Datasheet

Quantum12™ LE 1.2GHZ Line Extender

OVERVIEW

The Quantum12 LE 1.2GHz Line Extenders' legacy design continues to support a new era where high-quality signal strength is the standard. The Quantum12 Line Extender is engineered to meet stringent industry performance requirements and surpasses quality benchmarks. It seamlessly integrates into your GainMaker LE Housings and eliminates the need for cumbersome housing replacements while continuing to deliver reliable and robust performance every time.

Ease of Installation: Capability to drop directly into GainMaker LE Housing.

- Offers a hassle-free installation experience. There's no need to cut out and replace existing housings to accommodate a different product.

High-Performance Technology: Employs advanced GaN gain stage technology.

- Ensures superior signal amplification.

High Current Capacity: Has a 15A current capacity (steady state) and 25A 2-hour surge survivability.

- Ensures robust performance in various network conditions.

Enhanced Signal Control and Protection: Optional Single Pilot AGC with thermal backup.

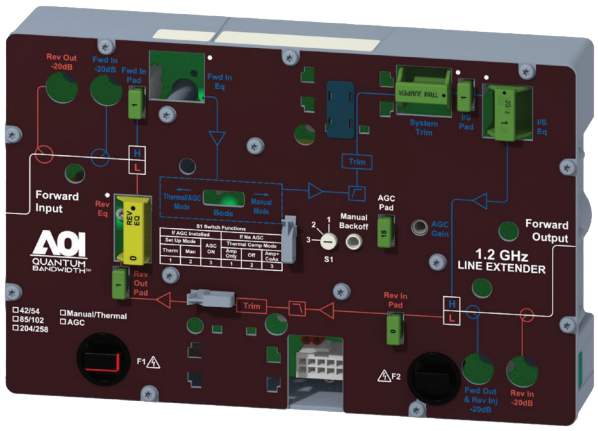
- Provides better control and eliminates disruptive RF output variation during pilot loss.
- Surge-resistant circuitry offers additional protection without the need for fuses or other failure-causing devices.

Innovative Design: Amplifier cover provides easy access to RF Accessories and test points. The power supply is strategically mounted in the housing lid.

- Ensures optimal performance and longevity through efficient thermal dissipation.

Ease of Maintenance: Includes spring-loaded seizure assemblies.

•Allows for easy installation and removal of the amplifier RF module.



GENERAL STATION PERFORMANCE	UNITS	FORWARD	REVERSE	NOTES
Pass band	MHz	54-1218	5-204	
Amplifier type	-	GaN	GaAs	
Frequency response	dB	± 0.5	± 0.5	
Auto slope and gain range	dB	± 5.8	-	
Return loss	dB	16	16	4
Maximum AC through current (continuous)	Amps	15	-	
Maximum AC through current (surge)	Amps	25	-	
Hum modulation at 15A (over specified frequency range)	dB	60 (54-1002 MHz) 55 (1002-1218 MHz)	55 (5-10 MHz) 60 (10-204 MHz)	
Test points (± 0.75 dB)	dB	-20	-20	

Forward Station Performance	Units	Auto/Thermal with 12 dB I/S EQ	Notes
Operational gain (minimum)	dB	38	1
Internal tilt (± 0.5 dB) @ 54 – 1218 MHz	dB	+11.7	
Noise Figure	dB	8	1
BER	dB	<1E-6	
CCN	dB	49	5
MER	dB	49	5

Unless indicated differently, our specifications are established based on a standard performance of 68°F (20°C). The measurements employed in determining these specifications adhere to the globally recognized SCTE/ANSI standards, when relevant, utilizing standard frequency assignments.

Reverse Station Performance	Units		Notes
Operational gain (minimum)	dB	27	3, 4
Noise Figure	dB	6	3, 4
NPR at 50dB CNR at 42 MHz		27	
NPR at 50dB CNR at 85 MHz	dB	24	
NPR at 50dB CNR at 204 MHz		20	

Station Delay Characteristics (42/54 Split)			
Forward (Chrominance to Luminance Delay)		Reverse (Group Delay in 1.5 MHz bandwidth)	
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)
55.25 to 58.83	37	5.0 to 6.5	60
61.25 to 64.83	15	6.5 to 8.0	22
67.25 to 70.83	10	8.0 to 9.5	12
77.25 to 80.83	5	37.5 to 39.0	20
		39.0 to 40.5	32
		40.5 to 42.0	45

Station Delay Characteristics (85/102 Split)			
Forward (Chrominance to Luminance Delay)		Reverse (Group Delay in 1.5 MHz bandwidth)	
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)
109.275 to 112.855	15	5.0 to 6.5	60
115.275 to 118.855	10	6.5 to 8.0	22
121.2625 to 124.8425	8	8.0 to 9.5	12
127.2625 to 130.8425	5	80.5 to 82.0	10
		82.0 to 83.5	17
		83.5 to 85.0	21

Station Delay Characteristics (204/258 Split)			
Forward (Chrominance to Luminance Delay)		Reverse (Group Delay in 1.5 MHz bandwidth)	
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)
259.2625 to 262.8425	10	5.0 to 6.5	60
265.2625 to 268.8425	8	6.5 to 8.0	22
271.2625 to 274.8425	7	8.0 to 9.5	12
277.2625to 280.8425	5	199.5 to 201.0	10
		201.0 to 202.5	17
		202.5 to 204.0	21

Station Powering Data														
Quantum12 Line Extender System Amplifier	I DC (Amps)		AC Voltage											
	5.5V	24V		90	85	80	75	70	65	60	55	50	45	40	35
Thermal/Manual	0.75	0.72	AC current	0.56	0.61	0.61	0.64	0.65	0.67	0.67	0.69	0.71	0.75	0.83	0.92
			Power (W)	27.9	28.1	27.7	28.1	27.9	27.9	27.6	27.9	27.9	28.1	28.6	28.9
AGC	0.75	0.79	AC current	0.56	0.61	0.62	0.64	0.66	0.68	0.68	0.70	0.72	0.77	0.85	0.95
			Power (W)	28.9	29.1	28.7	29.1	28.9	28.9	28.6	28.9	28.9	29.1	29.6	29.9

The data provided here is derived from stations set up for bidirectional operation. The specified AC currents are measured using a common CATV type ferroresonant AC power supply (quasi-square wave) and the Quantum12 High Output System Amplifier power supply (2.5A, 24 VDC).

The DC supply incorporates a customizable 30V, 40V, or 50 VAC under-voltage lockout circuit with the default setting being 30V, 40V, or 50 VAC. You can adjust the under-voltage lockout by modifying the position of the lockout jumper.

Note:

1. *We specify the output tilt as "LINEAR" tilt (not "cable" tilt). These tilts were achieved using a 1.5 dB EQ in the interstage, while the remaining tilt comes from the input EQ and the input signal.*
2. *Forward gain and noise figures were measured with 0 dB input EQ, 1 dB input pad, Thermal, and AGC module.*
3. *Reverse gain, noise figures for stations with 0 dB reverse input pad, 0 dB reverse output EQ, and 1 dB output pad.*
4. *Reverse operational gain, noise figure, and return loss are given without the reverse switch option. If a switch is installed, reduce gain by 0.5 dB, increase noise figure by 0.5 dB, and decrease return loss by 1 dB.*
5. *Distortion performance at reference output levels and tilt. Corrected with source performance backed out.*

Unless indicated differently, our specifications are established based on a standard performance of 68°F (20°C). The measurements employed in determining these specifications adhere to the globally recognized SCTE/ANSI standards, when relevant, utilizing standard frequency assignments

Environmental	Value
Operating temperature range	-40 to 140°F (-40 to 60°C)

Mechanical	Value
Housing dimensions (L x H x D)	11.66 in. x 6.77 in. x 9.58 in. (296.1 mm x 172.0 mm x 243.3 mm)
Weight Housing with power supply	13 lb (5.9 kg)