



# Falcon Series

## Frequency Converter Module

### C-Band Agile Upconverter

**Typical applications:**

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

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) 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.
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 Upconverter Module - RF Parameters**

Model Numbers	FN-U-C2F2-24106-XXS5	SWF-G1S-KX-109	SWF-G1S-KX-107
Size	3 slots wide	4 slots wide	6 slots wide
Redundancy	Standalone module	1 + 1 (Note: This column denotes specs for 24106 in 1 + 1 configuration)	2 + 1 (Note: This column denotes specs for 24106 in 2+ 1 configuration)
Input Frequency Range	70 ± 20 MHz		
Output Frequency Range	5725 - 6725 MHz in 1 kHz steps		
Conversion Gain	Max. 35 ± 2 dB / Min. 10 ± 2 dB	Max. 32 ± 2 dB / Min. 7 ± 2 dB	Max. 29.5 ± 2 dB / Min. 4.5 ± 2 dB
Gain steps	0.5 ± 0.2 dB		
Gain Flatness	±0.3 dB (full IF band)		
Input Return Loss (50 Ohm)	Typ. -18 dB / Min. -14 dB	Typ. -15 dB / Min. -11 dB	Typ. -15 dB / Min. -12 dB
Output Return Loss (50 Ohm)	Typ. -14dB / Min. -10 dB	Typ. -11 dB / Min. -7 dB	Typ. -11 dB / Min. -7 dB
Noise Figure At max. gain	Typ. 8 dB / Max 10 dB	Typ. 9.5 dB / Max 11.5 dB	Typ. 10.5 dB / Max 12.5 dB
Maximum Operational Input Level At max. gain	-30 dBm		
OP1dB At max. gain	Typ. +10 dBm / Min. +8 dBm	Typ. +8 dBm / Min. +6 dBm	Typ. +6.5 dBm / Min. +4.5 dBm
OIP3 At max. gain	Typ. +20 dBm / Min. +18 dBm	Typ. +18.5 dBm / Min. +16.5 dBm	Typ. +17.0 dBm / Min. +15.0 dBm
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	-80 dBc / Hz	
	@100KHz offset	-90 dBc / Hz	
	@1MHz offset	-110 dBc / Hz	
Spurs In-band	Carrier related	< -60 dBc	
	Non-carrier related	< -75 dBm	
Spurs Out-of-band	Carrier related	< -60 dBc	
	Non-carrier related	< -75 dBm	
LO Breakthrough	< -60 dBc		
Image Rejection	> 60 dB typical		
External Reference	Input Freq. 10MHz Input Level +3 dBm ± 3dB		
Mute	60 dB		
Number of conversion stages	Dual		
Spectral Inversion	Non-inverting		
Redundancy	Supported. Based on module configuration		
Spec version	0.1	0.1	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.



**Esatcom Inc.**  
www.esatcom.com  
Tel: 718.276.0800  
Email: sales@esatcom.com

