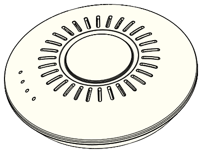
Quick Installation Manual

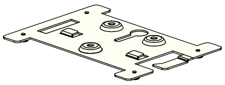
EAP280-L

Packing List

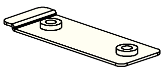
AP(1)



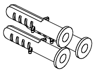
Mounting Kit(1)



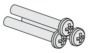
Mounting Plate(1)



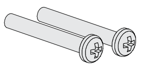
Expansion Tube(3)



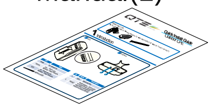
ST4.2X25(3)



M4X30(2)



Quick Installation Manual(1)

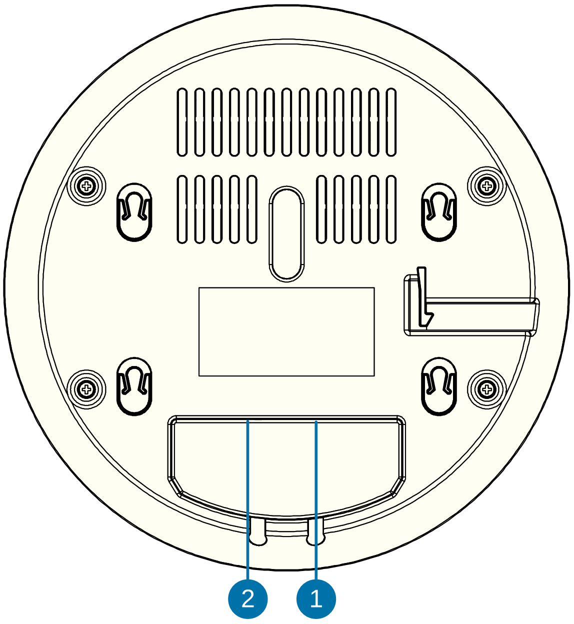


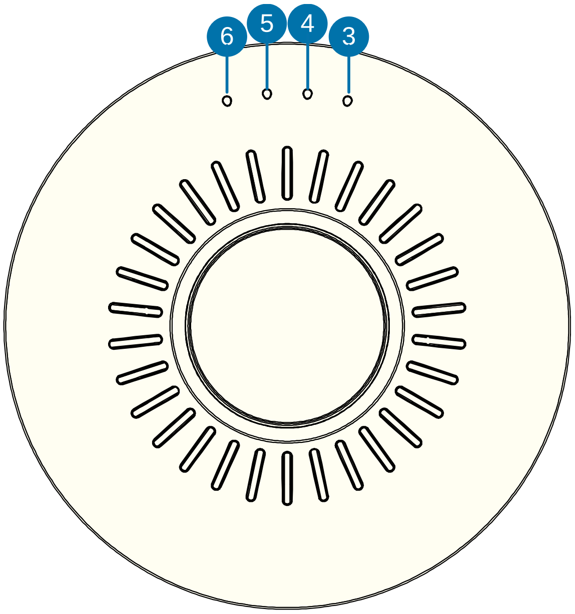
Qualification Card(1)

Warranty Card(1)

1 Equipment Introduction

Device Port and Indicator





No	Name	Description
1	ETH	Ethernet Port（48V POE）
2	Reset	Reset Button, Press to Restart; Press more than 5 seconds reset to factory default

No	Name	Description
3	PWR	Light Always On: System Normal
4	WLAN	Light Always On: Wireless enabled Light Flash: Data is transferring
5	ETH	Light Always On: Wireless connection stable Light Flash: Data is transferring
6		Reserved LED

2 Equipment Installation

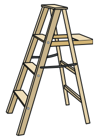
Preparing for Installation

◆Before installation, installation personnel must take the necessary safety measures to ensure personal safety

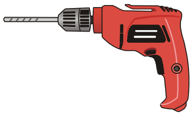
◆Do not put AP and Tool on walkways to avoid damage

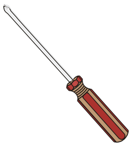
◆Device support wall mounting and ceiling mounting，make sure the ceiling and walls can bear safety before installation

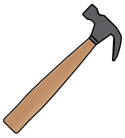
◆Installation may need tools listed on the below picture.(Tools need to self prepared)


Ladder

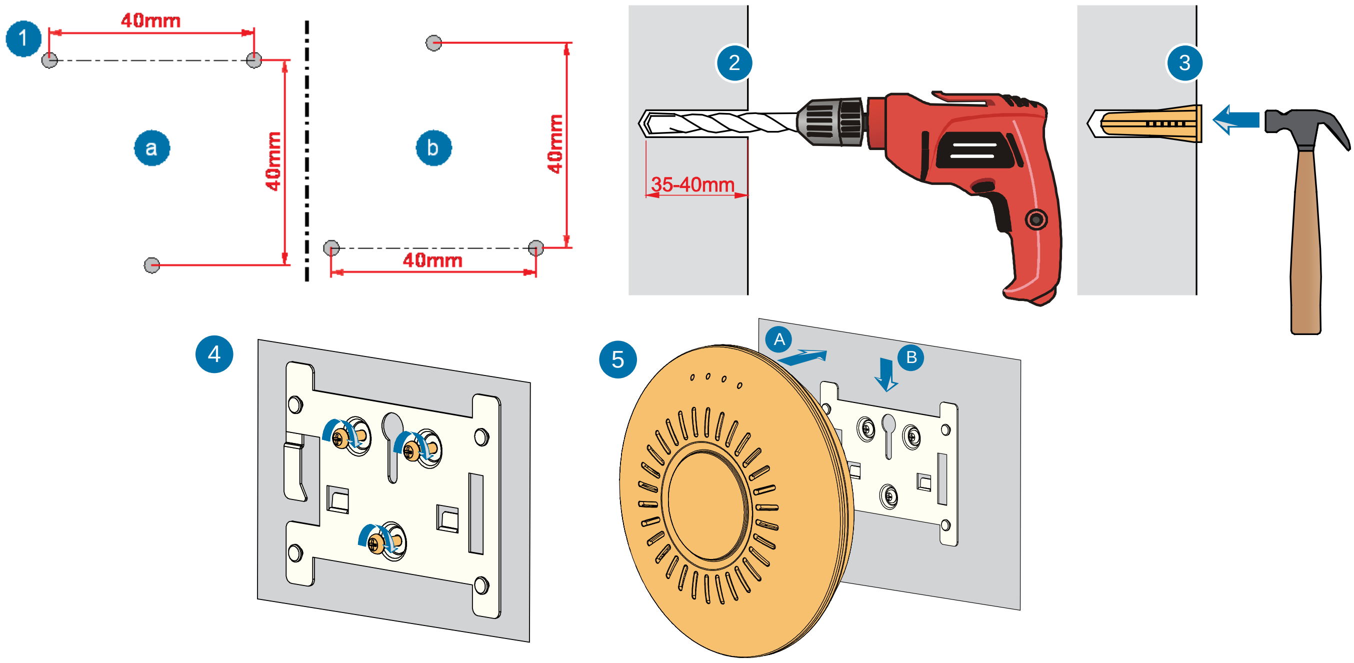
Marker Pen


Hand Driller


Phillips screwdriver


Claw Hammer

Wall Mounting



① Please follow the length and width in picture 1, and then use marker pen to mark the drilling location. ⓐ is covert security installation ⓑ is insecurity installation (The figure draw line downward).

② Please use 6mm drill head, drill holes with a depth of 35-40mm according to the marked place.

③ Plug in the holes with nut and use a hammer to knock the nut.

④ Put the mounting kit’s hole accurate to nut and use three screw to install mounting kit to the wall.

⑤ Put the mounting holes behind of the AP onto the mounting kit’s pegs and then pull the AP down until copper direction to complete installation.

⚠ Attention

Please plug in cable before the installation to the wall else after installation, cable cannot be plugged in.

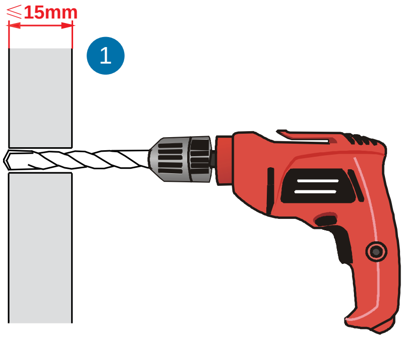
Ceiling Mount

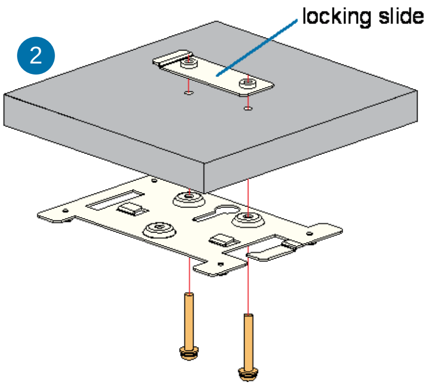
⚠ Attention

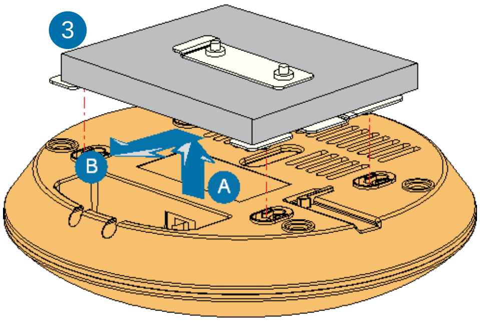
Ceiling mount need to use screws which is 30mm long. It is suitable for 15 mm thick ceiling. When need to use for thicker ceiling, customers need to prepare for longer screws.

⚠ Warning

Ceiling mount need to use covert security installation to prevent AP take off from the mount.





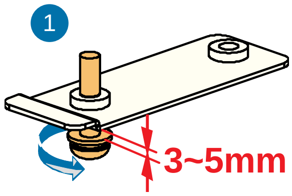


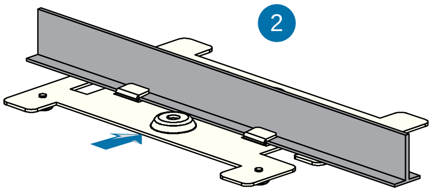
1. Take down the ceiling and use 4mm drill to open two hole on ceiling. The distance between two hole is 40mm.
2. Use locking slide to screw up sheet metal mount and ceiling. Mounting kit and locking slide will be put at different side of ceiling and install by using screw.
3. Put the mounting holes behind of the AP onto the mounting kit's pegs and then pull the AP slowly until copper direction to complete installation.

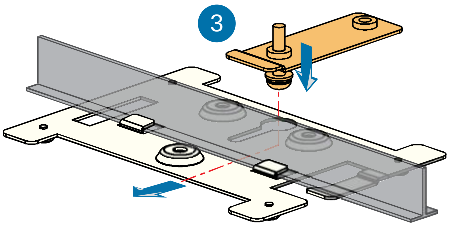
T-keel installation

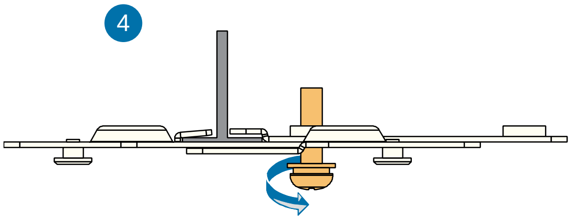
⚠ Warning

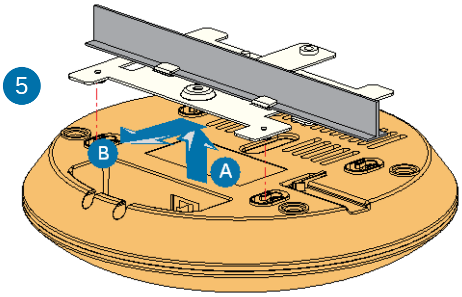
T-keel Installation need to use covert security installation to prevent AP take off from the mount.











1. Use M4 screw to screw up to sliding lock's hole like above picture and leave 3~5 mm space.
2. Put mounting kit's card slot into card slot of the keel.
3. Put the screw of sliding lock through hoist hole and adjust the position of sliding lock to the other side of keel.
4. Finally, screw up the screw so that the mounting kit is fixedly mounted in the T-keel.
5. Put the mounting holes behind of the AP onto the mounting kit's pegs and then pull the AP slowly until copper direction to complete installation.

FCC Notice

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

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 generates, 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.

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.

When using this product, it should be installed and operated with a minimum distance of 7.9 in.(20 cm) for 2.4 GHz operations between the radiator and your body. This transmitter must not be collocated or operate in conjunction with any other antenna or transmitter.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

DCN

Switch to new generation

EAP280-L Indoor Wireless AP

EAP280-L

Product Overview

EAP-280-L is new-generation 802.11n-based high-performance gigabit wireless access points (APs) launched by Digital China Networks Co., Ltd. (hereinafter referred to as DCN) for industrial users. It provides a wireless access rate equivalent to at least six times the rate available on a conventional 802.11a/b/g network, and offers wider coverage.

While completely taking into consideration important factors, such as wireless network security, radio frequency (RF) control, mobile access, quality of service (QoS) guarantee, and seamless roaming, the EAP280-L may be used with DCN wireless ACs to perform data forwarding, security, and access control of wireless users.

The EAP280-L operates in a 2.4 GHz band and employs technologies such as multiple-input multiple-output (MIMO) and orthogonal frequency division multiplexing (OFDM), providing a data transmission rate of at most 300 Mbps .

Featuring flexible installation, the EAP280-L may be installed on the wall, desk top, or ceiling. The EAP280-L supports power over Ethernet (PoE). The EAP280-L is a series of high-rate wireless APs preferred in various application environments for purposes such as campus WLAN access, campus coverage, and ISP' hot spot coverage.

Highlights

High-Performance and High-Reliability Wireless Network

► High-speed wireless broadband access

The EAP280-L supports the 802.11bgn standard and provides an access bandwidth up to 300 Mbps.

► High-Performance RF characteristics

Professional optimized design is employed for the RF module of the EAP280-L, so that a single antenna port supports 24 dBm transit power at all rate levels, thereby improving wireless coverage in high-rate access scenarios.

► Automatic emergency mechanism of APs

In a centralized network architecture where fit APs and a wireless AC are deployed, the APs will be unable to operate normally when the wireless AC is down and then the entire wireless network will crash. DCN wireless APs support an automatic emergency mechanism. This mechanism enables an AP to intelligently detect links. When detecting that the wireless AC is down, the AP quickly switches its operating mode so that it may continue to forward data while enabling new users to access the network. This mechanism attains high availability in the entire wireless network and really helps wireless users to be always online

► Broad operating temperature range

Thanks to deliberate hardware design and the selection of dedicated components operating in a broad temperature range, DCN smart APs may operate in an environment with its temperature ranging from 0°C to +50°C

► Dual-OS backup mechanism

DCN smart APs support a dual-OS backup mechanism. When an AP fails to start from the active OS, it can immediately start from a standby OS, thereby improving the long-term running reliability of equipment in an adverse environment.

Wireless Network of Intelligent Control and Automatic Perception

► Only 11n access control mechanism

Since 802.11n is downward compatible with the 802.11a/b/g protocol, generally 802.11a/b/g users can also access an 802.11n wireless access device. When this compatibility is provided, however, users with 802.11n access capability will experience performance degradation to a certain extent. On DCN smart APs, a certain RF channel may be set to only 11n access mode so that 802.11n users have guaranteed bandwidths.

► Intelligent RF management

DCN smart APs may be used with a wireless AC to perform automatic power and channel adjustment. They employ particular RF detection and management algorithms to attain a better RF coverage effect. When the signals of an AP are interfered by strong external signals, the AP may automatically switch to an appropriate operating channel under the control of the AC to avoid such interference, thereby guaranteeing wireless network communications. The system also supports wireless network blackhole compensation. When an AP on the network accidentally stops operating, the RF management function of the AC compensates the resulting blind area of signals so that the wireless network can still operate normally.

► Intelligent control of terminals based on airtime fair

When some outdated 802.11b and 802.11g terminals are used on a wireless network or some terminals are far way from APs, negotiation rates will be low, causing a large number of users to experience a long WLAN access delay, low rates, or poor overall AP performance. The AP performance problem in a lowrate terminal access environment, however, cannot be resolved by simply employing rate control and traffic shaping. DCN smart APs have essentially resolved this problem by using intelligent control of terminals based on airtime fairness, ensuring that a user can always enjoy the same joyful WLAN experience in the same location, no matter what type of the terminal the user is holding. The intelligent control of terminals based on airtime fairness greatly improves the performance of both the client and the entire network. It enables all clients with high data transmission rates to attain strikingly higher performance while low-rate clients are almost not affected at all. The performance will be even more obviously higher on an open wireless network. Once high-rate clients finish data transmission, fewer clients will be transmitting data on the wireless network. In this case, there will be less contention and retry on the network, thereby greatly improving overall AP performance.

► Intelligent load balancing mechanism

In general, a wireless client will select an AP according to the signal strength of APs. When this uncontrolled access mode is applied, however, a large number of clients could be connected to the same AP simply because the AP provides strong signals. As more clients are connected to an AP, the bandwidth available to each client will be smaller, thereby greatly affecting user experience of the clients. DCN wireless products support diversified intelligent load balancing means:

--AP load balancing based on traffic

--AP load balancing based on the number of users

--AP load balancing based on frequency bands

--Access control based on signal strength of terminals

--Mandatory roaming control of terminals to direct terminals to APs with stronger signals

► Intelligent identification of terminals

DCN smart APs may be used with DCN wireless ACs and a unified authentication platform to intelligently identify the size, system type, and type of each terminal; and comprehensively support mainstream smart terminal operating systems, such as Apple iOS, Android, and Windows. They intelligently identify the size of a terminal and adaptively present a portal authentication page of the corresponding size and page pattern, freeing users from multiple times of dragging to adjust the screen and enabling users to enjoy more intelligent wireless experience. They can also intelligently identify the system type of each terminal and present the system type of each terminal such as Windows, MAC OS, or Android on the unified authentication platform, exhibiting every detail of intelligence to users. In addition, they can intelligently identify the type of each terminal such as the mobile phone, tablet, or PC, and implement dynamic policy control of terminals according to different types of the terminals, making possible more intelligent user control at a finer granularity.

► Comprehensive support for IPV4/V6 dual-stack network

Powered by DCN cutting-edge IPv6 technology, DCN smart APs may be deployed on an IPv6 network, with IPv6 tunnels established through auto negotiation between a wireless AC and an AP. When the wireless AC and the AP completely operate in IPv6 mode, the wireless AC can still correctly identify IPv4 terminals and process IPv4 packets from wireless clients. Featuring flexible adaptability to IPv4/6, DCN smart APs cater to complex applications involved in migration from an IPv4 network to an IPv6 network. They not only provide IPv4 service to customers on an IPv6 network, but also enable users on an IPv4 network to log in to the network through the IPv6 protocol at ease.

► Network-wide seamless roaming

DCN wireless ACs support an advanced wireless AC cluster technology, which enables multiple ACs to synchronize online connection information and roaming records of all users to each other in real time. This technology implements not only L2/L3 seamless roaming inside a wireless AC but also fast roaming across wireless ACs. As client IP address information does not change and re-authentication is not required in the roaming process, the continuity of real-time mobile services is well guaranteed.

Secure and Controllable Wireless Network

► User isolation policy

DCN wireless APs support the isolation of wireless users from one another. If this user isolation function is enabled, two wireless clients cannot directly communicate with each other but can only access an upstream wired network. This further guarantees the security of wireless network applications.

► Wireless intrusion detection and intrusion defense

DCN wireless APs support wireless intrusion detection and intrusion defense features, such as detection of unauthorized wireless devices, intrusion detection, blacklist, and white list, thereby greatly improving security management of an entire wireless network.

► Wireless user management at a fine granularity

Each AP supports a maximum of 16 WLANs to implement multilayer multi-service management of wireless users at a fine granularity. Each WLAN supports access control and uplink/downlink rate limit based on MAC or IP addresses. These WLANs may be bound to virtual local area networks (VLANs). In addition, different authentication and accounting policies can be implemented. This feature is practically significant in a multiWLAN environment.

► Secure user admission

DCN smart APs may be used with wireless ACs to provide multiple secure access, authentication, and accounting mechanisms for various application environments. These mechanisms include:

--802.1x authentication

--Captive portal authentication, including built-in portal, external portal, and custom portal authentication modes

--MAC address authentication

--LDAP authentication

--WAPI encryption and authentication

--Wired/wireless integrated authentication and accounting

► Wireless SAVI

DCN wireless network products support a source address validation (SAVI) technology to deal with spoofed packet attacks that keep emerging on today's campus networks. As users' IP addresses are obtained through an address allocation protocol, users access the Internet using correct addresses in subsequent applications and cannot spoof others' IP addresses, thereby guaranteeing the reliability of source addresses. In addition, the SAVI technology is combined with a portal technology to further guarantee the authenticity and security of packets of all users accessing the Internet.

► PEAP user authentication

With the popularization and application of smart terminals, wireless terminal users require authentication mechanisms of higher usability and convenience. Using a mechanism that combines portal authentication and MAC address authentication, DCN wireless network products support Protected Extensible Authentication Protocol (PEAP) authentication to attain better user experience. Initially a user needs to manually perform portal authentication and later the user gets authenticated through PEAP in automatic mode. DCN wireless network products feature high terminal adaptation and provide good authentication compatibility. They adapt to the majority of WLAN terminals and do not need to adapt to clients. DCN wireless network products are compatible with existing portal authentication modes.

► Secure access mechanism

An AP is usually deployed in a public area and therefore requires a strict security mechanism to guarantee the legality of access devices. The following secure access mechanisms may be applied between a DCN smart AP and a wireless AC:

--AP MAC address authentication

--AP password authentication

--Bidirectional digital certificate authentication

► Real-time spectrum protection

DCN smart APs support a built-in RF collection module that integrates RF monitoring and real-time spectrum protection. By implementing communications and data collection through the respective AP, the RF collection module performs wireless environment quality monitoring, wireless network capability tendency evaluation, and unexpected-interference alarms. It resorts to a graphical means to actively detect and identify RF interference sources (Wi-Fi or non-Wi-Fi) and provides a realtime spectrum analysis diagram. In addition, it can automatically identify interference sources and determine the locations of problematic wireless devices, ensuring that a wireless network attains optimal performance.

Easy-to-Manage Wireless Network

► Plug-and-play

DCN smart APs are able to automatically discover DCN wireless ACs. A wireless network function can be enabled on an AP without performing any configuration on the AP at all. The AP can be seamlessly integrated with existing switches, firewalls, authentication servers, and other network devices without changing existing network architecture.

When used with a DCN wireless AC, DCN smart APs support plug-and-play and zero configuration. The wireless AC undertakes all the management, control, and configuration of the APs. Network administrators do not need to separately manage or maintain a huge number of wireless APs. All actions, such as configuration, firmware upgrade, and security policy updating, are performed uniformly under the control of the wireless AC.

► Fit and Fat modes

DCN smart APs may work in fit or fat mode and can flexibly switch between the fit mode and the fat mode according to network planning requirements. Users may also flexibly choose an ex-factory device version according to specific application requirements. APs working in fit mode are managed by a wireless AC in a centralized manner. System administrators may easily manage the entire network as the states of all the APs are clear at a glance.

► Automatic AP version upgrade

DCN smart APs may be automatically associated with a wireless AC on the live network to automatically download a latest software version and get automatically upgraded, thereby reducing the workload during network maintenance.

► Remote probe analysis

DCN smart APs support a remote probe analysis function, which listens to and captures Wi-Fi packets in the coverage and mirrors them to a local analysis device in real time to help network administrators better perform troubleshooting or optimization analysis. The remote probe analysis function can perform nonconvergence mirroring of a working channel and sampling of all channels in polling mode as well to flexibly meet various wireless network monitoring, operation, and maintenance requirements.

Product Specifications

Hardware Specifications

Item	EAP280-L
Dimensions (mm)	195(length) 195(width) 45(height)
10/100 Base-T	1
PoE	802.3af
Working frequency band	802.11b/g/n : 2.412GHz-2.462GHz (USA)
Modulation technology	OFDM:BPSK@6/9Mbps,QPSK@12/18Mbps,16-QAM@24Mbps,64-QAM@48/54Mbps DSSS:DBPSK@1Mbps,DQPSK@2Mbps,CCK@5.5/11Mbps MIMO-OFDM:MCS 0-15
Transmit power	The maximum transmit power output is 24dBm
Power adjustment granularity	1 dBm
AP access rate	802.11n: 20MHz BW: 6,5, 7.2, 13, 14.4, 19.5, 21.7, 26, 28.9, 39, 43.3, 52, 57.8, 58.5, 65, 72.2, 78, 86.7, 104, 115.6, 117, 130, 144Mbps 40MHz BW: 13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 91, 108, 120, 121.5, 135, 140, 150, 162, 180, 216, 240, 243, 270, 300Mbps
	802.11g: 54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1Mbps
	802.11b: 11, 5.5, 2, 1Mbps
Working/Storage temperature	0°C~50°C/-40°C~85°C
Working/Storage RH	5% to 95% (no condensing)
Protection level	IP21
FR standard	Radio Transmission Equipment Type Approval Certificate issued by the Ministry of Industry and Information Technology of P. R. China

Software Specifications

Item	Feature	EAP280-L
WLAN	Product positioning	Indoor single-frequency
	Working frequency band	2.4 GHz
	Maximum number of access users	127
	Virtual AP (BSSID)	16
	Number of spatial streams	2
	Dynamic channel adjustment (DCA)	Yes
	Transmit power control (TPC)	Yes
	Blind area detection and repair	Yes
	SSID hiding	Yes
	RTS/CTS	Yes
	RF environment scanning	Yes
	Hybrid access	Yes
	Restriction on the number of access users	Yes
	Link integrity check	Yes
	Prohibiting the access of terminals with weak signals	Yes
	Forced roaming of terminals with weak signals	Yes
	Intelligent control of terminals based on airtime fairness	Yes
	High-density application optimization	Yes
11n enhancements	40 MHz bundling	Yes
	300 Mbps (PHY)	Yes
	Frame aggregation (A-MPDU)	Yes
	Maximum likelihood demodulation (MLD)	Yes
	Transmit beam forming (TxBF)	Yes
	Maximum ratio combining (MRC)	Yes
	Space-time block coding (STBC)	Yes
	Low-density parity-check code (LDPC)	Yes

Item	Feature	EAP280-L
Security	Encryption	64/128 WEP, dynamic WEP, TKIP, and CCMP encryption
	802.11i	Yes
	WAPI	Yes
	MAC address authentication	Yes
	LDAP authentication	Yes
	PEAP authentication	Yes
	WIDS/WIPS	Yes
	Real-time spectrum protection	Yes
	Protection against DoS attacks	Anti-DoS for wireless management packets
	Forwarding security	Frame filtering, white list, static blacklist, and dynamic blacklist
	User isolation	AP L2 forwarding suppression
	Periodic SSID enabling and disabling	Yes
	Access control of free resources	Yes
	Secure admission control of wireless terminals	Secure admission control of wireless terminals based on DCSM
	Wireless SAVI	Yes
	ACL	Access control of various data packets such as MAC, IPv4, and IPv6 packets
	Secure access control of APs	Secure access control of APs, such as MAC authentication, password authentication, or digital certificate authentication between an AP and an AC
Forwarding	IP address setting	Static IP address configuration or dynamic DHCP address allocation
	IPv6 forwarding	Yes
	IPv6 portal	Yes
	Local forwarding	Yes
	Multicast	IGMP Snooping
	Roaming	Fast roaming across APs or ACs
	AP switching reference	Signal strength, bit error rate, RSSI, S/N, whether neighboring APs are normally operating, etc.
	WDS	Yes

Item	Feature	EAP280-L
QoS	WMM	Yes
	Priority mapping	Ethernet port 802.1P identification and marking Mapping from wireless priorities to wired priorities
	QoS policy mapping	Mapping of different SSIDs/VLANs to different QoS policies Mapping of data streams that match with different packet fields to different QoS policies
	L2-L4 packet filtering and flow classification	Yes: MAC, IPv4, and IPv6 packets
	Load balance	Load balancing based on the number of users Load balancing based on user traffic Load balancing based on frequency bands
	Bandwidth limit	Bandwidth limit based on APs Bandwidth limit based on SSIDs Bandwidth limit based on terminals Bandwidth limit based on specific data streams
	Power saving mode	Yes
	Automatic emergency mechanism of APs	Yes
	Intelligent identification of terminals	Yes
	Multicast enhancement	Multicast to unicast
Management	Network management	Centralized management through an AC; both fit and fat modes
	Maintenance mode	Both local and remote maintenance
	Logging	Local logs, Syslog, and log file export
	Alarming	Yes
	Fault detection	Yes
	Statistics	Yes
	Switching between the fat and fit modes	AP working in fit mode can switch to the fat mode through a wireless AC; AP working in fat mode can switch to the fit mode through a local control port or Telnet.
	Remote probe analysis	Yes
	Dual-image (dual-OS) backup mechanism	Yes
	Watchdog	Yes

Ordering Information

Product Model	Description	Remarks
EAP280-L	802.11n indoor wireless AP, provides an access bandwidth up to 300 Mbps (2.4 GHz single-channel single-frequency, built-in antenna, 802.3af PoE) (PoE module need to be separately purchased.Don’t support local power)	Mandatory
DCWL-PoEINJ-G+	10/100/1000 Mbps 1-port 802.3at PoE module	Optional

Contact us

Digital China Networks Limited

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