



AirSpeed 1000 Installation Guide

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UK WEEE Registration number: WEEE/AB0207WZ. For more information, see [WEEE Information for Airspan Customers and Recyclers](#).

Acknowledgements



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Document Information

Abstract

This document details procedures for installing the Airspan's AirSpeed 1000 Pico-class LTE eNodeB variant.

Revision History

Revision Details	Date	Summary of Changes
Rev 0.1 – 0.2	August 2017	<ul style="list-style-type: none">• Initial document – draft(s)• comments
Rev A	August 2017	<ul style="list-style-type: none">• comments• Published
Rev A1	January 2019	<ul style="list-style-type: none">• Updates

This document is available at: [AirSpeed 1000 Installation Guide](#)

Warnings and Cautions

Human Exposure to Radio Frequencies

The AirSpeed 1000 should be installed and operated from a minimum safe distance of about 48Cm.

Avertissement et Precautions d'Utilisation

Exposition des personnes aux fréquences radioélectriques

Les AirSpeed 1000 doivent être installée et utilisée de façon à garantir la distance minimale de sécurité de 2.5m.

Radio Interference

This AirSpeed 1000 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, television reception or WiFi AP, which can be determined by turning the equipment on and off, the technician is encouraged to try to correct the interference by performing one or more of the following measures:

- Re-orientate or relocate the unit
- Increase separation between the units and/or End Devices
- Connect the equipment to an outlet on a circuit different from that to which the power source is connected

Modifications

Any changes and modifications to this device that are not expressly approved by Airspan Networks may void the user's authority to operate the equipment.

General

- Only qualified personnel should be allowed to install, replace, and service the equipment.
- The device cannot be sold retail, to the general public or by mail order. It must be sold to operators.
- Installation must be controlled.
- Installation must be performed by licensed professionals.
- Installation requires special training. The AirSpeed 1000 should be installed ONLY by experienced installation professionals who are familiar with local building and safety codes and, wherever applicable, are licensed by the appropriate government regulatory authorities. Failure to do so may void Airspan's product warranty and may expose the end user or the service provider to legal and financial liabilities.
- Airspan and its resellers or distributors are not liable for injury, damage or violation of regulations associated with the installation of units or antennas.

Général

- Seul le personnel qualifié peut être autorisé pour installer ou remplacer l'équipement ainsi qu'effectuer les opérations de maintenance pour cet équipement.
- L'équipement ne peut pas être vendu en grande distribution ou par commande via email à destination du public. Il doit être vendu aux opérateurs de télécommunications.
- Son installation doit être contrôlée
- Son Installation doit être effectuée par des professionnels autorisés.
- Son installation requiert une formation spécifique du personnel. L'AirSpeed 1000, radio et antenne doit être installée UNIQUEMENT par des installateurs professionnels expérimentés et ayant une connaissance des constructions locales et règles de sécurité, ainsi que, dès que

nécessaire, disposant d'un accord des autorités gouvernementales de réglementation. Toute infraction à ces obligations peut annuler la garantie délivrée par Airspan pour ces produits et peut exposer l'utilisateur final ou le fournisseur de services à des dommages légaux et financiers.

- Airspan et ses revendeurs ou ses distributeurs ne sont pas responsables des blessures, dommages ou violations de la réglementation en vigueur liés à l'installation du système ou des antennes.

Important Safety Instructions

- Read and Save these instructions
- This Installation Guide contains instructions and warnings that should be followed during installation, and operation.
- Failure to follow these instructions could cause bodily injury and/or product failure

Safety

1. Read this guide and follow all operating and safety instructions.
2. No user serviceable parts inside.
3. Position the power cord to avoid possible damage; do not overload circuits.
4. Do not place this product on or near a direct heat source, and avoid placing objects on the terminal.
5. Use only a damp cloth for cleaning. Do not use liquid or aerosol cleaners. Disconnect the power before cleaning.
6. The units should not be located near power lines or other electrical power circuits.
7. It is the user's responsibility to install this device in accordance with the local electrical codes.
8. Installation of the AirSpeed 1000 must be contracted to a professional installer.
9. The circuit breaker should be easily accessible in case you have to disconnect the device.
10. When installed in the final configuration, the product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.

Securite

1. Lire attentivement ce guide et suivre les instructions d'utilisation et de sécurité.
2. Aucune pièce à l'intérieur est d'utilité pour l'utilisateur.
3. Positionner le cordon d'alimentation de façon à éviter des dommages potentiels. Ne pas surcharger les circuits.
4. Ne pas placer ce produit sur ou à proximité d'une source directe de chaleur et éviter de placer des objets sur le terminal.
5. Utiliser uniquement chiffon de coton pour nettoyage. Ne pas utiliser de produits liquides ou d'aérosols. Déconnecter le produit de la source d'alimentation avant nettoyage.
6. L'unité ne doit pas être située trop près de lignes électriques ou autres circuits de puissance, avec lesquels il pourrait entrer en contact.
7. L'utilisateur est tenu responsable de l'installation du produit conformément aux règles électriques en vigueur localement.
8. L'installation de AirSpeed 1000 doit être contractualisée avec un installateur professionnel.

9. L'interrupteur de circuit électrique doit être facilement accessible afin de pouvoir déconnecter l'équipement.
10. Lors de l'installation de la configuration finale, le produit doit être conforme aux Standards de Sécurité en vigueur ainsi qu'aux exigences réglementaires du pays dans lequel il est installé. Si nécessaire, consulter les agences réglementaires appropriées, ainsi que les autorités chargées de l'inspection afin de garantir la conformité.

Warning of Hazardous Voltages

On AC installations, hazardous voltages exist. Use caution when verifying or working with AC power. Remove metal jewellery that could come into contact with AC power.

On DC sections, short-circuiting the low voltage, low impedance circuits can cause severe arcing that may result in burns or eye damage. Remove rings, watches etc. to avoid shorting DC circuits.

Note: Airspan products do not contain hazardous substances (as defined in UK Control of Substances Hazardous to Health Regulations 1989 and the Dangerous Substances Regulations 1990). At the end of any Airspan products life cycle, the customer should consult with Airspan to ensure that the product is disposed of in conformance with the relevant regulatory requirements.

Attention aux Voltages Hasardeux

Sur les installations de réseau électrique de type courant alternatif (CA), des voltages hasardeux peuvent survenir. Garder une Attention particulière lors d'une vérification ou de travaux sur réseau électrique CA. Retirer tous bijoux en métal qui pourraient entrer en contact avec l'alimentation ou le réseau CA.

Sur les portions de réseau électrique de type courant continu (CC), un circuit basse impédance peut causer de sérieux arcs électriques qui pourraient bruler ou endommager les yeux. Retirer bagues, anneaux, montres etc... afin d'éviter les court-circuit sur le réseau CC.

Adherence to European Directive 1999/5/EC

European Council Recommendation 1999/5/EC details basic restrictions and reference levels on human exposure to electromagnetic fields as advised by the ICNIRP. Adherence to these recommended restrictions and reference levels should provide a high level of protection as regards the established health effects that may result from exposure to electromagnetic fields.



Airspan equipment is compliant with CE and R&TTE regulations and can be operated in all EU (European Union) locations listed below:

Country Code			
BE	EL	LT	PT
BG	ES	LU	RO
CZ	FR	HU	SI
DK	HR	MT	SK
DE	IT	NL	FI
EE	CY	AT	SE
IE	LV	PL	UK

Warning Symbols

The following symbols may be encountered during installation or troubleshooting. These warning symbols mean danger. Bodily injury may result if you are not aware of the safety hazards involved in working with electrical equipment and radio transmitters. Familiarize yourself with standard safety practices before continuing.



Caution, hot surface



Caution



Electro-Magnetic
Radiation



DC

Service Information

Refer all repairs to qualified service personnel. Do not modify any part of this device, as this will void the warranty.

Disconnect the power to this product and return it for service if the following conditions apply:

- a. The terminal does not function after following the operating instructions outlined in this manual.
- b. Liquid has been spilled, a foreign object is inside, or the terminal has been exposed to rain.
- c. The product has been dropped or the housing is damaged.

Locate the serial number of the terminal and record this on your registration card for future reference. Also record the MAC address, located on the product sticker.

UL Information

- The electrical source must be properly grounded according with NEC and other local safety code requirements.
- AirSpeed 1000 is designed to operate in environmental conditions complying with IP40 and relevant standards.

DECLARATION OF CONFORMITY

European Community, Switzerland, Norway, Iceland, and Liechtenstein

Declaration of Conformity with Regard to the R&TTE Directive 1999/5/EC

English:

This equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Deutsch:

Dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 1999/5/EU.

Dansk:

Dette udstyr er i overensstemmelse med de væsentlige krav og andre relevante bestemmelser i Directiv 1999/5/EF.

Español:

Este equipo cumple con los requisitos esenciales así como con otras disposiciones de la Directiva 1999/5/EC.

Greek:

ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Airspan ΔΗΛΩΝΕΙ ΟΤΙ Ο ΕΞΟΠΛΙΣΜΟΣ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.

Français:

Cet appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la Directive 1999/5/EC.

Íslenska:

Þessi búnaður samrýmist lögboðnum kröfum og öðrum ákvæðum tilskipunar 1999/5/ESB.

Italiano:

Questo apparato é conforme ai requisiti essenziali ed agli altri principi sanciti dalla Direttiva 1999/5/EC.

Nederlands:

Deze apparatuur voldoet aan de belangrijkste eisen en andere voorzieningen van richtlijn 1999/5/EC.

Norsk:

Dette utstyret er i samsvar med de grunnleggende krav og andre relevante bestemmelser i EU-direktiv 1999/5/EC.

Português:

Este equipamento satisfaz os requisitos essenciais e outras provisões da Directiva 1999/5/EC.

Suomalainen:

Tämä laite täyttää direktiivin 1999/5/EY oleelliset vaatimukset ja on siinä asetettujen muidenkin ehtojen mukainen.

Svenska:

Denna utrustning är i överensstämmelse med de väsentliga kraven och andra relevanta bestämmelser i Direktiv 1999/5/EC.

Român:

Acest echipament este în conformitate cu cerințele esențiale și alte prevederi relevante ale Directivei 1999/5/CE.

The Declaration of Conformity related to this product can be obtained from PLM@Airspan.com.

Maximum Output TX Power

Table 1: AirSpeed 1000 ETSI Maximum Output TX Power

Frequency Band (MHz)	ETSI TX (dBm)	ETSI EIRP (dBm)	Antenna Gain (dBi)	Variant
3550-3700	25	45.5	20.5	1000

Table 2: AirSpeed 1000 FCC Maximum Output TX Power

Frequency Band (MHz)	FCC TX (dBm)	FCC EIRP (dBm)	Antenna Gain (dBi)	Variant
3550-3700	23.98	44.48	20.5	1000

Note: The AirSpeed 1000 requires operation using an Airspan FCC-specific version of Netspan acting as a CBRS Domain Proxy.

Caution: Do not set maximum output TX total power to higher than local regulations.

Product Variants

AirSpeed supports the following frequency bands with the specific performance values:

Table 3: Supported Frequency Bands

LTE Band	Variant	Downlink Freq. (MHz)	Uplink Freq. (MHz)	Duplex	Tx / Rx Conf.	Tx Power per Port (dBm)	Power Source
48, 42H, 43L	AS10-U48-B02D	3550-3700	3550-3700	TDD	2 x 2	25	DC

Power Consumption

Table 4: Power Consumption

Power Source	Nominal Power Consumption (W)	Max Nominal Power Consumption (W)
DC	40	65

Note: Nominal Power Consumption (W) - refers to average power consumption over time.

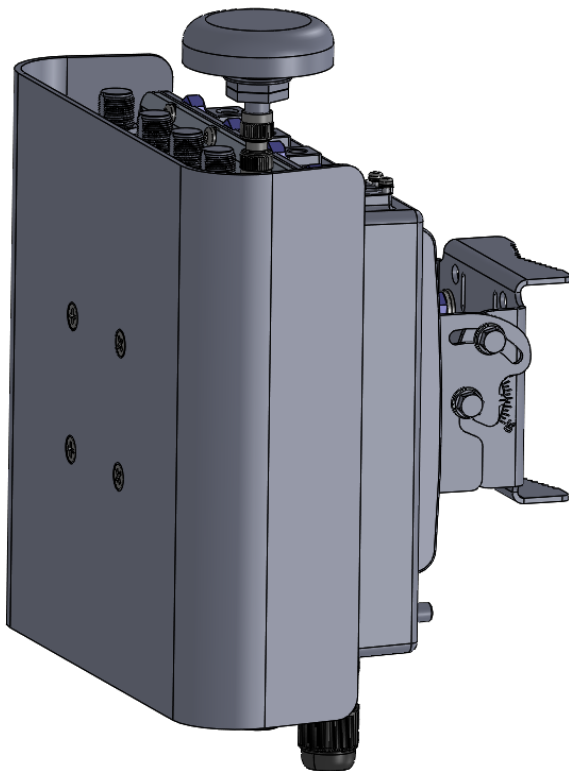
External Antennas

AirSpeed 1000 connects to the external antennas via four (4) N-Type female connectors located at the top panel. The antenna should be mounted to its appropriate mounting facility.

The supported antennas should be dual slant, cross polar antennas.

Note: For a list of compatible external antennas, please contact your nearest Airspan Sales representative.

Figure 1: AirSpeed 1000



About This Document

Purpose

This guide provides the workflow and step-by-step procedures for installing the Airspan's AirSpeed 1000, Pico-class LTE eNodeB variant. These procedures include:

- Verify prerequisites
- Install Mounting bracket
- Install the AirSpeed 1000
- Connect and manage cables

Intended Audience

This guide is intended for persons who are responsible for installing the AirSpeed 1000 equipment.

Document Conventions

This document uses the following typographic conventions.

Table 5: Typographic Conventions

Convention	Element
Blue underlined text	Cross-reference links.
Bold text	Keyboard buttons and GUI elements.
<code>Command</code>	Command names or phrases.
Computer output	Text displayed by the computer.
Hyperlinks	Website and e-mail addresses.
Danger	Signifies a hazardous situation—if not avoided—will cause death or serious injury. Describes how to avoid it.
Warning	Signifies a hazardous situation—if not avoided—can cause death or serious personal injury. Describes how to avoid it.
Caution	Signifies a hazardous situation—if not avoided—can void the product warranty, and cause property damage. Describes how to avoid it.
Important	Provides necessary information to explain a task.
Note	Provides additional information.
Tip	Provides helpful hints.

Related Reading

The following documents contain related information:

- [AirSpeed 1000 Product Datasheet](#)
- [Airspan LTE Commissioning Manual](#)

Customer Care Help Desk

Airspan's *Customer Care Help Desk* offers prompt and efficient customer support services.

Note: To avail Airspan's *Customer Care Help Desk* support, you must be a registered user and must have a valid support contract. To register, click [here](#) and fill the **Registration** form.

To create and update issue logs, send e-mails to [Customer Care Help Desk](#). Once you submit your issue, the system generates a new issue and sends an issue number for your reference. The system uses this issue number to categorize and store e-mails under the appropriate issue.

To help *Customer Care Help Desk* identify your issue, include the issue number and your *Customer Care Helpdesk* account details in all further communications.

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Airspan Encourages Comments

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1 Introduction

This section provides a descriptive overview of the Airspan's AirSpeed 1000 Pico-class eNodeB variant and its place in the Airspan product suite.

1.1 AirSpeed 1000

AirSpeed 1000 is part of Airspan's carrier-class LTE Advanced outdoor small cell eNodeB family. AirSpeed 1000 is a Pico-class LTE eNodeB product, providing high-speed data, mobility, Voice over LTE, and broadcast/multicast services.

AirSpeed 1000 is a super compact, easy to install Pico-class eNodeB. Allowing an operator to deploy LTE broadband services on any Street Furniture, rooftop or building front.

AirSpeed 1000 is a dual sector / carrier 2x2 MIMO product.

Note: For management please refer to the Airspan LTE Commissioning Manual as well as the Netspan User Manual.

Note: The AirSpeed 1000 requires operation using an Airspan FCC-specific version of Netspan acting as a CBRs Domain Proxy.

The AirSpeed 1000 unit is displayed below.

Figure 2: AirSpeed 1000 Front View

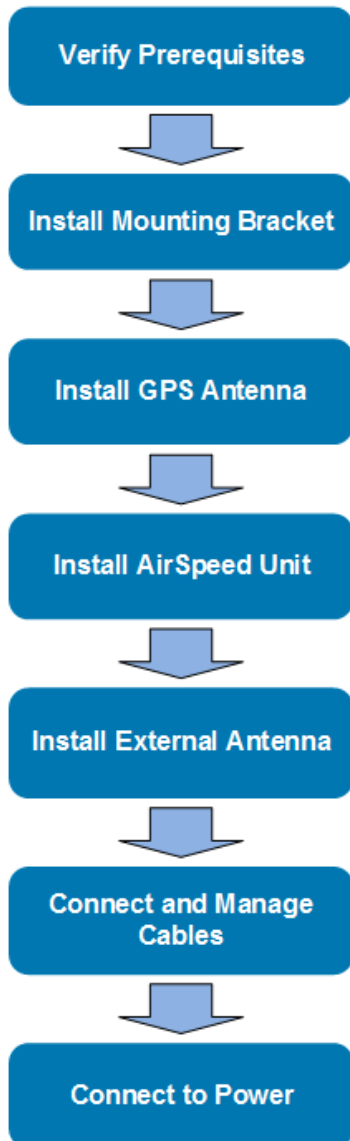


2 Getting Started

2.1 Workflow of Installation

The Workflow to install the AirSpeed 1000 is displayed in the following diagram:

Figure 3: Workflow



2.2 AirSpeed 1000 Installation Checklist

Plan the installation of the AirSpeed 1000 by using the Installation Checklist, which you can find as a removable job aid in [Appendix B](#) for this guide.

3 Verifying Prerequisites

Prior to installing the AirSpeed 1000, verify the required safety, power, tools, parts and components. This chapter includes the hardware, software, and client requirements for installation.

Important: Set up requirements for the installation is detailed in the **Job Sheet**, see [Appendix A](#).

3.1 Verifying Site Requirements

To set up the AirSpeed 1000, an IP connection to a Netspan server is required.

3.2 Verify Installation Requirements

3.2.1 Verify the Tools

Table 6. Minimum Hardware Requirements

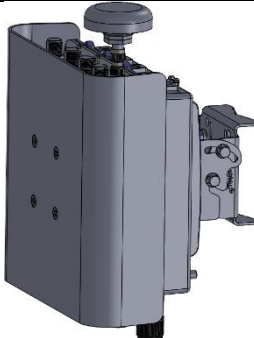








Tool	Use
Large flat bladed screwdriver	securing the pole straps (bands)
13 mm wrench	for securing M8 nuts
10 mm or 13/32 inch wrench	for securing M6 nuts
Large pliers	Tightening cable glands - To fit 15 mm

Note: Airspan does not provide screws and wall anchors for mounting the unit to the wall. The screw size depends on the structure of the building to which the unit is to be attached. When selecting screw sizes, consideration must be given to the weight of the unit and load that may be induced in windy conditions.

3.2.2 Verify the Parts and Kits

Note: Verify order and requirements to ensure the correct unit type is being installed.

Table 7. Parts & Kits

Installation Kit / Part	Product Code	Airspan No.	Consisting of:	Images
AirSpeed 1000, 3.550-3.700 GHz (B48)	AS10-U48-B02D	998-73-483	AirSpeed 1000 Copper Backhaul, DC Unit	
AirSpeed 1000 Acc. Mounting Kit	TBD	903-03-803	AirSpeed 1000 mounting kit including: <ul style="list-style-type: none"> 1 - CPE Pole mount Bracket Base 2 – U-bolt M8 x2 for 1" (33.7mm) to 1.5" (48.3mm) pole 4 - M8 Hex Nut 4 – Washer Spring 4 – Washer M8 4 – M6 x 20 Hex head bolt with 2 washers 2- Maxi Clamps, band 9/16" wide + quick adjustment lock – for 1.8" (45 mm) to 8" (210 mm) pole GPS antenna 	       

3.2.3 Power Supply

AirSpeed 1000 supports direct connection to DC power source:

- Operational Voltage Range: -40.5 to -57 VDC
- Transient Voltage: +150V (ETR283)

Note: AC power feed is also available, using an AC/DC power converter offered by Airspan.

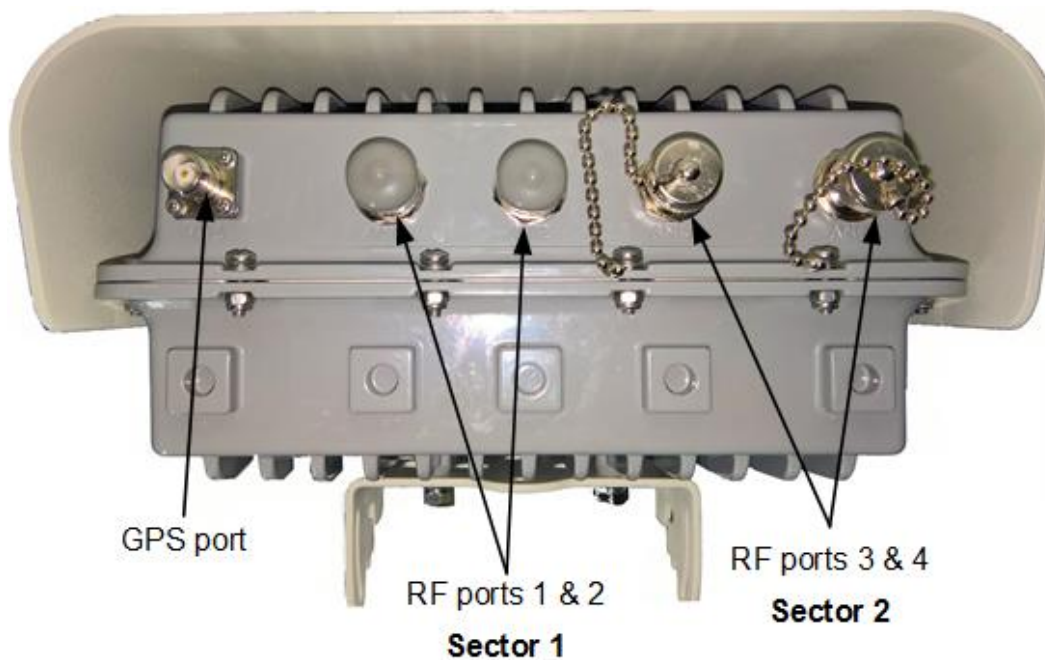
For more details on the offered AC/DC converter (sold separately), please contact your nearest Airspan sales representative.

3.2.4 Connections

The following diagrams display the connections on the top and bottom panels of the AirSpeed 1000.

Note: The unit requires a secure ground connection and a grounding screw fitted with a flat washer and lock washer is provided on the back and clearly marked with the universal ground symbol.

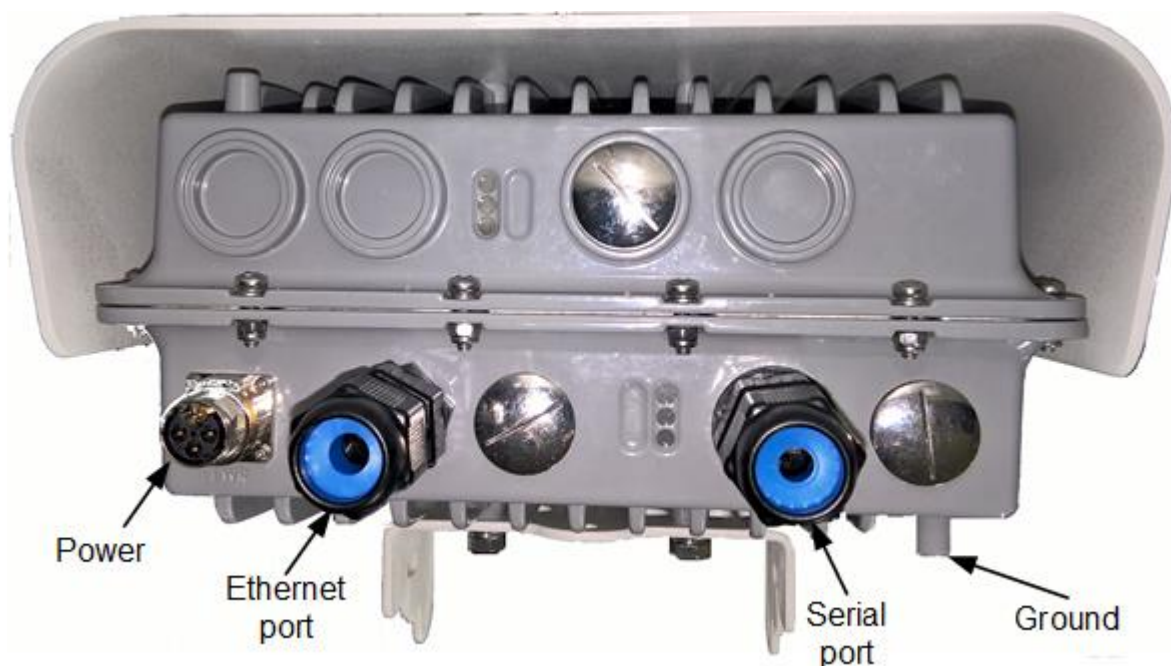
Figure 4: AirSpeed 1000 Top Ports



Note: RF ports 1 & 2 are specified as Sector 1. RF ports 3 & 4 are specified as Sector 2

Note: When utilizing only a single sector, Sector 1 should be used (ports 1 & 2) and the other ports (3 & 4) should be closed with the provided caps.

Figure 5: AirSpeed 1000 Bottom Ports



Note: When the Serial port is not in use it should be sealed with a cap or plug to keep it secured.

3.2.5 Physical Dimensions

AirSpeed 1000 is an outdoor enclosure.

Table 8. AirSpeed 1000 Physical Dimensions

Variant	Dimensions (H x W x D)	Comment
AirSpeed 1000	220 x 220 x 150 mm / 9 x 9 x 6 in.	The dimensions exclude connectors and protruding screws
Weight		
Main Unit	4 Kg / 8.8 Lbs.	
Mounting Bracket (Bracket Base)	1 Kg. / 2.2 Lbs.	

3.2.6 Environmental

Note: AirSpeed 1000 is not meant to be used in a Marine environment.

AirSpeed 1000 meets the following environmental requirements:

- IEC 60529
- IEC 60068
- ETSI EN 300-019-2-4 Operational (non-weather protected equipment)
- ETSI EN 300-019-2-1 Storage (weather protected, not temperature controlled locations)
- ETSI EN 300-019-2-2 Transportation (Public Transportation)
- GR-63, Issue 4

Table 9. AirSpeed 1000 Environment Compliance

Type	Details
Operating temperature	-40°C to 55°C / -40°F to 131°F
Operating humidity	5% - 100% non-condensing
Storage temperature	-40°C to 70° C / -40°F to 158°F
Storage humidity	5% - 100% non-condensing
Rain and Dust Ingress protection	IP66

4 AirSpeed 1000 Installation

AirSpeed 1000 offers two optional methods for outdoor mounting using the included mounting kit, either:

- Pole Mounting
- Wall mounting

The AirSpeed 1000 Mounting Kit - includes a pole/wall mounting bracket for fastening the unit to a pole or on a wall. Prior to installation of the AirSpeed unit the mounting bracket must first be affixed in place on either the pole or a wall.

Note: AirSpeed 1000 comes with the GPS pre-assembled.

Caution: Proper local rigging and hoisting practices should be followed when installing the AirSpeed 1000.

4.1 Connecting the GPS Antenna

The following describes the connection of the GPS antenna which is installed directly to the top of the unit.

1. Unscrew the protective dust cap from the GPS antenna jack prior to mounting the GPS on the AirSpeed-1000 unit.
2. Align the GPS jack with the plug attached to the top panel on the unit.
3. Attach the GPS antenna to the TNC connector on the unit.

Figure 6: Attaching GPS Antenna



Caution: Take care not to over tighten so as not to damage the threads.

Note: It is good practice to weather-proof all the antenna connections. This is done with a layer of self-amalgamating tape followed by an over layer of PVC tape. See [Weather-proofing Antenna Connections](#).

4.2 Pole Mounting Assembly

Caution: Mount the AirSpeed 1000 unit in an orientation such that its Ethernet port (located on the bottom) face downwards. This prevents rain water from settling on the port, and thereby, avoiding damage to the unit such as corrosion and electrical short-circuiting.

The following describes the pole mounting procedure:

1. Select the location on the pole to mount the AirSpeed 1000 mounting bracket.

Note: You can attach the unit to any pole from 1 inch to 8 inch (33.7 to 210 mm) in diameter.

2. Assemble the 2 SEMS screws (M8 x 20) into the lower threaded holes on the mounting (base) bracket, do not tighten.
3. Position the mounting bracket onto the pole at the required height using the provided U-bolts (for 1 in. / 33.7 mm to 1.5 in. / 48.3 mm) pole and tighten in place.
4. Carefully align and position the unit so that the screws (1 on each side) fit into the notched grooves provided on the back bracket (pre-assembled on the unit) and hand tighten. Insert the M8 screws, washers and nuts (supplied) and fasten the back bracket (pre-assembled on the unit) to the mounting bracket.
5. Adjust the unit so that the GPS is positioned upright. Check and tighten all fixing screws.

4.2.1 Pole Mounting (Larger Poles)

Note: For larger 1.8" (45 mm) to 8" (210 mm) poles.

1. Select the location on the pole to mount the AirSpeed 1000 mounting bracket.
2. Assemble the 2 SEMS screws (M8 x 20) into the lower threaded holes on the mounting (base) bracket, do not tighten.
3. Position the mounting bracket onto the pole at the required height.
4. Insert the clamp bands (supplied) by passing them through the upper and lower slots in the bracket, in two (2) places.
5. Tighten the clamp bands with a large screw driver.
6. Continue with Steps 4 & 5 as shown above.

Figure 7: Pole Mounting Assembly

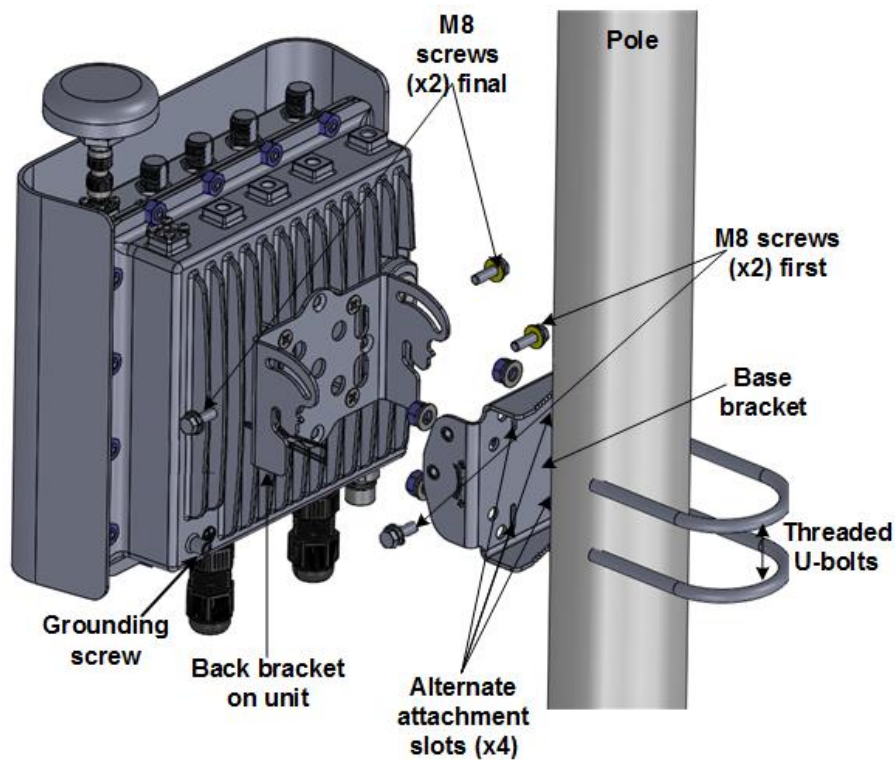


Figure 8: Mounted on Pole



4.3 Wall Mount Assembly

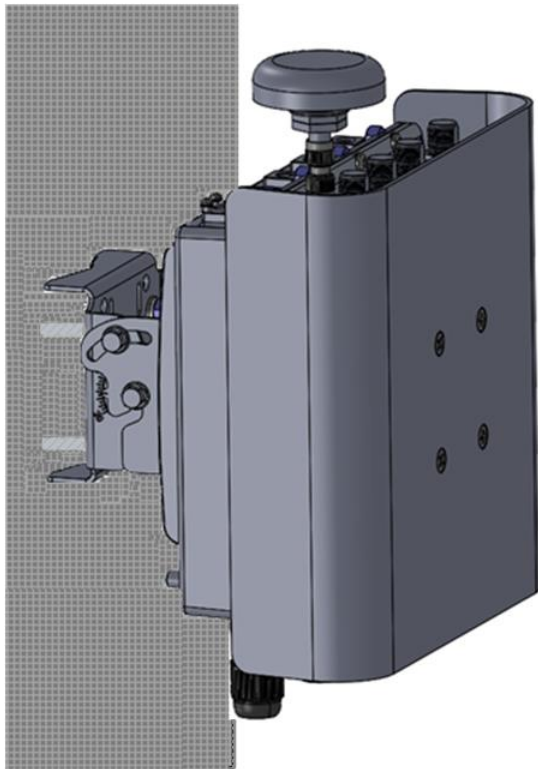
The following describes the wall mounting procedure:

1. Select the location on the wall to mount the AirSpeed 1000 mounting bracket.
2. Assemble the 2 SEMS screws (M8 x 20) into the lower threaded holes on the mounting (base) bracket, do not tighten.
3. Position the mounting (base) bracket onto the wall at the required height using screws and appropriate wall anchors (not provided) and tighten in place.

Note: Wall plugs (x4) and necessary hardware are **not** supplied by Airspan and are the responsibility of the installer. Use appropriate wall plugs according to field conditions.

4. Carefully align and position the unit so that the screws (1 on each side) fit into the notched grooves provided on the back bracket (pre-assembled on the unit) and hand tighten. Insert the M8 screws, washers and nuts (supplied) and fasten the back bracket (pre-assembled on the unit) to the mounting bracket.
5. Adjust the unit so that the GPS is positioned upright. Check and tighten all fixing screws.

Figure 9: AirSpeed on Wall



4.4 LED Display

A single tri-color LED (Green/Red/Orange) appears at the bottom of the unit, providing unit status indication.

5 Connect and Manage Cables

This section describes grounding procedure, cable preparation and connections and external antenna assembly.

5.1 Grounding

The AirSpeed 1000 requires a secure ground connection and a grounding screw fitted with a flat washer and lock washer is provided on the back and clearly marked with the universal ground symbol



The cable should be grounded and bonded according to international or local standards.

5.2 Remote Antenna Assembly

The AirSpeed 1000 unit is used with remotely attached antennas.

For installation of the remotely mounted antennas follow the antenna manufacturer's instructions and connect the antenna to the AirSpeed 1000 using the appropriate cables. (Weather-proofed N-type Heliax RF cables (ordered separately).

1. Attach, connect and secure the RF cable between the external antenna and the appropriate RF connection on the top of the unit.

Figure 10: Connecting Antenna RF Cable



Caution: Do not over-tighten the RF connector. RF failures can result when the RF connector is over-tightened.

5.3 Weather-proofing Antenna Connections

Weather-proofing of the antenna connections is recommended. This is done with a layer of self-amalgamating tape followed by an over layer of PVC tape.

Figure 11: Weather-proof the Connection



Verify the RF connector is completely weather-sealed.

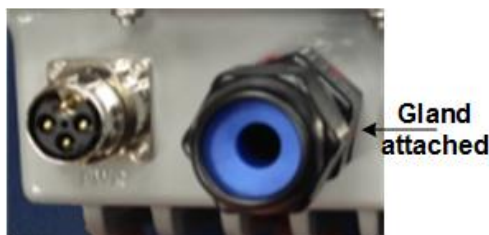
5.4 Ethernet Cable Installation

Before connecting to the appropriate port you can manage and store any excess cable by winding it up and fasten it securely. This takes up any excess slack and presents a more thorough and orderly installation.

The following demonstrates the recommended assembly instructions, hardware and tool requirements for the proper Ethernet cable assembly of the Ethernet Category 5e (enhanced) (CAT5e) cable used by Airspan products.

The Ethernet cable is connected using a standard RJ45 connector protected by a harsh environment protective casing.

Figure 12: Gland Connected



-
1. Remove the Gland connector by unscrewing the body from the unit stand-off.
 2. Pass the prepared Ethernet cable through the tail nut, seal, body and front seal of the connector casing as shown below. Do not tighten the tail nut.
-

Figure 13: Ethernet Cable through Connector



-
3. Seat (click) the RJ45 connector plug securely into the AirSpeed 1000.
 4. Tighten the Gland body into to the stand-off on unit.
 5. Tighten the tail nut on to the body, forcing the seal to compress around the cable.
-

Once the connector is properly installed, the cable should be positioned and secured to minimize stress on the cable.

5.5 Connecting the DC Power Cable

1. Plan the position of the DC power cable run from the AirSpeed 1000 unit to the power supply. The DC power cable is offered in various lengths, to fit different deployments.
2. Uncoil the cable and secure the connector to the connector on the bottom panel of the AirSpeed 1000 unit.

Note: When securing the cable make sure there is no tension on the connector so that it is easy to disconnect and re-connect for future maintenance actions.

3. Position the pins correctly, the connector is secured to the unit with a locking ring that is screwed into place. Use firm hand pressure only, the connector has a built in sealing ring.

Caution: The internal plastic parts of the mating connector are keyed. Take care to align these by visual inspection or by gently rotating the connector body until the key way sections align and the pins go in before tightening the locking ring.

Figure 14: Power Cable Attached



A Job Sheet

This job sheet enables the users to keep track of their installation. It covers all the prerequisites required for accomplishing the AirSpeed 1000 installation.

Site Requirements
<ul style="list-style-type: none">○ Position on Pole / Wall○ Access restrictions (local regulations) (when applicable)○ Method of reaching pole or wall positions (ladders, Elevated work platform)○ Configuration programming details known○ Point of connection for Ethernet (if applicable)○ All equipment items available at the installation site<ul style="list-style-type: none">○ AirSpeed 1000 unit○ Mounting bracket○ Ethernet cable assembly
Tool Requirements (For further information, see Verify the Tools.)
<ul style="list-style-type: none">○ Large flat bladed screw driver○ 13 mm wrench○ 10 mm or 13/32 inch wrench○ Large pliers○ Hammer (to insert and set the wall plugs)
Required Ancillary Equipment
<ul style="list-style-type: none">○ Laptop PC for initial configuration○ Ethernet cable for temporary connection of the lap top

B Checklist

During installation, review and perform all the steps on this checklist (in the given order). This checklist is meant for the person who performs the AirSpeed 1000 installation.

Tip: To make sure you complete all the tasks, detach or print this checklist and use it as a job aid. After performing, check off each task.

Procedure	Action	Check If Performed
Verify the prerequisites	Verify the site requirements.	<input type="checkbox"/>
	Verify the installation requirements.	<input type="checkbox"/>
	Verify the tool requirements.	<input type="checkbox"/>
	Verify the parts & kits required.	<input type="checkbox"/>
AirSpeed 1000 installation	Install the mounting bracket (base)	<input type="checkbox"/>
	Install AirSpeed 1000 on the mounting bracket (as required).	<input type="checkbox"/>
Connect & manage Cables	Connect to Ethernet (if applicable)	<input type="checkbox"/>
Connect power system	Connect power	<input type="checkbox"/>

C Abbreviations

Table 10: ABBREVIATIONS & DEFINITIONS

Term	Expansion
3GPP	3rd Generation Partnership Project, responsible for LTE
AWGN	Additive White Gaussian Noise is a channel model in which the only impairment to communication is a linear addition of white noise with a constant spectral density and a Gaussian distribution of amplitude.
BER	Bit Error Rate
dB	Decibel. A logarithmic unit used to describe a ratio (such as power ratio in radio telecommunications)
dBm	An abbreviation for the power ratio in decibels (dB) of the measured power referenced to one milliwatt (mW). It is used as a convenient measure of absolute power because of its capability to express both very large and very small values in a short form
eNodeB	Evolved Node B, is the element in E-UTRAN of LTE
ESP	Encapsulating Security Payloads (ESP) provide confidentiality, data-origin authentication, connectionless integrity, an anti-replay service (a form of partial sequence integrity), and limited traffic-flow confidentiality
E-UTRAN	Evolved Universal Terrestrial Radio Access Network, is the air interface of 3GPP's Long Term Evolution
FDD	Frequency-Division Duplexing. A transceiver mode where the transmitter and receiver operate at different carrier frequencies
GNSS	Global Navigation Satellite System is a term used to describe a satellite navigation system with global coverage. There are currently two fully operational GNSSs – the US GPS and the Russian GLONASS.
HPBW	Half Power Beam Width is the angular separation in an antenna, in which the magnitude of the radiation pattern decreases by 50% (or -3 dB) from the peak of the main beam
IPSec	Internet Protocol Security is a protocol suite for securing Internet Protocol (IP) communications by authenticating and encrypting each IP packet of a communication session
LED	Light Emitting Diode
LTE	Long Term Evolution
MAC	Medium Access Controller – responsible for several functions such Scheduling, Packet (De)Multiplexing, etc...
MME	Mobility Management Entity is the key control-node for the LTE access-network. It is responsible, among other things for idle mode UE tracking and paging procedure including retransmissions

Term	Expansion
MTBF	Mean Time Between Failures
NL	Network Listening
OFDMA	Orthogonal Frequency-Division Multiple Access (OFDMA) is a multiple access version of OFDM digital modulation scheme, used for eNodeB transmissions to UEs
PDU	Protocol Data Unit
PTP	Precision Time Protocol is used to synchronize clocks throughout a network. In this document, PTP is referring to IEEE1588-2008 protocol
ROHS	Restriction Of Hazardous Substances
S-GW	Serving Gateway. A Core entity in the LTE EPC architecture responsible for routing and forwarding user data packets, while also acting as the mobility anchor for the user plane during inter-eNodeB handovers and as the anchor for mobility between LTE and other 3GPP technologies
SC-FDMA	Single-Carrier FDMA is a frequency-division multiple access scheme, dealing with the assignment of multiple users to a shared communication resource. Used in LTE for UE transmissions to the eNodeB
SDR	Software Defined Radio
TDD	Time-Division Duplexing. A transceiver mode where the transmitter and receiver operate on the same carrier frequency
UE	User Equipment. The end user in LTE
WEEE	Waste Electrical and Electronic Equipment
