



ETL Systems

New technologies
in RF distribution

Model Number:
FN-D-K4L1-24211-xxxx

Falcon Series Frequency Converter Module Ka-Band Agile Downconverter

Typical applications:

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

Ka to L-band conversion. 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.

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.

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



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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**Falcon Frequency Converter Module
Ka-Band Agile Downconverter**

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

RF Parameters single module		RF Parameters in redundancy mode
Model Numbers	FN-D-K1F2-24211-xxxx	SWF-G1S-QX-108A-xxxx
Size	4 slots wide	4 slots wide
Redundancy	Supported	1+1 (Note: This column denotes specs for 24211 in 1+1 configuration) For 2+1 refer to 2U chassis solution.
Input Frequency Range	27 – 31 GHz User controllable frequency range via software command	
Output Frequency Range	950 - 1950 MHz - Fixed	
Conversion Gain	Max. 35 ± 2 dB / Min. 5 ± 2 dB	Max. 31.0 ± 1.5 dB / Min. 1.0 ± 1.5 dB
Gain steps	0.5 ± 0.25 dB	
Gain Flatness	Full IF Band ±2.0 dB / Any 40 MHz ± 0.3dB	
Input Return Loss (Ka-Band)	Typ. -14 dB / Min. -10 dB	Typ. -11 dB / Min. -8 dB
Output Return Loss (L-Band)	Typ. -18 dB / Min. -14 dB	Typ. -15 dB / Min. -12 dB
Noise Figure At max. gain	Typ. 15 dB / Max 18 dB	Typ. 18.0 dB / Max 21.0 dB
Input Power Range	-75 to -35 dBm	
OP1dB At max. gain	Typ. +12 dBm / Min. +9 dBm	Typ. +11.0 dBm / Min. +8.0 dBm
OIP3 At max. gain	Typ. +22 dBm / Min. +19 dBm	Typ. +21.0 dBm / Min. +18.0 dBm
Slope Compensation	0-6dB in 1 ±0.5 dB steps	
Group Delay (max pk-pk)	2 ns	
Internal Reference Stability	± 5 x 10 ⁻⁸ over 0 to 50°C	
Phase Noise (Typical values)	@10Hz offset	-55 dBc / Hz
	@100Hz offset	-65 dBc / Hz
	@1KHz offset	-75 dBc / Hz
	@10KHz offset	-77 dBc / Hz
	@100KHz offset	-80 dBc / Hz
	@1MHz offset	-95 dBc / Hz
Spurs In-band @ output of -5dBm	Carrier related	< -50dBc
	Non-carrier related	< -70 dBm
Spurs Out-of-band @ output of -5dBm	Carrier related	< -50 dBc
	Non-carrier related	< -70 dBm
LO Breakthrough	< -80 dBm	
Image Rejection	>60 dB	
Conversion stages	Dual	
External Reference	Input Freq. 10MHz Input Level +3 dBm±3dB	
Mute	60 dB	
Spectral Inversion	Non-inverting	
Redundancy	Supported. Based on module configuration	
Spec version	0.1	1.0

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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