

M2 SERIES CONVERTERS

FOR DATA, VOICE AND DIGITAL/ANALOG VIDEO TRANSMISSION

M2-Series dynamically advanced converter technology combines extended bandwidth, reduced size, improved reliability and advanced performance at a competitive price.

With L-3 Narda's 1 Rack Unit Slimline configuration, the M2-Series design leads to substantially smaller 1:1 and 1:N systems. A 1:1 redundant subsystem can be supplied in only 2 RU (3.5").

L Band monitoring port for DSNG signal test and monitoring.

M2-Series Up and Downconverters meet INTELSAT, EUTELSAT, Regional and DOMSAT requirements. The extended converter bandwidth provides access to almost all Ku-Band satellites worldwide.

M2-Series Converters have excellent phase noise performance accommodating the standard QPSK as well as the more stringent 8PSK and 16QAM and higher order carriers. These converters will faithfully transmit the wide spectrum of high data rates demanded for digital video, ATM and related applications. Integrated field adjustable Group Delay/Amplitude Equalizer modules are also available.



KU- OR C-BAND FREQUENCY CONVERTER FEATURES

- 125 KHz Step Size Frequency Tuning
- Front Panel Gain Control
- RS 422/485 Remote Control
- High Output Power
- Front Panel Amplitude Slope Adjust for IFL Equalization
- User Friendly Menu-Driven Front-Panel Control and Monitors
- Group Delay/Amplitude Equalized - Suitable for any Type of Carrier
- Interchangeable with other LNR Series Converters
- CE Marked
- Ultra Low Phase Noise
- Reduced Size
- 1:4 Up and Downconverter systems with Smart Switch (tm) in 15 Rack Units
- Redundant Up and Downconverter System with Switch in 2 Rack Units
- High Reliability/Lower Parts Count

			FREQUENCY BAND	TUNING BAND
KU-BAND	Upconverter UC14M2-D5(70) UC14M2-D5(140)	70 MHz IF 140 MHz IF	13.75-14.5 GHz	750 MHz
	Downconverter DC11M2-D5(70) DC11M2-D5(140)	70 MHz IF 140 MHz IF	10.95-12.75 GHz	1800 MHz
C-BAND	Upconverter UC6M2-D5(70) UC6M2-D5(140)	70 MHz IF 140 MHz IF	5.845-6.725 GHz	880 MHz
	Downconverter DC4M2-D5(70) DC4M2-D5(140)	70MHz IF 140 MHz IF	3.4-4.2 GHz	800 MHz

M2 SERIES SPECIFICATIONS (C&KU-BAND)

FRONT PANEL CONTROL AND MONITOR FUNCTIONS

- * Frequency
- * Gain
- * Summary Alarm
- * Detailed Alarm
- * Self Test
- * Store/Recall Frequencies
- * Unit Address
- * Mute
- * Subassembly Diagnostics
- * Key Lock
- * Ref Frequency Monitor & Adjust
- * Power On/Off Indicator
- * Local/Remote
- * 10 MHz Crystal Reference Monitor Port
- * RS422/485 Remote Control (Rear Panel)

OPTIONS

- * +15dBm Output Power @ 1 dB compression point (U/C)
- * Remote Control: RS-232 or IEEE-488
- * IF/RF Monitor Ports (Front Panel)
- * LO Monitor Ports (Front Panel)
- * 10 MHz External References
- * -48V DC Power
- * Higher Frequency Stability
- * 5 or 10 MHz External Reference Auto or Manual Select

POWER

INPUT: 115/230 VAC +/-10% 47-63 Hz
Consumption: 100W (max.)

ENVIRONMENT

Operating Temp: 0 to 50°C
Non-Operating Temp: -30 to +70°C
Humidity: Up to 95%
(Non-Condensing)

MECHANICAL

Dimensions: 1.75" x 22" x 19"
Weight: 9 Kg (20lbs.) nominal
Shock & Vibration: Normal handling by commercial carriers

M2 SERIES SPECIFICATIONS (C&KU-BAND)

UC6M2-D5 & UC14M2-D5 Low Phase Noise Upconverter

Type	Dual Conversion
Frequency	Positive (No Inversion)
Frequency Selection (Local or Remote)	Synthesizer tuned, 125 KHz steps
Frequency Stability	+/-1 x 10 ⁻⁸ /MO, incl. 10 to 40°C temp. change
First IF Frequency	Above 1 GHz
Reference Frequency	Front Panel Adjust and Monitor

Input

Frequency	70 MHz (Option: 140 MHz)
Impedance	75 Ohms
Return Loss	23 dB (nom.) Note 1
Connector	BNC

Output (UC6M2-D5)

Frequency	5.845-6.725 GHz (Std.)
Impedance	50 Ohms
Return Loss	19 dB (nom.)
Connector	Type "N"
Level (1 dB compr.)	+10 dBm (min.)*
	Higher Val. Opt.
Muting	80 dB (min.)

Output (UC14M2-D5)

Frequency	13.75-14.5 GHz (Std.)
Impedance	50 Ohms
Return Loss	17 dB (nom.)
Connector	SMA
Level (1 dB compr.)	+6 dBm (min.)*
	Higher Val. Opt.
Muting	80 dB (min.)

Transfer Characteristics

Gain	32 dB (nom.) 30 dB (min.)
Bandwidth and Ripple	36 MHz, +/-0.25dB (max.)
Gain Slope	+/-0.05 dB/MHz (max.)
Gain Stability	+/-0.25 dB/day (max.)
Group Delay (+/-18 MHz) Note 1	Linear +/-0.05 ns/MHz (max.)
	Parabolic 0.008 ns/MHz (max.)
	Ripple 1.0 ns, p-p (max.)
Phase Noise	3 dB better than IESS
	308/309 (UC14M2-D5)
	5 dB better than IESS
	308/309 (UC6M2-D5)
AM to PM Conversion	0.1∞/dB (max.) for -10 dBm output
Gain Adjust	41.5 dB in 0.25 dB steps
	Front Panel Control
Remote Control	RS422/485 (Std.)

DC4M2-D5 & DC11M2-D5 Low Phase Downconverter

Type	Dual Conversion
Frequency	Positive (No Inversion)
Frequency Selection (Local or Remote)	Synthesizer tuned, 125 KHz steps
Frequency Stability	+/-1 x 10 ⁻⁸ /MO, incl. 10 to 40°C temp. change
First IF Frequency	Above 1 GHz
Reference Frequency	Front Panel Adjust and Monitor

Input (DC4M2-D5)

Frequency	3.4-4.2 GHz (Std.)
Impedance	50 Ohms
Return Loss	19 dB (nom.)
Connector	Type "N"
Noise Figure	13 dB (max.)

Input (DC11M2-D5)

Frequency	10.95-12.75 GHz (Std.)
Impedance	50 Ohms
Return Loss	17 dB (nom.)
Connector	SMA
Noise Figure	15 dB (max.)

Output

Frequency	70 MHz (Option: 140 MHz)
Impedance	75 Ohms
Return Loss	23 dB (nom.) Note 1
Connector	SMA
Level (1 dB compr.)	+15 dBm (min.)
Muting	80 dB (min.)

Transfer Characteristics

Gain	52 dB (nom.) 50 dB (min.)
Bandwidth and Ripple	36 MHz, +/-0.25 dB (max.)
Gain Slope	+/-0.05 dB/MHz (max.)
Gain Stability	+/-0.25 dB/day (max.)
Group Delay (+/-18 MHz) Note 1	Linear +/-0.05 ns/MHz (max.)
	Parabolic 0.008 ns/MHz(2) (max.)
	Ripple 1.0 ns, p-p (max.)
Phase Noise	5 dB better than IESS
	308/309 (DC4M2-D5)
	3 dB better than IESS
	308/309 (DC11M2-D5)
In-band LO Leakage	-70 dBm (max.) at input
AM to PM Conversion	0.1∞/dB (max.) for 0 dBm output
Intermodulation (Third Order)	-50 dBc, for two carriers at 0 dBm output
Gain Adjust	41.5 dB in 0.25 dB steps
	Front Panel Control
Remote Control	RS422/485 (Std.)

Note 1: 140 MHz IF (Up and Downconverters)

Bandwidth	72 MHz (min.)
Ripple	+/-0.4 dB
IF Return Loss	23 dB (nom.)
Group Delay	Linear +/-0.03
	Parabolic 0.003
	Ripple 1.0

* Optional Levels Available