



Falcon Series

Frequency Converter Module

X-Band to L-Band Agile Downconverter

Typical applications:

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

X-Band to L-Band block 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



Frequency Conversion Down conversion from X-Band to L-Band.



Hot Swap & replaceable RF

Frequency Converter modules



Variable Gain & Slope For balancing input signals.

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-X3L1-24477AA-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 24477 in 1+1 configuration)	2+1 (Note: This column denotes specs for 24477 in 2+1 configuration)
Input Frequency Range		7250—8500 MHz			
Output Frequency Range		950 –2150 MHz			
LO		5600—7050 MHz Commandable in 1kHz steps.			
Mean Conversion Gain		Max +35 ± 1.5 dB / Min +5 ± 1.5 dB	Max +33.8 ± 2.3 dB / Min +3.8 ± 2.3 dB	Max +34 ± 2.6 dB / Min +4 ± 2.6 dB	
Gain Steps		0.25 ± 0.15 dB			
Gain Flatness (50 Ohm)		Full band: ±1.0 dB Any 500MHz Band: ±0.6 dB Any 36MHz: ±0.3 dB	Full band: ±1.3 dB	Full band: ±1.6 dB	
Input Return Loss (RF-Band, 50 Ohm)		Typ. -18 dB / Min.-15 dB	Typ -12 dB / Min.-9 dB	Typ -12 dB / Min.-9 dB	
Output Return Loss (IF-Band, 50 Ohm)		Typ. -18 dB / Min.-15 dB	Typ -15 dB / Min.-11 dB	Typ -15 dB / Min.-12 dB	
Noise Figure (@ max gain)		Typ. 8 dB / Max. 10 dB	Typ. 10.5 dB / Max. 12.5 dB	Typ. 10.5 dB / Max. 12.5 dB	
Maximum Operational Input Level		–30 dBm (At max gain)			
OP1dB (@ max gain)		Typ. +15 dBm / Min.+13 dBm	Typ. +13.5 dBm / Min.+10.5 dBm	Typ. +13.5 dBm / Min.+10.5 dBm	
OIP3 (@ max gain)		Typ. +25 dBm / Min.+22 dBm	Typ. +23.5 dBm / Min.+20.5 dBm	Typ. +23.5 dBm / Min.+20.5 dBm	
Internal Reference Stability		±5x10 ⁻⁸ over 0 to 50°C			
Slope Compensation		0-6 dB (pivot point at 2150MHz)			
Slope Control Steps		1 dB			
Phase Noise (Typical values)	@10Hz offset	-68 dBc / Hz			
	@100Hz offset	-80 dBc / Hz			
	@1KHz offset	-90 dBc / Hz			
	@10KHz offset	-110 dBc / Hz			
	@100KHz offset	-115 dBc / Hz			
	@1MHz offset	-120 dBc / Hz			
Spurs In-band (@-5dBm Output) Non-harmonic	Non-carrier related	<-75 dBm			
	Carrier Related >1MHz Offset (dBc)	<-60 dBc			
Spurs Out-of-band (@-5dBm Output)	Carrier related	<-60 dBc			
	Non-carrier related	<-75 dBm			
LO Breakthrough		<-75 dBm			
Image Rejection		> 60 dB typ			
External Reference Input Frequency		10 MHz or 100 MHz. Auto detection.			
External Ref. Input Level		0 dBm ± 10dB			
Mute		60 dB			
IF Monitor Port		Yes			
Number of conversion stages		Single			
Spectral Inversion		Non-inverting			
Spec version		0.2	1.1	1.1	

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Frequency Downconverter Module - RF Parameters		
Model Numbers	FN-D-X3L1-24477AC-S5S5	
Size	4 slots wide	
Redundancy	Standalone module	
Input Frequency Range	7250—8400 MHz	
Output Frequency Range	900 –2100 MHz	
Mean Conversion Gain	Max +35 ± 1.5 dB / Min +5 ± 1.5 dB	
Gain Steps	0.25 ± 0.15 dB	
Gain Flatness (50 Ohm)	Full band: ±1.0 dB Any 40MHz: ±0.3 dB	
Input Return Loss (RF-Band, 50 Ohm)	Typ. -18 dB / Min.-15 dB	
Output Return Loss (IF-Band, 50 Ohm)	Typ. -18 dB / Min.-15 dB	
Noise Figure (@ max gain)	Typ. 8 dB / Max. 10 dB	
Maximum Operational Input Level	–30 dBm (At max gain)	
OP1dB	Typ. +15 dBm / Min.+13 dBm (At max gain)	
OIP3	Typ. +25 dBm / Min.+22 dBm (At max gain) ($\Delta f = 5$ MHz two carriers 0 dBm each)	
Internal Reference Stability	±5x10 ⁻⁸ over 0 to 50°C	
Phase Noise (Typical values)	@10Hz offset	-68 dBc / Hz
	@100Hz offset	-80 dBc / Hz
	@1KHz offset	-90 dBc / Hz
	@10KHz offset	-110 dBc / Hz
	@100KHz offset	-115 dBc / Hz
	@1MHz offset	-120 dBc / Hz
Spurs In-band (@-5dBm Output) Non-harmonic	Non-carrier related	<-75 dBm
	Carrier Related >1MHz Offset (dBc)	<-60 dBc
Spurs Out-of-band (@-5dBm Output)	Carrier related	<-60 dBc
	Non-carrier related	<-75 dBm
LO Breakthrough	<-75 dBm	
Image Rejection	> 60 dB typ	
External Reference Input Frequency	10 MHz or 100 MHz. Auto detection.	
External Ref. Input Level	0 dBm ± 10dB	
Mute	60 dB	
IF Monitor Port	Yes	
Number of conversion stages	Single	
Spectral Inversion	Non-inverting	
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.