Signal Booster Installation Guide

Direct Connect
800/1900 MHz
Smart Technology™
Signal Booster with
GPS Amplification

Contents:

Appearance of device and accessories may vary.

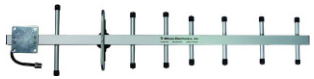
Note: This manual contains important safety and operating information. Please read and follow the instructions in this manual. Failure to do so could be hazardous and result in damage to your Signal Booster.

Wilson® Electronics, Inc.

Installation Instructions for the Following Wilson Electronics Signal Boosters

Direct Connect 800/1900 MHz Smart Technology™ Signal Booster with GPS Amplification – Model # 2B1401 -
Part #811200, 811201, 811206, 811207 & 811209
Contains 1575 MHz bypass to allow for GPS reception.
FCC ID: PWO2B1401SA IC: 4726A-2B1401SA
The term "IC" before the radio certification number signifies that Industry Canada technical specifications were met.

Options and Accessories


800 MHz Yagi Cellular Antenna (301111)


1900 MHz Yagi PCS Antenna (301124)


800 MHz Yagi Cellular Antenna (301129)


Lightning Surge Protector 50 Ohm (859902)


12v DC Hardwire Power Supply (859905)


Mini Magnet (301126)


Magnet Mount (301125)


Trucker Mount (301101)


Marine Antenna (301130)


NMO Mount (301104)

Appearance of device and accessories may vary.
To purchase call Wilson Electronics Sales Team 800-204-4104

Before Getting Started

This guide will help you properly install Wilson Electronics Direct Connect Signal Boosters in both in-vehicle and in-building applications. **It is important to read through all of the installation steps for your particular application prior to installing any equipment.** Read through the instructions, visualize where all the equipment will need to be installed and do a soft installation before mounting any equipment. Contact Wilson Electronics Technical Support at 866-294-1660 with any questions.

Inside This Package (811201)
- Direct Connect Signal Booster
- DC plug-in power supply
- 6 ' extension cable


Direct Connect Signal Booster

Inside This Package (811200)
- Direct Connect Signal Booster
- AC power supply
- 6" extension cable

Additional Equipment
- Outside Antenna for in-vehicle or in-building use (required)
  Note: *specifically tuned iDEN antennas available, Signal Booster will not work with iDen*
- Cell phone or data card-specific external antenna adapter (required)
- AC/DC power supply (required for in-building use)

How it Works

Wilson Electronics Signal Boosters are small, portable, bi-directional devices that deliver service levels consistent with what would be expected in areas of high cell network coverage. They amplify a weak or shadowed signal in mobile, M2M, marine and in-building applications.

When using a Wilson Electronics Signal Booster in conjunction with Wilson Electronics antennas, the Outside Antenna will collect the cell tower signal and send it through the cable to the Signal Booster adapter. Cell phones and cellular data cards (laptops) then communicate with the improved signal. When a cell phone or cellular data card transmits, the signal is amplified by the Signal Booster and transmitted back to the cell tower through the Outside Antenna.

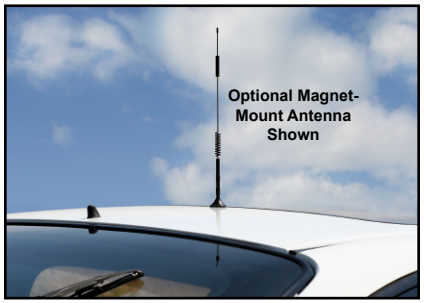
In addition to dual-band cellular signal amplification, this Signal Booster incorporates GPS signal amplification. The amplified GPS signal enhances the performance of any GPS applications which your phone may support, including the E-911 emergency location feature if your phone is so equipped. In emergencies, E-911 enabled phones provide caller location to 911 call centers.

In-Vehicle

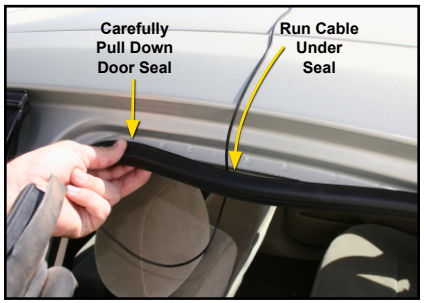
Installing a Wilson Electronics Outside Antenna

To receive the best cell signal, select a location in the center of the vehicle's roof at least 12 inches away from any other antennas and free of obstructions.

Follow the specific antenna installation instructions included with the Outside Antenna (sold separately).



The Outside Antenna must be installed vertically. Signal performance will be degraded if the antenna is not vertical.



The antenna cable may run through the door to the Signal Booster.

For a more professional looking installation, run the antenna cable under the door seal. Carefully pull down the door seal. Run the cable through the seal and push the seal back into place. This prevents constant wear and tear on the cable as the door opens and closes.

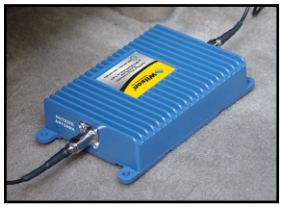
In-Vehicle

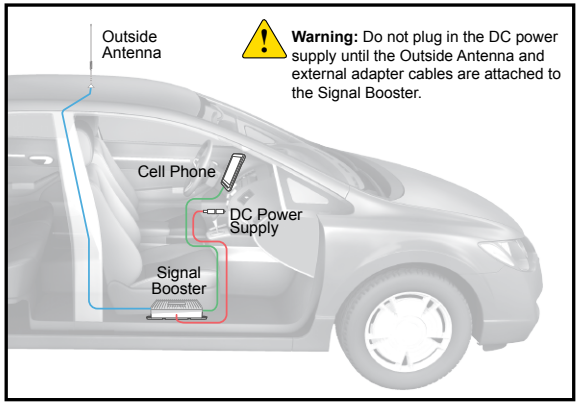
The antenna cable is small enough to easily tuck under the door seal or plastic molding.

Note: *See RF Safety Warnings (p. 5)*

Installing a Wilson Electronics Signal Booster

Select a location to install the Signal Booster that is away from excessive heat, direct sunlight, moisture and that has proper ventilation.





Recommended installation locations for in-vehicle are: under the seat, in the trunk, under the dash.

Run the cable from the Outside Antenna and attach it to the connector labeled “Outside Antenna” on the Signal Booster.

Installing a Wilson Electronics External Adapter

An external adapter is required to connect the cell phone or cellular data card to the Signal Booster. The external adapter is cell phone/data card-specific and may be purchased through a local retailer. Refer to Wilson Electronics Adapter Guide to identify the right adapter for your cell phone or cellular data card. The adapter guide is available through a local retailer or at *www.WilsonElectronics.com.* The external adapter plugs into the included antenna extension cable and directly into a socket on the cell phone or cellular data card.

The external adapter and the included extension cable are long enough to reach the Signal Booster location. This allows for ease and convenience of use.

Run the extension cable from the external adapter and attach it to the connector labeled “Cellular Phone or Data Card” on the Signal Booster.

Note: *Depending on your specific cell phone, the adapter socket may be located beneath a rubber plug.*

Contact Wilson Electronics’s Technical Support Team with any questions at 866-294-1660
Or email: tech@wilsonelectronics.com Hours: 7am to 6 pm mountain standard time.

In-Building

Installing a Wilson Electronics Outside Antenna – In-Building

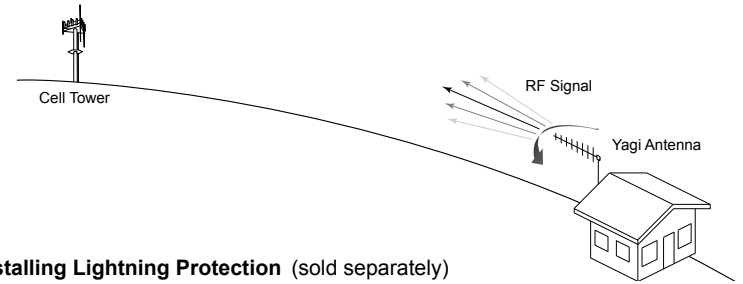
Select a location on the roof of the building to install the Outside Antenna that has the most unobstructed line of sight to the cell tower.

Follow the specific antenna installation instructions included with the Outside Antenna.

Lightning protection is recommended for all in-building installations. (sold separately) Take extreme care to ensure neither you nor the antenna come in contact with any electrical power lines.

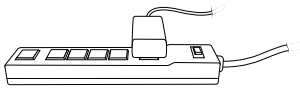
A Yagi antenna must be installed horizontally with the elements vertical and the drip hole on the bottom. Ensure there are three feet of clearance in all directions surrounding the antenna.

To obtain maximum performance, the antenna should point toward the cell tower. Follow the instructions included with the Outside Antenna.



Installing Lightning Protection (sold separately)

Install the Lightning Surge Protector (LSP) close to the Signal Booster. Attach the cable from the Outside Antenna to the surge protector, using a short length of low loss cable; attach one end to the LSP and the other to the Outside Antenna connector on the Signal Booster. Attach a ground wire (not included) to the LSP. Lightning Surge Protector (sold separately). May be purchased at *www.WilsonElectronics.com* or 800-204-4104.



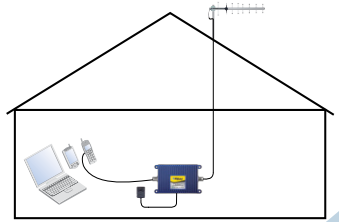
Wilson® Electronics recommends that all AC power supplies for home electronics be plugged into a **Surge Protector Power Strip.**

Installing a Wilson Electronics Signal Booster

Select a location to install the Signal Booster that is away from excessive heat, direct sunlight, moisture and that has proper ventilation. Ensure the Signal Booster is installed within six feet of where the cell phone or cellular data card will be used (to accommodate the six-foot adapter extension cable). Run the cable from the Outside Antenna and attach it to the connector labeled “Outside Antenna” on the Signal Booster. Connect the AC/DC power supply (included in 811200) to the power input labeled “12V DC” on the Signal Booster.

Recommended installation locations for in-building are near a power outlet and on a wall or on the ceiling.

NOTE: *See RF Safety Warnings (page 5)*



Contact Wilson Electronics’s Technical Support Team with any questions at 866-294-1660
Or email: tech@wilsonelectronics.com Hours: 7am to 6 pm mountain standard time.

In-Building / In-Vehicle

Powering up a Wilson Electronics Signal Booster (In-Building & In-Vehicle)

Carefully insert the power cable.

Warning: Use only a Wilson Electronics power supply. Use of a non-Wilson Electronics product could damage your equipment.

Warning: Verify that both the Outside Antenna and the adapter extension cable are connected to the Signal Booster before powering up the Signal Booster.

For **in-vehicle**, first connect the power cable to the Signal Booster input marked "12V DC" and then insert the large end into a power socket or vehicle power adapter.

The Signal Booster may remain on all the time; however, leaving the Signal Booster on in a vehicle when it is not running can discharge the battery in a day or two.

A good option is to power the Signal Booster through the ignition switch so that the Signal Booster turns off and on with the vehicle. (*Part# 859905* 12V DC Hardwire Kit available from *www.WilsonElectronics.com*).

For **in-building**, first connect the AC/DC power supply to the Signal Booster input labeled "12V DC" and then into a wall outlet. (included in 811200)

Testing a Wilson Signal Booster

To test your Signal Booster, go to a weak signal area where your cell phone registers only 1-2 bars without the Signal Booster turned on. Then, connect the Signal Booster to the phone and you should see a signal improvement of 2 or more bars. ***Note:*** *Many phones take up to 20 seconds to reset the bar indicator.*

Extension Cables

Available for purchase at *www.WilsonElectronics.com* or by calling 800-204-4104, to help you customize your installation for peak performance.

Warnings and Recommendations

Warning: Verify that both the Outside Antenna and the adapter extension cable are connected to the Signal Booster before powering up the Signal Booster.

Warning: **RF Safety**: In-vehicle - The Outside Antenna must be installed with a separation of at least 20 inches from any of the vehicle's occupants or nearby persons and must not be located or operating in conjunction with any other antenna or Signal Booster. Use of a Cellular Signal Booster with an antenna gain higher than 6.12 dBi is in violation of FCC regulations, for which the offender is fully liable. All Wilson Electronics mobile antennas are 6.12 dBi or less.

Warning: **RF Safety**: In-vehicle - All roof mount antennas should be centrally located on the roof of the vehicle. Glass Mount Antennas should be located in the middle of either the front or back windshield. Mirror Mount Antennas should be at least 20 inches from any persons in or around the vehicle.

Warning: **RF Safety**: In-Building - The Outside Antenna must be installed on an outdoor structure with a separation of at least 26 inches from all persons during normal operation. The outside building antenna must not have a gain that exceeds 15 dBi. All Wilson Electronics outside building antennas have gains of 15 dBi or less.

Lightning protection is recommended for all in-building installations. (sold separately)

NOTE: *The aluminum casing of a Wilson Electronics Signal Booster will adjust very quickly to the ambient temperature of its environment. For example, in the summer, when the inside of a car can reach 140 degrees Fahrenheit, the Signal Booster temperature may be 150 degrees or higher. The casing will be hot to the touch, similar to a metal door handle or a steering wheel. Such high temperatures will not damage the Signal Booster, nor do they pose a fire risk to the vehicle. As recommended in these instructions, install the Signal Booster in a location with adequate ventilation, such as under the seat, in the trunk or under the dashboard. Keep the area free of items that could block air flow to the Signal Booster.*

30-Day Money-Back Guarantee

All Wilson Electronics products are protected by Wilson Electronics 30-day money-back guarantee. If for any reason the performance of any product is not acceptable, simply return the product directly to the reseller with a dated proof of purchase.

1-Year Warranty

Wilson Electronics Signal Boosters are warranted for one (1) year against defects in workmanship and/or materials. Warranty cases may be resolved by returning the product directly to the reseller with a dated proof of purchase.

Signal Boosters may also be returned directly to the manufacturer at the consumer's expense, with a dated proof of purchase and a Returned Material Authorization (RMA) number supplied by Wilson Electronics. Wilson Electronics shall, at its option, either repair or replace the product. Wilson Electronics will pay for delivery of the repaired or replaced product back to the original consumer, if located within the continental U.S.

This warranty does not apply to any Signal Boosters determined by Wilson Electronics to have been subjected to misuse, abuse, neglect, or mishandling that alters or damages physical or electronic properties.

RMA numbers may be obtained by phoning our free U.S. based Technical Support at 866-294-1660.

The Manufacturer's rated output power of this equipment is for single carrier operation.

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. Changes or modifications made that are not expressly approved by Wilson Electronics could void authority to operate this equipment.

Disclaimer: The information provided by Wilson Electronics, Inc. is believed to be complete and accurate. However, no responsibility is assumed by Wilson Electronics, Inc. for any business or personal losses arising from its use, or for any infringements of patents or other rights of third parties that may result from its use.

One or more of the following U.S. Patent numbers may apply to the Signal Booster in this product – D596,614; D596,615; D563,381;7,729,669; 7,486,929; 7,729,656; 7,409,186; 7,783,318; 7,684,838; 12,714,994.

Signal Booster Specifications

	Dual-Band 800/1900 MHz Specifications
Model Number / Part Number	2B1401 / 811200, 811201, 811206, 811207 & 811209
Connectors	FME-Male
Impedance (input/output)	50 ohms
Dimensions	5 x 5.4 x 1.4 inch or 14 x 10.8 x 3.5 cm
Weight	1.32 lbs or 0.6 kg
Frequency	824-894 MHz / 1850-1990 MHz / GSM 1575 MHz
[1]Passband Gain (nominal)	
800 MHz and 1900 MHz	20 dB
1575 MHz	8 dB
[2]20 dB Bandwidth (nominal)	
800 MHz (uplink/downlink)	50 MHz / 49 MHz
1900 MHz (uplink/downlink)	121 MHz / 94 MHz

[3]Power output for single cell phone (uplink)	800 MHz	1900 MHz
CDMA	33 dBm	29.6 dBm
GSM	32.6 dBm	27.3 dBm
EDGE	33.1 dBm	27.8 dBm
WCDMA	33.5 dBm	29.7 dBm

[3]Power output for single received channel (downlink)	800 MHz	1575 MHz	1900 MHz
CDMA	9.7 dBm		13.6 dBm
GSM	8.7 dBm		9.6 dBm
EDGE	9.1 dBm		12.3 dBm
AMPS	10.3 dBm		11.9 dBm
GPS		18 dBm	

[4]Power output for multiple received channels (downlink). The maximum power is reduced by the number of channels:	Maximum Power	
Number of channels	800 MHz	1900 MHz
2	10.1 dBm	10.9 dBm
3	6.5 dBm	7.4 dBm
4	4.0 dBm	4.9 dBm
5	2.1 dBm	2.9 dBm
6	0.5 dBm	1.4 dBm

Noise Figure (typical)	3 dB nominal
Isolation	> 90 dB
Power Requirements	
Signal Booster Usage	12 V, .5 A - 1.5 A (subject to uplink power)

Notes:
1. Nominal gain is the maximum gain at any frequency in the passband.
2. Nominal bandwidth is the difference between two frequencies that are adjacent to the passband where the amplification is 20 dB lower than the passband amplification. One of the frequencies is lower than the passband and the other is higher.
3. The Manufacturer's rated output power of this equipment is for single carrier operation. For situations when multiple carrier signals are present, the rating would have to be reduced by 3.5 dB, especially where the output signal is re-radiated and can cause interference to adjacent band users. This power reduction is to be by means of input power or gain reduction and not by an attenuator at the output of the device.
4. The maximum power for 2 or more simultaneous signals will be reduced by 6 dB every time the number of signals is doubled.

Wilson® Electronics, Inc.
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For additional Technical Support visit www.WilsonElectronics.com
or email: tech@wilsonelectronics.com
Phone: 866-294-1660 Local: 435-673-5021 Fax: 435-656-2432
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Part #110662_DCwithGPS_Rev16_102511