

## Best Call

### Cellular/PCS Repeater

Installation and Operation Manual

Innertron, Inc.

96B 5L 663-4 Gojan-dong, Namdong-gu,

Incheon-city 405-310 Korea

Phone : +82-32-816-1456 / 1458

Fax : +82-32-816-1457

Mobile : +82-10-6602-6980

Website: [www.innertron.com](http://www.innertron.com)

Email: sales@innertron.com

# Cellular/PCS Repeater Installation and Operation manual

**Congratulations on the purchase of our Best Call Cellular/PCS Repeater!**

## Safety First

- \_ For your safety and to prevent injury to the installer or the operator, it is essential to read this manual carefully before your new unit is installed and operated.
- \_ Through out this document this symbol indicates potential injury incase the operator fails to follow the guideline or common sense during the installation of the repeater unit.

## Personal safety

- \_ This unit is powered by small AC adaptor unit. Turn off the electricity supply if you have to do any rewiring or making alterations to wall sockets.
- \_ The equipment should be used only for amplifying mobile (cellular) phone signals and not for any other purpose.
- \_ Should the unit fail to operate, any repairs should be carried out by qualified personnel ONLY.
- \_ The RF energy that the unit radiates is very small (max of 5mW) this level is many times smaller than the RF power radiated by your mobile phone.

## General Repeater Information

### Introduction

Almost all of us have experienced a dropped call or "Service Not Available" messages on our cell phones. This phenomenon occurs because there is inadequate signal strength from the cellular/PCS towers that provide network coverage. You see the base station cellular/PCS towers along roadsides, on top of communications towers, and installed on some buildings in urban areas.

Often transmission to and reception from a cellular/PCS tower is weak because the tower is such a long way away from the mobile unit.

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Other times, buildings block the Cellular/PCS signal or make it patchy. Full coverage is quite rare, and due to “poor reception” we experience interruption of conversations, voice distortion and dropped calls. The Best Call Cellular/PCS Repeater is the solution to this problem. Repeaters not only amplify the weak received signal, but they also reduce the need for high level of RF transmission from your cell-phone, reducing undesirable radiation exposure and battery drainage. The Best Call Cellular/PCS Repeater is ideal for areas such as offices, apartment blocks and homes where your phone is ordinarily unable to get adequate reception. By boosting the signal, this device enhances the signal from your handset, ensuring a reduction in noise and call drops, and so better quality of service.

### **So how does it work?**

Look at the image on the next page to understand the setup of the Best Call Cellular/PCS Repeater kit. The repeater is made up of two main parts: the directional panel antenna and the Best Call amplifier unit. The directional panel antenna is aligned with the closest cell phone tower, and collects the Cellular/PCS signal. This signal is then sent via a 30-foot cable to the Best Call amplifier unit. The amplifier unit boosts the signal, and then retransmits it about your home or office using a monopole broadcast antenna.

## **Best Call Repeater Kit Contents**

1. Best Call Amplifier Unit
2. Cellular/PCS Monopole Antenna Unit
3. Cellular/PCS Directional Panel Antenna Unit (and Fixtures)
4. DC Adapter (3.8V)
5. Antenna Cable
6. Cable Wrench

## **Installing your Best Call Repeater**

### **Site Selection**

The first thing you need to do before installing your Best Call Repeater is to find out where you want to install the repeater. Look at the diagram below for an idea of how the Cellular/PCS Repeater works:

1. The Cellular/PCS signal is broadcast to/from the Cellular/PCS tower.
2. The directional panel antenna collects the signal from the Cellular/PCS tower.
3. The Best Call Repeater amplifies the signal and re-broadcasts it about your home/office.
4. Ideally, the Best Call Amplifier Unit and the monopole broadcast

### Step 1 - Locating the Cellular/PCS Signal

The best way to find the best Cellular/PCS signal around your home/office is simply to walk around with your cell phone on. You should use a cell phone on the network/band whose signal you are trying to improve. The “Signal Strength” meter on your cell phone will tell you where the signal is strongest. **Note: The Cell Phone “Signal Strength” meter takes up to 30 seconds to update as you move from location to location**, so make sure to take a nice long pause in every location you test. The place you choose should either be outside, or in the very least by a window. It should also be within 30 feet of where you want to rebroadcast the Cellular/PCS signal (this is the length of the provided cable).

### Step 2 - Set up the Cellular/PCS Repeater

Once you have established what part of your home has the best signal, you will need to set up the Best Call Cellular/PCS Repeater.

1. Place the panel antenna in the place with the best signal and connect it to the 30 foot cable.
2. Connect the other end of the cable to the connector on the bottom side of the Best Call Amplifier Unit (marked “BTS”).
3. Finally, connect the monopole broadcast antenna to the connector on top of the Best Call repeater (marked “SERVICE”).
4. Move the Best Call amplifier unit inside to where you want the signal to be rebroadcast. Try to make sure that the directional panel antenna and Best Call amplifier unit are as far away from each other as possible, and separated by a wall if at all possible. Point 4 above is very important because it provides **isolation between the directional panel antenna and the monopole broadcast antenna**. The two antennas need to be isolated from one another in order to prevent feedback/oscillation (this occurs when the directional input antenna picks up the signal broadcast by the broadcast antenna). In order to prevent feedback/oscillation, the directional panel antenna and the monopole antenna should be distanced from each other, and the directional panel antenna should always be facing away from the monopole broadcast antenna. It is not vital to have a wall between the panel antenna and the amplifier unit, but if possible, it can help reduce the changes of oscillation/feedback occurring.
5. Make sure that the panel antenna is facing in a direction AWAY from the Best Call amplifier unit.
6. Plug the DC adapter provided with the Best Call package into an electrical socket, and connect the other end to the “DC in” plug on the bottom of the amplifier unit.
7. The unit’s power “on” light should turn green, signaling that the unit is operating.

### STEP 3 - Aligning the Directional Antenna

Now go back to the directional panel antenna. As you turn the panel antenna, the indicator lights will show the strength of the signal from the direction it is facing. Have someone else stand by the indicator lights, and tell you which direction provides the strongest signal (highest light level). **Make sure never to turn the directional antenna so that it is facing the direction of the Best Call amplifier unit (see image below)**. Depending on the signal quality in your area, you will be able to get a low, medium,

or high strength signal. In order for the Best Call repeater to work properly, you will need to find at least a medium (5-6 lights on) signal - the "low" signal level is just background signal noise and will not improve your Cellular/PCS signal.

*IF THE "FAIL" LIGHT IS CONSTANTLY LIGHTED:*

This means that the input signal strength is too strong, causing what is known as "signal saturation" - this reduces to effectiveness of the repeater unit. You should change the direction of the antenna to a direction from which the signal is weaker, such that the "FAIL" light is not constantly on.

*IF THE "ALM" LIGHT TURNS ON:*

This "alarm" light signals oscillation due to signal feedback. When the alarm Directional Panel Antenna Positioning light is on, the unit is no longer operation - it will automatically reset after one minute or you can reset the unit manually by disconnecting and reconnecting the power cable. In order to prevent the alarm light from turning on, you need to insure the isolation of the directional antenna from the monopole broadcast antenna. To do this, make sure that the directional antenna is facing away from the repeater unit and is sufficiently far away. Also, you can improve isolation by installing the repeater with a wall between the directional antenna and the repeater unit. See the "Step 2" of the installation procedure above for more information.

#### STEP 4 - Finalizing the Cellular/PCS Repeater Installation

Once you have found the direction with the best signal, you will need to fix the panel antenna in that direction. The panel antenna comes with fixtures that allow you to fix the antenna in any direction. Find a suitable place and install the fixture to a wall or window frame with the four provided screws. The fixture's direction is adjustable both horizontally and vertically. Once you have chosen the direction for the fixture, it can be fixed in that direction by tightening the screw that runs horizontally through the fixture. Once the directional and position of the fixture have been fixed, the directional panel antenna can be connected by sliding the directional panel antenna from above onto the fixture. You will hear a click once the directional panel antenna has locked into place.

#### Directional Panel Antenna

Finalize the position of the Best Call amplifier unit by making sure that it is in an unobstructed place (to allow maximum cell phone signal about your home/office). You can also hang the Best Call repeater from a wall if you wish (a fixture is provided for this on the back of the unit). In general the unit should be placed approximately at head-height (i.e. 6 feet from the floor). The monopole antenna should always be fixed vertically. Now you're ready to enjoy improved cell phone reception. Simply pick up your phone and make a call!

## Cellular/PCS Repeater Technical Specifications

Cellular/PCS Repeater Technical Specifications		
NO.	Parameter	Specification
Frequency		Cellular Uplink : 824~849MHz
1	Gain	60dB[Mean]
2	Channel Power	8dBm
3	Max, Input Power	-32dBm
4	Gain Flatness	6dB
5	ALC Commence Level	≥ -52dBm
6	Modulation	CDMA Only
Frequency		Cellular Downlink : 869~894MHz
7	Gain	60dB[Mean]
8	Channel Power	0dBm
9	Max, Input Power	-40dBm
10	Gain Flatness	4,5dB
11	ALC Commence Level	≥ -60dBm
12	Modulation	CDMA Only
Frequency		PCS Uplink : 1850~1910MHz
13	Gain	60dB[Mean]
14	Channel Power	8dBm
15	Max, Input Power	-32dBm
16	Gain Flatness	6dB
17	ALC Commence Level	≥ -52dBm
18	Modulation	CDMA Only
Frequency		PCS Downlink : 1930~1990MHz
19	Gain	60dB[Mean]
20	Channel Power	0dBm
21	Max, Input Power	-40dBm
22	Gain Flatness	4,5dB
23	ALC Commence Level	≥ -60dBm
24	Modulation	CDMA Only
25	Power Delay	3 Sec
26	DC Adaptor	5,0~3,8V, ≥3A
27	Input Impedance	50 Ohm

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