



ETL Systems

New technologies
in RF distribution

Model Number:
FN-U-K1L1-24202-XXXX

Falcon Series Frequency Converter Module

L- to Ku-Band frequency converter with variable gain and variable slope. The 1U Chassis has the capacity for up to four hot-swap frequency converter modules. These can be all Upconverters, all

Typical applications:

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

- 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.



Image for indication purposes only, actual units may be differ

- 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) <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. 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		Redundancy Module - RF Parameters	
Model Numbers	FN-U-K1L1-24202-xxxx	SWF-G1S-KX-109A-xxxx	SWF-G1S-KX-115-xxxx
Size	4 slots wide	4 slots wide	4 slots wide
Redundancy	Standalone module	1+1 (Note: This column denotes specs for 24202 in 1+1 configuration)	2+1 (Note: This column denotes specs for 24202 in 2+1 configuration)
Input Frequency Range	950 – 2000 MHz		
Output Frequency Range	Mode 1 : 10.7—11.75 or Mode 2 : 11.7—12.75 MHz		
Mean Conversion Gain	Max. 35 ± 1.5 dB / Min 5 ± 1.5 dB	Max. 31.3 ± 1.5 dB / Min 1.3 ± 1.5 dB	Max. 28.8 ± 1.5 dB / Min -1.2 ± 1.5 dB
Gain steps	0.25 ± 0.15 dB		
Gain Flatness (50 Ohm)	Full IF band: ±1.5 dB Any 40MHz: ±0.3 dB		
Input Return Loss (50 Ohm) @ 0 dB slope	Typ. -18 dB / Min. -14 dB	Typ. -15 dB / Min. -11 dB	Typ. -15 dB / Min. -12 dB
Output Return Loss (50 Ohm)	Typ. -15dB / Min. -10 dB	Typ. -11 dB / Min. -8 dB	Typ. -11 dB / Min. -8 dB
Noise Figure At max. gain	Typ. 10 dB / Max 13 dB	Typ. 11.7 dB / Max 14.7 dB	Typ. 12.7 dB / Max 15.98dB
Input Power Range	-75 to -30 dBm		
OP1dB At max. gain	Typ. +15 dBm / Min. +12 dBm	Typ. +13 dBm / Min. +10 dBm	Typ. +11.5 dBm / Min. +8.5 dBm
OIP3 At max. gain	Typ. +25 dBm / Min. +22 dBm	Typ. +23 dBm / Min. +20 dBm	Typ. +21.5 dBm / Min. +18.5 dBm
Slope Compensation	0-6 dB at L-band		
Slope Control Steps	1 dB		
Internal Reference Stability	± 5 x 10 ⁻⁸ over 0 to 50°C		
Phase Noise (Typical values)	@10Hz offset	-70 dBc / Hz	
	@100Hz offset	-80 dBc / Hz	
	@1KHz offset	-85 dBc / Hz	
	@10KHz offset	-85 dBc / Hz	
	@100KHz offset	-90 dBc / Hz	
	@1MHz offset	-110 dBc / Hz	
Spurs In-band	Carrier related (> 1MHz offset)	< -50 dBc At -10dBm Output	
	Non-carrier related	< -80 dBm At -10dBm Output	
Spurs Out-of-band	Carrier related	< -50 dBc At -10dBm Output	
	Non-carrier related	< -80 dBm At -10dBm Output	
LO Breakthrough	< -80 dBm		
Image Rejection	> 60 dB		
External Reference	Input Freq. 10MHz Input Level +3 dBm±3dB		
Mute	60 dB		
IF Monitor	Yes. Internal RF detector monitored		
Spectral Inversion	Non-inverting		
Spec version	1.3	1.0	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.

