Flex Max330

Line Extenders

- **Advanced, economical line extender**
- **Upgrade legacy C-COR 750 MHz E700 series line extenders to 862 MHz**
- **Cost-effective choice for new system builds**
- **ALC, TLC, and NLC options**

C-COR introduces the Flex Max330 Line Extenders, a new family of advanced yet economical, strand-mount line extenders with the superior quality and exceptional performance customers have come to expect with C-COR RF amplifiers.

Flex Max330 Line Extenders are available as both complete units for customers designing new system builds requiring a cost-effective line extender that meets or exceeds existing operating performances and also as drop-in RF modules for an economical 870 MHz upgrade of legacy C-COR 750 MHz E700 series line extenders. Flex Max330 Line Extender operating specifications, such as gain and tilt, are maintained at 750 MHz, with extended gain and tilt out to 870 MHz. These unique design considerations enable reuse of legacy line extender housings and existing spacing, which in turn eliminates the additional cost of resplicing and makes the Flex Max330 Line Extender drop-in RF module the economical choice for system upgrades.

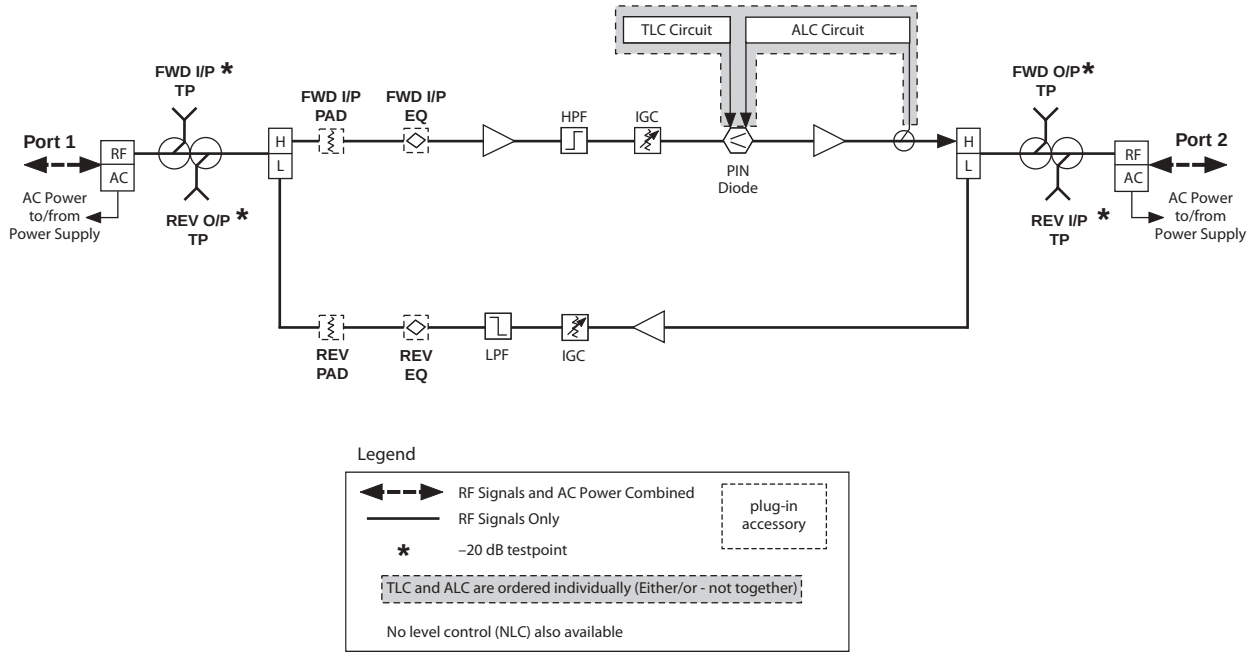
Flex Max330 Line Extenders meet the requirements for modern HFC multi-transport networks through applied robust Gallium Arsenide technology, which improves system performance and drives total system costs down. With its 32dB operational gain, the Flex Max330 covers all applications for modern high performance line extenders.

Flex Max330 Line Extenders are available with three level control options: automatic level control (ALC), thermal level control (TLC), and no level control (NLC). To further facilitate upgrades when the Flex Max330 Line Extender is purchased as a drop-in module, the ALC model has two pilot levels common to legacy 750 MHz E700 series line extenders.

Features

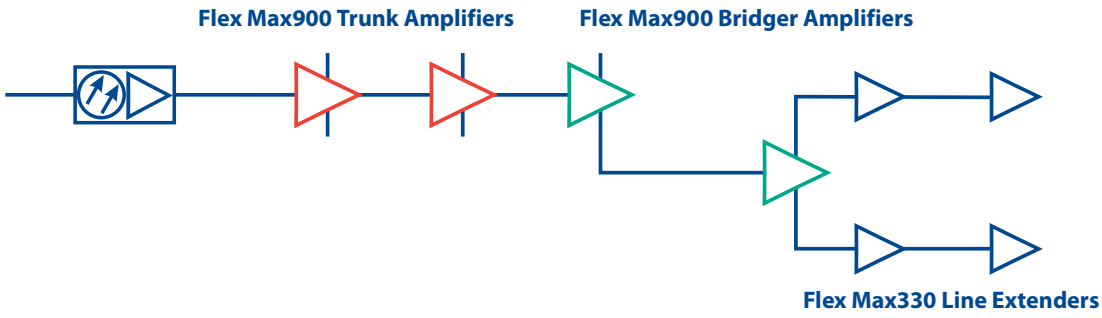
- Economical choice for both legacy system upgrades and new builds
- Gallium Arsenide technology results in fewer active components, improved system performance, and reduced total system costs
- High performance push-pull return amplifier for a wide range of signals on the return path
- Capable of handling 15 A of AC through-current for tough powering demands for new builds and 13 A for upgrades
- Optional surge protection module decreases amplifier failure rates by dissipating surges due to lightning, power transients, and other causes
- –20 dB forward and return testpoints for accurate and repeatable measurements

Functional Block Diagram



Application

Flex Max330 Line Extenders amplify and control forward feeder signals from a network amplifier or other line extender. Return path circuitry of the Flex Max330 Line Extender also amplifies return signals from the subscriber.



Sample Specifications

	Forward	Return	
General			
Bandwidth, MHz	54 to 870	5 to 42	
AC Current Passing, A	15	15	
Typical Operating Conditions			
Operational Gain, dB (Note 1)	32	18	
Channels, Number of NTSC (Note 2)	79	6	
Operating Levels (recommended)			
Frequency, MHz	870/550/54	42/5	
Input, dBmV, min. (Note 3)	17.5/14/9	17/17	
Output, dBmV (Note 4)	49.5/44/35	35/35	
Performance Specifications @ Recommended Levels			
(Temperature Range: –40 to 60°C)			
Carrier-to-Interference Ratio, dB			
Composite Triple Beat	70	—	
Second Order Beat (F1 ± F2)	—	82	
Cross Modulation (per NCTA std.) (Note 5)	66	78	
Third Order Beat (F1 ± F2 ± F3)	—	89	
Composite 2IM	75	—	
Composite Intermodulation Noise (CIN) (Note 6)	65	—	
Noise, 4 MHz, 75Ω (Note 7)	66.5/64/59	69	
Noise Figure, dB (without EQ) (Note 7)	9/8/8	7/7	
Full Gain, dB (without EQ and ALC)	36.5	19	
Factory Alignment (with ALC reserve, without EQ)			
Cable Loss, dB @ 862 MHz	8	—	
Flat Loss, dB	25	19	
Gain Slope, dB	+0.5/–0.25	±0.5	
Flatness, dB	±0.5	±0.5	
Return Loss, dB, min.	16	16	
Powering Requirements, max./typ. (Note 8)		**With Active Return**	
AC Voltage, 60 Hz		@ 90 V	@ 60 V
AC Power, Watts		23/21	23/21
AC Current, mA		325/315	500/480
DC Current, mA @ 24V ± 0.5 V		780/730	780/730
Automatic Level Control			
Range, dB @ 862 MHz	+3.5/–4.0	—	
Accuracy (–40 to 60°C), dB	±0.5	—	
Operating Level Range (from specified levels), dB	+2/–6	—	
Pilot Frequency Band (recommended), MHz	439.25 (single channel)	—	

Specification Document Number 1500019 Rev C

Notes:
1. Spacing is at the highest frequency with SEQ-862-xx installed. Return spacing includes losses due to housing, diplex filters, and MEQ-42-xx.
2. NTSC video channels occupying the appropriate frequency spectrum per specified number of channels.
3. Recommended minimum forward input level at 870 MHz including loss due to equalizer.
4. Recommended maximum return output level at 42 MHz including loss due to equalizer.
5. Cross modulation specification number indicates typical cascade performance.
6. System operating with digitally compressed channels or equivalent broadband noise from 550 to 870 MHz at levels 6 dB below equivalent video channels will experience a composite distortion (CIN) appearing as noise in the 54 to 550 MHz frequency spectrum.
7. The Noise Figure and C/N specifications are typical within the specified passband.
8. Power supply is internal to RF module. See 333995-25 for additional information.
9. –20 dB internal forward and return directional testpoints. Testpoint accuracy is ±0.75 dB except the Port 1 forward input (±1.25 dB).

Specifications are subject to change without notice

Ordering Information

					1	2	3		4	5	6	7	8	9	10
F	M	3	3	0	D	x	J	–	x	x	4	E	P	x	x

1	Bandwidth
D	870 MHz

2	Spacing	
P	32 dB	a
7	35 dB	b

*a) Must select "**A1**", "**KB**", or "**L0**" in #4–5 block,* **Level Control**.

*b) Must select "**NA**" in #4–5 block,* **Level Control**.

3	Frequency Split
J	42/54 MHz

4–5	Level Control
A1	TLC (thermal level control)
KB	439.25 MHz TV (automatic level control)
L0	499.25 MHz TV (automatic level control)
NA	None (manual level control)

6	Return
4	18 dB gain active

7	Factory Equalization
E	8 dB

8	Powering	
P	60–90 V, 50–60 Hz power supply	a

a) An optional surge protector (P/N 162355-03) is available and must be ordered separately.

9	Housing	
A	None	a
R	2-Port, 1 GHz Flex Max330 housing, flat lid, –20 dB internal TPs	

*a) Select "**1**" #10 block,* **Housing Finish**. *Required when ordering module only.*

10	Housing Finish	
1	Standard (or N/A)	a
4	Corrosion protected	

a) Required when ordering module only.

Americas Headquarters
60 Decibel Road • State College • Pennsylvania • 16801 • USA
T: 1-814-238-2461 T: 1-800-233-2267 F: 1-814-238-4065

EuroPacific Headquarters
Transistorstraat 44-V • 1322 CG Almere • The Netherlands
T: 31-36-546 1111 F: 31-36-536 4255

www.c-cor.com