



Force5 Inline

5-Band Cellular Booster Extender for Commercial Offices, Institutions and Housing Complexes.

User Guide

WARNING

This is NOT a CONSUMER device. It is designated for installation by FCC LICENSEES and QUALIFIED INSTALLERS. You MUST have an FCC LICENSE or express consent of an FCC Licensee to operate this device. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of \$100,000 for each continuing violation.

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Thank you for your purchase of the Force5 Inline signal booster. This booster is designed to extend the signal reach for Industrial Force5 Inline installations that extend beyond 80,000 square feet.

This guide contains all the information you'll need to get your Force5 Inline system up and running. If you need any assistance while installing the product please contact tech support at 1-888-365-6283.

When a project entails greater area coverage than the Force5 Industrial alone can provide, additional Force5 Inline boosters can be added to areas where the signal strength is getting weak or cable lengths are too long causing dB loss.

How it works

Two common ways to increase the coverage area include:

- For areas consisting of long aisles, Force5 Inline boosters can be added where the signal falls to between -70dB and -90dB.
- For large, wide areas the Force5 Inline boosters can be daisy-chained with the use of splitters to extend the signal to remote corners.

1. Unpack all package contents. For missing or damaged items, contact your reseller.

2. Turn over the signal booster and record the model and serial number for reference:

Serial #: _____

Purchase Date: _____

3. Keep the carton and packing material to store the product in case you need to return it.

Standard Force5-Inline signal booster packages include the following items:

- One power supply

Force5 Inline Booster



Before You Start

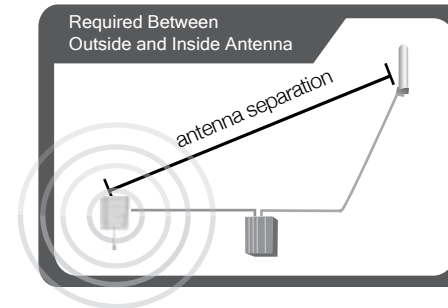
Step 1. Make sure you have positioned the booster close enough to an existing electrical outlet.

Step 2. Make sure you have sufficient cable length between the main cable location and booster connector.

Step 3. Make sure you have sufficient cable length between proposed inside antenna location and booster connector.

Step 1. Install the Inside Antenna

Inside antennas come in omni-directional (dome) and flat panel versions.

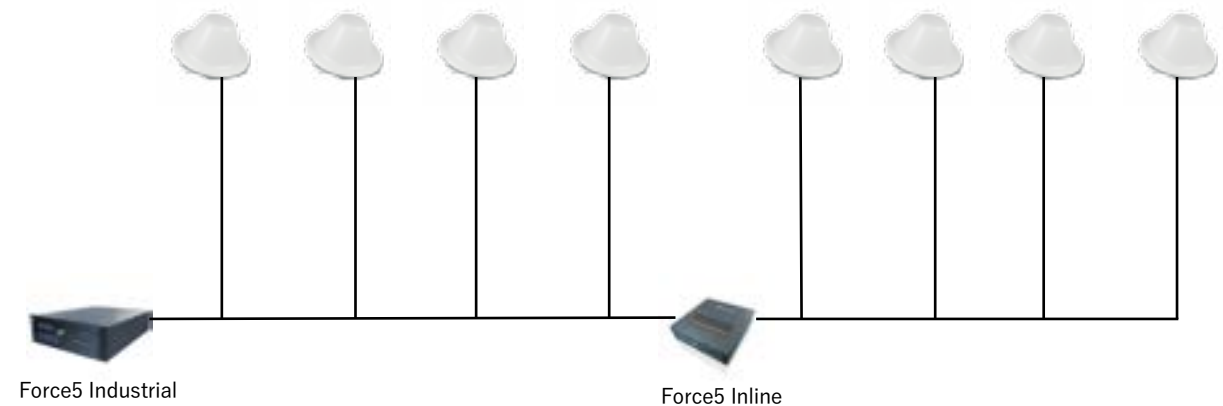


Antenna Separation Table

Amplifier gain	Min. separation (ad)
40dB	5-6'
45dB	15-20'
50dB	50'
55dB	60'
65dB	75-80'
72dB	100'-110'

Note: As you can see from the table above, acquiring the recommended inside and outside antenna separation optimizes coverage significantly. Any reduced antenna separation reduces the booster's coverage.

1. If your indoor antenna is a dome type, mount it on the ceiling in a central location.
2. If your indoor antenna is a flat panel, install it against a wall or surface projecting the area where you want reception. Point the antenna away from the outside antenna. To avoid interference stay a minimum distance of 3 feet from the panel antenna.

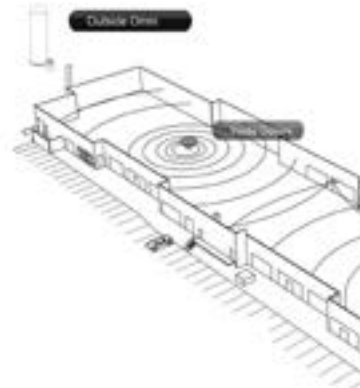


Dome antennas are omni-directional interior antenna that gather signals from all sides.

Range of antennas is dependent on three factors:

- 1) Physical obstructions
- 2) Power generated by booster and
- 3) Reception from outside signal received and distributed by outside antenna.

Dome antennas should be mounted in an upright position for best results.



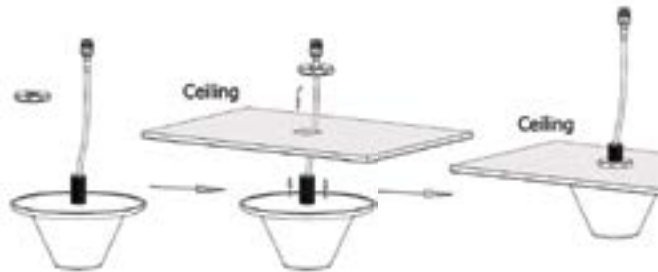
Step 1: Drill a 35mm diameter hole in the ceiling. The ceiling thickness should be 20mm, maximum.

Step 2: Unscrew fixing nut from antenna. Place antenna cable through hole. Screw the fixing nut back onto antenna and cable on crawl space side of ceiling and fasten.

Step 3: Attach the N-Female connection from the interior antenna to the cable leading to the connector labeled INSIDE, on your booster.

Step 4: Tighten fixing nut to secure antenna (do not over-tighten).

- Storage and transportation: Store and place in non-extreme room-temperature and dry environment
- Attention: This antenna should not be used near open fire or flame



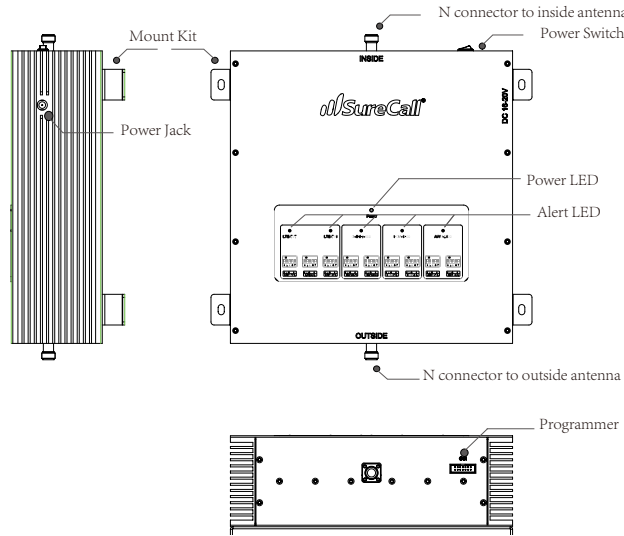
Step 2. Install the Signal Booster

1. Select a location for your booster close to a working AC outlet. Do not expose the signal booster to excessive heat, direct sunlight, moisture, and airtight enclosures.
2. Attach the supplied mounting kit to the booster using the supplied screws. Tighten the screws with a screwdriver until snug, then add a 1/4-to-1/2 turn. Do not over tighten.
3. Orient the signal booster so the LEDs and DIP switches face away from the wall and the LEDs are seen easily. Then mount the signal booster to the wall using appropriate screws and/or wall anchors.
4. Connect the main cable line from the primary booster to the booster's connector labeled "Outside". Hand-tighten the connection.
5. Connect the inside antenna cable to signal booster marked **INSIDE**. Hand-tighten the connection.
6. Connect the AC power cord to the signal booster.
7. Connect the plug on the other end of the 110V AC power outlet.
8. Turn the booster's power switch on.
 - The signal booster turns on automatically.
 - The **Power** LED lights up to show that the signal booster is ready for use.
 - The **Alert** LEDs flash up to 15 seconds on each band to show the band is activated.

Note: If the Power LED does not turn ON or the Alert LEDs continue to flash, see Troubleshooting page 19. This booster is rated for 19V AV input voltage. DO NOT use the booster with a higher voltage power supply. This can damage the booster, cause personal injury and void your warranty.

Booster Hardware

The following image shows the key hardware components on the cellular booster. Refer to this image as you install your Force5 Inline kit components.



DIP Switches and Lights

The Force5 Inline Industrial booster has the following indicators and controls:

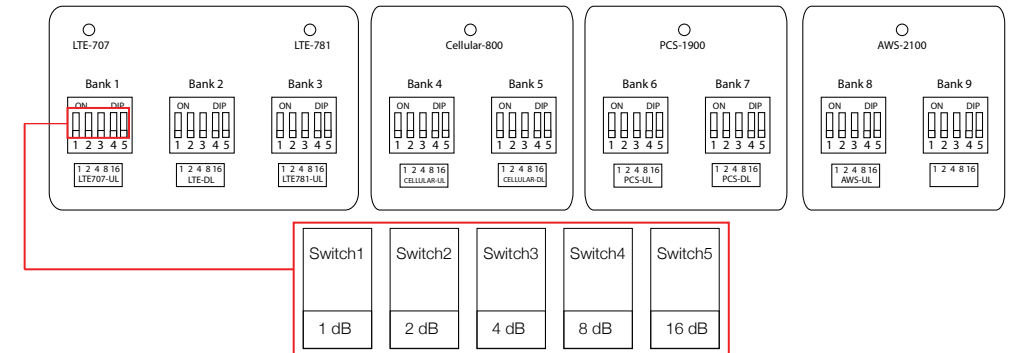
- PCS Uplink Warning light/DIP switches (1): These DIP switches control the PCS communications with the cellular tower.
- PCS Downlink Warning light/DIP switches (2): These DIP switches control the PCS amplification within the building.
- Power light (3): This light should be illuminated or blinking green at all times while the booster is powered on.
- Cellular Downlink Warning light/DIP switches (4): These DIP switches control the cellular amplification within the building.
- Cellular Uplink Warning light/DIP switches (5): These switches control the cellular communications with the tower.

Step 3. Configure Gain Settings

Facing the front of your booster, find 9 banks of Dual In-line Package (DIP) switches. These switches allow manual dB gain attenuation for uplink and downlink channels.

- Bank 1 controls AT&T communications with the cellular tower.
- Bank 2 controls Verizon and AT&T amplification in the building.
- Bank 3 controls Verizon communications with the cellular tower.
- Bank 4 controls Cellular communications with the cellular tower.
- Bank 5 controls Cellular amplification in the building.
- Bank 6 controls PCS amplification with the cellular tower.
- Bank 7 controls PCS amplification in the building.
- Bank 8 controls T-Mobile communications with the cellular tower.
- Bank 9 controls T-Mobile amplification in the building.

The DIP switches in each bank correspond to the following dB gain values:



For maximum gain on all channels, your booster ships with all DIP switches turned OFF. This setting should always be your starting point when installing or reinstalling the booster. To change it, move the DIP switches to the ON or OFF position.

- Moving a switch down (away from the LEDs) turns OFF the switch and increases booster gain for the selected channel.
- Moving a switch up (toward the LEDs) turns ON the switch and decreases booster gain for the selected channel.

Switch settings are cumulative. This means the total amount of attenuation for a channel equals the combined dB of all DIP switches in the same bank being set to ON.

WARNING: Do not adjust the uplink and downlink dB attenuation settings more than 20dB. This could cause the booster to shut down

To Achieve...	Set the DIP Switches in the Same Bank as Follows...				
	SW1 (1 dB)	SW2 (2 dB)	SW3 (4 dB)	SW4 (8 dB)	SW5 (16 dB)
0 DB	OFF	OFF	OFF	OFF	OFF
1 DB	ON	OFF	OFF	OFF	OFF
3 DB	ON	ON	OFF	OFF	OFF
7 DB	ON	ON	ON	OFF	OFF
15 DB	ON	ON	ON	ON	OFF
21 DB	ON	OFF	ON	OFF	ON
31 DB	ON	ON	ON	ON	ON

Note: As you see from the table above, attaining the recommended indoor and outdoor antenna separation optimizes coverage significantly. Any reduced antenna separation decreases the booster's cellular signal capabilities.

LEDs

A light-emitting diode (LED) appears above each DIP switch bank on the top panel of the signal booster.

LED	Designation	Description
1	LTE 707 Uplink	OFF = normal operation. ON = LTE AT&T uplink warning. Power off booster immediately.
2	LTE 781 Uplink	OFF = normal operation. ON = LTE Verizon uplink warning. Power off booster immediately.
3	Cellular 800 Uplink	OFF = normal operation. ON = Cellular uplink warning. Power off booster immediately.

LED	Designation	Description
4	PCS 1900 Uplink	OFF = normal operation. ON = PCS downlink warning. Power off booster immediately.
5	AWS 2100 Uplink	OFF = normal operation. ON = AWS uplink warning. Power off booster immediately.
6	Power	Green ON or blink = booster receiving power. OFF = booster not receiving power Red ON = oscillation has occurred for longer than 15 minutes and the booster is shutting down

Automatic Shutdown

SureCall boosters that have automatic shutdown work in the following way:

1. The cellular side (LEDs 4 and 5) is usually the first side to experience oscillation. When oscillation is detected in the uplink and/or downlink, the appropriate red **Warning** LEDs flash and **Power** (LED 3) turns red.
2. If oscillation occurs on the PCS side, LEDs 1 and/or 2 blink as appropriate and **Power** (LED 3) turns red due to cellular oscillation.
3. If the problem is not resolved, the affected side shuts down after 30 seconds. In general, the cellular side oscillates more easily than the PCS side.
4. The booster wakes up and **Power** (LED 3) turns green. If oscillation resumes, the LEDs flash as described previously. These 30-second cycles continue for 15 minutes or until the problem is resolved.
5. If the problem is not resolved within 15 minutes, the booster shuts down automatically (all LEDs OFF except **Power**, which is red) and must be reset by unplugging the booster from the power supply and plugging it back in.
6. To resolve oscillation, increase antenna separation and/or the attenuation.

If you Want to Improve Coverage

- Find a location that receives a stronger signal and relocate the outside antenna to that location.
- Increase the distance between the outside and inside antennas.

Be sure your signal booster's dB gain is turned up to maximum gain on each dial (see page 16).

In the event you encounter a problem, follow the suggestions below to resolve the issue.

Problem	Resolution
Signal booster has no power	Verify that the booster switch is turned on. Connect the power supply to an alternate power source. Be sure the AC outlet is working and is not controlled by a wall switch that can cut power to the outlet. If the green POWER LED on the signal booster is OFF, return the power supply to SureCall. Contact tech support at 1-888-365-6283 or support@surecall.com , or go to www.surecall.com and log on to online support to receive a Return Merchandise Authorization (RMA).
After installing your signal booster system, you have no signal or reception.	Check the strength of the outside signal as close as you can to the outside antenna. (see instructions on page 7) Double-check all signal booster and antenna cable connections. Be sure your signal booster's dB gain is turned up to full power on each dial. (see page 14)
Yellow Flashing LED	Automatic Gain Control (AGC) is adjusting, part of normal operation.
Red Flashing LED	Signal coming into booster from cellular tower is too strong causing the booster to automatically shut down. There are two possible solutions: 1. Add an inline attenuator to the cable coming into the booster 2. Relocate the outdoor antenna to a location where the signal is weaker.
Your signal booster restarted and shut down for 15 minutes, and is now shut down permanently.	Each SureCall signal booster is equipped with Auto Shutdown to prevent cell tower interference. The outside antenna may be close to a cell tower. Move the outside antenna to a location that provides sufficient distance from the cell tower to prevent the signal booster from automatically enabling Auto Shutdown. Once away from the original location, perform the procedure under step 3 on page 10
Solid Red LED	Band is off
The Power LED does not turn ON	Be sure the AC outlet is working and is not controlled by a wall switch that can cut power to the outlet.

Problem	Resolution
Solid Yellow LED	Indicates an inactive band. Light is off while band is active.
Yellow/Red Flashing LED	Oscillation is detected. First try increasing the separation between the indoor and outdoor antennas. If this doesn't eliminate oscillation, lower the dB gain in 5dB increments.
Your signal booster has no power.	Verify that the switch on the power supply is turned on and red LED is ON. Connect the power supply to an alternate power source. Be sure the power source is not controlled by a switch that can remove power from the outlet. Check the green POWER LED on the signal booster. If it is OFF, return the power supply to SureCall. Contact tech support at 1-888-365-6283 or support@surecall.com , or go to www.surecall.com and log on to online support to receive an RMA.

Product Name	Force5
Uplink Frequency Range (MHz):	698-716 / 776 – 787 / 824-849 1850-1915 / 1710-1755 G Block Included
Downlink Frequency Range (MHz):	728-746 / 746 – 757 / 869-894 1930-1995 / 2110-2155 G Block Included
Input Impedance:	50 Ω
Maximum Gain:	50 dB
Noise Figure:	8 dB
VSWR:	≤2.0
Supported Standards:	CDMA, WCDMA, GSM, EDGE, HSPA+, EVDO, LTE and all cellular standards
AC Input:	Input AC110V, 60 Hz; Output DC 19 V
Maximum Output Power:	27 dBm
RF Connectors:	N Female (both ends)
Power Consumption:	<50W
Operation Temperature:	-4°F to +158°F
Dimensions:	11.3" x 10.9" x 2.5"
Weight:	16.5 lbs
FCC (USA):	RSNFORCE-5INLINE

Three-Year Product Warranty

SureCall warrants its products for three years from the date of purchase against defects in workmanship and/or materials. Specifications are subject to change. The three-year warranty only applies to products meeting the latest FCC Certification Guidelines stated on 2/20/2013 and going into effect April 30, 2014. A two-year warranty applies to any products manufactured before May 1, 2014.

Products returned by customers must be in their original, un-modified condition, shipped in the original or protective packaging with proof-of-purchase documentation enclosed, and a Return Merchandise Authorization (RMA) number printed clearly on the outside of the shipping container.

Buyers may obtain an RMA number for warranty returns by calling the SureCall Return Department toll-free at 1-888-365-6283. Any returns received by SureCall without an RMA number clearly printed on the outside of the shipping container will be returned to sender. In order to receive full credit for signal boosters, all accessories originally included in the signal booster box must be returned with the signal booster. (The Buyer does not need to include accessories sold in addition to the signal booster, such as antennas or cables.)

This warranty does not apply to any product determined by SureCall to have been subjected to misuse, abuse, neglect, or mishandling that alters or damages the product's physical or electronic properties.

SureCall warrants to the Buyer that each of its products, when shipped, will be free from defects in material and workmanship, and will perform in full accordance with applicable specifications. The limit of liability under this warranty is, at SureCall's option, to repair or replace any product or part thereof which was purchased up to **THREE YEARS after May 1, 2014 or TWO YEARS for products purchased before May 1, 2014**, as determined by examination by SureCall, prove defective in material and/or workmanship. Warranty returns must first be authorized in writing by SureCall. Disassembly of any SureCall product by anyone other than an authorized representative of SureCall voids this warranty in its entirety. SureCall reserves the right to make changes in any of its products without incurring any obligation to make the same changes on previously delivered products.

As a condition to the warranties provided for herein, the Buyer will prepay the shipping charges for all products returned to SureCall for repair, and SureCall will pay the return shipping with the exception of products returned from outside the United States, in which case the Buyer will pay the shipping charges.

The Buyer will pay the cost of inspecting and testing any goods returned under the warranty or otherwise, which are found to meet the applicable specifications or which are not defective or not covered by this warranty.

Products sold by SureCall shall not be considered defective or non-conforming to the Buyer's order if they satisfactorily fulfill the performance requirements that were published in the product specification literature, or in accordance with samples provided by SureCall. This warranty shall not apply to any products or parts thereof which have been subject to accident, negligence, alteration, abuse, or misuse. SureCall makes no warranty whatsoever in respect to accessories or parts not supplied by it.

Limitations of Warranty, Damages and Liability:

EXCEPT AS EXPRESSLY SET FORTH HEREIN, THERE ARE NO WARRANTIES, CONDITIONS, GUARANTEES, OR REPRESENTATIONS AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHER WARRANTIES, CONDITIONS, GUARANTEES, OR REPRESENTATIONS, WHETHER EXPRESSED OR IMPLIED, IN LAW OR IN FACT, ORAL OR IN WRITING. SURECALL AGGREGATE LIABILITY IN DAMAGES OR OTHERWISE SHALL NOT EXCEED THE PAYMENT, IF ANY, RECEIVED BY CELLPHONE-MATE, INC. FOR THE UNIT OF PRODUCT OR SERVICE FURNISHED OR TO BE FURNISHED, AS THE CASE MAY BE, WHICH IS THE SUBJECT OF CLAIM OR DISPUTE. IN NO EVENT SHALL SURECALL BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES, HOWSOEVER CAUSED.

All matters regarding this warranty shall be interpreted in accordance with the laws of the State of California, and any controversy that cannot be settled directly shall be settled by arbitration in California in accordance with the rules then prevailing of the American Arbitration Association, and judgment upon the award rendered may be entered in any court having jurisdiction thereof. If one or more provisions provided herein are held to be invalid or unenforceable under applicable law, then such provision shall be ineffective and excluded to the extent of such invalidity or unenforceability without affecting in any way the remaining provisions hereof.

WARNING: E911 location information may not be provided or may be inaccurate for calls served BY USING THIS DEVICE.

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888.365.6283
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www.surecall.com

SureCall has made a good faith effort to ensure the accuracy of the information in this document and disclaims the implied warranties of merchantability and fitness for a particular purpose and makes no express warranties, except as may be stated in its written agreement with and for its customers. SureCall shall not be held liable to anyone for any indirect, special or consequential damages due to omissions or errors. The information and specifications in this document are subject to change without notice. © 2014. All Rights Reserved. All trademarks and registered trademarks are the property of their respective owners.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC 27.50(d)(4) Statement: Fixed, mobile and portable (hand-held) stations operating in the 1720-1755 MHz band are limited to 1 Watt EIRP. Fixed stations operating in this band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in this band must employ a means for limiting power to the minimum necessary for successful communications.