



# Falcon Series Frequency Converter Module Ka-Band Block Downconverter

**Typical applications:**

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

Ka-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 will be used for fan (if required) and 1 slot will be used for 10 MHz EXT inject module.
Temperature	Operating: 0 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) <i>Above Mean Sea Level</i>
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.
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
No. of modules per chassis	5 max. Module 3 slots wide





**Frequency Converter Module**  
Compact form factor allowing multiple modules to be housed in 1U chassis. Each module uses 3 slots in the chassis.

Frequency Downconverter Module - RF Parameters		Redundancy Module - RF Parameters	
Model Numbers	FN-D-KXL1-24124-K5XX	SWF-G1S-QX-108	SWF-G1S-QX-106
Size	3 Slots wide	4 slots wide	6 slots wide
Redundancy	Standalone module	1+1 (Note: This column denotes specs for 24124 in 1+1 configuration)	2+1 (Note: This column denotes specs for 24124 in 2+1 configuration)
Input Frequency Range	<b>Mode 1:</b> 17.3-18.4 GHz, <b>Mode 2:</b> 17.7 – 18.8 GHz, <b>Mode 3:</b> 18.4 – 19.3 GHz, <b>Mode 4:</b> 19.3 – 20.1 GHz, <b>Mode 5:</b> 20.1 – 21.2 GHz User selectable frequency range via software command		
Output Frequency Range	950 – 2050 MHz		
LO	Fixed 6800 MHz / Variable <b>Mode 1:</b> 9550 MHz, <b>Variable Mode 2:</b> 9950 MHz, <b>Variable Mode 3:</b> 10650 MHz, <b>Variable Mode 4:</b> 11550 MHz, <b>Variable Mode 5:</b> 12350 MHz		
Conversion Gain	Max 35 ±1.5 dB, Min 5 ± 1.5 dB	Max 35 ±1.5 dB, Min 5 ± 1.5 dB	Max 29 ±1.5 dB, Min -1 ± 1.5 dB
Gain Step Size	0.5 ±0.25 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 / -7Min. dB	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	Max 12 dB (at max gain)	Max. 15.1dB	Max. 15.6dB
OP1dB At max. gain	Typ +15 dBm	Typ. +12.5dBm	Typ. +12.0dBm
OIP3 At max. gain	Typ +27 dBm	Typ. +25.0dBm	Typ. +24.5dBm
Slope Compensation	0-8 dB @ L-Band		
Group Delay (max pk-pk)	2 ns		
Internal Reference Stability	±5x10 <sup>-8</sup> over 0 to 50°C		
Phase Noise (Typical values)	@10Hz offset	-60 dBc / Hz	
	@100Hz offset	-70 dBc / Hz	
	@1KHz offset	-80 dBc / Hz	
	@10KHz offset	-80 dBc / Hz	
	@100KHz offset	-85 dBc / Hz	
	@1MHz offset	-105 dBc / Hz	
Spurs In-band	Non-carrier related	<-75 dBm	
	Carrier related	<-50 dBc	
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	0.4	0.2	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.