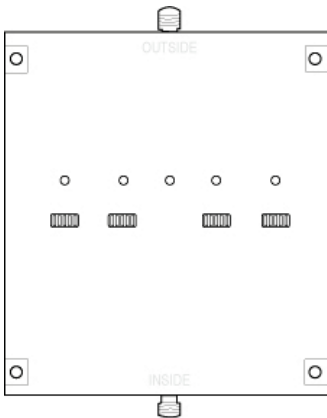


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# Dual-Band Wireless Adjustable Signal Booster / Kit



Dual Force™ Booster Dual Force  
Omni Kit, Dual Force- Panel Kits  
(DUAL FORCE)

User Guide

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## **Congratulations on purchasing the SureCall Dual Force, the finest cellular signal booster available!**

SureCall adjustable cellular signal boosters and kits from Cellphone-Mate remove frustrations over dropped calls, limited range, and slow data rates by amplifying incoming and outgoing cellular signals in buildings, offices, and homes. The Dual Force is designed with leading-edge technologies to detect and amplify weak incoming signals your cellular device would otherwise miss and to broadcast a significantly stronger signal back to the cell tower.

This guide contains all the information you need to get your SureCall Dual Force booster system up and running.

### **Theory of Operation**

The SureCall Dual Force is a high-quality bidirectional signal booster that boosts cellular signals for areas prone to weak or shadowed cellular coverage.

The Dual Force works with two antennas:

- × An inside antenna that communicates with your cell phone.
- × An outside antenna that communicates with the cell tower.

Signals sent from a cell tower are received by the outside antenna, amplified by the booster and then sent to your phone via the inside antenna.

When your phone transmits, the signal is sent to the inside antenna, and then sent to the cell tower via the outside antenna.

Some cell signal is required for the Dual Force to enhance cellular signal coverage. The weakest cell signal for the Dual Force to work is low -100dBm to high -90dBm. dBm is an abbreviation for the power ratio in decibels of the radio power per one milliwatt.

To measure your existing cell signal on an Apple iPhone, dial **\*3001#12345#\*** and press **Call**. In the top-left corner, a number appears instead of bars.

For Android devices, you can download several apps to measure exact signal strength. Look up **check real signal strength** to find a cell signal measurement app.

## SureCall Dual Force Packages

### Dual Force - Antenna Kitting Information

Component	Product Number (Description)	Gain/Loss		Notes
		800 MHz	1900 MHz	
Outdoor Antennas*	CM288W	3 dBi	4 dBi	
	CM230W	10 dBi	10 dBi	
Outdoor Cable*	CM400-65NN (65 feet)	- 3.89 dB	- 5.43 dB	65 feet or longer
Indoor Antenna*	CM248W	7 dBi	10 dBi	
	CM222W	3 dBi	6 dBi	
Indoor Cable*	CM400-40NN (40 feet)	- 2.63 dB	- 3.57 dB	40 feet or longer

\* All equivalent antennas and cables are suitable for use with the Dual Force booster.

**Note:** For the signal booster to work, the following items are required:

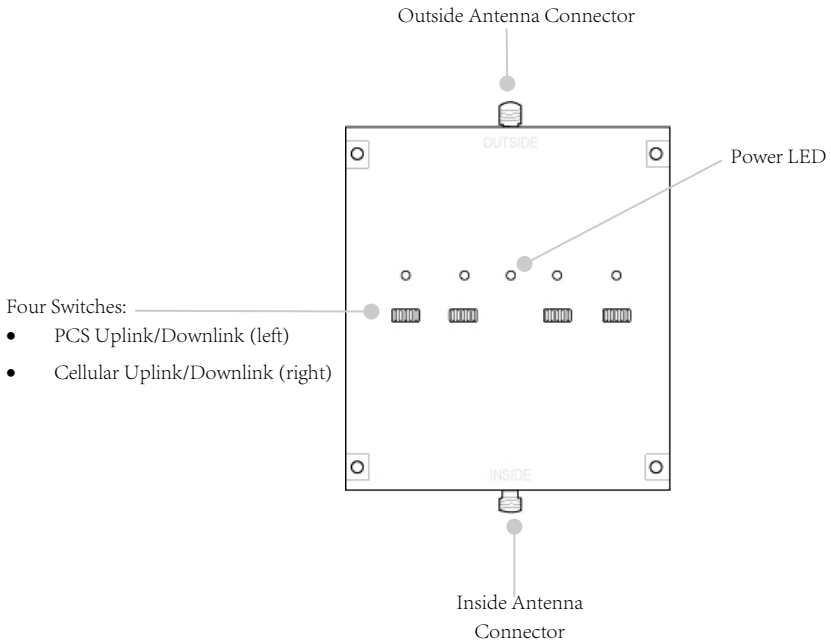
- × Outside antenna
- × Cable for connecting the outside antenna to the booster
- × Signal booster
- × Inside antenna
- × Cable for connecting the inside antenna to the booster
- × Power supply

**Warning:** Unauthorized antennas, cables, and/or coupling devices are prohibited by FCC new rules. Please contact FCC for details: 1-888-CALL-FCC.

Changes or modifications not expressly approved by Cellphone-Mate could void the user's authority to operate the equipment.

## Dual Force Booster Hardware

The following figure shows the key hardware components on the SureCall Dual Force cellular signal booster. Refer to this figure as you install your SureCall Dual Force components.



Unpack all package contents and check for damage. For missing or damaged items, contact your reseller. Keep the carton and packing material to store the product or if you need to return it.

### Site Selection

For optimum performance, select a location for your booster that:

- × Provides the best signal strength possible. To measure your existing cell signal on an Apple iPhone, dial \*3001#12345#\* and press Call. In the top-left corner, a number appears instead of bars. For Android devices, you can download several apps to measure exact signal strength. Look up “check real signal strength” to find a cell signal measurement app.
- × Avoids areas where wireless signals can be blocked or reflected by buildings, walls, trees, hills, and other terrain features. This can result in low signal strength.
- × Is not close to energy-efficient windows, which can affect signal penetration into a home or office.

**Note:** The cell phone tower site in relation to the location where you install your booster also determines signal strength. Although cell phone providers try to place towers for maximum coverage, local ordinances and terrain features can restrict tower locations, which can limit signal strength at your location.

## Installation Instructions

The Dual Force signal booster is suited for installation in a building or home.

### **Step 1. Connect the Outside Antenna**

1. When mounting the outside antenna:
  - × Find the wall or roof with the strongest signal, using a signal meter or any other cellular-frequency detector.
  - × Mount an omnidirectional antenna mounted vertically or a directional Yagi antenna pointed directly (line of sight) at the cellular tower.
  - × Attach a grounded lightning protector between the outdoor antenna and the booster.
  - × Use caution when working in high areas to avoid falls and personal injury.
  - × Do not touch live electrical wires or allow the antenna or cable to touch any live electrical wires.
2. Using the CM400 cable, connect the outside antenna to the booster connector marked **OUTSIDE** (see page 4).
3. Hand tighten the connection.

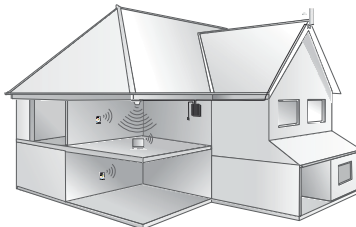
**Step 2. Connect the Inside Antenna**

1. When mounting the inside antenna:
  - × Consider the following coverage area and required antenna separation.

**IMPORTANT:** A minimum separation distance of 30 vertical feet is necessary between the outside and inside antennas. If the inside coverage is not sufficient, you may need as much as 80 feet of separation. See the following table.

To Use This Much Booster Gain...	Allow This Much Separation...
40 dB	5 – 10 feet
45 dB	15 – 20 feet
50 dB	50 - 55 feet
55 dB	55 – 65 feet
65 dB	70 – 80 feet

- × Use directional flat-panel antennas for long, narrow spaces. Mount them as close as possible to the center of the wall at one end of long narrow space.
- × Use omnidirectional dome antennas for square spaces favorable to using a central antenna. Mount them in the ceiling, as close to the center of the desired coverage area as possible, with the domed side pointing down



2. Using the CM400 cable, connect the inside antenna to the booster connector marked **INSIDE** (see page 4).

3. Hand tighten the connection.

### ***Step 3. Mount the Booster (Optional)***

1. Select a location for your booster.
2. Attach the supplied mounting kit to the booster using the supplied screws. Tighten the screws with a screwdriver until snug, then add a ¼-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 outdoor antenna cable to the **Outdoor Antenna** port on the booster.
5. Connect the indoor antenna cable to the **Indoor Antenna** port on the booster.
6. Verify that all cable connections are snug, and that the outdoor and indoor antennas are connected to the proper jacks.

### ***Step 4. Connect to AC Power***

1. Connect the AC power cord to the booster (see page 4).
2. Connect the plug on the other end to a 110V AC power outlet. Be sure all connections to the booster are tight and secure.
  - × The booster turns on automatically.
  - × The **Power** LED goes ON to show that the booster is ready for use (see page 4).
  - × The **Alert** LEDs flash up to 15 seconds on each band to show the band is activated (see page 4).

**The booster is rated for 5-20V input voltage. DO NOT use the booster with a higher voltage power supply. This can damage the booster and/or cause personal injury.**



**Step 5. Configure Switch Settings**

Facing the front of your booster, find 4 banks of dual in-line package (DIP) switches (see page 4). These switches let you attenuate the dB gain manually for uplink and downlink channels.

- × Bank 1 controls PCS communications with the cellular tower.
- × Bank 2 controls PCS amplification in the building.
- × Bank 3 controls cellular amplification in the building.
- × Bank 4 controls cellular amplification with the tower.

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

<b>Switch 1</b>	<b>Switch 2</b>	<b>Switch 3</b>	<b>Switch 4</b>	<b>Switch 5</b>
1 dB	2 dB	4 dB	8 dB	16 dB

For maximum gain on all channels, your booster ships with all DIP switches turned ON. 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.

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

**Tip:** The Dual Force signal booster comes unattenuated or fully powered. If you cannot obtain sufficient antenna separation, use the DIP switches to attenuate the booster's dB gain.

**LEDs**

A light-emitting diode (LED) appears above each DIP switch bank on the top panel of the signal booster (see page 4).

LED	Designation	Description
LED #1	PCS Uplink	OFF = normal operation. ON = PCS uplink warning. Power off booster immediately.
LED #2	PCS Downlink	OFF = normal operation. ON = PCS downlink warning. Power off booster immediately.
LED #3	Power	Green ON or blink = booster is receiving power. OFF = booster is not receiving power. Red ON = oscillation has occurred for longer than 15 minutes and the booster is shutting down (see Automatic Shutdown on page 12).
LED #4	Cellular Downlink	OFF = normal operation. ON = cellular downlink warning. Power off booster immediately.
LED #5	Cellular Uplink	OFF = normal operation. ON = cellular uplink warning. Power off booster immediately.

## Automatic Shutdown

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

3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. To resolve oscillation, increase antenna separation and/or the attenuation (see the table on page 7).

In the unlikely event you encounter a problem, use the following steps to identify and resolve the issue.

Problem	Resolution
<p>Booster has no power.</p>	<ol style="list-style-type: none"> <li>1. Verify that the switch on the power supply is turned on and red LED is ON.</li> <li>2. Connect the power supply to an alternate power source.</li> <li>3. Be sure the power source is not controlled by a switch that can remove power from the outlet.</li> <li>4. Check the green POWER LED on the booster. If it is OFF, return the power supply to Cellphone-Mate. Contact tech support at 1-888-365-6283, email support@surecall.com, or go to surecall.com and log on via online support to receive a Return Merchandise Authorization (RMA).</li> </ol>
<p>After installing the booster system, you have no signal or reception.</p>	<ol style="list-style-type: none"> <li>1. Check the strength of the outside signal as close as you can to the outside antenna. To measure your existing cell signal:                      Apple iPhone: dial *3001#12345#*and press Call. In the top-left corner, a number replaces the bars.                      Android devices: download apps to measure exact signal strength, such as Network Signal Info in the Google Play store. Search "check real signal strength" to find other cell signal measurement apps.</li> <li>2. Double-check all booster and antenna cable connections.</li> <li>3. Be sure your booster's dB gain is turned up to full power on each switch.</li> </ol>
<p>One of the red lights next to the switches on your booster is flashing.</p>	<ol style="list-style-type: none"> <li>1. Turn down the dB gain on the switch until the light goes OFF or turns yellow.</li> <li>2. Be sure the inside panel antenna is facing away from the outside antenna.</li> <li>3. Use the recommended antenna separation:                             <ul style="list-style-type: none"> <li>· 65dB — 60 ft. separation</li> <li>· 63dB — 50-60 ft. separation</li> <li>· 55dB — 40-50 ft. separation</li> <li>· 50dB — 30-40 ft. separation</li> <li>· 45dB — 20-30 ft. separation</li> <li>· 40dB — 10-20 ft. separation</li> <li>· 35dB — 10 ft. separation</li> </ul> </li> </ol>

Problem	Resolution
Your booster restarted and shut down for 15 minutes, and is now shut down permanently.	Each SureCall 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 booster from automatically enabling Auto Shutdown. Once away from the original location, perform the procedure under Step 4. Connect to AC Power on page 8.
The red LED goes ON.	More antenna separation is needed. If you cannot provide more antenna separation and the Alert LEDs flash after the initial activation period, lower the switch below the blinking LED by 5 dB (for example, from 50 to 45) and monitor the bars on your cell phone to see whether reception improves.
The <b>Power</b> LED does not turn ON.	Be sure the AC outlet is working and is not controlled by a wall switch that can remove power from the outlet.
The <b>Alert</b> LEDs flash after the initial activation period.	Lower the switch below the blinking LED by 5 dB (for example, from 60 to 55) and monitor the bars on your cell phone to see whether reception has improved.
The <b>Alert</b> LEDs continue to flash.	The booster shuts down automatically, and then restarts after 60 seconds. Turn down the <b>Cellular-800</b> or <b>PCS-1900</b> switch that is oscillating to prevent the booster from shutting down automatically.

## FREQUENTLY ASKED QUESTIONS

For a list of Frequently Asked Questions and a comprehensive, up-to-date Troubleshooting Guide, please visit our website at: [www.surecall.com](http://www.surecall.com) or call us at 1-800-365-6283.

You can also consult a Cellphone-Mate technical specialist directly by emailing us at [support@surecall.com](mailto:support@surecall.com).

Record the model and serial number for your products:

Serial #: \_\_\_\_\_

Purchase Date: \_\_\_\_\_

## Two-Year Product Warranty

Cellphone-Mate warrants its products for two years from the date of purchase against defects in workmanship and/or materials.

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 Cellphone-Mate Return Department toll-free at 1-888-365-6283. Any returns received by Cellphone-Mate 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 Cellphone-Mate to have been subjected to misuse, abuse, neglect, or mishandling that alters or damages the product's physical or electronic properties.

Cellphone-Mate 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 Cellphone-Mate's option, to repair or replace any product or part thereof which shall within TWO YEARS of purchase as determined by examination by Cellphone-Mate, prove defective in material and/or workmanship. Warranty returns must first be authorized in writing by Cellphone-Mate. Disassembly of any Cellphone-Mate, Inc. product by anyone other than an authorized representative of Cellphone-Mate voids this warranty in its entirety. Cellphone-Mate 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 Cellphone-Mate for repair, and Cellphone-Mate 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 Cellphone-Mate 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 Cellphone-Mate. This warranty shall not apply to any products or parts thereof which have been subject to accident, negligence, alteration, abuse, or misuse.

Cellphone-Mate 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.

CELLPHONE-MATE 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 CELLPHONE-MATE, INC. 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.

Specification	Dual Force
Uplink Frequency Range:	Cellular-800: 824 – 849 MHz PCS: 1850 – 1915 MHz
Downlink Frequency Range:	Cellular-800: 869 – 894 MHz PCS: 1930 – 1995 MHz
Supported Standards:	CDMA, GSM, LTE
Maximum Gain:	Cellular-800: 65 dB PCS: 72 dB
Maximum RF Output Power:	1 Watt EIRP
Input Impedance:	50 $\Omega$
Noise Figure:	5dB
VSWR:	$\leq 2.0$
AC Power Transmitter:	Input: AC110 V, 60 Hz Output: DC 9 V
Cable:	CM400 recommended
RF Connectors:	N female, both ends
Power Consumption:	<40 W
Dimensions:	10.5 x 7.5 x 2 in. (26.67 x 19.05 x 5.08 cm.)
Weight:	10 lbs. (4.53 kgs.)
FCC ID (USA):	RSNDUALFORCE

This is a **CONSUMER** device.

**BEFORE USE**, you **MUST REGISTER THIS DEVICE** with your wireless provider and have your provider's consent. Most wireless providers consent to the use of signal boosters. Some providers may not consent to the use of this device on their network. If you are unsure, contact your provider.

You **MUST** operate this device with approved antennas and cables as specified by the manufacturer. Antennas **MUST** be installed at least 20 cm (8 inches) from any person.

You **MUST** cease operating this device immediately if requested by the FCC or a licensed wireless service provider.

**WARNING.** E911 location information may not be provided or may be inaccurate for calls served by using this device.

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.



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[www.surecall.com](http://www.surecall.com)

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