ETL Systems
New technologies
in RF distribution
www.etlsystems.com

Model Number:
FN-U-K1L1-24407XX-XXXX

Falcon Series
Frequency Converter Module
L-Band to Ku-Band Block Upconverter

Typical applications:
- Teleports & Earth Stations
- Satellite Operations
- Government & Defence applications
- Telemetry, Tracking & Command
- High Resilience applications

L-Band to Ku-Band block upconverter module with variable gain and slope.
The 1U chassis has the capacity for up to four hot-swap frequency converter modules. These can be all upconverters, all downconverters or a mix of both.

Frequency Converter Module

Frequency Converter Module Compact form factor allowing multiple modules to be housed in the Genus chassis. Each module occupies 4 slots in the chassis.

Hot Swap & replaceable RF Frequency Converter modules

Redundancy configurations Field-replaceable 2+1 or 1+1 redundant configuration

Variable Gain & Slope For balancing input signals.

Frequency Conversion Up conversion from L-Band to Ku-Band.

Chassis Options

Local control & monitoring via HMI high resolution touchscreen

Resilience from dual redundant hot -swap power supplies & field replaceable CPU & HMI

Compact indoor & outdoor chassis options, which can be part populated

Secure protocols with SNMPv3 and HTTPS

Flexible Module Configurations choose from a mixture of up and down converters with different operating frequencies.

Remote control & monitoring via RJ45 Ethernet port with SNMP & web browser interface

Field replaceable Internal reference source and external reference inject port with auto detection

Indoor Chassis

Outdoor Unit

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Model Number:
FN-U-K1L1-24407AA-XXXX

Frequency Upconverter Module - RF Parameters		
Model Numbers		FN-U-K1L1-24407AA-XXXX
Size		4 slots wide
Redundancy		Supported (based on chassis configuration)
Input Frequency Range		1150—2150 MHz
Output Frequency Range (User selectable frequency range via software command)		**Mode 1**: 12.75—13.75 GHz or **Mode 2**: 13.5—14.5 GHz (user selectable)
Mean Conversion Gain		Max. 35 ± 2.0 dB / Min. 0 ± 2.0 dB
Gain Step Size		0.25 ± 0.15 dB
Gain Flatness		Full IF band: ±1.5 dB Any 40MHz: ±0.3 dB
Slope Compensation		0—6 dB (Pivot Point 2150 MHz)
Slope Control Steps		1 dB
Input Return Loss (L-band)		Typ. - 18 dB / Min. -14 dB
Output Return Loss (Ku-band)		Typ. -18 dB / Min. -14 dB
Noise Figure At max. gain		Typ. 10 dB / Max 12 dB
Input Power Range		-75 to -30 dBm
OP1dB At max. gain		Typ. +12 dBm / Min. +10 dBm
OIP3 At max. gain		Typ. +22 dBm / Min. +20 dBm
Internal Reference Stability		± 5 x 10^{-8} over 0 to 50°C
Phase Noise (Typical values)	@10Hz offset	-70 dBc / Hz
	@100Hz offset	-80 dBc / Hz
	@1KHz offset	-90 dBc / Hz
	@10KHz offset	-98 dBc / Hz
	@100KHz offset	-101 dBc / Hz
	@1MHz offset	-110 dBc / Hz
Spurs In-band (Measured at -5 dBm output)	Carrier related (>1MHz offset)	< -60 dBc
	Non-carrier related	< -60 dBm
Spurs Out-of-band (Measured at -5 dBm output)	Carrier related	< -60 dBc
	Non-carrier related	< -80 dBm
LO Breakthrough		< -80 dBm
Image Rejection		> 60 dB typical
External Reference Input Frequency		10MHz or 100MHz (auto detection)
External Ref Input Level		+3 dBm ±3 dB
Mute		60 dB
IF Monitor		Yes. Internal RF detector monitored.
Spectral Inversion		Non-inverting
Number of conversion stages		Dual
Spec version		0.1

Note 1: The specification is subject to regular reviews and will be updated from time to time as part of our continuing product development and improved spec accuracy.
Note 2: Operation beyond the quoted limits stated above may cause instantaneous and permanent damage.
Note 3: All specs are for 50 Ohm connectors unless detailed otherwise.

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RoHS COMPLIANT
Pb-Free
nqa ISO 9001 QUALITY MANAGEMENT
UKAS MANAGEMENT SYSTEMS 015

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Model Number:
FN-U-K1L1-24407AB-XXXX

Frequency Upconverter Module - RF Parameters		
Model Numbers		FN-U-K1L1-24407AB-XXXX
Size		4 slots wide
Redundancy		Supported (based on chassis configuration)
Input Frequency Range		950—2000 MHz
Output Frequency Range (User selectable frequency range via software command)		**Mode 1**: 12.75—13.80 GHz or **Mode 2**: 13.75—14.8 GHz (user selectable)
Mean Conversion Gain		Max. 35 ± 2.0 dB / Min. 0 ± 2.0 dB
Gain Step Size		0.25 ± 0.15 dB
Gain Flatness		Full IF band: ±1.5 dB Any 40MHz: ±0.3 dB
Slope Compensation		0—6 dB (Pivot Point 2150 MHz)
Slope Control Steps		1 dB
Input Return Loss (L-band)		Typ. - 18 dB / Min. -14 dB
Output Return Loss (Ku-band)		Typ. -18 dB / Min. -14 dB
Noise Figure At max. gain		Typ. 10 dB / Max 12 dB
Input Power Range		-75 to -30 dBm
OP1dB At max. gain		Typ. +12 dBm / Min. +10 dBm
OIP3 At max. gain		Typ. +22 dBm / Min. +20 dBm
Internal Reference Stability		± 5 x 10^{-8} over 0 to 50°C
Phase Noise (Typical values)	@10Hz offset	-70 dBc / Hz
	@100Hz offset	-80 dBc / Hz
	@1KHz offset	-90 dBc / Hz
	@10KHz offset	-98 dBc / Hz
	@100KHz offset	-101 dBc / Hz
	@1MHz offset	-110 dBc / Hz
Spurs In-band (Measured at –15 dBm output)	Carrier related (>1MHz offset)	< -60 dBc
	Non-carrier related	< -60 dBm
Spurs Out-of-band (Measured at –15 dBm output)	Carrier related	< -60 dBc
	Non-carrier related	< -80 dBm
LO Breakthrough		< -80 dBm
Image Rejection		> 60 dB typical
External Reference Input Frequency		10MHz or 100MHz (auto detection)
External Ref Input Level		0 dBm ± 10 dB
Mute		60 dB
IF Monitor		Yes. Internal RF detector monitored.
Spectral Inversion		Non-inverting
Number of conversion stages		Dual
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