

Falcon Series Frequency Converter Module

Ku-Band to L-Band Downconverter

Ku-Band to L-Band downconverter 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

For balancing input signals.

Frequency Conversion

Down conversion from Ku-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

Frequency Downconverter Module - RF Parameters		Redundancy - RF Parameters			
Model Numbers		FN-D-K1L1-24400AA-xxxx	SWF-G1S-KX-109A-xxxx	SWF-G1S-KX-115-xxxx	
Size		4 slots wide		4 slots wide	
Redundancy		Standalone module		1+1 (Note: This column denotes specs for 24400 in 1+1 configuration)	2+1 (Note: This column denotes specs for 24400 in 2+1 configuration)
Input Frequency Range		Mode 1: 10.7 - 11.75 GHz Mode 2: 11.7 - 12.75 GHz (user selectable)			
Output Frequency Range		1100 - 2150 MHz			
Mean Conversion Gain		Max. 35 ± 1.5 dB / Min. 0 ± 1.5 dB	Max. 33.7 ± 1.8 dB / Min. 3.7 ± 1.8 dB	Max. 33.8 ± 2.1 dB / Min. 3.8 ± 2.1 dB	
Gain Steps		0.25 ± 0.15 dB			
Gain Flatness (50 Ohm)		Full band: ±1.5 dB Any 40MHz: ±0.3 dB	Full band: ±1.8 dB Any 40MHz: ±0.6 dB	Full band: ±2.1 dB Any 40MHz: ±0.9 dB	
Input Return Loss (50 Ohm)		Typ. -18 dB / Min. -15 dB		Typ. -11 dB / Min. -8 dB	
Output Return Loss (50 Ohm)		Typ. -18 dB / Min. -15 dB		Typ. -15 dB / Min. -11 dB	
Maximum Operational Input Level		-30 dBm			
Noise Figure At max. gain		Typ. 10 dB / Max 12 dB	Typ. 12.5dB / Max 14.5 dB	Typ. 12.5 dB / Max 14.5 dB	
OP1dB At max. gain		Typ. +15 dBm / Min. +13 dBm	Typ. +13.5 dBm / Min. +11.5 dBm	Typ. +13.5 dBm / Min. +11.5 dBm	
OIP3 At max. gain		Typ. +27 dBm / Min. +25 dBm	Typ. +25.5 dBm / Min. +23.5 dBm	Typ. +25.5 dBm / Min. +23.5 dBm	
Slope Compensation		0 - 6 dB, in 1dB steps			
Internal Reference Stability		±5 x 10 ⁻⁸ over 0 to 50°C			
Phase Noise (Typical Values)	@10 Hz offset	-66 dBc / Hz			
	@100 Hz offset	-80 dBc / Hz			
	@1 KHz offset	-92 dBc / Hz			
	@10 KHz offset	-104 dBc / Hz			
	@100 KHz offset	-106 dBc / Hz			
	@1 MHz offset	-115 dBc / Hz			
Spurs In-band (@ -5 dBm output)	Carrier related	< -60 dBc (> 1MHz offset)			
	Harmonic	< -50 dBc			
	Non-carrier related	< -75 dBm			
Spurs Out-of-band (@ -5 dBm output)	Carrier Related	< -60 dBc			
	Harmonic	< -50 dBc			
	Non-carrier related	< -75 dBm			
LO Breakthrough		< -80 dBm			
Image Rejection		>60 dB			
External Reference Input Frequency		10MHz or 100MHz (auto detection)			
External Reference Input Level		0dBm ± 10dB			
Mute		90 dB			
Number of conversion stages		Dual			
Spectral Inversion		Non-inverting			
IF Monitor		Yes			
Redundancy		Supported. Based on module configuration			
Spec version		0.3	1.1	1.1	

Frequency Downconverter Module - RF Parameters		Redundancy - RF Parameters			
Model Numbers		FN-D-K1L1-24400AB-xxxx	SWF-G1S-KX-109A-xxxx	SWF-G1S-KX-115-xxxx	
Size		4 slots wide		4 slots wide	
Redundancy		Standalone module		1+1 (Note: This column denotes specs for 24400 in 1+1 configuration)	2+1 (Note: This column denotes specs for 24400 in 2+1 configuration)
Input Frequency Range		10.7 - 12.75 GHz (tuneable in 1 KHz steps)			
Output Frequency Range		1100 - 2150 MHz			
Mean Conversion Gain		Max. 35 ± 1.5 dB / Min. 0 ± 1.5 dB	Max. 33.7 ± 1.8 dB / Min. 3.7 ± 1.8 dB	Max. 33.8 ± 2.1 dB / Min. 3.8 ± 2.1 dB	
Gain Step Size		0.25 ± 0.15 dB			
Gain Flatness (50 Ohm)		Full band: ±1.5 dB Any 40MHz: ±0.3 dB	Full band: ±1.8 dB Any 40MHz: ±0.6 dB	Full band: ±2.1 dB Any 40MHz: ±0.9 dB	
Input Return Loss (50 Ohm)		Typ. -18 dB / Min. -15 dB	Typ. -11 dB / Min. -8 dB	Typ. -11 dB / Min. -8 dB	
Output Return Loss (50 Ohm)		Typ. -18 dB / Min. -15 dB	Typ. -15 dB / Min. -11 dB	Typ. -15 dB / Min. -12 dB	
Maximum Input Power Range		-30 dBm			
Noise Figure At max. gain		Typ. 10 dB, Max 12 dB	Typ. 12.5.dB / Max 14.5 dB	Typ. 12.5 dB / Max 14.5 dB	
OP1dB At max. gain		Typ +15 dBm, Min +13 dBm	Typ. +13.5 dBm / Min. +11.5 dBm	Typ. +13.5 dBm / Min. +11.5 dBm	
OIP3 At max. gain		Typ +27 dBm, Min +25 dBm	Typ. +25.5 dBm / Min. +23.5 dBm	Typ. +25.5 dBm / Min. +23.5 dBm	
Slope Compensation		0 - 6 dB, in 1dB steps			
Internal Reference Stability		± 5 x 10 ⁻⁸ over 0 to 50°C			
Phase Noise (Typical Values)	@10 Hz offset	-66 dBc / Hz			
	@100 Hz offset	-80 dBc / Hz			
	@1 KHz offset	-92 dBc / Hz			
	@10 KHz offset	-104 dBc / Hz			
	@100 KHz offset	-106 dBc / Hz			
	@1 MHz offset	-115 dBc / Hz			
Spurs In-band (@ -5 dBm output)	Carrier related	< -60 dBc (> 1MHz offset)			
	Harmonic	< -50 dBc			
	Non-carrier related	< -75 dBm			
Spurs Out-of-band (@ -5 dBm output)	Carrier related	<-60 dBc			
	Harmonic	< -50 dBc			
	Non-carrier related	<-75 dBm			
LO Breakthrough		< -80 dBm			
Image Rejection		>60 dB			
Conversion stages		Single			
External Reference Input Frequency		10MHz or 100MHz (auto detection)			
External Reference Input Level		0dBm ± 10dB			
Mute		90 dB			
Spectral Inversion		Non-inverting			
IF Monitor		Supported. Based on module configuration			
Spec version		0.2	1.1	1.1	

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 Downconverter Module - RF Parameters		Redundancy - RF Parameters		
Model Numbers		FN-D-K1L1-24400AC-xxxx	SWF-G1S-KX-109A-xxxx	SWF-G1S-KX-115-xxxx
Size		4 slots wide		4 slots wide
Redundancy		Standalone module	1+1 (Note: This column denotes specs for 24400 in 1+1 configuration)	2+1 (Note: This column denotes specs for 24400 in 2+1 configuration)
Input Frequency Range		10.70 - 11.70 GHz / 11.70 - 12.75 GHz		
Output Frequency Range		950 - 1950 MHz / 950 - 2000 MHz		
Mean Conversion Gain		Max. 35 ± 1.5 dB Min. 0 ± 1.5 dB	Max. 33.7 ± 1.8 dB Min. 3.7 ± 1.8 dB	Max. 33.8 ± 2.1 dB Min. 3.8 ± 2.1 dB
Gain Step Size		0.25 ± 0.15 dB		
Gain Flatness (50 Ohm)		Full band: ±1.5 dB Any 40MHz: ±0.3 dB	Full band: ±1.8 dB Any 40MHz: ±0.6 dB	Full band: ±2.1 dB Any 40MHz: ±0.9 dB
Input Return Loss (50 Ohm)		Typ. -18 dB / Min. -15 dB	Typ. -11 dB / Min. -8 dB	Typ. -11 dB / Min. -8 dB
Output Return Loss (50 Ohm)		Typ. -18 dB / Min. -15 dB	Typ. -15 dB / Min. -11 dB	Typ. -15 dB / Min. -12 dB
Maximum Input Power Range		-30 dBm		
Noise Figure At max. gain		Typ. 10 dB, Max 12 dB	Typ. 12.5.dB / Max 14.5 dB	Typ. 12.5 dB / Max 14.5 dB
OP1dB At max. gain		Typ +15 dBm, Min +13 dBm	Typ. +13.5 dBm / Min. +11.5 dBm	Typ. +13.5 dBm / Min. +11.5 dBm
OIP3 At max. gain		Typ +27 dBm, Min +25 dBm	Typ. +25.5 dBm / Min. +23.5 dBm	Typ. +25.5 dBm / Min. +23.5 dBm
Slope Compensation		0 - 6 dB, in 1dB steps (pivot point at 2150 MHz)		
Internal Reference Stability		± 5 x 10 ⁻⁸ over 0 to 50°C		
Phase Noise (Typical Values)	@10 Hz offset	-66 dBc / Hz		
	@100 Hz offset	-80 dBc / Hz		
	@1 KHz offset	-92 dBc / Hz		
	@10 KHz offset	-104 dBc / Hz		
	@100 KHz offset	-106 dBc / Hz		
	@1 MHz offset	-115 dBc / Hz		
Spurs In-band (@ -5 dBm output)	Carrier related	< -60 dBc (> 1MHz offset)		
	Harmonic	< -50 dBc		
	Non-carrier related	< -75 dBm		
Spurs Out-of-band (@ -5 dBm output)	Carrier related	<-60 dBc		
	Harmonic	< -50 dBc		
	Non-carrier related	<-75 dBm		
LO Breakthrough		< -80 dBm		
Image Rejection		>60 dB		
Conversion stages		Single		
External Reference Input Frequency		10MHz or 100MHz (auto detection)		
External Reference Input Level		0dBm ± 10dB		
Mute		90 dB		
Spectral Inversion		Non-inverting		
IF Monitor		Supported. Based on module configuration		
Spec version		1.0	1.1	1.1

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Frequency Downconverter Module - RF Parameters		Redundancy - RF Parameters	
Model Numbers	FN-D-K1L1-24400AD-xxxx	SWF-G1S-KX-109A-xxxx	SWF-G1S-KX-115-xxxx
Size	4 slots wide	4 slots wide	4 slots wide
Redundancy	Standalone module	1+1 (Note: This column denotes specs for 24400 in 1+1 configuration)	2+1 (Note: This column denotes specs for 24400 in 2+1 configuration)
Input Frequency Range	Mode 1: 10.95 - 12.1 GHz Mode 2: 11.6 - 12.75 GHz (user selectable)		
Output Frequency Range	950 - 2100 MHz		
Mean Conversion Gain	Max. 35 ± 1.5 dB / Min. 0 ± 1.5 dB	Max. 33.7 ± 1.8 dB / Min. 3.7 ± 1.8 dB	Max. 33.8 ± 2.1 dB / Min. 3.8 ± 2.1 dB
Gain Step Size	0.25 ± 0.15 dB		
Gain Flatness (50 Ohm)	Full band: ±1.5 dB Any 40MHz: ±0.3 dB	Full band: ±1.8 dB Any 40MHz: ±0.6 dB	Full band: ±2.1 dB Any 40MHz: ±0.9 dB
Input Return Loss (50 Ohm)	Typ. -18 dB / Min. -15 dB	Typ. -11 dB / Min. -8 dB	Typ. -11 dB / Min. -8 dB
Output Return Loss (50 Ohm)	Typ. -18 dB / Min. -15 dB	Typ. -15 dB / Min. -11 dB	Typ. -15 dB / Min. -12 dB
Maximum Input Power Range	-30 dBm		
Noise Figure At max. gain	Typ. 10 dB, Max 12 dB	Typ. 12.5.dB / Max 14.5 dB	Typ. 12.5 dB / Max 14.5 dB
OP1dB At max. gain	Typ +15 dBm, Min +13 dBm	Typ. +13.5 dBm / Min. +11.5 dBm	Typ. +13.5 dBm / Min. +11.5 dBm
OIP3 At max. gain	Typ +27 dBm, Min +25 dBm	Typ. +25.5 dBm / Min. +23.5 dBm	Typ. +25.5 dBm / Min. +23.5 dBm
Slope Compensation	0 - 6 dB, in 1dB steps		
Internal Reference Stability	± 5 x 10 ⁻⁸ over 0 to 50°C		
Phase Noise (Typical Values)	@10 Hz offset	-66 dBc / Hz	
	@100 Hz offset	-80 dBc / Hz	
	@1 KHz offset	-92 dBc / Hz	
	@10 KHz offset	-104 dBc / Hz	
	@100 KHz offset	-106 dBc / Hz	
	@1 MHz offset	-115 dBc / Hz	
Spurs In-band (@ -5 dBm output)	Carrier related	< -60 dBc (> 1MHz offset)	
	Harmonic	< -50 dBc	
	Non-carrier related	< -75 dBm	
Spurs Out-of-band (@ -5 dBm output)	Carrier related	<-60 dBc	
	Harmonic	< -50 dBc	
	Non-carrier related	<-75 dBm	
LO Breakthrough	< -80 dBm		
Image Rejection	>60 dB		
Conversion stages	Single		
External Reference Input Frequency	10MHz or 100MHz (auto detection)		
External Reference Input Level	0dBm ± 10dB		
Mute	90 dB		
Spectral Inversion	Non-inverting		
IF Monitor	Supported. Based on module configuration		
Spec version	0.3	1.1	1.1

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