



ETL Systems
New technologies
in RF distribution

Model Number:
FN-D-KXL1-24123-XXXX

Falcon Series Frequency Converter Module K-Band Block Downconverter

Typical applications:

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

K-band to L-band. The 1U chassis has the capacity for up to five hot-swap frequency converter modules. These can be all upconverters, all downconverters or a mix of both.

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

Local control & monitoring via HMI high resolution touchscreen

Compact housed in a 1U high chassis with capacity for up to five modules

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

Hot Swap & replaceable RF Frequency Converter modules

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

Field replaceable Internal 10MHz reference source and external reference inject port with auto detection

Secure protocols with SNMPv3 and HTTPS

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

Chassis - Specification

Dimensions / Weight / Colour	1U high x 550mm deep x 19" wide / <10 kg / RAL9003—White (Semi-matte)
Capacity	Total of 17 module slots. Note that 1 slot may be used for fan (if required) and 1 slot may be used for 10 MHz EXT inject module (if required). Note actual modules may require >1 slot. Refer to required module spec table.
Temperature	Operating: 0°C to +45°C / Storage: -20°C to +75°C
Location / Humidity / Altitude	Indoor use only / 20 to 90% non-condensing / 10,000 feet AMSL (Operational) 30,000 feet AMSL (Storage) Above Mean Sea Level
Control & Monitoring	Local: HMI touch screen Remote: Ethernet via RJ45, 10BaseT/100 BaseTx. TCP/IP, SNMP V3 & HTTPS & Web browser interface HMI and CPU field replaceable. Each module independently monitored and reported.
MTTR	20 minutes (15 minutes to retrieve spare part and 5 mins to replace) Applies to LRUs only and assumed in house stock
AC Input / Consumption	85-264Vac 50/60Hz / 150W
PSU Redundancy	Dual redundant and alarmed Diode OR. Hot swappable
Input & Output ports	Dependant upon module fitted

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Frequency Converter Module

Compact form factor allowing multiple modules to be housed in 1U chassis. Each module uses 4 slots in the chassis.

Frequency Downconverter Module - RF Parameters		Redundancy Module - RF Parameters	
Model Numbers	FN-D-KXL1-24123-XXXX	SWF-G1S-QX-108A-xxxx	SWF-G1S-QX-106-xxxx
Size	4 Slots wide	4 slots wide	6 slots wide
Redundancy	Standalone module	1+1 (Note: This column denotes specs for 24123 in 1+1 configuration)	2+1 (Note: This column denotes specs for 24123 in 2+1 configuration)
Input Frequency Range	20.0 – 21.2 GHz		
Output Frequency Range	950 – 2150 MHz		
LO	LO 1: 12500 MHz, LO 2: 6550 MHz		
Mean Conversion Gain	Max 35 ±2 dB, Min 5 ± 2 dB	Max 31 ±2 dB, Min 1.0 ± 2 dB	Max 27.7 ±2 dB, Min -2.3 ± 2 dB
Gain Step Size	0.25 ±0.15 dB		
Gain Flatness (50 Ohm)	Full IF band: ±1.5 dB Any 40MHz: ±0.3 dB		
Input Return Loss (Ka-Band, 50 Ohm)	Typ.-14 dB / Min.-10 dB	Typ. -11dB / Min. -8dB	Typ. -11dB / Min. -7dB
Output Return Loss (L-Band, 50 Ohm)	Typ.-18 dB / Min.-14 dB	Typ. -15dB / Min. -12dB	Typ. -15dB / Min. -12dB
Input Power Range	-75 to -30 dBm		
Noise Figure At max. gain	Max 12 dB	Max. 15.0dB	Max. 16.6dB
OP1dB At max. gain	Typ +15 dBm Min +12dBm	Typ. +14.0dBm	Typ. +11.7dBm
OIP3 At max. gain	Typ +25 dBm Min +22dBm	Typ. +26.0dBm	Typ. +24.2dBm
Slope Compensation	0-6 dB @ L-Band in 1dB steps		
Internal Reference Stability	±5x10 ⁻⁸ over 0 to 50°C		
Phase Noise (Typical values)	@10Hz offset	-60 dBc / Hz	
	@100Hz offset	-70 dBc / Hz	
	@1KHz offset	-83 dBc / Hz	
	@10KHz offset	-88 dBc / Hz	
	@100KHz offset	-90 dBc / Hz	
	@1MHz offset	-105 dBc / Hz	
Spurs In-band	Carrier related (> 1MHz offset)	< -50 dBc	
	Non-carrier related	<-75 dBm	
Spurs Out-of-band	Carrier related	<-50 dBc	
	Non-carrier related	<-80 dBm	
LO Breakthrough	<-80 dBm		
Image Rejection	>60 dB		
External Reference	Input Freq. 10 MHz (Auto-detection)		Input Level +3 dBm ± 3 dB
Mute	60 dB		
Number of conversion stages	Dual		
IF Monitor	Yes. Internal RF detector monitored		
Spectral Inversion	Non-inverting		
Spec version	0.2	1.0	0.2

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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