LBA-3827 Series 1.2 GHz MDU Amplifiers

Installation & Operation Manual

PRODUCT OVERVIEW

Part #	Power Socket Type	Frequency Range
LBA-3827-xx-B	100-240 VAC (Brazil)	xx = 45 = 5-42 MHz / 54-1220 MHz
LBA-3827-xx-C	100-240 VAC (Europe)	xx = 81 = 5-85 MHz / 102-1220 MHz
LBA-3827-xx-D	15 VDC (transformer)	xx = 22 = 5-204 MHz / 258-1220 MHz

This Lindsay Broadband exclusive multi-dwelling unit (MDU) amplifier delivers reliable performance supporting DOCSIS® 3.1 frequencies to 1.2 GHz. The unique design offers configurations for 42, 85 and 204 MHz upstream bandwidth requirements. The LBA-3827 amplifier is suited for applications for advanced HFC network installations in apartment buildings, hotels, schools, hospitals, and similar facilities having high RF amplification requirements.

This high-gain amplifier can be mounted directly to a wall. It runs cool with its increased heat dissipation properties and low power consumption, thereby reducing operating costs. The two-way amplifier uses the latest 1.2 GHz GaAs FET push-pull technology, providing superior distortion performance and low noise. Technician-friendly controls feature variable attenuators and EQs facilitating greater flexibility when adjusting the amplifier. The mains-powered automatic switching mode power supply accepts input voltages from 90-240 V at frequencies of 50 or 60 Hz without adjustment.

FEATURES

- Wall mount aluminum enclosure
- Heat dissipation finned design
- IP64 rating for indoor applications
- Operating Temperature: -40°C to +60°C (-40°F to +140°F)
- Forward gain 38 dB; reverse gain 27 dB
- Available Diplex Filter Options: 42/54, 85/102 & 204/258 MHz
- Variable-type attenuators & EQs
- -20 dB external test points
- Surge protected to 6 kV on all ports
- 90-240 VAC mains-powered
- Also available in 12-15 VDC powering option

CAUTION

Risk of electric shock. Do not open.

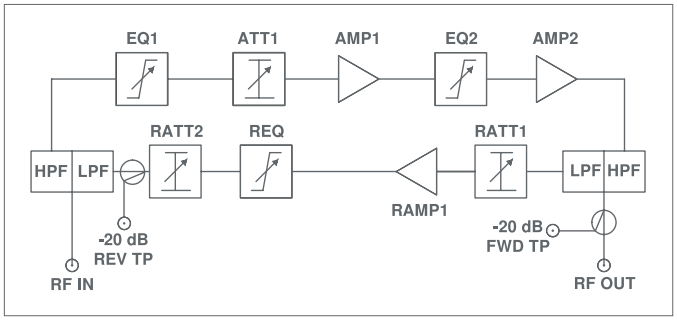
Remember to replace cover after adjusting. Cover must be in place for safety and protection.

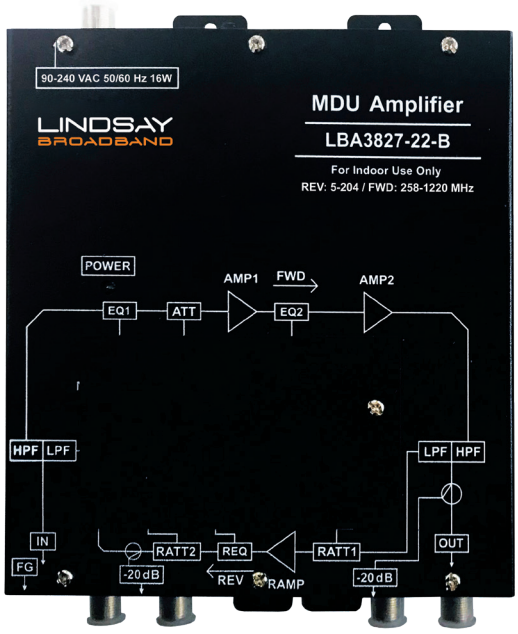
No serviceable parts inside. Refer servicing to qualified service personnel.

Please note that the potentiometers are continuously adjustable with a hard stop at the ends of rotation. Using more force at the end of the potentiometer range will cause the potentiometer to break and damage the LBA-3827 amplifier.

Such physical damage to the LBA-3827 will not be covered under warranty.

FUNCTIONAL SCHEMATIC





LBA-3827
(front view)

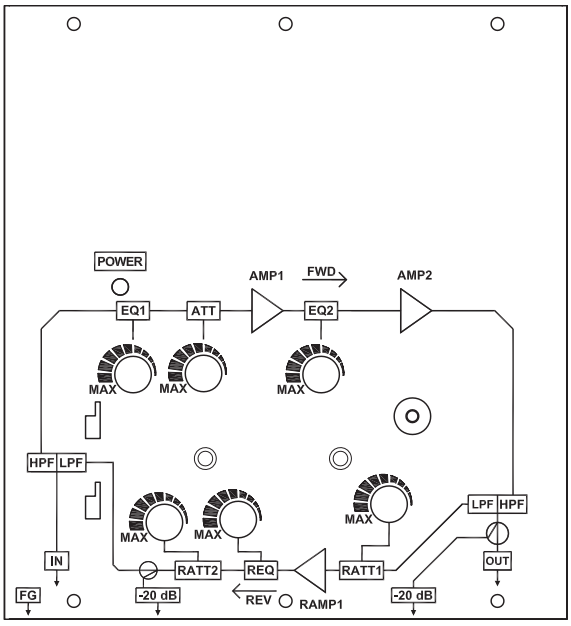
SPECIFICATIONS

Parameter		Specification	
		Forward	Reverse
Bandwidth		54/102/258-1220 MHz	5-42/85/204 MHz
Average Full Gain		38 dB	27 dB
Flatness		± 1 dB	± 0.75 dB
Return Loss		-14 dB	-14 dB
Test Points	FwdOUT/RevOUT	-20 ± 1 dB	-20 ± 1 dB
Input EQ Control Range (1)		0-18 dB	
Interstage EQ Control Range (1)		0-18 dB	
Output EQ Control Range (1)			0-18 dB
Input Attenuator Control Range (1)		0-20 dB	0-20 dB
Output Attenuator Control Range (1)			0-20 dB
Reference Output Level		48 dBmV	46 dBmV
Forward Distortions: 33/48 dBmV (15 dB tilt 54/1220 MHz) output level, 79 NTSC channels, digital at -6 dB from 550 MHz - 1.2 GHz			
CTB		-66 dBc	
CSO		-66 dBc	
Reverse Distortions: 46 dBmV flat output, 2 CH (13 & 19 MHz) according to ANSI SCTE 1152011			
DTO	on 7 & 25 MHz		-75 dBc
DSO	on 6 & 32 MHz		-60 dBc
Noise Figure	with Full Gain	8 dB	8 dB
Group Delay	3.58 MHz Span	≤ 35 ns	
	1 MHz Span		≤ 35 ns
Hum Modulation		-65 dBc	-75 dBc
Surge Withstand	In/Out	IEEE C62.41-Cat B3, Combination Wave, 6 kV, 3 kA	
Power, Environmental & Physical			
Powering		12-15 VDC / 90-240 VAC, 50/60 Hz	
Power Consumption		16 W	
Operating Temperature		-40°C to +60°C (-40°F to +140°F)	
Dimensions (H x W x D)		8.3"H x 6.1"W x 2.4"D (21.0H x 15.5W x 6.0D cm)	
Weight		3.8 lb (1.6 kg)	

NOTES:

Typical for T = +20°C (+68°F); ZIN = ZOUT = 75 ohms

(1) Continuously adjustable with hard stop at ends of rotation



LBA-3827
(front view with door off)

POWERING GUIDELINES

1. The LBA-3827 has two powering options. The first option comes with a power cord that can accept 100-240 VAC input. The second option comes with an F connector for powering that can accept 12-15 VDC.
2. To power the LBA-3827 with the 100-240 VAC powering option, plug the power cord into the wall outlet/receptacle that has voltage in the range of 100-240 VAC 50/60 Hz.
3. A 15 V 1.5 A output switcher power pack, capable of accepting 100-240 VAC 50/60 Hz is supplied with the DC powered LBA-3827. To power the LBA-3827 with the 12-15 VDC powering option, connect the output of supplied power pack via a coaxial cable to the F connector on the top left corner of the LBA-3827 labelled "12-15 VDC 16 W". Then plug the power pack into the wall outlet/receptacle.
4. When the amplifier is on, the POWER LED on the LBA-3827 will be illuminated.
5. There is a grounding screw on the bottom left of the amplifier to ground the amplifier chassis.
6. The LBA-3827 does not have power passing capabilities. To prevent damage to the amplifier, do not provide any electrical power to the RF ports.

FORWARD & REVERSE SETUP GUIDELINES

1. Gain and cable slope controls are reachable under the protective housing cover. Use a small Phillips or flat/slotted screwdriver to open the protective cover of the LBA-3827.
2. The LBA-3827 MDU amplifier uses potentiometers for all gain and slope controls. Use a small flat/slotted screwdriver to adjust potentiometer controls. No extra accessories are required to setup the LBA-3827 amplifier. Rotating the potentiometers in a counterclockwise direction increases attenuation or slope. ***Please note that the potentiometers are continuously adjustable with a hard stop at the ends of rotation. Using more force at the end of the potentiometer range will cause the potentiometer to break and damage the LBA-3827 amplifier.***
3. ***For the forward path setup, make sure that the forward input level to the input of the amplifier is not too high or damage to the amplifier might occur. Check the RF input to the amplifier using a signal level meter before connecting to the IN port (forward input) of the amplifier.***

> ***NOTE: All the RF levels mentioned in this manual refer to analog channel levels, unless specified. For digital equivalent, use -6 dB levels compared to analog levels.***

4. With zero attenuation (ATT) and zero slope (EQ1 & EQ2) in the forward direction, the LBA-3827 delivers a full gain of 38 dB. Therefore, with an input of 10 dBmV per channel, the forward output will be 48 dBmV per channel.
5. The recommended RF input to the LBA-3827 is 10-12 dBmV per channel. If the RF input to the amplifier is more than 10-12 dBmV per channel, then use the ATT potentiometer (forward attenuator) to attenuate the RF input to the gain block of the LBA-3827.
6. If the input to the LBA-3827 has a reverse slope (reverse tilt), use the EQ1 (input equalizer) potentiometer to flatten the input to the amplifier, so that the input to the gain block is flat.
7. Check the RF output of the amplifier at the OUT port (forward output) of the LBA-3827 using a signal level meter. The forward output test point (TP) can also be used to measure the forward RF output from the LBA-3827. Please note that the forward output TP is -20 dB relative to the output port. Thus, the output from this -20 dB TP will be 20 dB lower than the OUT port.
8. If the output from LBA-3827 is still not flat, further adjust the EQ1 potentiometer to make it flat.
9. RF output levels of 48-50 dBmV per channel at the high frequency end are recommended for optimum performance of the amplifier. If your system requires slope at the output of the amplifier, use the EQ2 (output equalizer) potentiometer to provide slope (tilt) to the output of LBA-3827 amplifier.
10. For best performance in the forward direction, set the amplifier for 15 dB of output slope with 33 dBmV/channel output at the low frequency end, and 48 dBmV/channel output at the high frequency end.
11. This completes the forward path setup for the LBA-3827 amplifier. The forward path setup for the LBA-3827 amplifier is now complete.
12. For the reverse path setup, make sure that the reverse input level to the amplifier is not too high or damage to the amplifier might occur. Check the upstream RF input to the amplifier using a signal level meter before connecting it to the OUT port (reverse input) of the amplifier. The -20 dB forward output test point (TP) is a bi-directional test point and can also be used to inject the upstream test carrier. Compensate 20 dB if using the forward output TP to inject the upstream test carrier.
13. The upstream RF input range for the LBA-3827 is 0-20 dBmV per channel. These upstream levels are assumed with the condition that a 42/54 MHz split unit will have 6 equally loaded channels in the upstream band, the 85/102 MHz split will have 13 equally loaded channels in the upstream band, and the 204/258 MHz split unit will have 33 equally loaded channels in the upstream band. If using less channels, then can compensate for more power. However, the total RF input level (for all channels combined) should not exceed more than 35 dBmV. More than 35 dBmV total upstream RF input might damage the amplifier. Use the following formula to calculate total RF power. Total RF power = RF power per channel + [10* log (# of channels)].
14. With zero attenuation (RATT1 & RATT2) and zero slope (REQ1) in the reverse direction, the LBA-3827 delivers a full upstream gain of 27 dB. Therefore, with an upstream input of 20 dBmV per channel, the reverse output will be 47 dBmV per channel.
15. If the upstream RF input to the amplifier is more than 20 dBmV per channel, then use RATT1 (reverse input attenuator) to attenuate the RF input before it hits the reverse gain block.
16. Now inject the upstream test carrier into the upstream path of the LBA-3827. Use either the OUT port or -20 dB Forward Output TP.
17. Check the upstream RF output of the amplifier at the IN port (reverse output) of the LBA-3827 using a signal level meter. You can also measure at the -20 dB reverse output test point to check the upstream output levels.
18. If the system design requires slope (tilt), use the REQ (reverse equalizer) potentiometer to adjust the tilt. If the system design requires less output, use the RATT2 (reverse output attenuator) potentiometer to adjust the reverse output.
19. For optimum performance in the upstream direction, make sure the reverse output does not exceed 46-47 dBmV per channel.
20. This completes the reverse path setup for LBA-3827 amplifier.
21. If you have any more questions regarding the LBA-3827 setup, please reach out to Lindsay Broadband for support.
22. Do not open the unit, there are no serviceable parts inside. Opening the unit will void the warranty.

CLOSING THE LID INSTRUCTIONS

1. Record the input and output levels for the station in both the upstream and downstream for reference.
2. Close the lid and screw the protective cover back on using a small Phillips or flat/slotted screwdriver.

ORDERING INFORMATION

		Bandpass Split		Power Socket Type
LBA-3827	-	xx	-	x
		45 = 5-42 MHz / 54-1220 MHz		B = Brazil
		81 = 5-85 MHz / 102-1220 MHz		C = Europe
		22 = 5-204 MHz / 258-1220 MHz		D = 15 VDC (transformer)

LINDSAY BROADBAND
2-2035 Fisher Dr, Peterborough, ON K9J 6X6 Canada
+1.705.742.1350 • 1.800.465.7046 • support@lindsaybb.com • lindsaybb.com