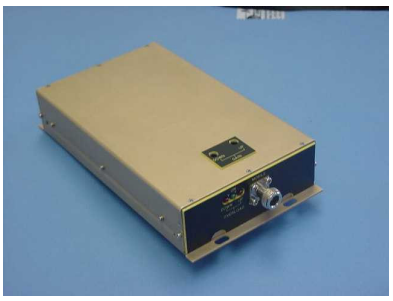
MARS ANTENNAS & RF SYSTEMS LTD.

MR-BDA60-X

INSTALATION AND OPERATINAL MANUAL



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Description and Operational Manual of MR-BDA60-X

General Information

The MR-BDA60-X Bi-Directional Amplifier is designed to enhance radio communication in buildings, basements, parking garage and other RF shielded environments. An MR-BDA60-X system includes all the materials necessary to provide clear, continuous donor site extension coverage within a building or other shadowed location.
MR-BDA60-X is suitable for CDMA/TDMA/N-AMPS systems.
The small size and flexibility of the MR-BDA60-X system makes it suitable to introduce service to: Shielded buildings (offices, shopping malls, hospitals, airports and underground parking garages or other.

General Description

MR-BDA60-X Bi-Directional Amplifier is based on a duplexed two path configuration. It features sharp out-of-band attenuation for better selectivity and improved isolation between the receiving and transmitting paths. Passband insertion losses at transmitting path are very low, thus minimizing RF power losses.
An MR-BDA60-X system example is show below.
Using an external roof or vertical wall-mounted antenna, downlink signals from a donor base station site are received and directed via cable and diplexer to the low noise amplifier (LNA).
Low noise amplifier provides gain to set the system noise figure.
The next pre-amplifier (Pre-Amp.) provides sufficient signal strength and frequency characteristics to the power amplifier (PA).
Power amplifier with highly linear characteristics improves overall system linearity.
The signal transmission from the portable back to the donor follows the same principles.
Since these amplifiers are Bi-Directional, the uplink signal is amplified in its own amplifier path and routed to the external antenna and back to the donor site.
Voltage variable attenuators, couplers in each path and control system provide manual gain control of each channel.
The DC system current consumption and abnormal operation in each path are monitored by means of LED indicators.
The MR-BDA60-X Bi-Directional Amplifier is a low-power, high-gain device.
A compact, lightweight, weatherproof box will mounting, assures easy and reliable installation.

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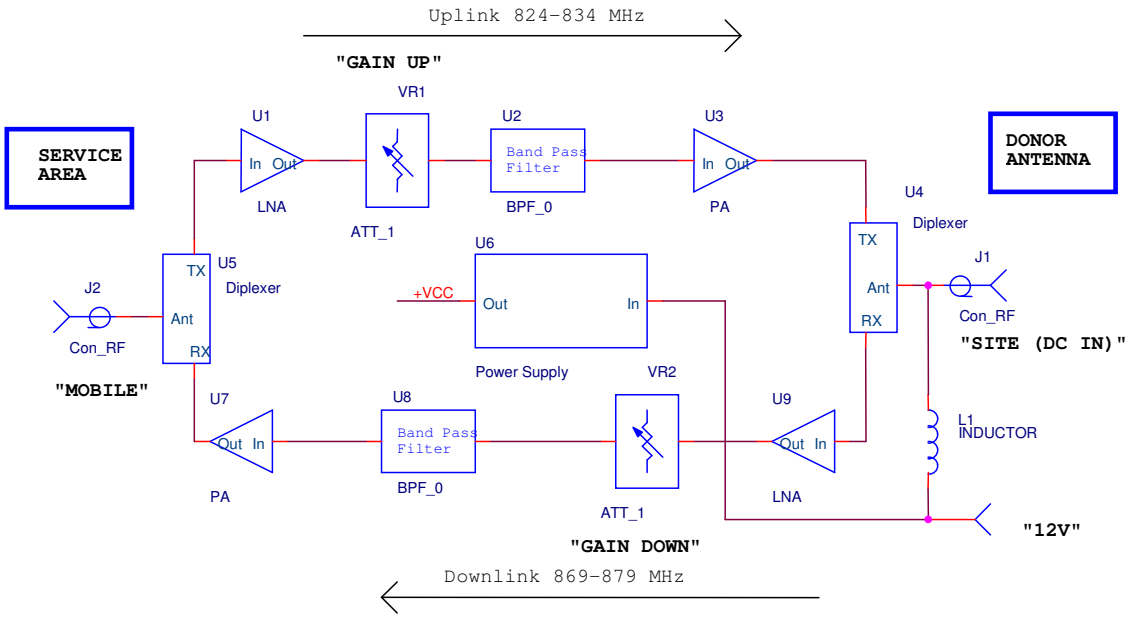
MR-BDA60-X BLOCK DIAGRAM



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Composition

On the front panel of MR-BDA60-X are placed RF connector “MOBILE” for connection with Up Link part of antenna and 3 LEDs.
Green LED “ON” is light when DC power from external power supply +12V or from RF connector “MOBILE” is on.
Two red LEDs “OVERLOAD” are indicators of abnormal operation in each channel. LED “DOWN” is on when input signal of channel “MOBILE” (Up Link) is big and the channel in position 1 dB compression. LED “UP” is on when input signal of channel “SITE” (Down Link) is big and the channel in position 1 dB compression.
On the rear panel are placed RF connector “SITE (DC IN)” for connection with Down Link part of antenna and DC connector “12V” for connection with external power supply +12VDC.
On the higher side of MR-BDA60-X are placed two holes for manual control of gain in each channel. Gain manual controls are provided with potentiometers in each channel of MR-BDA60-X.
Potentiometer “DOWN” provides manual gain control in Up Link.
Potentiometer “UP” provides gain control in Down Link.

Installation

1. Install MR-BDA60-B1 on the place and support the casing with four screws through four mounting holes.
2. Check the isolation between the donor antenna and mobile antenna.
3. Connect RF cable with RF connector “MOBILE” of MR-BDA60-B1 and Mobile part of antenna.
4. Connect RF cable with connector “SITE (DC IN)” of MR-BDA60-B1 and Base part of antenna.
5. Connect DC connector “12V” with +12VDC power supply and connect the AC adaptor 220 to 220VAC check that the green led is turned “ON”.
6. Adjust the potentiometer Gain Down on the top cover until you receive sufficient signal on your portable test equipment. Pay attention that while adjusting the Gain Down the Overload Down red led in front panel will not turn “ON”.
7. Repeat the same procedure (paragraph 6) for the Gain UP adjustment.

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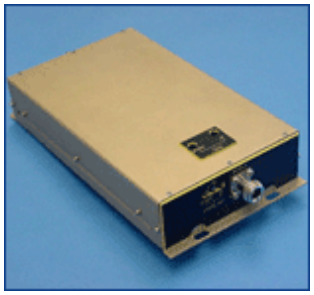
Bi-Directional Amplifier

MR-BDA60-X

Mars BDA series of products provides a cost effective answer for enhancing radio communication in buildings, basements, parking garages and other RF shielded environments. The BDA products work by receiving and amplifying RF signals strength in both the "Down Link" and the "Up Link" communication paths.



Specifications:

Electrical		
	Down Link (Base to Mobile)	**Up Link** (Mobile to Base)
Frequency Range, MHz	869 - 894	824 - 849
Operational Frequency Band, MHz (other available on request)	869 - 879	824 - 834
Gain at min. Attenuation	55 dB	60 dB
Pass Band Ripple	± 1.5 dB	± 1.5 dB
Output Power @ 1 dB Compression	26 dBm	19 dBm
Noise Figure, max.	6.5 dB	6.5 dB
Gain Control, manual	20 dB	20 dB
Impedance	50 Ohm	50 Ohm
VSWR, max.	2:1	2:1
Output IP3, min.	40 dBm	31 dBm
Input Power, max.	-15 dBm	-15 dBm
Biasing (via RF cable and through separate DC Connector)	12V/1000 mA; Adaptor **MR-PS26** should be separately ordered.	
Mechanical and Environmental		
Dimensions	253x125x43 mm	
Weight	850 g	
RF Connector	N-Type Female	
Operating Temperature	-10°C to +50°C	
Relative Humidity	95%	
Splash, Dust	Protected	

Specifications subject to change without notice