



# Falcon Series Frequency Converter Module Ka-Band Block Upconverter

### Typical applications:

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

Converting L-band to Ka-band with dual stage conversion and variable gain. Housed in a 1U chassis with capacity for up to four converter modules.

**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 four 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 available**

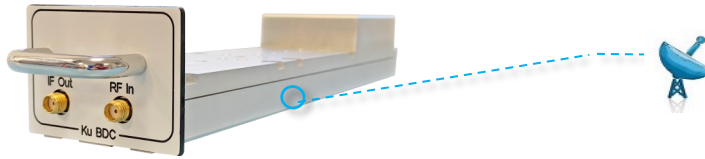
**Field replaceable Internal 10MHz reference source** and external reference inject port with auto detection

**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





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

**Frequency Upconverter Module - RF Parameters**

Model Numbers	FN-U-K4L1-24203-XXK5	SWF-G1S-QX-108A-xxxx
Size	4 slots wide	4 slots wide
Redundancy	Supported (based on chassis configuration)	1+1 (Note: This column denotes specs for 24203 in 1+1 configuration). For 2+1 refer to 2U chassis solution.
Input Frequency Range	950 - 2150 MHz	
Output Frequency Range (User selectable frequency range via software command)	<b>Mode 1</b> : 27.0—28.20, <b>Mode 2</b> : 27.50—28.70, <b>Mode 3</b> : 28.00—29.20, <b>Mode 4</b> : 28.50—29.70, <b>Mode 5</b> : 29.00—30.20 GHz, <b>Mode 6</b> : 29.50—30.70 GHz, <b>Mode 7</b> : 29.80—31.00 GHz	
Conversion Gain	Min. 22.0 ± 2.0 dB / Max. -3.0 ± 2.0 dB	Max. 18.0 ± 2.0 dB / Min -7.0 ± 2.0 dB
Gain Step Size	0.5 ± 0.25 dB	
Gain Flatness	Full IF band: ±1.5 dB Any 40MHz: ±0.3 dB	
Input Return Loss (L-band)	Typ. -15 dB / Min. -13 dB	Typ. -13 dB / Min. -11 dB
Output Return Loss (Ka-band)	Typ. -11 dB / Min. -8 dB	Typ. -9 dB / Min. -8 dB
Noise Figure At max. gain	Typ. 20 dB / Max 23 dB	Typ. 21 dB / Max 24 dB
Input Power Range	-75 to -30 dBm	
OP1dB At max. gain	Typ. +3 dBm / Min. 0 dBm	Typ. 0 dBm / Min. -3.0 dBm
OIP3 At max. gain	Typ. +13 dBm / Min. +10 dBm	Typ. +10.0 dBm / Min. +7.0 dBm
Slope Control Range	0-6 dB, pivot point at 2150 MHz	
Slope Control Steps	1 ± 0.5 dB	
Group Delay (max pk-pk)	2 ns	
Internal Reference Stability	± 5 x 10 <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	-83 dBc / Hz
	@100KHz offset	-85 dBc / Hz
	@1MHz offset	-100 dBc / Hz
Spurs In-band (Measured at -15 dBm output and max gain)	Carrier related	< -50 dBc
	Non-carrier related	< -70 dBm
Spurs Out-of-band (Measured at -15 dBm output and max gain)	Carrier related	< -50 dBc
	Non-carrier related	< -70 dBm
LO Breakthrough	< -70 dBm	
Image Rejection	> 60 dB	
External Reference	Input Freq. 10MHz Input Level +3 dBm ±3 dB	
Mute	>80 dB	
IF Monitor	Yes. Internal RF detector monitored.	
Spectral Inversion	Non-inverting	
Number of conversion stages	Dual	
Spec version	1.1	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.

