LINDSAY ELECTRONICS

Going the Last Mile

Tomorrow's architectures for sending or receiving information around the world or down the street will require a new era of communication equipment...now available from Lindsay Electronics.

Established in 1953, Lindsay is a leading manufacturer and global provider of RF distribution products for the CATV and wired communication industries. With our 150,000 square foot North American manufacturing facility, 300 dedicated employees, and a worldwide distribution network, we are committed to the growth and advancement of your business.

Focused on the last mile, our Hardline Passives, Subscriber Amplifiers, Apartment Amplifiers, Power Passing Multitaps, and Distribution Amplifiers all work from a 1 GHz platform. Our revolutionary new technology creates communication equipment to solve system problems before they become subscriber problems. This is achieved through applied ISO continuous improvement disciplines, innovation and strict attention to details.

A quarter century of proven reliability and superior performance under the most severe climatic conditions result in fewer service interruptions, less maintenance and thus better service at lower operating cost.

LINDSAY ELECTRONICS

Going the extra mile ... for the last mile

Since 1953

50 Mary Street West, Lindsay, Ontario, Canada K9V 4S7
Tel: (705) 324-2196 Tel: (800) 465-7046 Fax: (705) 324-5474

8000 SERIES

1 GHz Distribution Amplifier

8000

Revolutionary Technologies from Lindsay Electronics
Create the New Standard for System Symmetry

LINDSAY ELECTRONICS

Going the extra mile ... for the last mile

Notes:
performance given for port 2 to port 1 with 0dB jumpers in all reverse path sockets. Specifications are typical and subject to change without notice.

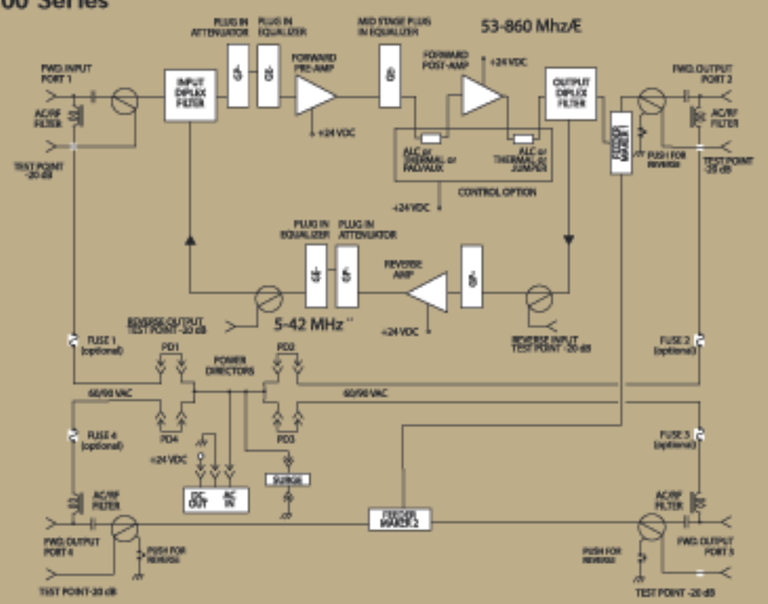
Distortions determined using specified gains and at 20degC

COMPARE BANDWIDTH, GAIN OPTIONS, NON DESTRUCTIVE PIN SEIZURE MECHANISM, POWER CONSUMPTION AND HEAT DISSIPATION...

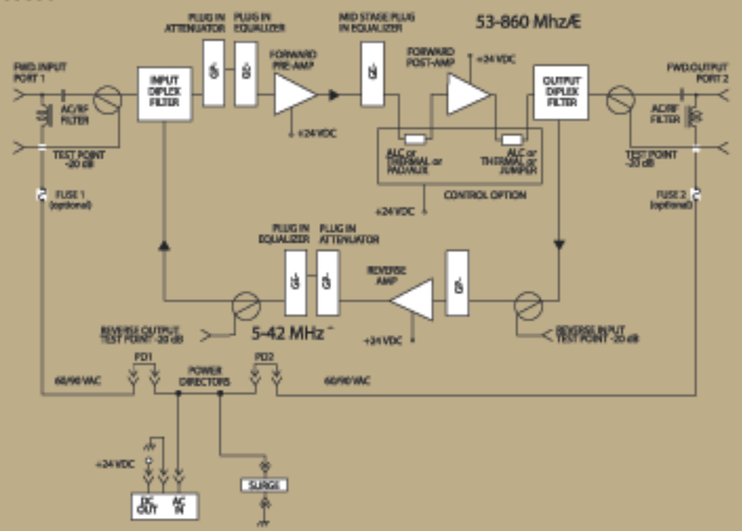
Typical Reverse Specifications for Distribution Amplifiers

Model		RAB1116	RAB2418
Pre-amp IC	MHz	22	24
Gain (dB)	42	16.5	18.5
	5	16.5	18.5
Response Flatness (+/-dB)		0.5	0.5
Return Loss (dB)	5-42	16 input & output	
Flat Input Level (dBmV) 4 channels		30	30
2nd Order Beat (dBc)	19	-79	-82
Triple Beat (dBc)	25	-84	-80
Cross Modulation (dBc)	25	-89	-85
Noise Figure (dB)	42	6.1	6.1
	5	4.0	4.0
Power Requirements (watts)		6.3	6.3

8400 Series



8200 Series



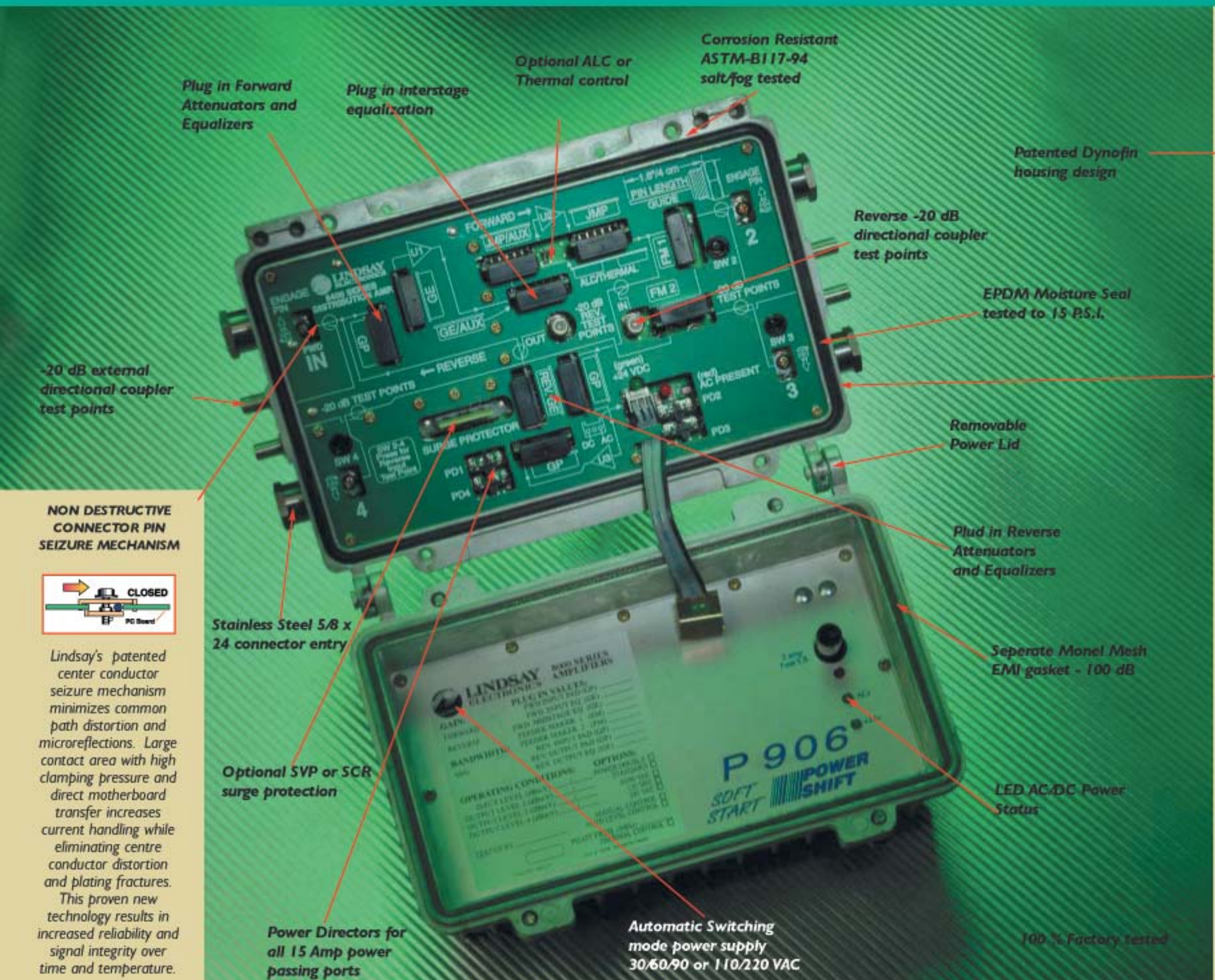
ALL THIS AND MORE FROM THE PEOPLE WHO CREATED THE STANDARD

Typical Specifications for 8200 & 8400 Distribution 860 MHz Amplifiers with 79, 112, 132 Channels, Automatic & Manual

Model 8200 8400	MHz	8236P-G 8436P-G	8236P 8436P	8236 8436	8234P 8434P	8234 8434	8230P 8430P	8230 8430
Pre-amp IC		20 GaAs	24	24	22	22	18	18
Post-amp IC		22 GaAs	18P	18	18P	18	18P	18
Station gain (dB)	860	29.2/35.5	30.5/36.8	30.2/36.5	28.2/34.5	27.9/34.2	24.6/30.9	24.3/30.6
Reduce gain for	750	29.7/35.7	31.0/37.0	30.7/36.7	28.7/34.7	28.4/34.4	25.1/31.1	24.8/30.8
each equalizer used.	550	30.9/36.2	32.1/37.4	31.8/37.1	29.9/35.2	29.6/34.9	26.3/31.6	26.0/31.3
	53	32.5/35.4	33.5/36.4	33.2/36.1	31.4/34.3	31.1/34.0	28.0/30.9	27.7/30.6
Response Flatness (dB)		±0.5 for all models						
Return Loss (dB)		16 for all ports						
Output Level (dBmV)								
132 Ch NTSC	860	46.0	46.0	46.0	46.0	46.0	46.0	46.0
112 Ch NTSC, 110 MHz Digital	750	44.5	44.5	44.5	44.5	44.5	44.5	44.5
79 Ch NTSC, 310 MHz Digital	550	42.1	42.1	42.1	42.1	42.1	42.1	42.1
	53	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Slope (dB)		10 dB, 53- 860 MHz						
Composite 2nd Order (dBc)								
	132ch		-66.5/-69.4	-65.9/-68.6	-66.5/-68.9	-65.9/-68.2	-68.1/-70.0	-67.4/-69.2
	112ch	-69.8/-72.5	-69.6/-73.5	-67.4/-69.9	-66.1/-69.8	-64.9/-67.8	-71.1/-74.0	-68.4/-70.2
	79ch	-71.4/-72.6	-81.1/-83.7	-74.2/-75.1	-71.3/-75.2	-69.6/-72.3	-75.9/-79.4	-72.4/-74.2
Composite Triple Beat (dBc)								
	132ch		-56.4/-59.9	-54.9/-58.1	-56.5/-59.5	-55.0/-57.8	-57.4/-60.0	-55.7/-58.1
	112ch	-68.4/-71.4	-60.7/-64.6	-57.9/-61.1	-60.4/-64.0	-57.7/-60.6	-61.8/-64.7	-58.7/-61.1
	79ch	-76.4/-80.1	-66.9/-71.3	-63.6/-67.0	-68.2/-71.4	-64.5/-67.0	-68.5/-71.5	-64.7/-67.1
Cross Modulation (dBc)								
	132ch		-56.9/-61.7	-51.8/-54.9	-57.7/-61.6	-52.3/-54.9	-58.9/-62.3	-52.9/-55.2
	112ch	-63.3/-66.4	-59.4/-64.5	-53.8/-56.9	-60.3/-64.4	-54.3/-56.9	-61.6/-65.1	-54.9/-57.2
	79ch	-71.9/-76.5	-62.4/-67.5	-56.8/-59.9	-63.7/-67.6	-57.5/-60.0	-64.6/-68.1	-57.9/-60.2
Carrier to Noise (dB)	860	70.4/64.4	67.5/61.3	67.9/61.7	69.9/63.8	70.3/64.1	73.1/67.4	73.7/67.7
	750	69.6/63.9	67.1/61.2	67.4/61.5	69.6/63.9	70.0/64.2	72.8/67.3	73.3/67.7
	550	68.1/63.1	65.8/60.7	66.2/61.0	68.4/63.4	68.8/63.8	71.6/67.0	72.2/67.4
	53	66.7/64.5	65.9/63.3	66.4/63.8	68.3/66.0	68.9/66.5	70.1/68.2	70.9/68.8
Noise Figure (dB)	860	6.2/5.9	7.8/7.7	7.7/7.6	7.7/7.5	7.6/7.5	8.1/7.5	7.8/7.5
(Includes midstage equalizer	750	6.0/5.7	7.3/7.2	7.3/7.1	7.0/6.7	6.9/6.7	7.4/6.9	7.3/6.8
but not input equalizer)	550	5.8/5.4	6.9/6.7	6.8/6.7	6.5/6.2	6.4/6.1	6.8/6.1	6.6/6.0
	53	7.1/6.4	6.9/6.6	6.7/6.5	6.6/6.0	6.3/5.8	8.2/7.2	7.7/6.9
Port Current (Amps)	Max	15						
	Typ	10						
Hum Mod (dBc) @ 10 Amps	Max	-70						
Power (Watts)		23.1/20.1	24.5/21.5	19.1/16.1	21.6/18.6	16.2/13.2	21.6/18.6	16.2/13.2
Group Delay (nSec) Max	Ch 2	30						
EMI Isolation (dB)		≤-100						
Weight (lbs / Kg)		10.5 / 4.7 approx. for all models						
Temperature Range (degC)		-40 to +60degC						

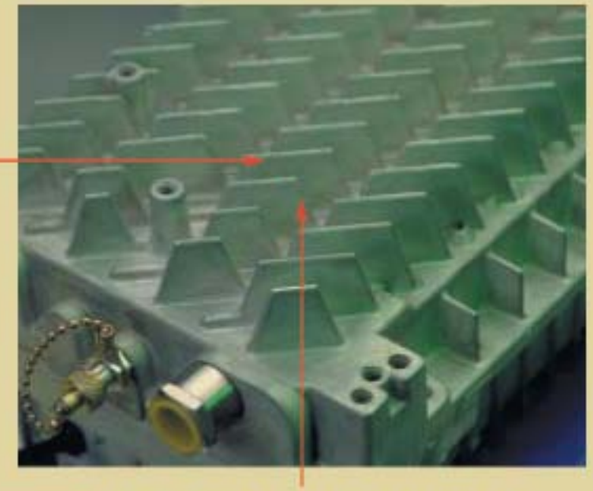
Notes for Specifications:

1. On split specs, first number is Automatic, second number is Manual.
2. Add losses from Feeder Makers for 8400 specs.
3. Quoted gains are with 0dB pads and equalizers. Derate gain with each equalizer or pad used.
4. Automatic amplifier gains, distortions and NFs are quoted with 3dB gain reserve.
5. NF is quoted with 0dB input equalizer and pad.
6. A GE-14-860 equalizer is used midstage for all quoted distortions and noise figures.
7. All amplifiers are 860MHz spaced with 36/46dBmV output for 54/860MHz.
8. Forward station gain tolerance is +/-2dB.
9. Derate Return Loss to 14dB at 860MHz.
10. Reverse amplifier power not included in the total station power.
11. Equalizers available in 550, 750 and 860 MHz versions.
12. All specifications are subject to change.



NON DESTRUCTIVE CONNECTOR PIN SEIZURE MECHANISM

Lindsay's patented center conductor seizure mechanism minimizes common path distortion and microreflections. Large contact area with high clamping pressure and direct motherboard transfer increases current handling while eliminating centre conductor distortion and plating fractures. This proven new technology results in increased reliability and signal integrity over time and temperature.



I.C.E COOLING SYSTEM

I: *I.C.'s embossed directly to housing wall through milled surfaces ensuring direct and efficient heat transfer.*

C: *Chimney effect draws air through Lindsay's patented Dynofin housing design exchanging cool air for unwanted hot air.*

E: *Energy efficient automatic switching mode power supply load shares heat producing components on the removable lid.*

RESULTS:

I.C. Flange of push pull chip runs at 23°C above ambient.

I.C. Flange of power doubling chip runs at 30°C above ambient.

General Description

The 8000 Series amplifier is a multiport, two way amplifier using a 2 part aluminum housing (base and lid). Two base models are available; the 8200 single output Trunk Amplifier and the 8400 four port Distribution Amplifier. The base is a rugged aluminum housing heavily ribbed for heat dissipation, with exterior co-axial connectors, test points and installation mounts. The interior is a one board amplifier with plug in options for equalization, attenuation, RF controls and AC powering.

The aluminum housing lid is hinged to the base and interconnects to it through a ribbon cable. The lid contains a +24 VDC power supply. Three lid models are available; either a 35-90 VAC cable powered supply, a 120 VAC or a 240 VAC 60 Hz supply with line cords for interior use.

All 8000 Series stations share the same blank mainboard which is wired differently for the 8200 and 8400 models. The station has multiple forward gain options including power doubling, two reverse gains and flexible bandwidths options.

Automatic Level Control

The ALC option is a complete unit which carries the coupler for sampling the output RF level, the PIN diode circuit for levelling the RF and the signal processing circuit between them.

The PIN diode circuit is arranged in a bridged Tee network that uses a low frequency pivot to simulate the change in cable attenuation with temperature. The ALC input is composite and averages the level of 5 adjacent channels at the end of the analog bandwidth. The operator can order the ALC to sample channels at 450 or 550 MHz.

The ALC is designated as ALC-xxx where xxx indicates the band edge for the sampling channels. The ALC has an 8 dB (±4 dB) level range and an output accuracy of ±0.50 dB.

If the operator chooses not to use the ALC with the amplifier then the RF losses of the coupler and PIN diode circuits remain with the ALC and allow the amplifier gain to be maximized.

Equalizers (LGE-xx-yyy)

Forward equalizers are available for 550, 750 and 860 MHz band edges. They are all provided with 2 dB steps in cable length from 2 to 26 dB inclusive. Each equalizer corrects for the length of cable indicated on its label. The high end loss of all equalizers is less than 1 dB.

Reverse equalizers are available for a 42 MHz. band edge. They are provided with 2 dB steps in cable length from 2 to 20 dB inclusive. Each equalizer corrects for the length of cable indicated on its label. The high end loss of these equalizers is also less than 1 dB.

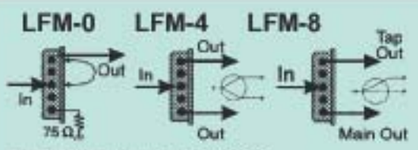
All equalizers are designated as LGE-xx-yyy where xx is the equalizer value and yyy is the band edge of 42, 550, 750 or 860 MHz. The forward and reverse equalizers were designed to be used in all Lindsay Electronics 1 GHz amplifiers.

Attenuators (LGP-xx)

These attenuators are used in the forward and reverse paths of all Lindsay Electronics 1 GHz amplifiers. They are available in 1 dB steps from 0 to 21 dB. The attenuators are designated as LGP-xx where xx represents the value of the attenuator. The 8000 amplifier is equipped with all LGP-0dB attenuators by default.

Feeder Makers (LFM-0,4,8)

The Feeder Maker family of plug in components consists of the LFM-0, LFM-4 and LFM-8. They are installed in two FM sockets on the 8400 model only and provide the signal routing for the distribution outputs. To provide maximum output level flexibility, the LFM0 and LFM8 can be installed in the sockets in a normal or reversed position (rotated 180°). While these components can be installed in either orientation, they must be correctly installed to provide the desired output levels.



FEEDER MAKER INSERTION LOSS TABLE

Model/Frequency	5	42-53	550	750	860
LFM-0 jumper	0.0	0.0	0.0	0.0	0.0
LFM-4 splitter	-3.4	-3.3	-3.6	-3.8	-3.9
LFM-8 coupler Main	-1.9	-1.6	-1.9	-2.2	-2.4
Tap	-9.0	-8.6	-8.5	-8.5	-8.6

All specifications are subject to change.

8400 Series
4 PORT 84- - / - - - / - - V - - - - -

Complete stations are ordered by a matrix number that incorporates the Model number, the frequency upper limit, the power supply voltage and various features. For example: 8436/860/60V-1A2345678 where 1A-8 are numerals indicating the option choices listed below.

FEATURE 1: GAIN / FREQUENCY

550MHz-Cable Powered Complete Assy.
8436-550
8434-550
8430-550
8436P-550
8434P-550
8430P-550

750MHz-Cable Powered Complete Assy.
8436-750
8434-750
8430-750
8436P-750
8434P-750
8430P-750

860MHz-Cable Powered Complete Assy.
8436PG-860
8436-860
8434-860
8430-860
8436P-860
8434P-860
8430P-860

FEATURE 1A: POWER OPTION	Option #
60 Volt	1
90 Volt	2
110 Volt	3
220 Volt	4

FEATURE 2: FILTERS	
Not required-A0JPR Jumper Assy	0
A1LPF5-42 Low Pass Filter	1
A1HPF 53-860 HIGH PASS FILTER	
A2HPF 45-860MHz HIGH PASS FILTER	
A3LPF 5-65 LOW PASS FILTER	3
A3HPF 85-860 HIGH PASS FILTER	

FEATURE 3: REVERSE	
NOT REQUIRED	0
PASSIVE REVERSE ASSY	1
ACTIVE REVERSE 16dB (RA8016)	2
ACTIVE REVERSE 19dB (RA8019)	3

FEATURE 4: FORWARD CONTROLS	Option #
MANUAL	0
ALC ANALOG 19dB 350MHz	1
ALC ANALOG 19dB 450MHz	2
ALC ANALOG 19dB 550MHz	3

FEATURE 5: FEEDER MAKER 1	
FM-0dB FEEDER MAKER	0
FM-4dB FEEDER MAKER	1
FM-8dB FEEDER MAKER	2

FEATURE 6: FEEDER MAKER 2	
FM-0dB FEEDER MAKER	0
FM-4dB FEEDER MAKER	1
FM-8dB FEEDER MAKER	2

FEATURE 7: SURGE PROTECTION	
NOT REQUIRED	0
SVP PLUG-IN ASSY 230V	1
SURGE CLAMP	2

FEATURE 8: MOUNTING HARDWARE	
NOT REQUIRED	0
HANGER BRACKET	1
STRAND CLAMP	2
EUROPEAN HARDWARE	3
PEDESTAL PLATE	4

8200 SERIES
2 PORT 82-_-___-_V-_____

Complete stations are ordered by a matrix number that incorporates the Model number, the frequency upper limit, the power supply voltage and various features. For example: 8236-860-60V-1A2345 6 where 1A-6 are numbers indicating option choices listed below.

FEATURE 1: GAIN / FREQUENCY

550MHz-Cable Powered Complete Assy.
8236-550
8234-550
8230-550
8236P-550
8234P-550
8230P-550

750MHz-Cable Powered Complete Assy.
8236-750
8234-750
8230-750
8236P-750
8234P-750
8230P-750

860MHz-Cable Powered Complete Assy
8236PG-860
8236-860
8234-860
8230-860
8236P-860
8234P-860
8230P-860

FEATURE 1A: POWER OPTION	Option #
60 Volt	1
90 Volt	2
110 Volt	3
220 Volt	4

FEATURE 2: FILTERS	
Not required-A0JPR Jumper Assy	0
A1LPF5-42 LOW PASS FILTER	1
A1HPF 53-860 HIGH PASS FILTER	
A2LPF 5-30MHz LOW PASS FILTER	2
A2HPF 45-860MHz HIGH PASS FILTER	
A3LPF 5-65 LOW PASS FILTER	3
A3HPF 85-860 HIGH PASS FILTER	

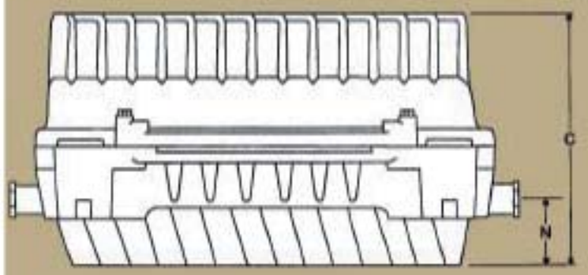
FEATURE 3: REVERSE	
NOT REQUIRED	0
PASSIVE REVERSE ASSY	1
ACTIVE REVERSE 16dB (RA8016)	2
ACTIVE REVERSE 19dB (RA8019)	3

FEATURE 4: FORWARD CONTROLS	
MANUAL	0
ALC ANALOG 19dB 350MHz	1
ALC ANALOG 19dB 450MHz	2
ALC ANALOG 19dB 550MHz	3

FEATURE 5: SURGE PROTECTION	
NOT REQUIRED	0
SVP PLUG-IN ASSY 230V	1
SURGE CLAMP	2

FEATURE 6: MOUNTING HARDWARE	
NOT REQUIRED	0
HANGER BRACKET	1
STRAND CLAMP	2
EUROPEAN HARDWARE	3
PEDESTAL PLATE	4

DIMENSION	INCHES	CM	DIMENSION	INCHES	CM
A	12.3	31.2	H	5	12.7
B	8 1/8	20.6	J	7 7/8	20.0
C	5.5	14.0	K	1 5/8	4.2
D	12 1/8	30.8	L	1 7/8	4.8
E	11 1/8	28.3	M	3.6	9.1
F	3 11/16	9.4	N	13/8	3.5
G	2	5.1			



8000 Dimensional Diagram