

Falcon Series Frequency Converter Module

L-Band to K-Band Block Upconverter

L-Band to K-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.

Redundancy Configurations

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

Hot Swap & Replaceable

RF Frequency Converter modules

Variable Gain & Slope

For balancing input signals.

Frequency Conversion

Up conversion from L-Band to K-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

Frequency Upconverter Module - RF Parameters		Redundancy - RF Parameters			
Model Numbers		FN-U-KXL1-24458AA-S5S5	SWF-G1S-QX-108A-xxxx	SWF-G1S-QX-116-xxxx	
Size		4 slots wide		4 slots wide	
Redundancy		Standalone module		1+1 (Note: This column denotes specs for 24458 in 1+1 configuration)	2+1 (Note: This column denotes specs for 24458 in 2+1 configuration)
Input Frequency Range		950-2050 MHz			
Output Frequency Range		17300 – 18400 MHz			
Mean Conversion Gain		Max 35 ± 2 dB, Min 0 ± 2 dB	Max 31 ± 2 dB, Min –4.0 ± 2 dB	Max 28 ± 2 dB, Min –7 ± 2 dB	
Gain Step Size		0.25 ± 0.15 dB			
Gain Flatness (50 Ohm)		Full Instantaneous Band: ±1.75 dB Any 40MHz: ±0.3 dB			
Input Return Loss		Typ.-20 dB / Min.-18 dB	Typ. -17dB / -15 Min. dB	Typ. -17dB / Min. -15dB	
Output Return Loss		Typ. -18 dB / Min. -14 dB	Typ. -12dB / Min. -9dB	Typ. -12dB / Min. -9dB	
Maximum Operational Input Level		-35 dBm			
Noise Figure At max. gain		Typ. 12 dB, Max 14 dB	Typ. 13.5 dB, Max 15.5 dB	Typ. 15 dB, Max 17.5 dB	
OP1dB At max. gain		Typ +8 dBm, Min +5 dBm	Typ. +4.5dBm, Min +1.5 dBm	Typ +3 dBm, Min +0 dBm	
OIP3 At max. gain		Typ +18 dBm, Min +15 dBm	Typ +14.5 dBm, Min +11.5 dBm	Typ +13 dBm, Min +10 dBm	
Internal Reference Stability		±5 x 10-8 over 0 to 50°C			
Phase Noise (Typical Values)	@10 Hz offset	-70 dBc/Hz typ. -60 dBc/Hz max.			
	@100 Hz offset	-80 dBc / Hz typ. -70 dBc/Hz max.			
	@1 KHz offset	-90 dBc / Hz typ. -80 dBc/Hz max.			
	@10 KHz offset	-98 dBc / Hz typ. -88 dBc/Hz max.			
	@100 KHz offset	-101 dBc / Hz typ. -91 dBc/Hz max.			
	@1 MHz offset	-107 dBc / Hz typ. -97 dBc/Hz max.			
	@10 MHz offset	-130 dBc / Hz typ. -120 dBc/Hz max.			
Integrated Phase Jitter		89.6 fs (RMS Typical, between 10kHz-10MHz at 18.4GHz)			
Spurs In-band (@ -15 dBm output)	Non-carrier related	<-70 dBm			
	Carrier related (>1MHz Offset)	<-60 dBc typ. <-55 dBc max.			
Spurs Out-of-band (@ -15 dBm output)	Carrier Related	<-60 dBc typ. <-55 dBc max.			
	Non-carrier related	<-70 dBm			
LO Breakthrough		< -70 dBm			
Image Rejection		>60 dB typical			
External Reference Input Frequency		10MHz or 100MHz (auto detection)			
External Reference Input Level		0dBm ± 10dB			
Mute		60 dB			
IF Monitor		Yes. Internal RF detector monitored			
Spectral Inversion		Non-inverting			
Number of conversion stages		Dual			
Spec version		0.3	1.0	0.2	

Frequency Upconverter Module - RF Parameters		
Model Numbers		FN-U-KXL1-24458AB-S5S5
Size		4 slots wide
Redundancy		Standalone module
Input Frequency Range		950-1950 MHz
Output Frequency Range		20200 – 21200 MHz
Mean Conversion Gain		0 ± 2 dB
Gain Flatness (50 Ohm)		Full Instantaneous Band: ±1.75 dB Any 40MHz: ±0.3 dB
Input Return Loss		Typ. -20 dB / Min. -18 dB
Output Return Loss		Typ.-18 dB / Min.-14 dB
Maximum Operational Input Level		-20 dBm
OP1dB		Typ +5 dBm, Min 0 dBm
OIP3		Typ +15 dBm, Min +10 dBm
Internal Reference Stability		± 5 x 10-8 over 0 to 50°C
Phase Noise (Typical Values)	@10 Hz offset	-70 dBc / Hz
	@100 Hz offset	-80 dBc / Hz
	@1 KHz offset	-90 dBc / Hz
	@10 KHz offset	-98 dBc / Hz
	@100 KHz offset	-101 dBc / Hz
	@1 MHz offset	-107 dBc / Hz
	@10 MHz offset	-130 dBc / Hz
Spurs In-band (@ -15 dBm output)	Non-carrier related	<-70 dBm
	Carrier related (>1MHz Offset)	<-55 dBc
Spurs Out-of-band (@ -15 dBm output)	Carrier Related	<-55 dBc
	Non-carrier related	<-70 dBm
LO Breakthrough		< -70 dBm
Image Rejection		>60 dB typ.
External Reference Input Frequency		10MHz or 100MHz (auto detection)
External Reference Input Level		0dBm ± 10dB
Mute		60 dB
Number of conversion stages		Dual
Spectral Inversion		Non-inverting
IF Monitor		Yes. Internal RF detector monitored
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.

Frequency Upconverter Module - RF Parameters		
Model Number	FN-U-KXL1-24458AC-S5S5	
Size	4 slots wide	
Redundancy	Standalone module	
Input Frequency Range	950-2050 MHz	
Output Frequency Range	17300 – 21200 MHz	
Instantaneous Bandwidth	1100 MHz	
Mean Conversion Gain	Max. 35 ± dB Min. 0 ± 2 dB	
Gain Steps	0.25 ± 0.15 dB	
Gain Flatness (50 Ohm)	Full Instantaneous Band: ±1.75 dB Any 40MHz: ±0.3 dB	
Input Return Loss	Typ. -20 dB / Min. -18 dB	
Output Return Loss	Typ. -18 dB / Min. -14 dB	
Noise Figure	Typ. 12 dB / Min. 14 dB	
Maximum Operational Input Level	-35 dBm	
OP1dB	Typ +8 dBm, Min 5 dBm	
OIP3	Typ +18 dBm, Min +15 dBm	
Internal Reference Stability	± 5 x 10 ⁻⁸ over 0 to 50°C	
Phase Noise (Typical Values)	@10 Hz offset	-70 dBc / Hz
	@100 Hz offset	-80 dBc / Hz
	@1 KHz offset	-90 dBc / Hz
	@10 KHz offset	-98 dBc / Hz
	@100 KHz offset	-101 dBc / Hz
	@1 MHz offset	-107 dBc / Hz
	@10 MHz offset	-130 dBc / Hz
Spurs In-band (@ -15 dBm output)	Non-carrier related	< -70 dBm
	Carrier related (>1MHz Offset)	< -55 dBc
Spurs Out-of-band (@ -15 dBm output)	Carrier Related	< -55 dBc
	Non-carrier related	< -70 dBm
LO Breakthrough	< -70 dBm	
Image Rejection	> 60 dB typ.	
External Reference Input Frequency	10MHz or 100MHz (auto detection)	
External Reference Input Level	0dBm ± 10dB	
Mute	60 dB	
Number of conversion stages	Dual	
Spectral Inversion	Non-inverting	
IF Monitor	Yes. Internal RF detector monitored	
Spec version	0.1	

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