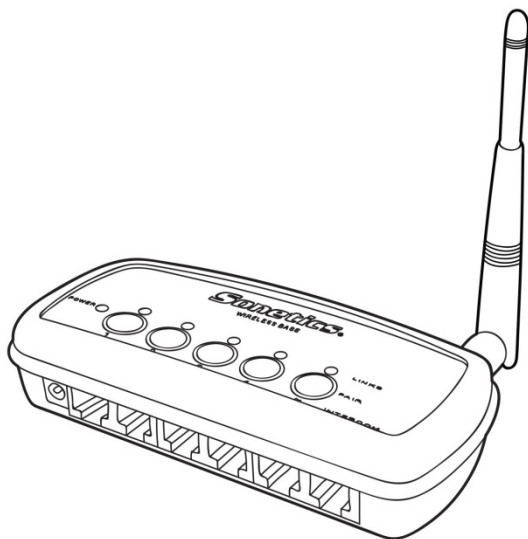




SON150

Wireless DECT7 Base Station

Manual



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Overview

Wireless base stations support the RF connections of Sonetics wireless communication systems. Housed in a compact rugged case, the Multiple-User Base Station maintains digital communication with up to five Sonetics wireless headsets in full duplex (like a conference call) with each able to activate a radio PTT remotely thru the Sonetics Digital Intercoms. For additional users, the wireless base has the ability to have up to 100 users in listen only mode for use in applications like tour groups. The listen only users also have the ability to take turns to talk with the rest of the group. Sonetics DECT7 operating on the 1.9GHz, the base station provides secure, interference-free, full-duplex communication, and wide band up to 7kHz with Sonetics wireless headsets up to a 1,600-foot line-of-sight radius. With an internal and external antenna, the wireless base configures the user's application for best wireless results. Multiple base stations can be combined with one or more intercom units to support up to 60 users in a single local digital audio network. USB programmable enables the site administrator extended control like adding channels and specific connection profiles.

Contents in Box

Base Station

1 ea x Wireless Base Station

Antenna

1 ea x Duck Antenna

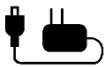
1 ea x Duck Antenna Mount



Manual and Reference

1 ea x Quick Reference Guide

1 ea x Manual



Power

1 ea x AC Wall Adaptor

1 ea x DC Power Cable

1 ea x in-line Fuse Holder & Fuse

Accessories

1 ea x Intercom Interface Kit

4 ea x Mounting Feet

1 ea x USB Cable

Accessories (not included)

Magnet Mount Remote Antenna

Permanent Antenna

Auxiliary Input Radio Interface - Connect to virtually any radio and many other devices

Worldwide Power Adaptor

Features

USB Programmable

The wireless base has a built in USB port for configuring with your Windows PC. Each feature and setting may be customized to your individual application.

Wireless DECT Communications

The headset features a wireless DECT communication channel enabling full duplex communication, like a phone call, to others on the same channel. The Sonetics wireless DECT base station will connect with Sonetics wireless headsets and belt packs. This DECT communication network gives the user up to 1600ft line-of-sight to the wireless base in Region 1 (US) and up to 800 meters in Region 2 (EU). The standard further ensures interference free and digitally encrypted communications amongst all parties.

Backwards Compatibility

The wireless headset is backwards compatible with the Sonetics first generation wireless bases with minimal loss in functionality.

Wide Band Audio

The wireless DECT communications are transmitted in a high definition wide band audio format. This allows greater intelligibility of the user and integration with voice activated control systems. This feature is defeatable to allow the user to be in a narrow band audio communication.

Dual Antenna Design

There is an internal antenna and an external antenna for diversity switching to lock onto the best signal. This allows the installer to place the wireless base in optimal location while being able to remotely locate the antenna if needed.

Two-Channel System

The wireless base has 2 channels able to be remotely selected by the wireless headsets.

Listen Only Mode

The headset may be paired into a listen only mode of operation reducing the power consumption considerably. Up to 100 wireless headsets may be paired and active in listen only mode. A headset may transition to talk mode momentarily in a first in first out basis.

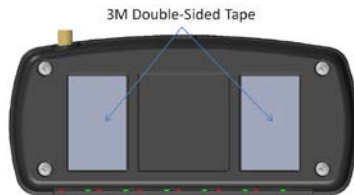
Mounting

The wireless base is designed to mount on a variety of surfaces. The unit includes an internal antenna and an external antenna. Consideration must be made to optimize the antenna performance.

⚠ WARNING: Do not locate the wireless base within 4" of any metal.

If the wireless base must be located in a non-optimal location, use an external accessory remote antenna.

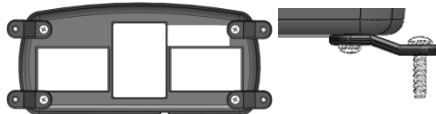
Option 1: Window Glue Mount



1. Remove duck antenna.
2. Clean the location where the wireless base will be installed.
3. Remove the protective backing from the 3M double-sided tape on the bottom of the wireless base.
4. Press firmly to the window.

Option 2: Fixed mount with Feet

1. One at a time, remove the wireless base screw.
2. Replace with the supplied foot and replacement screw.
3. Repeat for all 4 wireless base screws.
4. Affix the wireless base to the location using the feet.



5. Position antenna and use antenna mount to affix into place or use external remote antenna.

Option 3: Desk

1. Place on Desk.
2. Orient the external duck antenna vertically or use a remote antenna.

⚠ WARNING: Only use approved external antennas.

Antennas

The external antenna provides performance increase and flexibility in installation.

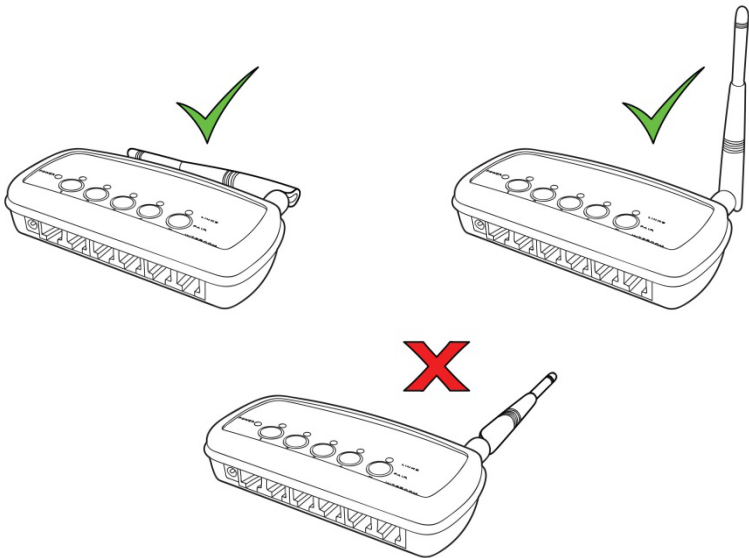
To optimize performance:

1. Position the antenna at least 12 inches from any other antenna, metal, electrical power, radio equipment, or obstructions.
2. Choose a location in the center of the vehicle's roof (if mounting outside).

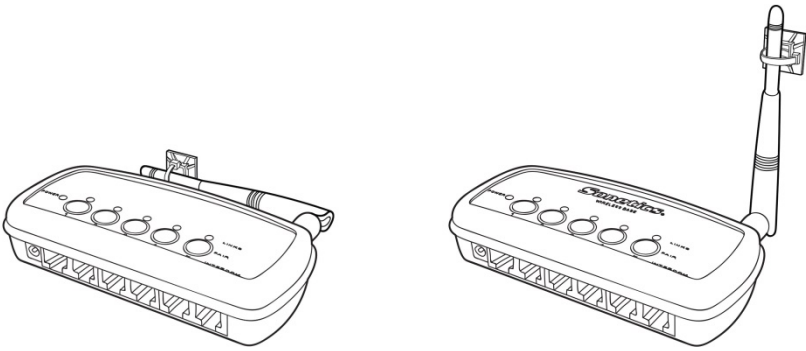
⚠ WARNING: For FCC and other Radio Frequency regulatory compliance, use only Sonetics approved wireless antennas.

Duck Antenna

Always position the Duck antenna at 90 degrees from the internal antenna. The internal antenna is shown below.



The duck antenna needs to be supported when used in a vehicle or any environment when the wireless base may be subjected to vibration.



Accessory Antennas

Sonetics has accessory antennas for temporary and permanent installation on the exterior of a vehicle or building.

Magnet Mount Antenna

This antenna is designed for non-permanent installations on metallic surfaces.

1. For optimal results, find the center of the vehicle's roof or trunk where you will locate the antenna. Temporarily mark this location. This will provide you with ground plane by giving equal distance around the sides of the antenna.
2. Clean the marked area with rubbing alcohol or other non-corrosive cleaner to prepare the surface for the mount. Let it dry for a few minutes.
3. Cut a round piece from a felt sheet the same size as the magnet mount bottom. Put the felt on the center of the ground plane and place the magnet antenna on top of the felt. This is to protect to the vehicle's paint from scratches. While placing the antenna, make sure the coaxial cable is facing the vehicle's front.
4. Open the hood or the trunk. Run the cable through the crevice that is closest to the rear window. Route this cable to the base station's location.
5. Insert the cable into the base station's antenna port.

Permanent Mount Antenna

This antenna is designed for permanent installation. Have a qualified radio installer perform the installation.

Power

The wireless base station can be powered from the DC Jack or directly from a Digital intercom. The unit will automatically power on when power is applied.

⚠ WARNING: Use only one option to power the wireless base to prevent ground loops.

Option 1: DC Jack Power



Wall Adapter Charging

Only charge the headset using the supplied 12VDC regulated wall adapter.

⚠ WARNING: Use only approved wall adaptors.

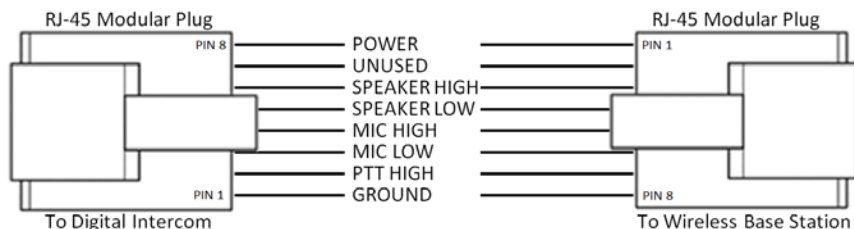
Vehicle Charging

Connect the **RED** wire to +12V and the **BLACK** wire to battery chassis ground. Install the fuse no further than 18" from the battery.

⚠ WARNING: Only replace fuse with the same type, 1.5A AGU.

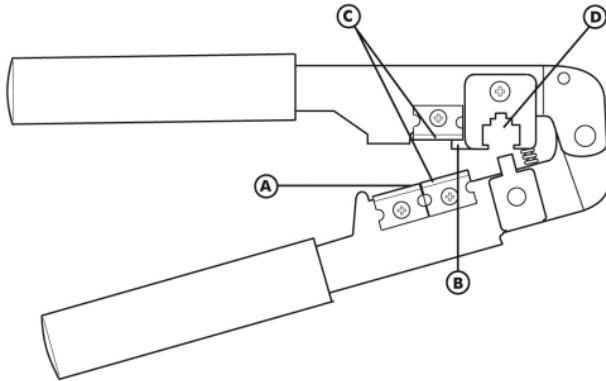
⚠ WARNING: Voltages exceeding the headset charging specification will damage the headset.

Option 2: Digital Intercom Power

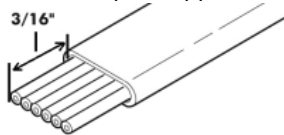


1. Connect one RJ-45 modular plug as shown above. Both the Power and Ground will be connected from the Digital Intercom to the Wireless Base. Any input will power the wireless base.
2. Adjust the fuse of the Digital intercom to include the current draw from the wireless base.
3. Additional connections to the digital intercom need only the middle connections using a 6 pin RJ-12 connector.

Modular Plug Installation

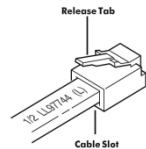


1. Using the cutter blade on the crimping tool (A), cut the flat CA Cable so the cut is clean and 90 degrees to the sides of the cable.
2. Insert one end of the CA Cable between the stripping blades (C) until the end of the cable hits the stop (B).
3. Squeeze the handles of the crimping tool together until the tool bottoms out.
4. While holding the handles together, pull the cable out of the tool.
5. The stripped insulation should expose approximately 3/16" of wire.



6. Push a RJ Modular Plug into the plug holder on the crimping tool (D) until the release tab on the plug locks into position.
7. Holding the cable so that the printed side (or smooth side) of the cable is toward the release-tab on the plug, push the cable into the plug as far as it will go.

 **ALWAYS make sure the printed side (or smooth side) of the cable is facing the release-tab on the RJ Modular Plug.**



8. Squeeze the tool handles **COMPLETELY** together. You may feel the crimper finish punching the contacts through the insulation on the wires.
9. Let the handles spring open.
10. Push down on the release-tab on the RJ Modular Plug and remove the RJ Modular Plug from the crimping tool.
11. Inspect the plug to ensure that the cable is held securely in place.

Connecting to an Intercom

The wireless base is designed to integrate into a Sonetics intercom system. This flexibility gives the user the ability to connect two-way-radios to the intercom and have full use from a wireless headset.

Any position connected to the intercom, except 6, will have radio transmit capability.

Any position using the intercom connection, position 6, will hear and be heard, but will not have radio transmit capability.

Any position not connected to the intercom will not be able to hear or be heard on the intercom.

Radio Transmit

This enables the wireless headset to have radio transmit capability wirelessly at the headset. The headset will hear everything received from the radio and will be able to radio transmit over the radio via the PTT button on the headset. The wireless base must be connected to a Sonetics intercom with the intercom connected to a two-way-radio for proper operation. Consult your intercom manual for instruction on how to connect to a radio.

1. Ensure you have a radio transmit wireless headset model or configure the wireless headset for radio transmit over DECT. Consult your wireless headset manual for instructions.
2. Pair the radio transmit wireless headset to position 1.
3. Connect the wireless base position 1 port to the Sonetics intercom using the supplied flat cable.
4. Repeat for other positions needing Radio transmit capability.
5. Test and verify each position.
 - a. The Red LED adjacent to the base station position will light up when the headset is in Radio Transmit mode.

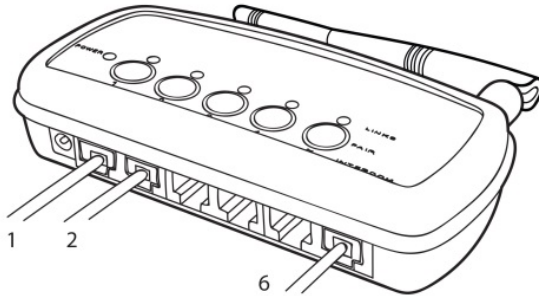
Intercom Only

The wireless base can conserve cable connection with the Sonetics intercom from the intercom only port. All wireless devices will transmit over the intercom only position 6. No radio PTT signals will be sent over the position 6 location.

1. Pair the wireless headset to position 1.
2. Connect the wireless base position 1 port to the Sonetics intercom.
3. Repeat for other positions needing Radio transmit capability.

Examples:

Mixed mode, Radio PTT with Intercom only



The positions 1 & 2 are configured for radio transmit to the intercom. Pair the radio transmit headsets to positions 1 & 2. Wireless headsets on positions 1 & 2 will radio transmit out positions 1 & 2 respectively.

Position 6, labeled as intercom, is also connected to the intercom. Headsets connected to positions 3, 4, and 5 are intercom only and do not have the ability to radio transmit under any circumstance.

LED Indicators

Top Indicators



Power Indicator

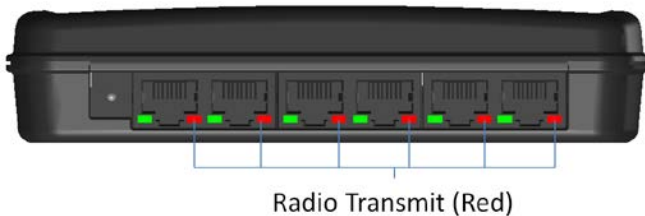
On when unit has power and is on.

Link Indicators

One per wireless position. These indicate the connection status of the wireless devices paired onto the wireless base.

- Off – No wireless device is paired to this position
- Slow Flashing – Pairing Mode Active
- Fast Flash – Device paired, no connection.
- Solid Light – Device paired and connected

Front Indicators



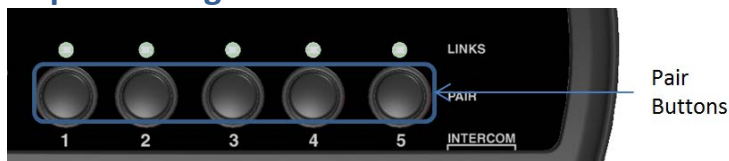
Radio Transmit

Indicates the radio transmit active per output.

Paring

Paring creates a semi-permanent connection between the wireless base and the device paired. This procedure is only required once to create the link. Each time the devices turn on, they will automatically remember the last link and make connection.

Full-Duplex Paring



1. Press and hold one of the paring buttons till the link indicators begins to flash slowly. Any other device that was previously paired into the link location will be forgotten.
2. Place the wireless device you wish to link into pairing mode.
3. The wireless base will automatically connect showing a solid link led.
4. If the pairing was unsuccessful. Repeat.

Listen Only Paring

Listen only allows up to 100 devices to be paired and linked to the wireless base station. Positions 3, 4, and 5 are reserved for listen only when a device is paired as a listen only device. One device at a time may transition from listen only to talk. Positions 1 and 2 are reserved for non-listen only paired devices. Radio transmit is not available on Listen Only Paired devices.



1. Press and hold Buttons 3, 4 & 5 till 3-5 link leds begin to flash slowly.
2. Place the wireless device you wish to link into pairing mode.
3. The wireless base will automatically connect showing a solid link led on position 5.
4. If the pairing was unsuccessful. Repeat.
5. To pair additional devices, Repeat 1-4.

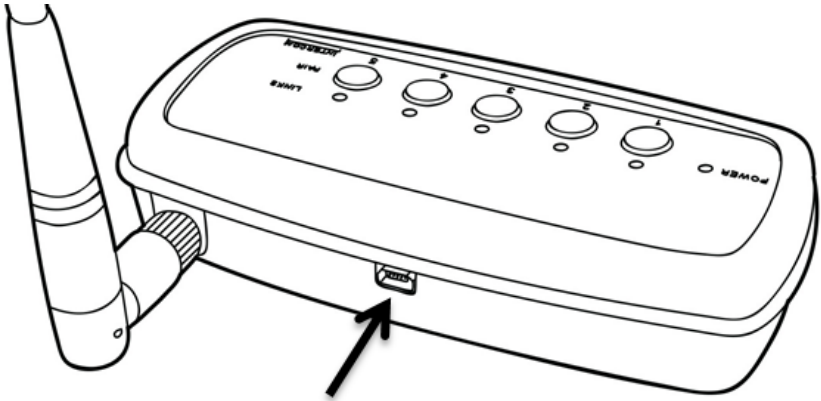
To exit listen only mode:

Press and hold 3, 4, OR 5 till the link led flashes slowly indicating paring mode.

PC Programming

All of the headsets feature a USB port located inside the left dome. Using the Sonetics Configurator program, you can adjust some additional features on a Windows PC. Refer to the program for additional information.

Locating the USB Port



Installation of the Sonetics Configurator Windows Program

1. Go to www.SoneticsCorp.com/software.
2. *Download* and *Install* the program for the wireless base station.
3. Plug in the USB cable from the wireless base to the computer.
4. Open the program.
5. Follow the directions of the configurator program.

Troubleshooting

Note: If the symptoms you are experiencing are not covered in this manual, or if you are having difficulty troubleshooting your system, call us or visit our website. We're here to help.

Service Contact:

Phone: 503-684-6647, Service@soneticscorp.com

No indication of power to the base station

- Check wiring to the base station.

No audio communication and/or PTT from or to the base.

- Ensure that power is turned on to the wireless headset(s) and that the headset(s) are connected.
- Ensure that the modular communication cable is connected between the base station and intercom.
- Check the modular communication cable between the base station and intercom for continuity.
- Ensure correct polarity of the modular plug on both ends of the modular cable.

Poor quality audio, low or distorted received or transmitted audio.

- Ensure that the volume level is properly adjusted on the intercom. For digital intercom series intercoms, it is recommended that the volume level is set as high as possible on the intercom without causing distorted audio on the headset side, and that the volume control on the headset is adjusted for comfortable listening.
- Poor quality audio can also be caused by a defective headset. Check operation with a known, well-functioning headset.
- Ensure that the proper base station model for your intercom is used.

Audible interference from portable and mobile radios.

- The wireless system is tested and proven to be immune to interferences from portable and mobile communication equipment operated anywhere in the frequency spectrum from 30MHz to 18GHz. However, care should be taken with installation of communication cables between the intercom and the base station. These cables should be routed away from portable and mobile radios and antenna cabling in order to prevent RF interference from such devices.

Poor coverage range.

- Check location of the base station and external antenna location. The base station should not be installed inside metal enclosures or any other location closer than 4 inches to a metal object or surface.
- Poor range can also be caused by a defective headset. Check operation with a known, well-functioning headset.

If a problem persists contact Sonetics Service for additional help.

Specifications

Physical

Length:	5.70in / 145mm
Width:	2.72in / 69mm (not including external antenna)
Height:	1.22in / 31mm
Weight:	4.8oz / 136g

Power

Voltage Input:	5 VDC to 16 VDC
Maximum Current Input:	400mA @ 5V, 150mA @ 12V

Environmental

IP-Rating:	IP-20
Operating temperature:	-40°F to 140°F / -40°C to 60°C
Storage temperature:	-40°F to 140°F / -40°C to 60°C

FCC

FCC ID:	V9N950325700V1
FCC Part 15:	All Models

Industry Canada

IC UPN:	7895A-950325700
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MIL SPEC

Humidity:	MIL-STD 810F and 810G
Temperature Shock:	MIL-STD 810F and 810G

SAE

Vibration:	J1455 Sec. 4.9
Conducted Immunity:	J1113-11
Electrostatic Discharge:	J1113-13
Radiated Emissions:	J1113-41
Radiated Immunity:	J1113-21

ISO

Conducted Transients:	7637-2
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DECT Specifications

Common DECT Specifications

Carrier Spacing:	1.724 MHz
Time Slots:	2 x 12 (up and down stream)
Channel Allocation:	Dynamic
Encryption:	DECT Standard Cipher with 35-bit initialization vector
Audio Bandwidth:	300 Hz to 3.4 kHz, Narrow Band, G.726 compression 50 Hz to 7 kHz, Wide Band, G.722 compression

Region 1 Specific Specifications

Authorized for use in:	Canada, USA
Frequency Bandwidth:	1920 MHz to 1930 MHz
Number of Carriers:	5
Total Time Slots:	60 in G.726(narrow band) / 30 in G.722(wide band)
Average Output Power:	4 mW
Maximum Output Power:	100 mW
Range (line of sight):	1600 feet maximum

Important Safety Information

⚠ CAUTION! Follow all warnings and instructions marked on the product or contained in the owner's manual.

When using this product, always follow basic safety precautions to reduce the risk of fire, electric shock and injury to persons, including the following:

- ⚠ Do not use the wireless system to report a gas leak in the vicinity of the leak.
- ⚠ Use only the power adapters, and power cords indicated in the manual. If more than one type of power adapter is included in the product, the manual specifies which adapter should be used for each component. Be sure to use the proper adapter for each product component.
- ⚠ Do not place the power cord where it creates a trip hazard or where it could become chafed and create a fire or electrical hazard.
- ⚠ Do not subject the unit to high temperatures or leave it in direct sunlight for an extended period of time.

SAVE THESE INSTRUCTIONS!

Warning for Sensitive Electronic Devices

This equipment and any radio-based can electronic potentially cause electromagnetic based interference with other equipment and can be interfered with other equipment. This also applies with DECT based Equipment. Due to the very low transmission power associated with DECT the chance for interference is small. However some specific precautions must be taken into account for sensitive electronic equipment e.g. sensitive laboratory equipment, medical instruments or medical implants to avoid incidental influence of equipment operated in straight nearness to sensitive electronic equipment. You are therefore advised not to place the DECT equipment or its antenna in close proximity to sensitive equipment by maintaining a 20cm minimum distance between the sensitive equipment even in standby mode. Please also consider referencing the documentation provided by us and the manufacturer of sensitive electronic items guiding its proper usage.

General Communication Privacy Notice

Although this equipment may contain specific protocols that enhance security and privacy of communication, privacy of communication may not be ensured when using this equipment.

Notice:

Modification not expressly approved of by Sonetics Corporation could void the uses authority to legally operate the equipment and will nullify warranty. This includes the use on non-approved antennas or 3rd party amplifiers with the radio base station.



This section applies to radio frequency equipment bearing an I.C. Equipment ID Number.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter IC: 7895A-95032570 has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Approved Antennas for use with this device:

- SON150 Base Station Antenna Sonetics P/N: 521-0014-00 (3dBi)
- Magnet Vehicle Mount Sonetics P/N: 114-0139-00 (4.4dBi) (Sold Separately)
- Permanent Mount Antenna, Sonetics P/N: 114-01138-00 (4.4dBi) (Sold Separately)

This section applies to radio frequency equipment bearing an I.C. equipment ID number.

This device complies with Industry Canada license-exempt RSS standard(s).

Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes:

- (1) le dispositif ne doit pas produire de brouillage préjudiciable, et
- (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Canada SAR Information:

This device contains a radio transmitter. This device has been shown to be capable of compliance for localized specific absorption rate for uncontrolled environmental / general public exposure limits specified in RSS-102, ANSI/IEEC95.1-2002 and have been tested in accordance with the measurement procedures specified in IEE 1528-2003.

Caution

This base station, other base stations or approved base station antenna meant to be used in conjunction with this equipment must not be used in close proximity to the body. Keep a minimum distance of greater than 20 CM to the human body. This device and antenna must not be co-located in conjunction with any other equipment antenna or transmitter.

Attention:

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

This class A digital apparatus complies with Canada ICES-003.

CET appareil numérique de la classe A est conforme à la norme NMB-003 et CNR 210 d'Industrie

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.

Modifications not expressly approved by Sonetics Corporation could void the user's authority to operate the equipment.

Privacy of communications may not be ensured when using this device.

FCC PART 15.105(a): Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC/IC RF Exposure Warning

- This product complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- To comply with FCC RF exposure guidelines the base station and any antennas must be installed and operated 20cm (8 inches) or more between the product and all persons body (excluding extremities of hands, wrists and feet). Note: All necessary accessories are included in the package; any additional or optional accessories are not required for compliance with the guidelines.) Use of other accessories might not comply with FCC or IC RF exposure guidelines.
- This product may not be collocated or operated in conjunction with any other antenna or transmitter.
- This device has been tested and meets the FCC RF exposure guidelines.

FCC Authorized Antenna Information:

Under FCC regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by FCC. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter has been approved by Industry FCC to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated.

Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Approved Antennas for use with this device:

- SON150 Base Station Antenna Sonetics P/N: 521-0014-00 (3dBi)
- Magnet Vehicle Mount Sonetics P/N: 114-0139-00 (5.5dBi) (Sold Separately)
- Permanent Mount Antenna, Sonetics P/N: 114-01138-00 (5.5dBi) (Sold Separately)

Sonetics Standard Limited Warranty

Sonetics Corporation ("Sonetics") warrants to the original purchaser of its products that products will be free from defects in materials and workmanship under normal and proper use for the period of **one (1) year** from date of purchase.

Sonetics Corporation will repair or replace, at its option, any products showing factory defects during this warranty period, subject to the following provisions and obligations:

1. This warranty applies only to a new product sold through authorized channels of distribution.
2. All work under warranty must be performed by Sonetics Corporation or Sonetics Authorized Service Center.
3. All returned products must be shipped to our address, freight prepaid and Sonetics will return products to customer via ground freight. Any expedite fees or additional freight charges will be charged to customer.
4. Any attempt to repair, service, or alter the product in any way voids this warranty.
5. This warranty does not apply in the event of accident, abuse, misuse, liquid contact, improper installation, unauthorized repair, tampering, modification, fire, earthquake, or damage from other external sources – including damage caused by user-replaceable parts.
6. This warranty does not apply: (a) to consumable parts such as batteries, ear seals, intercom bags, cables, external power supplies, parts listed as accessories to a system, or other parts designed to diminish in function over time unless a failure is due to a defect in materials or workmanship; (b) to cosmetic damage or to defects caused by normal wear and tear or aging of the product; (c) to damage caused by use with non-Sonetics products; (d) to damage caused by operating the product outside the permitted or intended uses or environments described by Sonetics; (e) to damage caused by service performed by anyone who is not a representative of Sonetics or an Sonetics Authorized Service Provider; (f) to a product or part that has been modified without the written permission of Sonetics; (g) if any Sonetics serial number has been removed or defaced.
7. This warranty does not extend to any other equipment, apparatus, vehicle, aircraft, or watercraft to which this product may be attached or connected.

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Subject to the terms and limitations of this Sonetics Standard Limited Warranty, this warranty covers any new covered product found to be defective within the applicable warranty period. Sonetics reserves the right to examine the alleged defective covered product to determine whether this Sonetics Standard Limited Warranty is applicable, and final determination of warranty coverage lies solely with Sonetics. If Sonetics determines that warranty coverage applies, Sonetics reserves the right to either repair or replace a covered product or any part thereof, as determined by Sonetics in its sole discretion. If the product has been subjected to conditions which exclude coverage under the warranty, customer will be so advised. Customer may then authorize paid repair service or other disposition of the product. Notwithstanding any other provision of this warranty, if you sell or otherwise transfer ownership of your covered product, this Sonetics Standard Limited Warranty shall automatically terminate.

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