



ETL Systems

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Model Number:
FN-D-K3L1-24130-S5xx

Falcon Series Frequency Converter Module Ku-Band Agile Downconverter

Typical applications:

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

Ku to L-Band conversion. The 1U Genus 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. Other module types are also available, these can be mixed and housed in the Genus chassis.

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 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

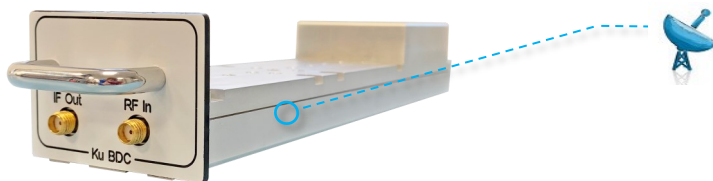
Dimensions / Weight / Colour	1U high x 550mm deep x 19" wide / <10 kg / RAL9003—White (Semi-matte)
Capacity	Total of 17 module slots. Note that 1 slot may be used for fan (if required) and 1 slot may be used for 10 MHz EXT inject module (if required). Note actual modules may require >1 slot. Refer to 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 Connectors	Dependant upon module fitted



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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-K3L1-24130-xxxx	SWF-G1S-KX-109A	SWF-G1S-KX-107A
Size	3 slots wide	4 slots wide	6 slots wide
Redundancy	Standalone module	1+1 (Note: This column denotes specs for 24130 in 1+1 configuration)	2+1 (Note: This column denotes specs for 24130 in 2+1 configuration)
Input Frequency Range	12750 – 14500 MHz - User Controllable In 1kHz step size		
Output Frequency Range	950—1950 MHz		
LO Frequencies	11800—12550 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 Instantaneous Band: ±2.0 dB Any 40 MHz: ±0.35 dB		
Slope Compensation	0—6 dB		
Slope Control Steps	1 dB		
Operational Input Level	-75 to -30 dBm		
Input Return Loss	Typ. -15 dB / Min. -10 dB	Typ. -11 dB / Min. -8 dB	Typ. -11 dB / Min. -8 dB
Output Return Loss	Typ. -18 dB / Min. -14 dB	Typ. -15 dB / Min. -11 dB	Typ. -15 dB / Min. -12 dB
Noise Figure (at max. gain)	Typ. 10 dB / Max 12 dB	Typ. 12 dB / Max 14 dB	Typ. 13.5 dB / Max 15.6 dB
OP1dB (at max. gain)	Typ. +17 dBm / Min. +15 dBm	Typ. +15.3 dBm / Min. +13.3 dBm	Typ. +14.3 dBm / Min. +12.3 dBm
OIP3 (at max. gain, Δf = 5 MHz two carriers 0 dBm each)	Typ. +27 dBm / Min. +25 dBm	Typ. +25.3 dBm / Min. +23.3 dBm	Typ. +24.3 dBm / Min. +22.3 dBm
Group Delay (max pk-pk)	1 ns		
Internal Reference Stability	± 5 x 10 ⁻⁸ over 0 to 50°C		
Phase Noise (Typical values)	@10Hz offset	-70 dBc / Hz	
	@100Hz offset	-83 dBc / Hz	
	@1KHz offset	-90 dBc / Hz	
	@10KHz offset	-90 dBc / Hz	
	@100KHz offset	-98 dBc / Hz	
	@1MHz offset	-115 dBc / Hz	
Spurs In-band	Non-carrier Related	< -75 dBm	
Spurs Out-of-band	Carrier Related	< -60 dBc	
	Non-carrier Related	< -75 dBm	
LO Breakthrough	< -80 dBm		
Image Rejection	>60 dB		
Conversion stages	Single		
External Reference	Input Freq. 10 MHz Input Level +3 dBm ±3 dB		
Mute	60 dB		
Spec version	0.1	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.

Note 3: All specs are for 50 Ohm connectors unless detailed otherwise.



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