

User's ▶▶▶▶▶▶▶▶ manual

2.4GHz Hi-Gain 15dBi Corner Antenna

HAI15SC



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Hi-Gain 15dBi Corner

HAI15SC Installation

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Antenna Terminology

dBi (decibel): Used as a measurement unit for antenna strength. The standard factory antenna strength for 802.11b wireless products is 2dBi. A higher dBi level from the antenna signifies a more powerful wireless signal.

Omni-Directional Antenna: The antenna covers a 360° radius on plane level or a flat surface (see diagram: horizontal coverage). It emits stronger signal in a slightly smaller angle (vertically) comparing to the Directional Antenna (see diagram: vertical coverage). The Omni-Directional is great for Wireless Access Points that serve multiple computers in different locations.

HORIZONTAL COVERAGE

VERTICAL COVERAGE

OMNI-DIRECTIONAL ANTENNA



Directional Antenna: The Antenna emits a direct signal, approximately 80° angle on a flat surface (see horizontal coverage), but wider coverage vertically (see diagram). Directional Antenna are very effective on both Access Points and Network Adapters, such as, Wireless Bridges, PC Cards, USB Network Adapters etc... Normally, it is recommended to install two directional antenna to optimize the performance. The extended range may reach up to 2750 ft.

HORIZONTAL COVERAGE

VERTICAL COVERAGE

DIRECTIONAL ANTENNA



Reverse SMA Plug: Standard connector for removable Wireless Antenna. Most wireless Access Points and Routers come with detachable antenna. Reserve-SMA plug is the on the end of antenna connector that screws/fastens into the wireless device.

Reverse SMA Jack:
Connector on the wireless device side (Access Point, Router, PCI Card)
Reverse SMA Plug screws into the Reverse SMA Jack.



Reverse SMA Plug
Antenna Side



Reverse SMA Jack
Wireless Device

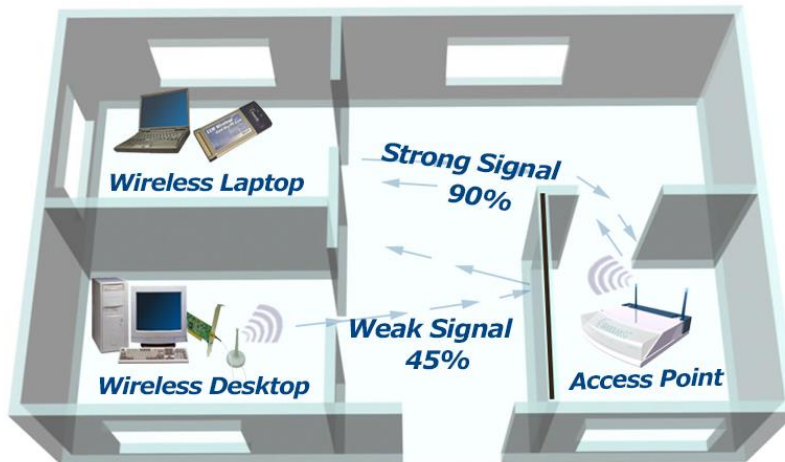


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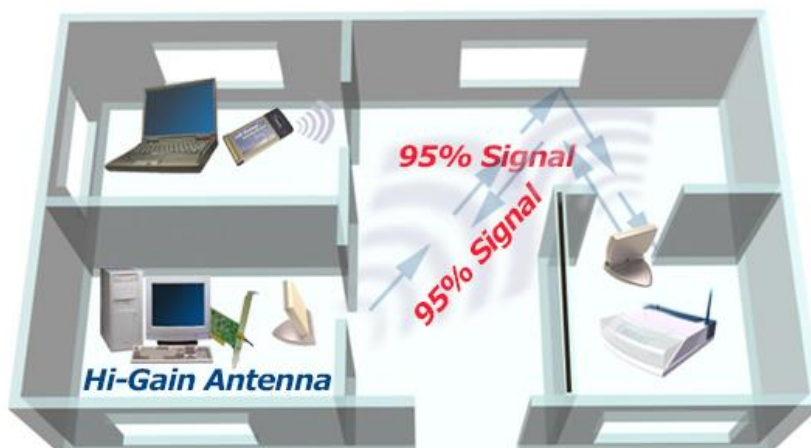
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Basic Setup and Operation

The basic setup of a Wireless Network looks like this:



Because of the wall in front of the Wireless Desktop room, the wireless signal is weak. To solve this problem a Hi-Gain Indoor Directional Wireless Antenna is set up to direct wireless signals out the door towards the door of the Access Point. Radio frequencies lose significant signal strength when travelling through concrete and especially metal walls. To solve this it may be easier to bounce an amplified signal towards the opening in the Access Point room.





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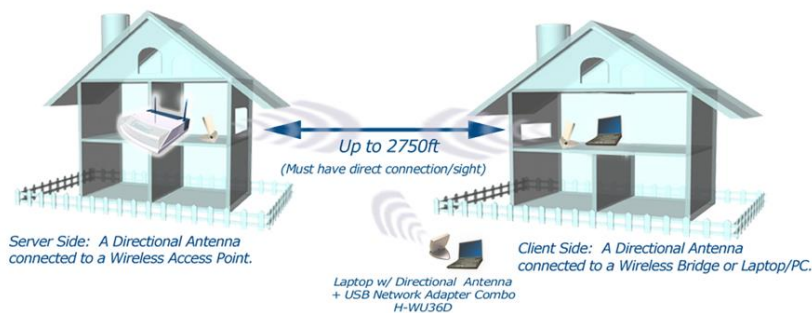
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Obtaining Optimal Antenna Performance

Obtaining one antenna or two antennas?

Depending on your wireless application, you may need two antennas, one on each end to optimize the signal. If you have an Access Point in a small environment, i.e. home, with multiple users in different locations, it is more cost effective for you to use one Omni-Directional Antenna. However, in areas that receive poor coverage, you may need a Directional Antenna to amplify the signal from the receiving end, i.e. Client side.

For extended wireless range, it is recommended that you use two Directional Antennas facing each other. If only one Hi-Gain Antenna applies to one end and a normal (manufacture standard) antenna on the other end, the result may not be as great as using two antennas. The Hi-Gain side may send out a signal quickly, however, the other end (manufacture standard side), may not have the strength to send back the signal instantaneously.



Higher gain antennas is recommended for applications that require further distances

HAO14SD: Hi-Gain 14dBi Directional Antenna



To obtain optimal distances, antennae must be directly facing one another with little or no obstructions interfering with the signal.

NOTE: Many factors in the environment may affect your wireless range. Different wireless devices may have stronger signals than others which may derive varying performance results. For example, the wireless output power on Access Points may vary from one brand to the next, which would create different results. These published results are obtained using HAWKING TECHNOLOGY wireless devices that are tested to obtain the highest performances with HAWKING TECHNOLOGY Hi-Gain Antennas.

Caution: This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 1 foot during normal operation.



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Removing your Original Antenna

It is very easy to remove your original antenna. Simply, take your wireless device, whether it be an Access Point, Bridge, Wireless PCI Card, USB Adapter etc., and check to see if it has a removable antenna. To check to see if your original antenna is removable, examine the base of the antenna to see if it is a "screw on" type or a non-removable type.



Non-Removable



Removable

Do not try to force an antenna off. If you are still not sure whether your antenna is removable please contact the manufacturer or contact techsupport@hawkingtech.com

To remove your original antenna, hold it by its base and unscrew firmly by turning it counter-clockwise until the antenna is separated from the connector. After it has been removed, take your Hawking Hi-Gain Antenna connector and screw it (clockwise) into your wireless device.



Unscrew Counter-Clockwise



Reverse SMA Plug

After you have firmly attached your Hi-Gain Antenna, place it in a location where it will achieve optimal performance.



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What is "Cable Loss"?

Cable loss is the loss in signal strength (dBi) due to the length of your antenna cable. Different types of Hi-Gain antenna cables have different rates of cable loss. However, in all cases, the longer your antenna cable is, the more signal strength (dBi) you will lose.

This table lists the specific antenna model, its cable type and the amount of dBi lost per meter of cable:

Model	Description	Cable Type	Cable Loss per Meter
H-AI6SD	6dB Indoor Directional	RG316	2.5 dBi/m
H-AO8SI	8dB Outdoor Omni	HDF400 (Using the H-AC10N)	0.26 dBi/m
H-AO14SD	14dB Outdoor Directional	HDF400 (Using the H-AC30N)	0.26 dBi/m
H-ACNT	N-Plug to TNC Jumper Cable	ULA 198	0.82 dBi/m
H-ACST	SMA to TNC Jumper Cable	ULA 316	0.82 dBi/m

**Note: H-AC10N and H-AC30N are extension cables used by outdoor antenna kits.*

As you can see from the chart, depending on the type of cable, there is a varying range of cable loss per meter.

Measuring exact dB loss due to cable:

(3.28 ft = 1 meter) Conversion rate

H-AC10N is 10ft long. It has a cable loss of 0.26 dBi per meter. Simple conversion shows that the use of this cable will result in:

10 ft (Cable length) / 3.28 (conversion rate) = 3.05 meters

3.05 meters x 0.26 (cable loss per meter) = **0.79 dBi**

Therefore, when attached to an 8dB Outdoor antenna, the actual signal strength will be 7.21 dBi (8.0 - 0.79 = 7.21 dBi)

The H-AC30N is a 30ft cable and would result in a cable loss of three times the amount the H-AC10N.

(0.79 x 3 = 2.37 dBi cable loss)

When attached to the same 8dBi Outdoor antenna the resulting actual dBi is 5.63 dBi. This is a significant difference.

Please be sure to check the amount of cable you need and use the shortest length possible to keep your signal strength at the highest level.



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Package Contents and Specifications

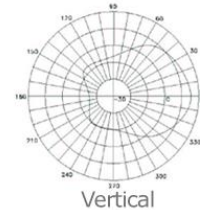
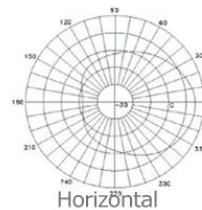
- HAI15SC Corner Antenna w/ 5ft Cable
- Wall Mounting Kit and Screws
- HACST SMA to TNC Connector Adapter
- HACSA SMA to MCX Connector Adapter
- User's Manual



Antenna Specifications

Frequency band	2400-2500MHz
Antenna gain	15 dBi
VSWR	1.6 max
Polarization	vertical
HPBW / H-plane	80°
HPBW / E-plane	80°
Impedance	50 Ohms
Dimensions HxWxD	218x100x50 mm

Field Pattern's



These coverage diagrams show the direction and area of the amplified wireless signal. Base your setup location on these specifications.

Installation

Step 1 Remove one original antenna from your wireless device and connect the HAI15SC connector to the wireless device antenna jack.

[If you are uncertain whether your device is compatible with the 15dBi Corner Antenna or you do not know how to connect the antenna to your wireless device, check the section: Removing your Original Antenna]

Step 2 After your Hi-Gain Antenna is attached to the device, decide a location where you will obtain the best performance for your application. (View Chapter 1 for more information on this)

If you plan on mounting your Hi-Gain Corner antenna to the corner of your building, please follow the instructions on the next page.



Connector Adapters

In your package there should be two connector adapters in case your antenna connector is incompatible with the RP-SMA connector. To use these connectors simply screw the SMA side into the SMA connector on the HAI15SC Corner Antenna. Use the other side to connect to your specific wireless devices' antenna connector. Hawking currently supports these popular brands (Cisco/Linksys/Apple)

*All trademarks and brand names are the property of their respective owners.



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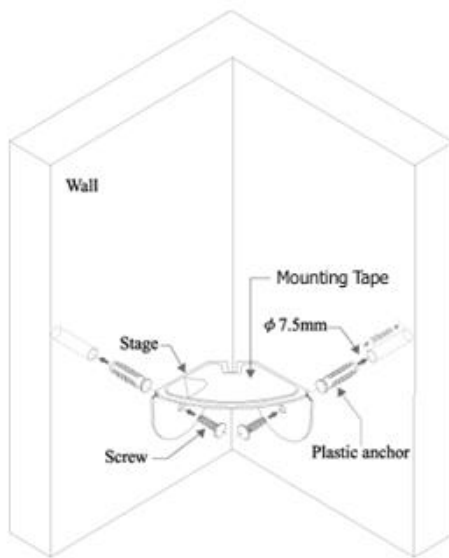
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Installation Cont'd

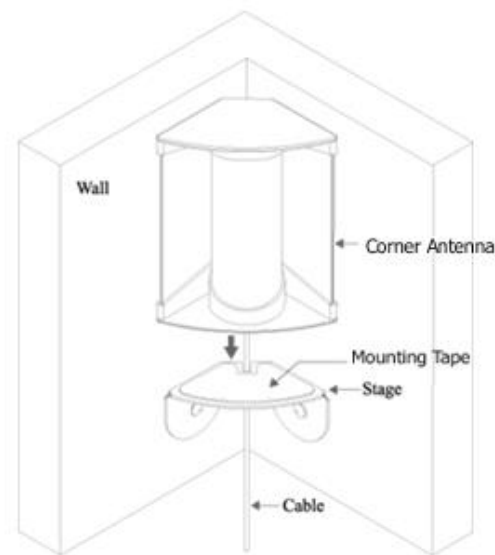
Mounting

Before mounting your Antenna, select a "corner" location that will be most effective for your application. The less interference with objects the antenna has, the better your signal will be. It is usually better to place your antenna as high as possible to avoid interference. Your antenna may also be placed on a desktop or on the ground if you do not wish to place it on a wall. Hawking also carries extension cables for specific installations.

Step 1



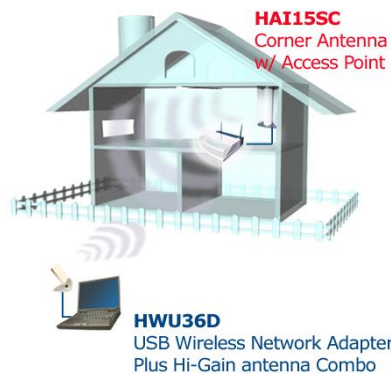
Step 2



Remove the metal Antenna Corner Mount from the packaging. Select the location for mounting your antenna and firmly screw in the mount as illustrated above.

After your mount is securely fastened to the wall, you may remove the mounting tape (red). Place your HAI15SC firmly on the tape so that there is good contact. Apply downward pressure on the antenna to secure its connection with the tape.

Installation Options:





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Certifications and Warranty

THE HAWKING HI-GAIN 24 SERIES:

HAI15SC, HD9DP, HAO9SIP, HAO15SIP, HAO14SDP, HAO14MD, HOA12DP, HAC10N, HAC20N, HAC30N, HAC7SS

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LIMITED WARRANTY

Hawking Technology guarantees that every Hi-Gain 24 Series Antenna and Accessory is free from physical defects in material and workmanship under normal use for one (1) year from the date of purchase. If the product proves defective during this one-year warranty period, call Hawking Customer Service in order to obtain a Return Authorization number. Warranty is for repair or replacement only. Hawking Technology does not issue any refunds. **BE SURE TO HAVE YOUR PROOF OF PURCHASE. RETURN REQUESTS CAN NOT BE PROCESSED WITHOUT PROOF OF PURCHASE.** When returning a product, mark the Return Authorization number clearly on the outside of the package and include your original proof of purchase. **IN NO EVENT SHALL HAWKING TECHNOLOGY'S LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT FROM DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT, ITS ACCOMPANYING SOFTWARE OR ITS DOCUMENTATION.** Hawking Technology makes no warranty or representation, expressed, implied or statutory, with respect to its products or the contents or use of this documentation and all accompanying software, and specifically disclaims its quality, performance, merchantability, or fitness for any particular purpose. Hawking Technology reserves the right to revise or update its products, software, or documentation without obligation to notify any individual or entity. Please direct all inquiries to: techsupport@hawkingtech.com

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