ◦ -81 dBm @ MCS20
	  ◦ -76 dBm @ MCS21
	5 GHz
	• 802.11n (HT20)
	  ◦ -93 dBm @ MCS0
	  ◦ -93 dBm @ MCS1
	  ◦ -92 dBm @ MCS2
	  ◦ -89 dBm @ MCS3
	  ◦ -86 dBm @ MCS4
	  ◦ -81 dBm @ MCS5
	  ◦ -80 dBm @ MCS6
	  ◦ -79 dBm @ MCS7
	  ◦ -93 dBm @ MCS8
	  ◦ -93 dBm @ MCS9
	  ◦ -90 dBm @ MCS10
	  ◦ -87 dBm @ MCS11
	  ◦ -84 dBm @ MCS12
	  ◦ -80 dBm @ MCS13
	  ◦ -79 dBm @ MCS14
	  ◦ -77 dBm @ MCS15
	  ◦ -93 dBm @ MCS16
	  ◦ -92 dBm @ MCS17
	  ◦ -89 dBm @ MCS18
	  ◦ -86 dBm @ MCS19
	  ◦ -83 dBm @ MCS20
	  ◦ -79 dBm @ MCS21
	5 GHz
	• 802.11n (HT40)
	  ◦ -90 dBm @ MCS0
	  ◦ -90 dBm @ MCS1
	  ◦ -89 dBm @ MCS2
	  ◦ -86 dBm @ MCS3
	  ◦ -83 dBm @ MCS4
	  ◦ -78 dBm @ MCS5
	  ◦ -77 dBm @ MCS6
	  ◦ -76 dBm @ MCS7
	  ◦ -90 dBm @ MCS8
	  ◦ -90 dBm @ MCS9
	  ◦ -87 dBm @ MCS10
	  ◦ -84 dBm @ MCS11
	  ◦ -81 dBm @ MCS12
	  ◦ -77 dBm @ MCS13
	  ◦ -76 dBm @ MCS14
	  ◦ -74 dBm @ MCS15
	  ◦ -90 dBm @ MCS16
	  ◦ -89 dBm @ MCS17
	  ◦ -86 dBm @ MCS18
	  ◦ -83 dBm @ MCS19
	  ◦ -80 dBm @ MCS20
	  ◦ -76 dBm @ MCS21

Item	Specification
	◦ -75 dBm @ MCS22 ◦ -77 dBm @ MCS22 ◦ -74 dBm @ MCS22 ◦ -74 dBm @ MCS23 ◦ -76 dBm @ MCS23 ◦ -73 dBm @ MCS23
	802.11ac Receive Sensitivity
	8.2.11ac (non-HT80) • -86 dBm @ 6 Mbps • -76 dBm @ 54 Mbps

MCS Index	Spatial Streams	VHT20	VHT40	VHT80	VTH20-STBC	VHT40- STBC	VHT80- STBC
0	1	-94 dBm	-91 dBm	-86 dBm	-94 dBm	-91 dBm	-86 dBm
8	1	-77 dBm			-77 dBm		
9	1		-72 dBm	-69 dBm		-73 dBm	-70 dBm
0	2	-94 dBm	-91 dBm	-86 dBm			
8	2	-75 dBm					
9	2		-71 dBm	-67 dBm			
0	3	-94 dBm	-91 dBm	-86 dBm			
9	3	-71 dBm	-70 dBm	-65 dBm			

Maximum transmit power	**2.4 GHz** • 802.11b ◦ 23 dBm, 4 antennas • 802.11g ◦ 23 dBm, 4 antennas • 802.11n (HT20) ◦ 23 dBm, 4 antennas	**5 GHz** • 802.11a ◦ 23 dBm, 4 antennas • 802.11n (HT20) ◦ 23 dBm, 4 antennas • 802.11n (HT40) ◦ 23 dBm, 4 antennas • 802.11ac ◦ non-HT80: 23 dBm, 4 antennas ◦ VHT20 23 dBm, 4 antennas ◦ VHT40: 23 dBm, 4 antennas ◦ VHT80: 23 dBm, 4 antennas ◦ VHT20-STBC: 23 dBm, 4 antennas ◦ VHT40-STBC: 23 dBm, 4 antennas ◦ VHT80-STBC: 23 dBm, 4 antennas
Note: The maximum power setting varies by channel and according to individual country regulations. Refer to the product documentation for specific details.		
Available transmit power settings	**2.4 GHz** • 23 dBm (200 mW) • 20 dBm (100 mW) • 17 dBm (50 mW) • 14 dBm (25 mW) • 11 dBm (12.5 mW) • 8 dBm (6.25 mW) • 5 dBm (3.13 mW) • 2 dBm (1.56 mW)	**5 GHz** • 23 dBm (200 mW) • 20 dBm (100 mW) • 17 dBm (50 mW) • 14 dBm (25 mW) • 11 dBm (12.5 mW) • 8 dBm (6.25 mW) • 5 dBm (3.13 mW) • 2 dBm (1.56 mW)
External antenna (sold separately)	• Certified for use with antenna gains up to 13 dBi (2.4 GHz and 5 GHz) • Cisco offers the industry's broadest selection of antennas, delivering optimal coverage for a variety of deployment scenarios. Further information can be found in the Cisco Industrial Routers and Industrial Wireless Access Points Antenna Guide and the Cisco Aironet Antennas and Accessories Reference Guide on Cisco.com.	
Interfaces	• 10/100/1000BASE-T autosensing (M12 8P female connector with X-coding per IEC 61076-2), PoE In (802.3af), PoE+ In (802.3at) • 10/100/1000BASE-T autosensing (M12 8P female connector with X-coding per IEC 61076-2), PoE Out (802.3af) • Management console port (serial with RJ-45 connector)	
Indicators	• Status LED indicates boot loader status, association status, operating status, boot loader warnings, boot loader errors	
System memory	• 512 MB DRAM • 64 MB flash	
Dimensions (W x L x H)	• Access point (not including connectors): 11.3 x 8.0 x 2.3 in (28.7 x 20.3 x 5.9 cm)	

Item	Specification
	• Volume: 148 cubic inches (2.4 liters)
Weight	• 6.7 lb (3.0 kg)
Environmental	• Nonoperating (storage) temperature: -40° to +185°F (-40° to +85°C) • Nonoperating (storage) altitude test: +25˚C, 15,000 ft. • Operating temperature: -40° to +158°F (-40° to +70°C) with solar load and still air • Extended operating temperature (DC powered): -58° to +167°F (-50° to +75°C) without solar loading, still air, and cold start limited to -40°C • Operating type test: +85°C for 16 hours • Operating humidity: 0% to 100% (condensing) • Operating altitude: 15,000 ft. (4,500 m) • Wind resistance: Up to 160 mph (257 km/h) sustained winds
Surge	• Surge protection to ± 2 kV (line-earth) and ± 1 kW (line-line) on DC power input • Surge protection to ± 4 kV on Ethernet ports
Input power requirements	• 9.6 to 60 VDC (M12 4P male connector with A-coding per IEC 61076-2) • PoE and PoE+ (M12 8P female connector with X-coding per IEC 61076-2)
Power Draw	* This is the power required at the Power Sourcing Equipment (PSE)

Power Input Type	Environment Condition/Heaters	Wi-Fi Radio Mode	PoE Out	Power Budget (Watts)
PoE 802.3af	> -20°C No heaters active	3x3:3 on 2.4/5 GHz	N/A	15.4
PoE+ 802.3at	> -20°C No heaters active	4x4:3 on 2.4/5 GHz	N/A	21
PoE+ 802.3at	-50°C to -20°C Still air 1 heater active	4x4:3 on 2.4/5 GHz	N/A	30
DC In	> -20°C No heaters active	4x4:3 on 2.4/5 GHz	No	20
DC In	-50°C to -20°C Still air 1 heater active	4x4:3 on 2.4/5 GHz	No	37
DC In	-50°C to -20°C Wind cooling 2 heaters active	4x4:3 on 2.4/5 GHz	No	53
DC In	> -20°C No heaters active	4x4:3 on 2.4/5 GHz	Yes	38
DC In	-50°C to -20°C Still air 1 heater active	4x4:3 on 2.4/5 GHz	Yes	55
DC In	-50°C to -20°C Wind cooling 2 heaters active	4x4:3 on 2.4/5 GHz	Yes	71

Warranty	5-year limited hardware warranty
Industrial Compliance Standards	Sections of the following standards are referenced for Cisco IW3700 Series Access Points certifications:

Item	Specification
Environmental	EN 60529 IP67 UL50E IEC 60068-2-1 (Cold) IEC 60068-2-2 (Dry Heat) IEC 60068-2-14 (Change of Temperature) IEC 60068-2-30 (Damp Heat) IEC 60068-2-6 (Vibration) IEC 60068-2-27 (Shock) IEC 60068-2-30 (Humidity) IEC 60068-2-32 (Freefall) IEC 60068-3-3 (Seismic)
Electromagnetic Compatibility	FCC 47 CFR Part 15 Class A EN 55022A Class A VCCI Class A AS/NZS CISPR 22 Class A CISPR 11 Class A CISPR 22 Class A ICES 003 Class A CNS13438 Class A EN 300 386 KN22 EN 301 489-1 v2.1.1 EN 301 489-17 v2.1.1 EN 55011 EN 55024 CISPR 24 KN24 KN 301 489-1 KN 301 489-17 IEC/EN 61000-4-2 - Electro Static Discharge IEC/EN 61000-4-3 - Radiated RF Immunity IEC/EN 61000-4-4, IEC 61000-6-1, IEC 61000-6-2 - Electromagnetic Fast Transients IEC/EN 61000-4-5 - Surge IEC/EN 61000-4-6 - Conducted RF Immunity IEC/EN 61000-4-8 - Power Frequency Magnetic Field IEC 61000-4-9 – Pulsed Magnetic Field IEC 61000-4-11 - AC Voltage Dips IEC 61000-4-18 - Damped Oscillatory Wave EN-61000-4-29 - DC Voltage Dips IEC/EN 61000-6-4
Safety Standards & Certifications	**Information Technology Equipment** UL 60950-1 CAN/CSA-C22.2 No. 60950-1 IEC 60950-1 EN 60950-1 EN 60950-22 EN 50385
Industry-Specific Standards	**Rail** AREMA C&S Manual Section 11.5.1 AAR S9401 Rail - Rolling stock cab, wayside outside EN 50155 Rail - Electronic Equipment on Rolling Stock Class TX (EMC, Environmental) EN 61373 Rail - Environmental EN 50121-4 Rail - Signaling and Telecommunications Apparatus EN 50121-3-2 Rail - Apparatus for Rolling Stock EN 61373 - Shock and Vibration

Item	Specification
Wireless Communication Standards	**Flammability** EN 45545-3 **Industrial** EN 61000-6-2 - Industrial EN 61000-6-4 - Industrial EN 61000-6-1 - Light Industrial EN 61326-1 - EMC for equipment used for measurement, control, and lab use EN 61131-2 - Programmable controllers **Radio Approvals:** • FCC Part 15.247, 15.407 • RSS-210 (Canada) • EN 300.328 v2.1.1 (EU) • EN 301.893 v2.1.1 (EU) • ARIB-STD 66 (Japan) • ARIB-STD T71 (Japan) • EMI and susceptibility (Class B) • FCC Part 15.107 and 15.109 • ICES-003 (Canada) • VCCI (Japan) • EN 60601-1-2 - EMC requirements for the Medical Directive 93/42/EEC **IEEE Wi-Fi and Security Standards:** • IEEE 802.11a/b/g, 802.11n, 802.11h, 802.11d, 802.11v • IEEE 802.11ac Draft 5 • IEEE 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA • IEEE 802.1X • Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP) **Extensible Authentication Protocol (EAP) Types:** • EAP-Transport Layer Security (TLS) • EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2) • Protected EAP (PEAP) v0 or EAP-MSCHAPv2 • EAP-Flexible Authentication via Secure Tunneling (FAST) • PEAP v1 or EAP-Generic Token Card (GTC) • EAP-Subscriber Identity Module (SIM) **Multimedia:** • Wi-Fi Multimedia (WMM) **Other:** • FCC Bulletin OET-65C • RSS-102

Five year hardware warranty

The Cisco IW3700 Series Access Points come with a 5-year limited warranty. The warranty includes 10-day advance hardware replacement and ensures that software media are defect-free for 90 days. For more details, visit Product Warranties.

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