

LE-1000

1GHz Line Extender

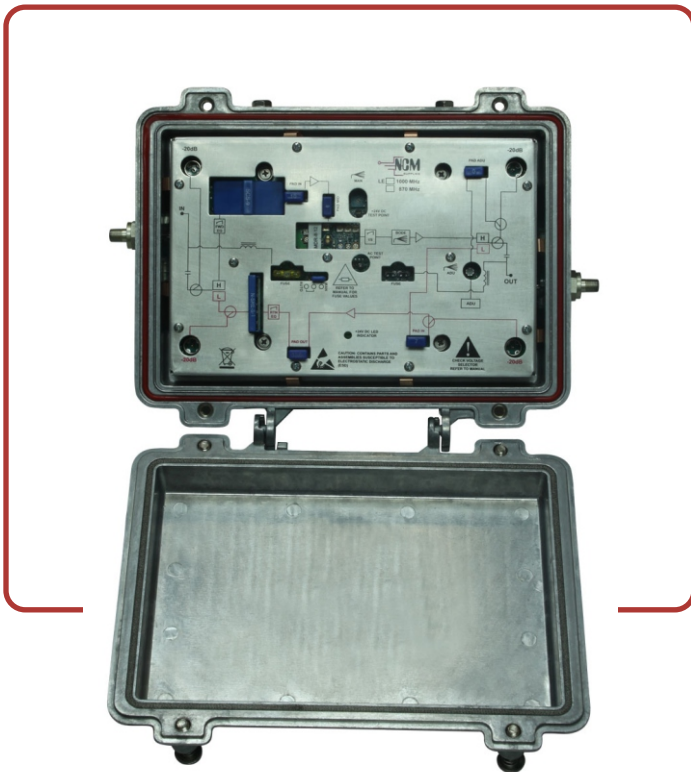


NCM's 1GHz LINE EXTENDER, model LE-1000 provides excellent two way performance and is designed for compatibility with standard accessories, such as attenuators, equalizers, ADUs or QADUs, return amplifiers and automotive fuses. All LE-1000s are completely designed, assembled and tested in USA. Their modules are factory configured with reverse amplifier, diplex filters, forward interstage pads and interstage equalizer, to ensure optimal quality. LE-1000 offers high gain, high output levels, excellent distortion performance, 16dB return loss, and bode equalization.

The LE-1000 line extender offers 1000MHz bandwidth, high gain, high output level, great distortion performance, excellent return loss, superior linearity, plug in compatible, with option to add ADU or QADU to automatic gain control. Ideal to use from 5 to 1000MHz CATV amplifier systems.

HYBRIDS

The LE-1000 uses Gallium Arsenide (GaAs) hybrids. These hybrids provide excellent linearity, superior return loss performance, extremely low distortion, optimal reliability, low noise, unconditionally stable, thermal optimized design, high gain and high output level. These features allow to maximize system performance and reduce system costs.



FEATURES

- 1GHz GaAsFET gain block technology.
- High gain and High output level.
- 60 and 90 volt AC powering capability.
- 15 Ampere AC capability.
- Directional coupler –20 dB test points.
- 16 dB return loss.
- Reverse input pad and Input hybrid RF test point.
- Plug-in, self-contained diplex filters.
- Bode equalization.
- Plug in, compatible.

Unless otherwise noted, the above specifications reflect typical device performance at stated reference levels in the recommended operating configuration(s). Specifications are subject to change without notice.

MODEL: LE-1000 Rev-1.1/2011 © 2000-2011 NCM Supplies – All Rights Reserved



MADE IN USA

NCM Supplies Inc.
2101 N.W. 79 Ave. Miami, Florida 33122
Phone: 305-640-0461 Fax: 305-639-2684
ncm@ncmsupplies.com | www.ncmsupplies.com

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SPECIFICATIONS

PARAMETER	UNITS	NOTE	FORWARD	REVERSE
Pass Band	MHz	1	54-1000	5-42
Flatness	dB	2	±1	±0.75
Manual Bode Slope Control Range	dB	3	±4	NA
Full/Operational Gain	dB	4	37/34	24
Interstage Equalizer Slope	dB	5	9±1	NA
Noise Figure	dB	6	8	6
Impedance	Ω	7	75	75
Return Loss	dB	8	16	15
Test Points (± 1 dB)	dB	9	20±1	20±1
Distortion CTB/CM/CSO	dBc	10	72/70/71	80/70/80
Reference Output Level	dBmV	11	36 (54MHz) 42 (550MHz) 44 (1000MHz)	35 (5MHz) 35 (37.5MHz) 35 (42MHz)
Group Delay	nSec	12	37 (55.25-58.83MHz) 14 (61.25-64.83MHz) 8 (67.25-70.83MHz) 6 (77.25-80.83MHz)	60 (5.0-6.5MHz) 11 (8.0-9.5MHz) 14 (37.5-39.0MHz) 35 (40.5-42.0MHz)
Hum Modulation @ 15A	dBc	13	65 (54-870MHz) 60 (870-1000MHz)	55 (5.0-10.0MHz) 65 (11.0-42MHz)
Hum Modulation @ 10A		14	70 (54-870MHz) 60 (870-1000MHz)	60 (5.0-10.0MHz) 70 (11.0-42MHz)
AC Current @60VAC/90VAC	A	15	0.60/0.45	0.65/0.55
Power Consumption	W	16	22	23
DC Ripple	mV	17	20pp	
DC Current	mA	18	900	950
DC Voltage	V	19	24±0.3	
Max AC Through Current (continuous)	A	20	15	
Housing Dimensions	cm		29.8L x 20.6 W x 14.6 H	
Package Dimensions	cm		31L x 27 W x 16 H	
Weight	kg		4.5	
• Housing with power supply			1.5	
• Module				
Ambient Operating Temperature	°C		-40 to +60	

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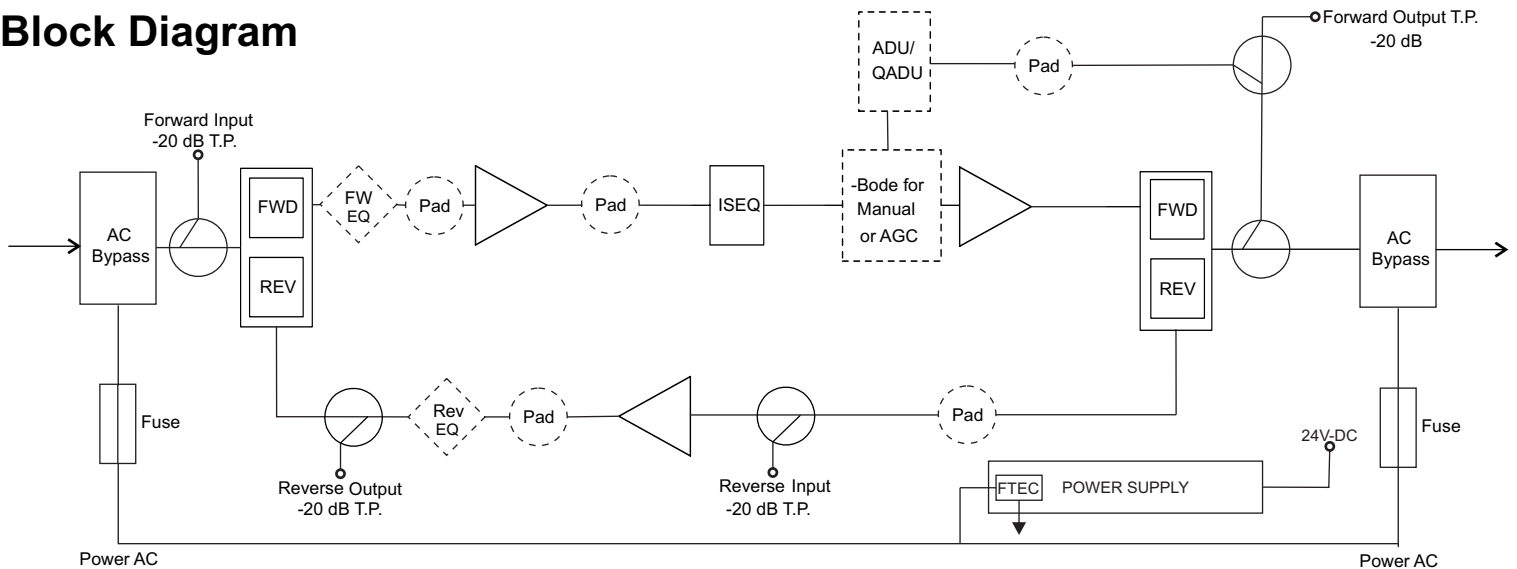
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Notes on specifications:

- 1- Operating passband of station. Diplex filters are plugged into the electronic chassis.
- 2- This is the worst case.
- 3- Amount of Bode slope control range from midpoint at 1000 MHz .
- 4- Forward Gain measured with 0 dB input EQ and 1 dB input pad.
- 5- Amount of slope created and cable equivalence of fixed interstage equalizer.
- 6- Noise Figure measured with 0 dB input EQ and 1 dB input pad.
- 7- Nominal CATV impedance de 75 ohm.
- 8-This is the worst case .Measured with the stated AC Bypass Current.
- 9- Match measurement at the amplifier input and output.
- 10- 78 CW NTSC channels loaded from 55 to 550 MHz. Digital refers to 550-1002 MHz loading with QAM carriers at -6 dB levels relative to analog video carrier levels.
- 11- Representative frequencies.
- 12- Chrominance to Luminance Delay / Group Delay in 1.5 MHz bandwidth(standard NTSC/ 3.58MHz color subcarrier).
- 13- Measured with the stated AC Bypass Current at 15A
- 14- Measured with the stated AC Bypass Current at 10A
- 15- AC current is stated in RMS continuous
- 16-.At 60VAC based on measurements made with typical CATV type ferro-resonant AC power supply
- 17- Measure with full load.
- 18- Individual measurement, based on measurements made with typical CATV type ferro-resonant AC power supply.
- 19- Used standard dc voltmeter, based on measurements made with typical CATV type ferro-resonant AC power supply.
- 20-Used load bank and power test

Block Diagram



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FORWARD PATH

The operational gain of the NCM-LE-1000 is 34 dB, with 16 dB return loss. Output level control is achieved through the use of an interstage Bode equalizer, which compensates for coaxial cable attenuation changes due to temperature. Equalization may be controlled manually or with a single pilot closed loop automatic drive unit, model ADU(analog pilot) or QADU(QAM pilot). Both the ADU and QADU boards are ordered by separated. ADUs utilize high quality Surface Acoustic Wave (SAW) filters for determining pilot frequency. This improves amplifier stability over temperature. To ensure easy installation and maintenance, the amplifier is designed for compatibility with standard accessories, such as attenuators, equalizers, ADUs or QADUs, automotive fuses, surge protection and the amplifier module is reversible too. The NCM-LE-1000 uses diplex filters (plug-in), it is available with split filters for a 5-42 MHz reverse band and a 54-1000 MHz forward band. Forward Equalizers are available in 1 dB steps from 0 to 24 dB at 1000 MHz (213471G0xxx)and the cable simulators are available in 1 dB steps from 0 to 10 dB at 1000 MHz(215001G0xxx)

RETURN PATH

The NCM-LE-1000 provides 24 dB minimum station gain. Return path equalizers are available in 1dB steps from 0 to 18dB at 40 MHz (2134842Kxxx), can be customer selected. Plug-in Pads (attenuators) are available in 1 dB steps from 0 to 20 dB (212460Txxx). The -20dB test point of input measure the direct input of the reverse hybrid, when use 0dB attenuator in “pad in”, otherwise, the operator needs to include the pad value in the calcule of input signal level.

MEASUREMENT

All specifications and measures are base in Recommended Practices for Measurement on Cable Television Systems 3th edition 2002 of NCTA (National Cable & Telecommunications Association). Measurement equipment Network Analyzer Agilent E5061B and Cable TV Analyzer Agilent 8591C. Include Agilent 86213A 75 ohm precision Attenuator set, HP85036B 75ohm Calibration kit and Agilent 85024A High Frequency Probe.

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