DCWL-7962OT Outdoor AP Installation Manual

DCWL-7962OT 室外型无线接入点产品安装指导

Manual Version: v1.1

Content

Chapter 1 Device Introduction

DCWL-7962OT(R5) outdoor AP is shown as below:

Fig 1-1 DCWL-7962OT（R5） AP

The ports explanation of DCWL-7962OT outdoor AP is as below:

Table 1-1 ports explanation

No.	Name	Explanation

1	5G-1	5G antenna interface 1
2	5G-2	5G antenna interface 2
3	2.4G-1	2.4G antenna interface 1
4	2.4G-2	2.4G antenna interface 2
5	PoE	PoE interface, PoE power and Ethernet interface
6	GND	Ground point
7	Reset	AP reset hole

The basic configuration of DCWL-7962OT outdoor AP is as below:

Table 1-2 basic configuration

Product Model	Applicable Protocols	Antenna	Maximum Power
DCWL-7962OT(R5)	• IEEE802.11a/b/g/n • Double Radiofrequency	Provide external antenna	24W

The shape size and weight of DCWL-7962OT outdoor AP is as below:

Table 1-3 the shape size and weight

Product Model	Shape Size	Weight
DCWL-7962OT(R5)（W×D×H）	220×220×100mm	3.80kg

Chapter 2 Preparation for Installation

2.1 Installation Precautions

⚠ Warning:

Only allow the professionals installing and disassembling the device and its annex. Before the installation and configuration, please read the related security introduction carefully.

- Adopt the appropriate security measures to avoid the personal injury and equipment damage.
- Please put the device on the dry and flat place and ensure the anti-skid measures.
- Keep the device clean without dirt.
- Do not put the device and the installation tools in the walking area.

2.2 Installation Environment Requirements

Before the installation, please check the installation conditions of the device to make sure that the device is in the good operating environment in a long time. Check this with the following aspects.

The temperature and humidity environment requirements of the device are as below:

Table 2-1 The temperature and humidity index

Items	Range
Standard working environment temperature (outdoor)	-40℃～60℃
Storage temperature	-45℃～70℃
Working humidity (non-condensing)	5%～95%

2.3 Equipment Accessories

Please refer to the packing list.

2.4 Installation Tools

When installing DCWL-7962OT outdoor AP, the following tools may be used (user-owned).

				
Horizontal ruler	Permanent marker	Knife	Wire stripper	Network pliers
				
Impact drill (1) and some supporting drills	Rubber hammer	Phillips screwdriver	Ladder	

Chapter 3 AP Installation

Notice:

Because the installation position of DCWL-7900 series indoor AP is high normally, the maintenance personal cannot maintain and debug through the console port to login the device after installation. We suggest user conducting the basic configuration according to need before installing the AP to the appointed position.

3.1 Installation Process

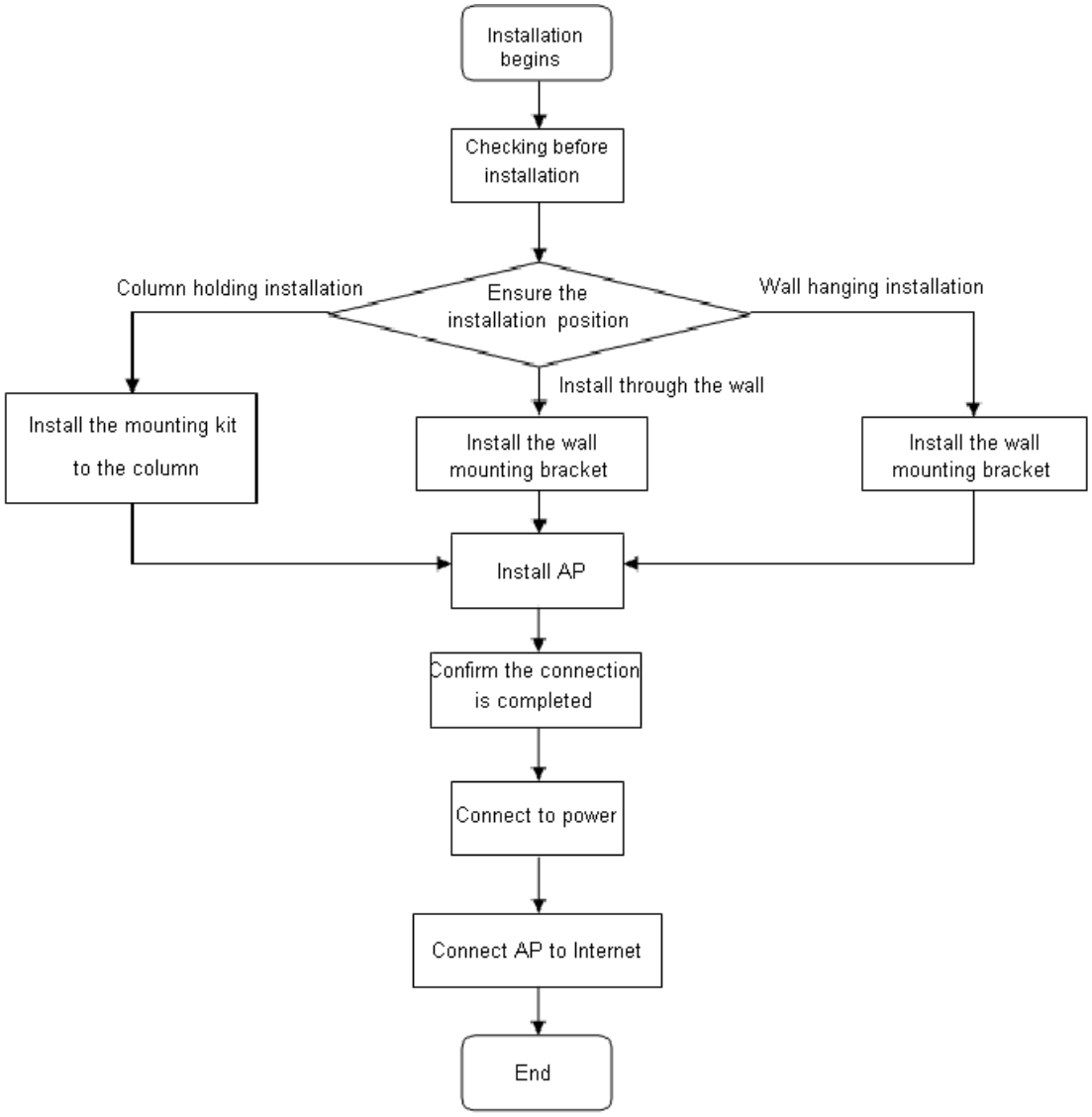

Fig 3-1 AP installation flow diagram

3.2 Checking before Installation

Please check the following items before the AP installation:

- Please power to the AP first and connect the AP to the Ethernet, then check the LED status to make sure the AP can work normally.
- Please ensure to complete the wiring in the position of AP installation.
- DCWL-7962OT (R5) outdoor AP supports 802.3at standard PoE (Power over Ethernet) power.
- Please record AP's MAC address and serial number (MAC address and serial number are on the back of the AP) first for convenient to find and use.

3.3 Ensure the Installation Position

The rules of installation position are as below:

- Cut back the obstacles (such as walls) between AP and the user terminal device as much as possible.
- Make the AP's position far away from the electrical device that can bring the RF noise (such as the microwave).
- The installation position should be hidden as much as possible to prevent disturbing the inhabitants.

3.4 Install DCWL-7962OT(R5)

The following two installation methods are supported for DCWL-7962OT (R5) outdoor AP:

- Column holding installation
- Wall hanging installation

3.4.1 Column Holding Installation

When install the DCWL-7962OT (R5) outdoor AP on the column, the steps are as below:

1. Install the backplane at the bottom of DCWL-7962OT (R5), and screw the 4pcs short screws with the phillips screwdriver. Make the long screw stick passing through the holes of the backplane and put the flat pad, spring shim and the screw nut on it in proper order; do not lock it tight.

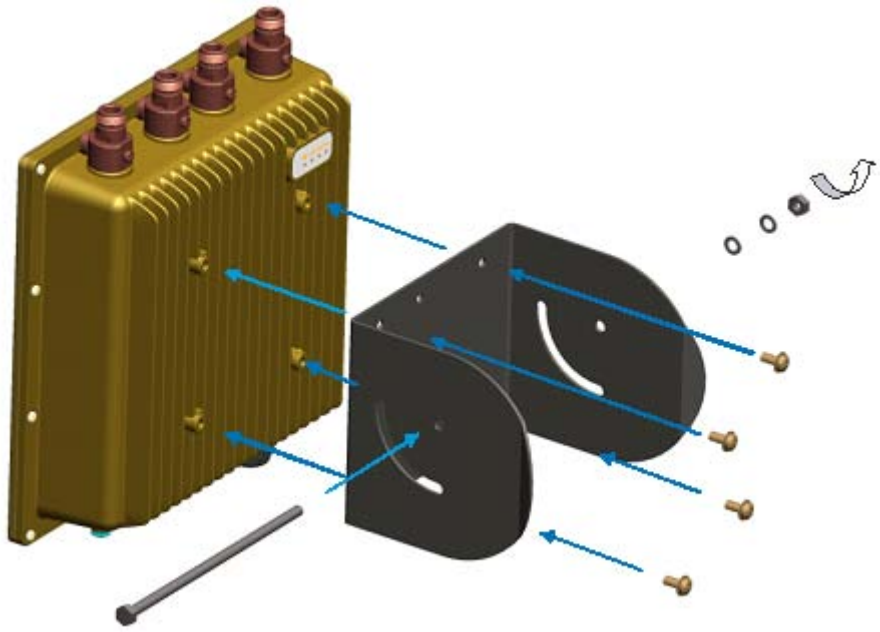

Fig 3-2 Install the backplane of DCWL-7962OT (R5) AP

2. Lock the 2PCS stainless tight hoop strip on the stick by passing through the mounting bracket and lock the fastening screws.

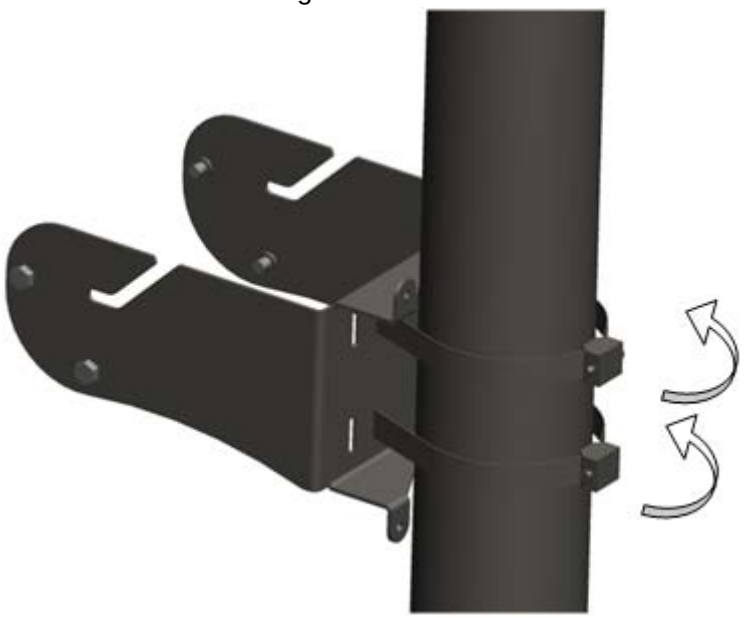

Fig 3-3 Column holding installation of DCWL-7962OT(R5) AP

3. Install the device with the backplane to the mounting kit on the column and fix the device and mounting kit together by using 2pcs short screws and 1pcs long screws.

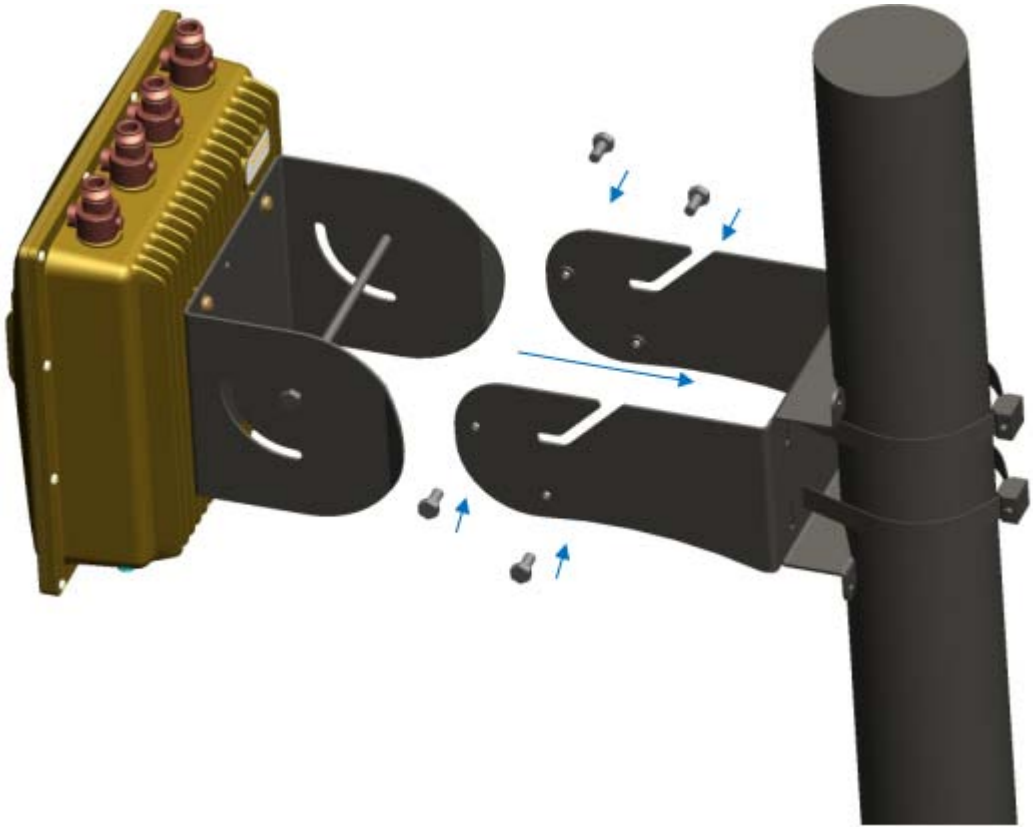

Fig 3-4 fixed installation of DCWL-7962OT(R5) AP

3.4.2 Wall Hanging Installation

When install the DCWL-7962OT (R5) outdoor AP with wall hanging method, the steps are as below:

1. As shown in the fig 3-1, install the backplane at the bottom of DCWL-7962OT (R5) first;

2. Make the AP wall mounting kit flat against the wall and mark the holes that the crews needs to be installed into, and then punch four holes with the impact drill; Insert the expansion bolt into the holes and use the rubber hammer beating it until the expansion bolt got into the wall completely;

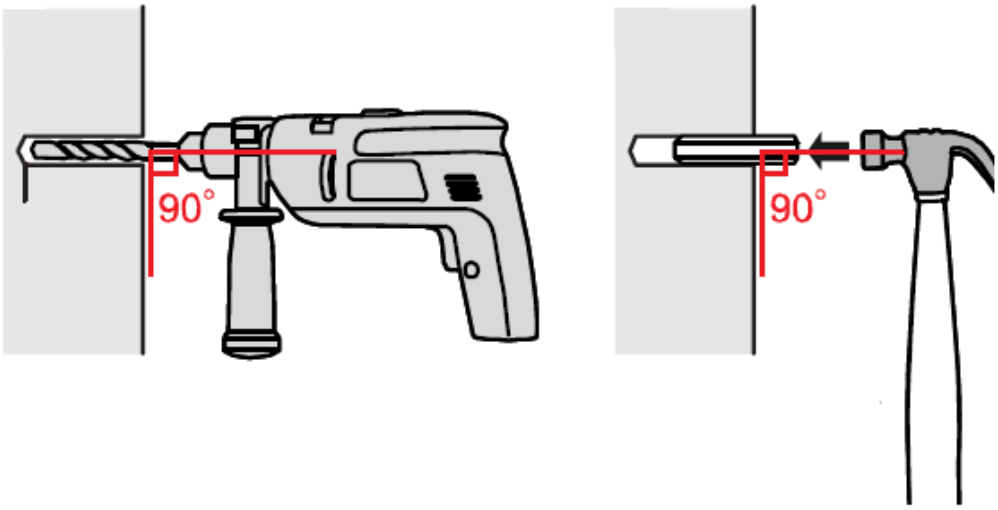

Fig 3-5 Wall drilling

3. Correspond the screw holes to the expansion bolt holes on the wall, and make the crews pass through the installation holes of the wall mounting kit; Lock the wall mounting kit to the wall;

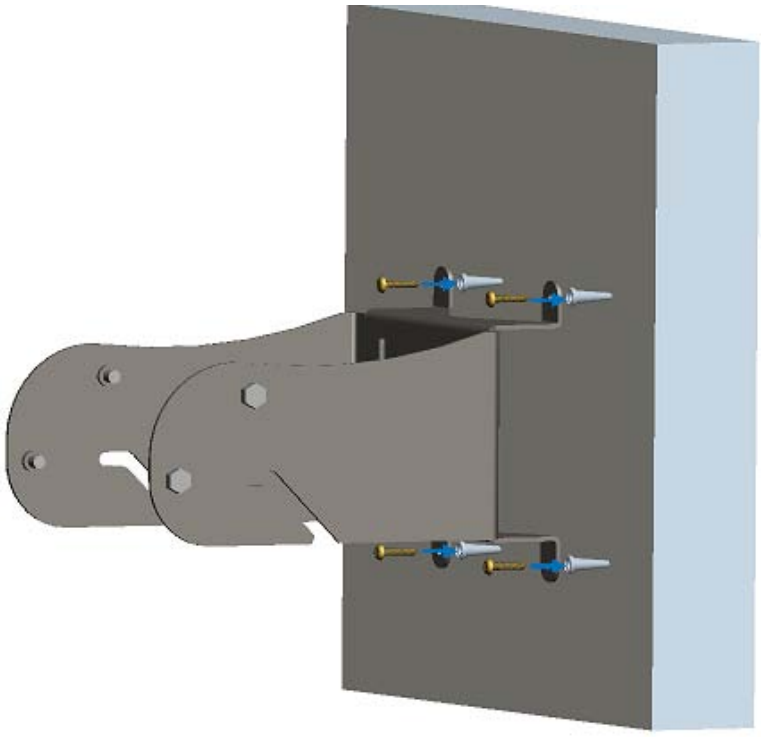

Fig 3-6 Install the wall mounting kit

4. Install the device with the backplane to the mounting kit on the column and fix the device and mounting kit together by using 4pcs short screws and 1pcs long screws.

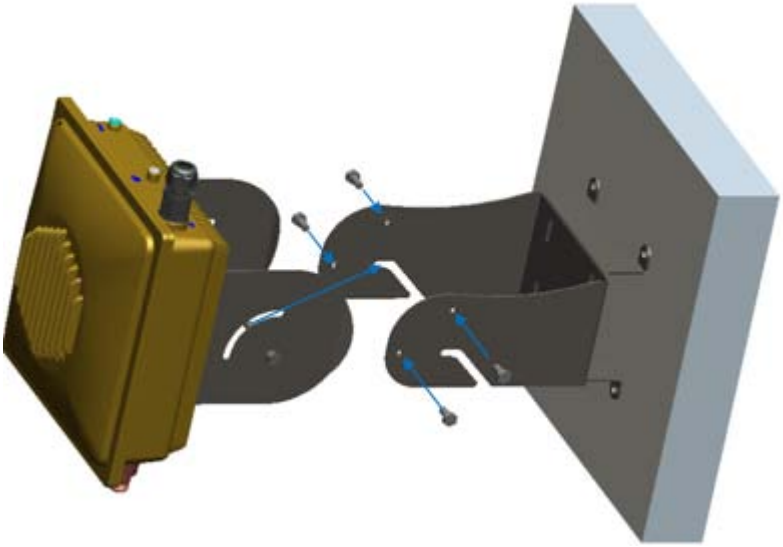

Fig 3-7 Wall hanging installation of AP

3.5 Connect Cables

3.5.1 Connect Network Cables

The DCWL-7962OT (R5) outdoor AP supports the 802.3at PoE power. The power and the network cables should be isolated with water. Please install the waterproof kit onto the network cables as the sequence in the following figure.

Fig 3-8 The installation sequence of the waterproof kit

After installed, insert the cables into the AP and screw the waterproof kit as the sequence.

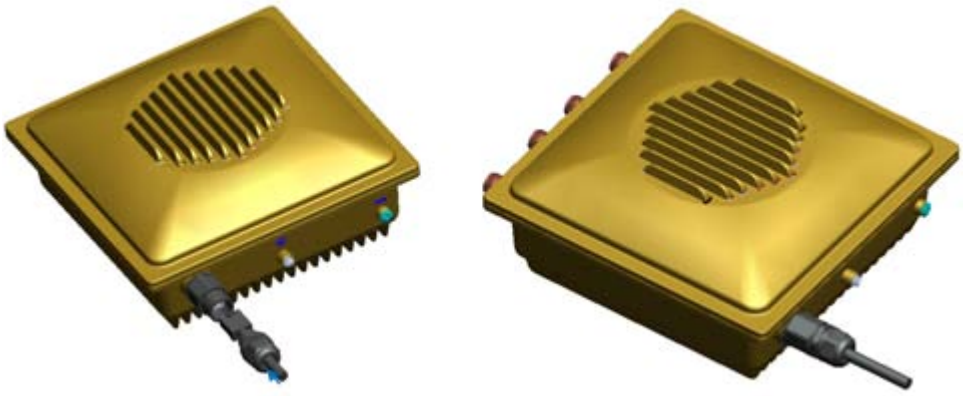

Fig 3-9 Install the waterproof kit

3.5.2 Connect Ground Cables

Please install the ground cables onto the ground point.

3.5.3 Connect RF Cables

Please install the RF cables or antenna onto the RF interface. The cables interface cannot be installed with a mistake. The 5G cable should be connected in the 5G RF interface and the 2.4G cable should be connected in the 2.4G RF interface. After connection, wrap 3 layers of waterproof tape on the connection point. The waterproof tape should be elongated first to make its width turn into the half of the original width; and then wrap it.

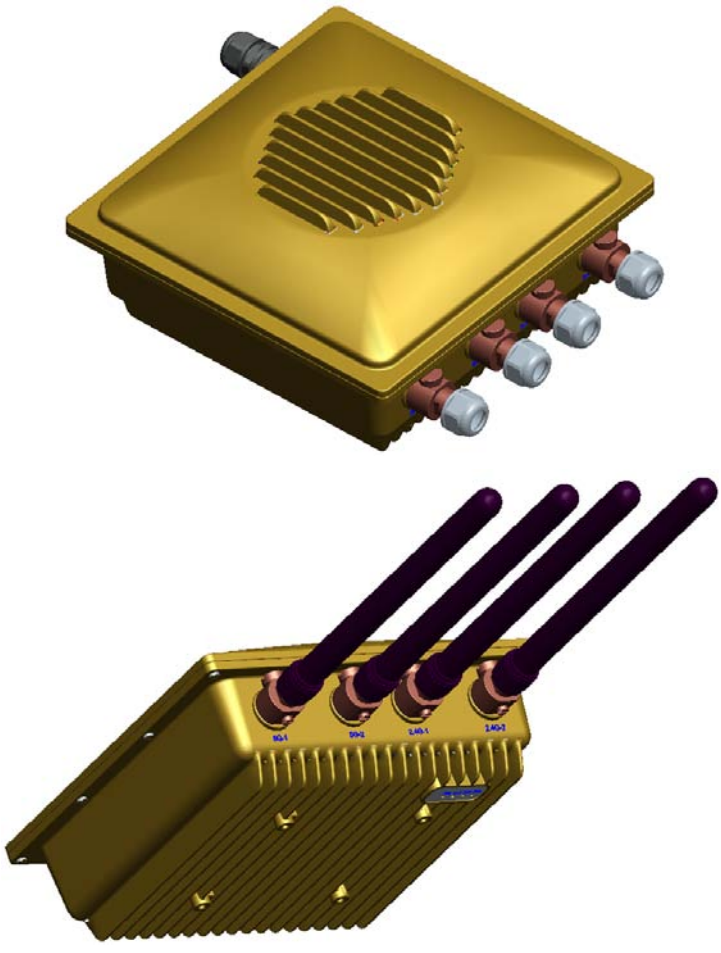

Fig 3-10 Install the antenna

3.6 AP Power

3.6.1 Checking before Power

After installing the AP, user should check it before power every time as below:

- When AP use the 802.3at standard PoE power, please ensure the power is connected normally to ground.

3.6.2 PoE Power

User can use the Ethernet cable to connect the Ethernet interface of the AP and the switch which supports PoE function to power to the AP.

3.6.3 Checking after Power

Check if the LED of AP works normally after connecting the power. The explanation of LED status is seen in the product spec.

3.7 Connect AP to Internet

In the actual use, AP can be uplink connected to the Internet or MAN through the Ethernet port. Connect the Ethernet port of the AP to the switch port to achieve the uplink connection.

目录

第1章 设备简介

DCWL-7962OT(R5)室外型无线接入点产品如下图：

图1-1 DCWL-7962OT（R5） AP

DCWL-7962OT 室外型 AP 端口说明如下表。

表1-1 产品端口说明列表

序号	名称	说明

1	5G-1	5G的天线接口1
2	5G-2	5G的天线接口2
3	2.4G-1	2.4G的天线接口1
4	2.4G-2	2.4G的天线接口2
5	PoE	PoE接口，PoE供电和以太网接口
6	GND	接地点
7	Reset	AP复位孔

DCWL-7962OT 室外型 AP 基本配置如下表。

表1-2 产品基本配置列表

产品型号	产品适用协议和特点	天线	最大功耗
DCWL-7962OT(R5)	• IEEE802.11a/b/g/n • 双射频	另配外置天线	24W

DCWL-7962OT 室外型 AP 的外形尺寸及重量如下表。

表1-3 外形尺寸及重量

产品型号	外形尺寸	重量
DCWL-7962OT(R5)（W×D×H）	220×220×100mm	3.80kg

第2章 安装准备

2.1 安全注意事项

⚠ 警告：

仅允许专业人员进行设备及其附件的安装和拆卸工作，进行安装和操作前必须仔细阅读设备提供的相关安全介绍。

- 采取适当的安全措施避免人身伤害和设备损坏。
- 请将设备放置在干燥、平整的地方，并且做好防滑措施。
- 保持设备洁净无灰尘。
- 请不要将设备和安装工具放在行走区域内。

2.2 检查安装条件

在准备安装之前，还应该对设备的安装条件进行检查，以保证设备长期处于良好的运行环境之中。 可从以下方面对安装条件进行检查。

设备工作的温度、湿度环境要求如下：

表 2-1 设备工作温度、湿度指标

项目	取值范围
标准工作环境温度（室外）	-40℃～60℃
存储温度	-45℃～70℃
工作湿度（非凝露）	5%～95%

2.3 设备附件

DCWL-7962OT(R5) 室外型 AP 随机发货的附件参考装箱清单。

2.4 安装工具

在安装 DCWL-7962OT(R5)室外型 AP 时，可能需要用到下列的工具（以下工具需要用户自备）。

				
水平尺	记号笔	小刀	剥线钳	网线钳
				
冲击钻（1个）以及配套钻头若干	橡胶锤	十字螺丝刀	梯子	

第3章 安装 AP

注意：

由于 DCWL-7962OT(R5)室外型 AP 的安装位置通常较高，AP 安装好后维护人员无法通过 Console 口登录设备进行维护和调试，所以建议用户在把 AP 设备安装到指定位置之前，根据客户需求，进行相关基础配置。

3.1 安装流程

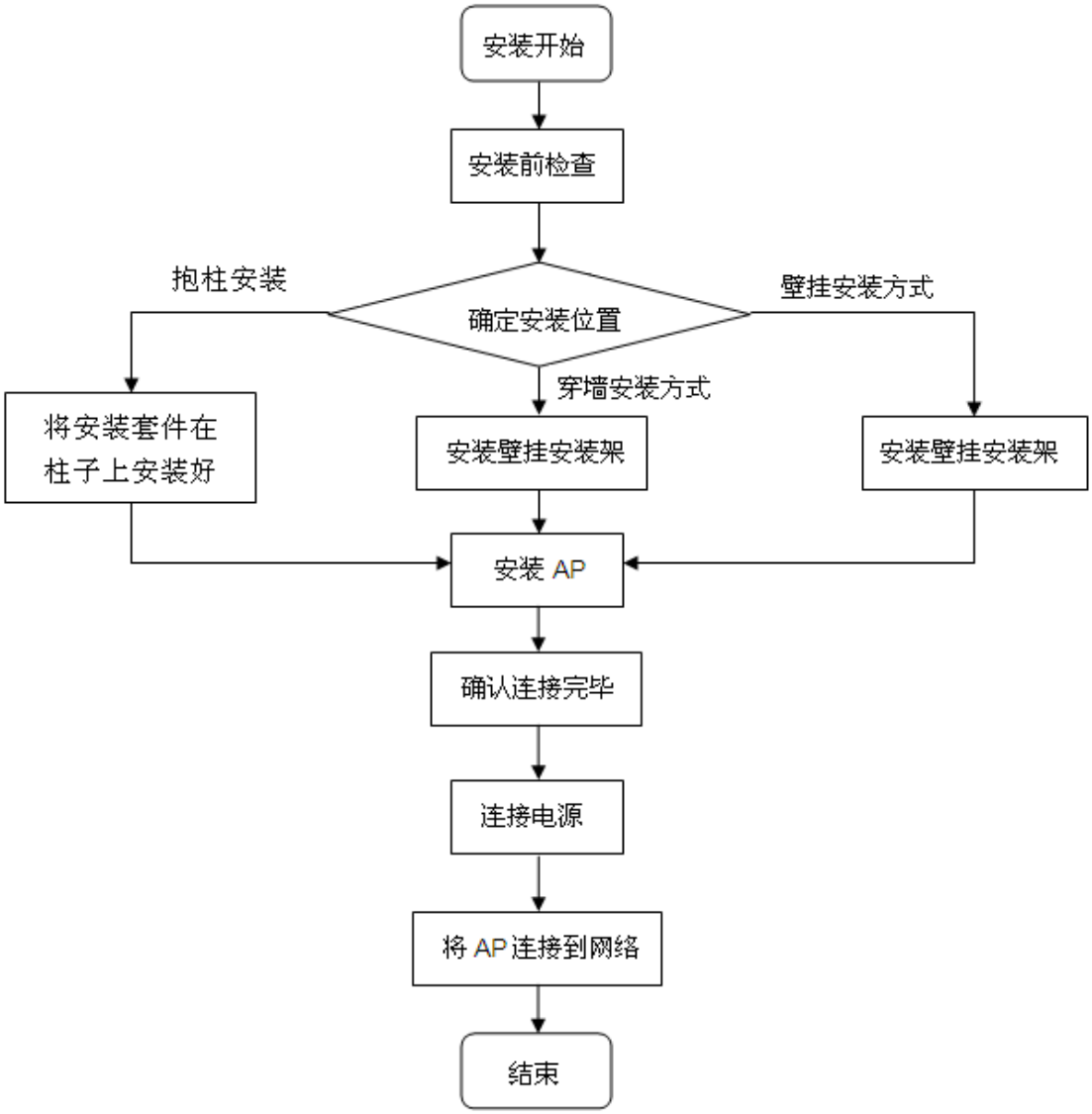

图 3-1 AP 设备安装流程图

3.2 安装前检查

安装 AP 前，请先进行以下检查：

- 请先给 AP 供电并将 AP 接入到以太网，检查指示灯状态，确定 AP 可以正常工作，设备指示灯状态请参考产品说明书。
- 请确认在需要安装 AP 设备的地点已经完成布线工作。
- DCWL-7900 系列室内型 AP 支持 802.3at 标准的 PoE（Power over Ethernet，以太网供电）电源。
- 请先记录 AP 设备的 MAC 地址和序列号（MAC 地址和序列号标识在 AP 设备背面），便于后续查找使用。

3.3 确定安装位置

确定安装位置时的原则如下：

- 尽量减少 AP 和用户终端间的障碍物（如：墙壁）数量。
- 使 AP 的安装位置远离可能产生射频噪声的电子设备或装置（如：微波炉）。
- 安装位置尽量隐蔽，不妨碍居民的日常工作和生活。

3.4 安装 DCWL-7962OT(R5)

DCWL-7962OT(R5)室外 AP 支持以下两种安装方式:

- 抱柱安装方式
- 壁挂安装方式

3.4.1 抱柱安装方式

将 DCWL-7962OT(R5)室外 AP 安装在柱子上的时候，请参考下面三个步骤：

1. 将底板安装在 DCWL-7962OT(R5)底部上，用十字螺丝刀拧紧 4PCS 短螺钉固定底板，将长螺杆穿过底板孔依次套上平垫、弹簧垫片并锁上螺母，以不锁紧为准，如下图所示：

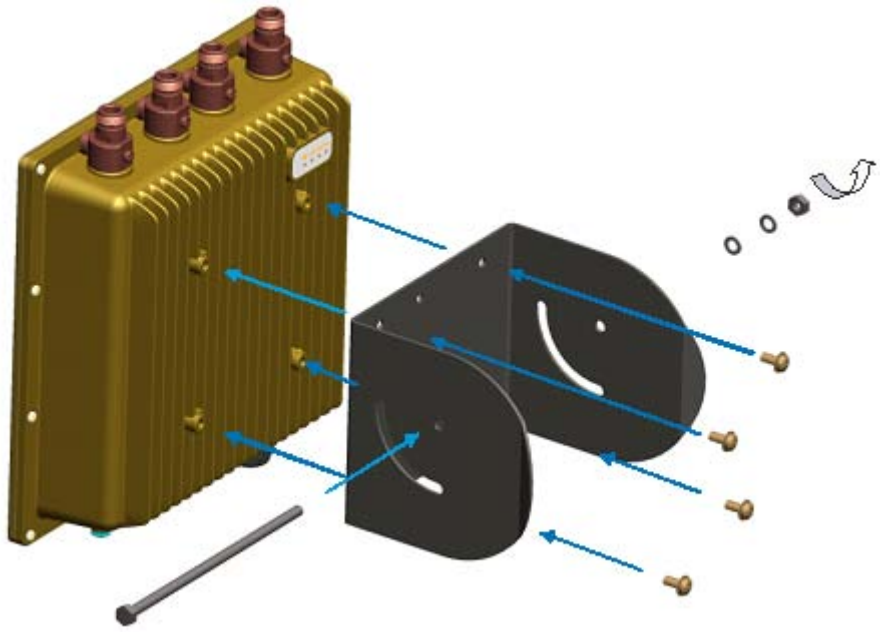

图 3-2 DCWL-7962OT(R5) AP 底板安装示意图

2. 将 2PCS 不锈钢紧箍条穿过安装支架锁在杆上，并锁紧紧固螺丝。如图下图所示：

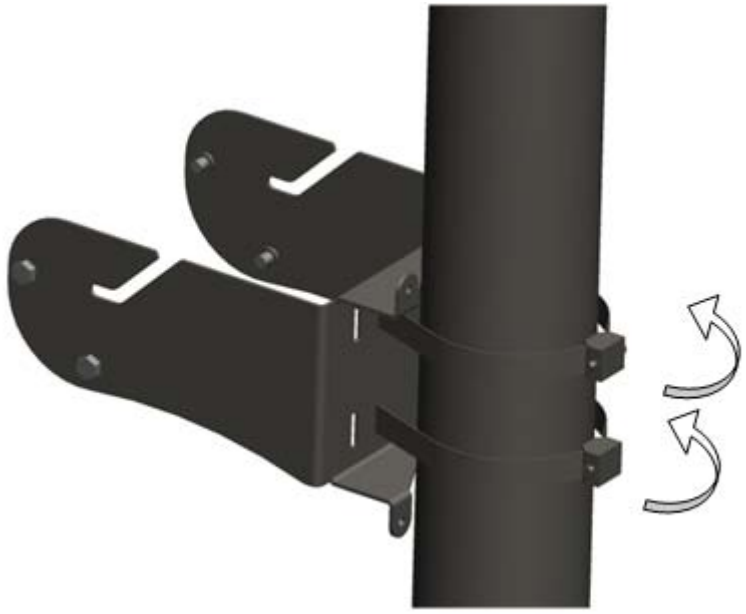

图 3-3 DCWL-7962OT(R5) AP 抱柱安装示意图

3. 将装好底板的设备安装到柱子的安装件上，用扳手将 2pcs 短螺钉与 1PCS 长螺钉将设备与安装件紧固在一起。如下图所示：

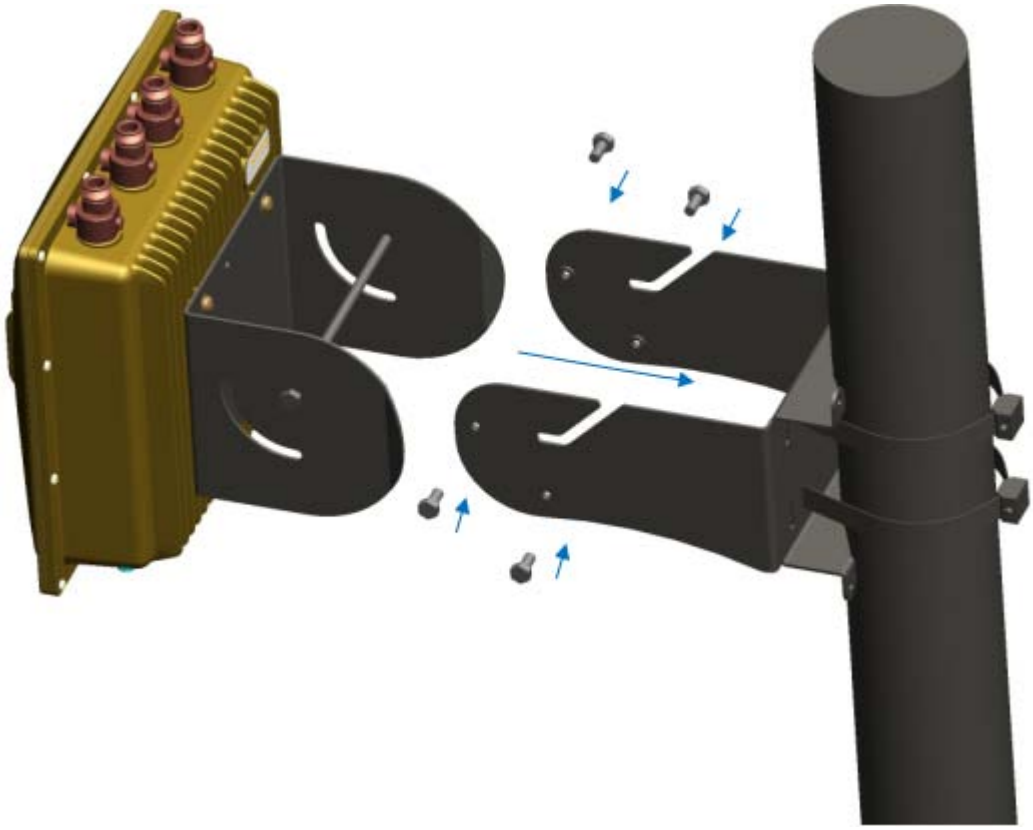

图 3-4 DCWL-7962OT(R5) AP 固定安装示意图

3.4.2 壁挂安装方式

将 DCWL-7962OT(R5)室外 AP 进行壁挂式安装的时候，请参考下面几个步骤：

1. 参考图 3-1，先将底板安装在 DCWL-7962OT(R5)底部上。

2. 将 AP 壁挂安装套件平贴在墙面，画出需要安装螺钉的孔的位置标记，在标记处用冲击钻钻四个孔，将膨胀塑胶螺管插入墙面上已钻好的孔中，再用橡胶锤敲打膨胀塑胶螺管，直至将膨胀塑胶螺管全部敲入墙内。见下图：

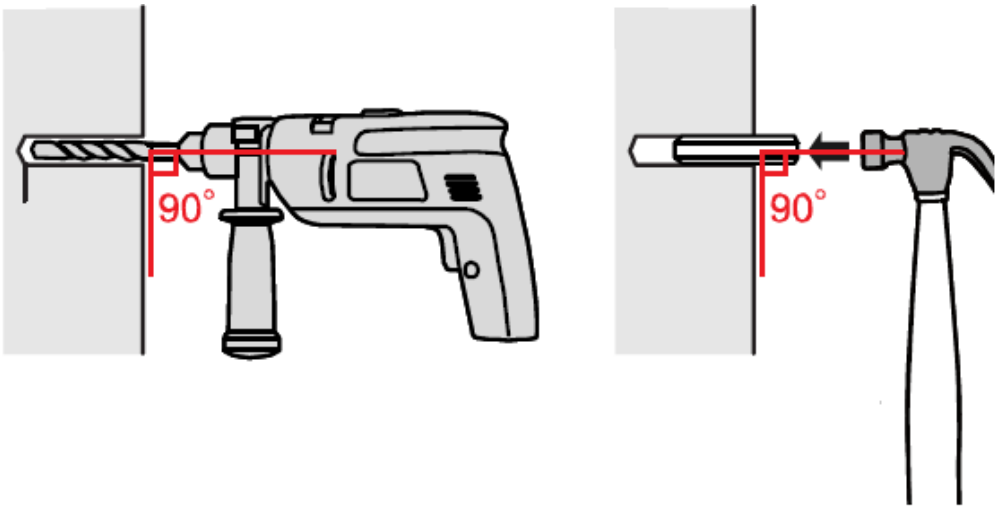

图3-5 墙面钻孔

3. 将壁挂安装套件的螺钉孔对准墙面上的膨胀塑胶螺管孔，将螺钉穿过壁挂安装套件上对应的安装孔，将壁挂安装套件锁紧在墙面上，见下图：

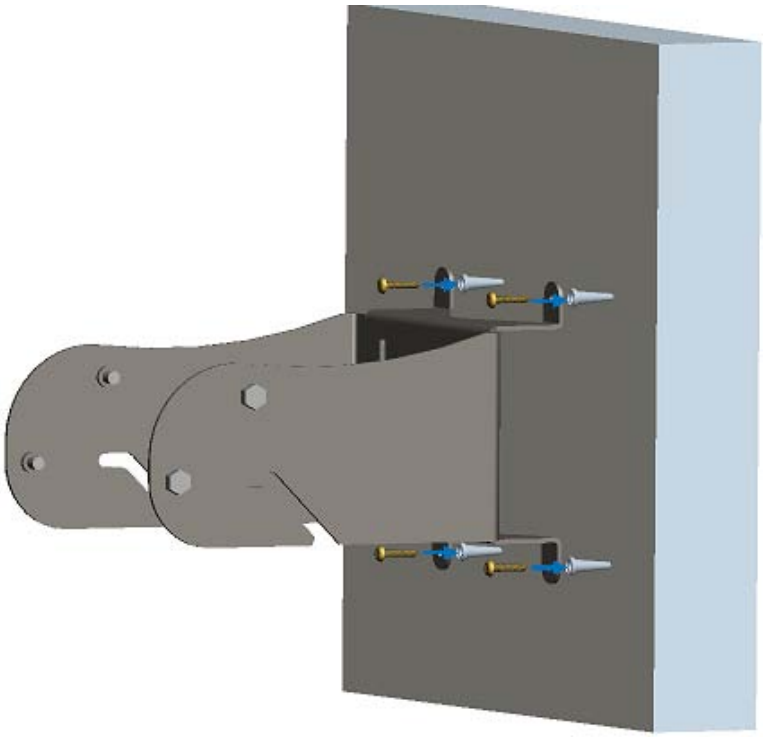

图3-6 壁挂安装套件的安装

4. 将装好底板的设备安装到柱子的安装件上，用扳手将 4pcs 短螺钉与 1PCS 长螺钉把设备与安装件紧固在一起，见下图：

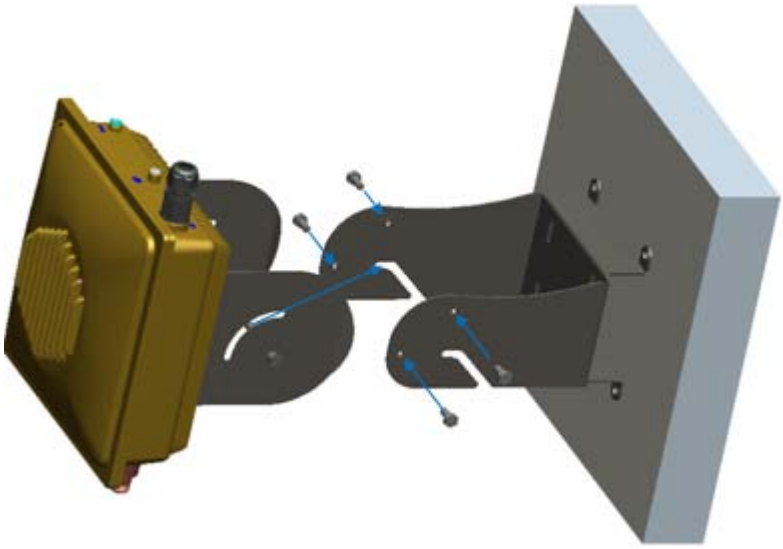

图 3-7 AP 的壁挂安装

3.5 连接线缆

3.5.1 连接网线

DCWL-7962OT(R5)室外型 AP 支持 802.3at PoE 供电，供电和上联网线接口需做好防水，请按照下图的顺序依次将防水套件安装在网线上。

图3-8 防水套件的安装顺序示意图

按照上图示意装好后，将网线插入 AP，然后依次将防水套件拧紧。

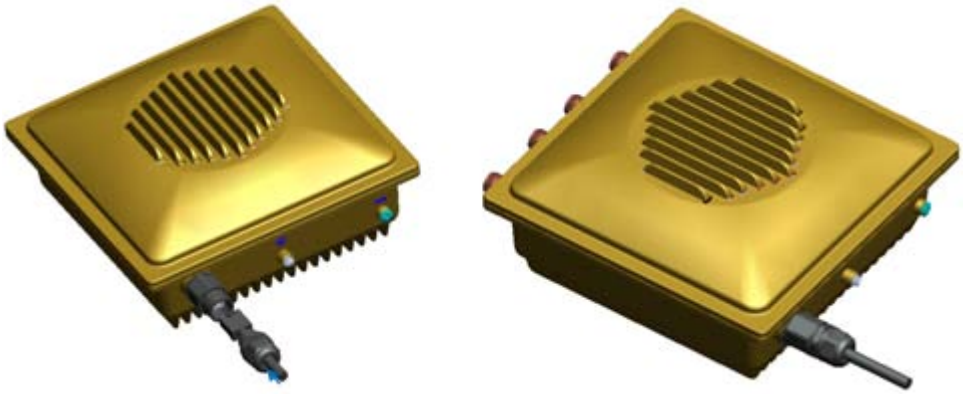

图 3-9 防水套件的安装示意图

3.5.2 连接接地线

请将接地线安装在 AP 的接地点上。

3.5.3 连接射频线

请将射频线缆或天线安装在射频接口上，主要天线接口不要弄错，5G 的天线接在 5G 的射频口上，2.4G 的天线接在 2.4G 的射频口上。连接完成后，在连接处缠上 3 层防水胶带。缠绕防水胶带时需要均匀拉伸防水胶带使其宽度为原来的二分之一后再缠绕，每缠一层都须拉紧压实。

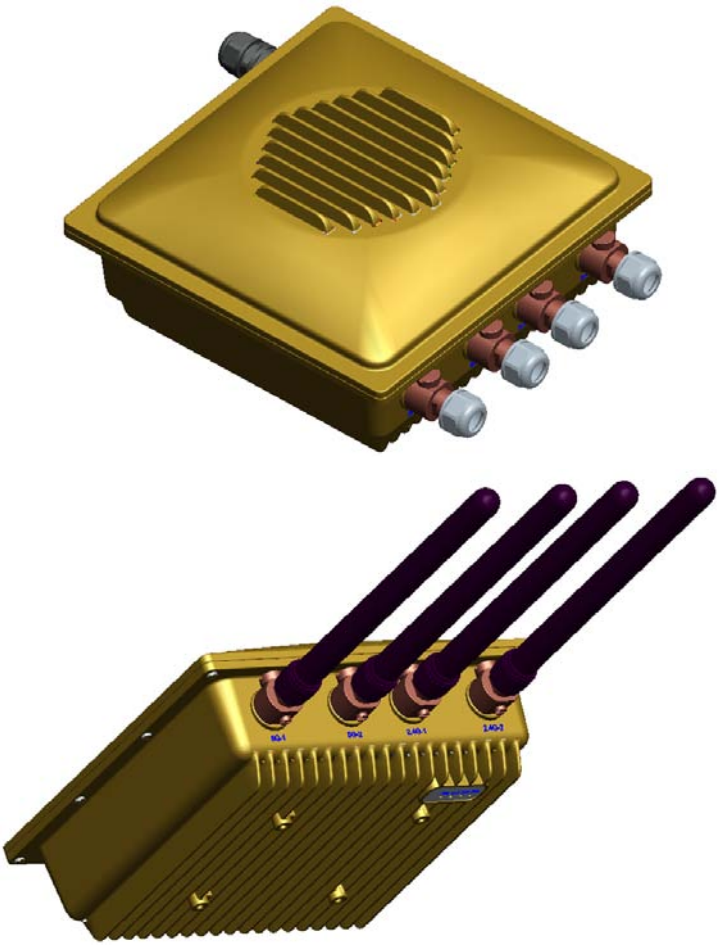

图 3-10 天线安装示意图

3.6 AP 供电

3.6.1 上电前检查

AP 安装完毕后，每次上电前均要进行检查，检查事项如下：

- AP 设备采用 802.3at 标准 PoE 供电时，请确认 PoE 供电设备良好接地。

3.6.2 PoE 供电

可以使用以太网线连接 AP 设备的以太网接口和支持 PoE 功能的交换机给 AP 供电。

3.6.3 上电后检查

AP 电源连接好后需要检查 AP 设备的指示灯是否正常显示。设备指示灯状态的详细描述请参见产品 spec。

3.7 将 AP 连接到网络

AP 设备在实际使用中，可以通过以太网口上行接入 Internet 或城域网。将 AP 设备的以太网口与以太网交换机的端口连接，实现 AP 设备通过以太网口上行接入到 Internet。

DCN

Switch to new generation

DCWL-7962OT Outdoor Wireless AP

DCWL-7962OT

Product Overview

The DCWL-7962OT is a series of new-generation 802.11n-based high-performance gigabit outdoor 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. The DCWL-7962OT uses GE ports as its uplink ports for access, which break through the limitations of FE ports and enable wireless multimedia applications to come true.

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 DCWL-7962OT may be used with DCN wireless ACs to perform data forwarding, security, and access control of wireless users.

The DCWL-7962OT operates in a 2.4 GHz or 5 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 per channel and 600 Mbps per dual channels.

The DCWL-7962OT employs industrial standard components. Its shell of the IP66 class is solid, waterproof, and dustproof, enabling the device to suit an adverse indoor environment. Along with a high-gain outdoor antenna of DCN, the DCWL-7962OT provides customers with a choice for constructing a high-performance and high-coverage wireless network. The DCWL-7962OT is a series of high-rate wireless APs preferred in various outdoor application environments for purposes such as campus WLAN access, campus coverage, and operators' hot spot coverage.

Highlights

High-Performance and High-Reliability Wireless Network

► High-speed wireless broadband access

The DCWL-7962OT supports the 802.11abgn standard and may operate in a 2.4 GHz or 5 GHz band. It provides an access bandwidth up to 600 Mbps.

► GE ports for wired connections

GE ports are used as uplink ports for access, which break through the limitations of conventional FE ports, so that wired ports are no longer a bottleneck of wireless access rates, offering a platform for smooth upgrade to support higher rates and more RF portfolios in the future.

► High-performance RF characteristics

Professional optimized design is employed for the RF module of the DCWL-7962OT, so that a single antenna port supports 27 dB 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 -40°C to 60°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. For some 802.11n wireless access devices capable of simultaneously providing dual frequencies for user access, it is recommended that the 5 GHz RF channel be set to only 11n access mode to guarantee a high-speed bandwidth and access performance of 802.11n access users; while the 2.4 GHz RF channel be set to compatible access mode to guarantee normal access of original 802.11b/g users.

► 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 low-rate 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

Call admission control (CAC) based on the number of users to well guarantee the access performance and bandwidths of terminals with high-priority applications

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 networks

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 32 WLANs to implement multi-layer 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 multi-WLAN 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 real-time 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 non-convergence 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	DCWL-7962OT
Dimensions (mm)	220 x 220 x 95
10/100 /1000Base-T port	1
PoE	802.3at
Maximum power consumption	23.4 W
RF port	Four N-type female ports
Working frequency band	802.11a/n: 5.725 GHz to 5.850 GHz (China) 802.11b/g/n: 2.4 GHz to 2.483 GHz (China)
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	Maximum 27 dBm for all rate levels and modulation modes
Power adjustment granularity	1 dBm
AP access speed	802.11n: 20 MHz 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, 144 Mbps 40 MHz 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, 300 Mbps
	802.11g: 54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1 Mbps
	802.11b: 11, 5.5, 2, 1 Mbps
	802.11a: 54, 48, 36, 24,18, 12, 9, 6 Mbps

Item	DCWL-7962OT
Working/Storage temperature	-40°C to +60°C –40°C to +70°C
Working/Storage RH	5% to 95% (non-condensing)
Protection level	IP66
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	DCWL-7962OT
WLAN	Product positioning	Outdoor dual-frequency
	Working frequency band	2.4 GHz and 5 GHz
	Maximum number of access users	254
	Virtual AP (BSSID)	32
	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
	300Mbps (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
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

Item	Feature	DCWL-7962OT
Security	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 Isolation between virtual APs (multiple SSIDs)
	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
	Fast roaming across ACs	
	AP switching reference	Signal strength, bit error rate, RSSI, S/N, whether neighboring APs are normally operating, etc.
	WDS	Yes
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 balancing	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
	Call admission control (CAC)	CAC based on the number of users
	Power saving mode	Yes
	Automatic emergency mechanism of APs	Yes
	Intelligent identification of terminals	Yes
	Wireless network VAS	Abundant wireless network VASs; applications based on smart terminals; advertisement push based on site locations; personalized push of the portal
	Multicast enhancement	Multicast to unicast

Item	Feature	DCWL-7962OT
Management	Network management	Centralized management through an AC; both fit and fat modes
	Maintenance mode	Both local and remote maintenance
	Log function	Local logs, Syslog, and log file export
	Alarm	Yes
	Fault detection	Yes
	Statistics	Yes
	Switching between the fat and fit modes	An AP working in fit mode can switch to the fat mode through a wireless AC; An 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

Product Purchase Information

Product Model	Description	Remarks
DCWL-7962OT(R5)	802.11abgn outdoor high-performance wireless AP (2.4 GHz & 5 GHz dual-channel dual-frequency, external antenna, 802.3at PoE) (The PoE adapter, waterproof kit, and outdoor antenna need to be separately purchased)	Mandatory
DCWL-PoEINJ-G+	10/100/1000 Mbps 1-port 802.3at PoE module	Optional
TDJ-D2400GB	Outdoor panel antenna, with a 2xN female antenna port, an operating frequency of 2400 to 2483.5 MHz, an azimuth of 65 degrees, and an antenna gain of 15 dBi	Optional
KBT90DP14-5158RT0	Outdoor panel antenna, with a 2xN female antenna port, an operating frequency of 5150 to 5850 MHz, an azimuth of 90 degrees, and an antenna gain of 13.5 dBi	Optional
TDJ-5158P9A×2	Outdoor panel antenna, with a 2xN female antenna port, an operating frequency of 5150 to 5850 MHz, an azimuth of 3.5 degrees, and an antenna gain of 32 dBi	Optional
TQJ-2400AT	Outdoor omni antenna, with a 1xN female antenna port, an operating frequency of 2400 to 2483.5 MHz, an azimuth of 360 degrees, and an antenna gain of 12 dBi	Optional
PJ-SZ01	Outdoor AP installation kit, including two 2 to 6 GHz lightning arresters, two 1.2 m N-N jumpers, two 1.5 m grounding wires, two rolls of 3M insulating tapes, and one roll of 3M waterproof paste (Two such installation kits need to be purchased for 2.4 GHz & 5 GHz dual-frequency deployment)	Optional

Connect us

Digital China Networks Limited

For more detail information about DCN product, contact:
URL: http://www.dcnglobal.com
Email: dcn_service@digitalchina.com
Address: Digital Technology Plaza, NO.9 Shangdi 9th Street, Haidian District, Beijing, China

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.

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.

EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013
EN301 489-1 V1.9.2, EN301 489-17 V2.2.1
ETSI EN300 328 V1.9.1
ETSI EN301 893 V1.7.1
ETSI EN 300 440-1 V1.6.1
ETSI EN 300 440-2 V1.4.1
EN 62311:2008

When using this product, it should be installed and operated with a minimum distance of 7.9 in.(20 cm) for 2.4 GHz/5GHz operations between the radiator and your body. This transmitter must not be collocated or operate in conjunction with any other antenna or transmitter.

CE Marking

CE 2280