ETL Systems

Excelling in RF Engineering

Model Number:
FN-U-L1F2-24405XX-XXXX

Falcon Series
Frequency Converter Module
IF-Band to L-Band Agile Upconverter

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

IF-Band to L-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 IF-Band to L-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

ETL Systems
New technologies
in RF distribution

Model Number:
FN-U-L1F2-24405AA-XXXX

Frequency Upconverter Module - RF Parameters		Redundancy - RF Parameters		
Model Numbers		FN-U-L1F2-24405AA-XXXX	SWF-G1S-CX-111A-xxxx	SWF-G1S-CX-110A-xxxx
Size		4 slots wide	4 slots wide	6 slots wide
Redundancy		Standalone Module	1+1 (**Note**. This column denotes specs for 24405 in 1+1 configuration)	2+1 (**Note**. This column denotes specs for 24405 in 2+1 configuration)
Input Frequency Range		70 ± 20 MHz or 140 ± 40 MHz user selectable		
Output Frequency Range		850-3150 MHz in 1 kHz steps		
Mean Conversion Gain		Max. 25 ± 1.5 dB / Min. -5 ± 1.5 dB	Max. 24.4 ± 1.7 dB / Min. –5.6 ± 1.7 dB	Max. 24.4 ± 1.8 dB / Min. –5.6 ± 1.8 dB
Gain steps		0.1 ± 0.1 dB		
Gain Flatness (50 Ohm)		Full IF Band Typ. ± 0.3 dB/ Max. ± 0.5 dB	Full IF Band Typ. ± 0.5 dB/ Max. ± 0.7 dB	Full IF Band Typ. ± 0.6 dB/ Max. ± 0.8 dB
Input Return Loss (RF-band, 50 Ohm)		Typ. –20 dB / Min -18 dB	Typ. -17 dB / Min. -15 dB	Typ. -18 dB / Min. -15 dB
Output Return Loss (IF-band, 50 Ohm)		Typ. –20 dB / Min. -18 dB	Typ. -17 dB / Min. -15 dB	Typ. -17 dB / Min. -15 dB
Noise Figure At max. gain		Typ. 8 dB / Max 10 dB	Typ. 8.7 dB / Max 10.9 dB	Typ. 10.7 dB / Max 13.7 dB
Maximum Operational Input level		- 30 dBm at max gain		
OP1dB At max. gain		Typ. +13 dBm / Min. +10 dBm	Typ. +12.3 dBm / Min. +9.3 dBm	Typ. +10.3 dBm / Min. +7.3 dBm
OIP3 At max. gain		Typ. +25 dBm / Min. +22 dBm	Typ. +24.3 dBm / Min. +21.3 dBm	Typ. +22.3 dBm / Min. +19.3 dBm
Internal Reference Stability		± 5 x 10^{-8} over 0 to 50°C		
Phase Noise (Typical values)	@10Hz offset	-70 dBc / Hz		
	@100Hz offset	-84 dBc / Hz		
	@1KHz offset	-98 dBc / Hz		
	@10KHz offset	-104 dBc / Hz		
	@100KHz offset	-107 dBc / Hz		
	@1MHz offset	-112 dBc / Hz		
Spurs In-band @ -5dBm output	Carrier related	< -60 dBc		
	Non-carrier related	< -75 dBm		
Spurs Out-of-band @ -5dBm output	Carrier related	< -60 dBc		
	Non-carrier related	< -75 dBm		
LO Breakthrough		< -60 dBm		
Image Rejection		> 60 dB typical		
External Reference		10 MHz or 100 MHz (Auto detection)		
External Reference Input Leve		0 dBm ± 10 dB		
Mute		60 dB		
Number of conversion stages		Dual		
Spectral Inversion		Non-inverting		
Spec version		0.1	1.0	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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