



ETL Systems
New technologies
in RF distribution

Model Number:
FN-D-C1L1-24226-XXXX

Falcon Series

Frequency Converter Module

C-Band Block Downconverter

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 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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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-C1L1-24226-XXXX	SWF-G1S-CX-111A-xxxx	SWF-G1S-CX-110A-xxxx
Size	3 slots wide	4 slots wide	6 slots wide
Redundancy	Standalone module	1+1 (Note: This column denotes specs for 24226 in 1+1 configuration)	2+1 (Note: This column denotes specs for 24226 in 2+1 configuration)
Input Frequency Range (user selectable)	Mode 1: 3400 – 4400 MHz Mode 2: 3600 – 4600 MHz Mode 3: 3800 – 4800 MHz		
Output Frequency Range	950—1950 MHz		
Mean Conversion Gain	Max. 35 ± 2 dB / Min. 5 ± 2 dB	Max. 33.9 ± 2.2 dB / Min. 3.9 ± 2.2 dB	Max. 34 ± 2.5 dB / Min. 4 ± 2.5 dB
Gain steps	0.25 ± 0.15 dB		
Gain Flatness (50 Ohm)	Full L-Band ±1.5 dB	Full L-Band ±1.7 dB	Full L-Band ± 2.0 dB
Input Return Loss (50 Ohm)	Typ. -16 dB / Min. -12 dB	Typ. -13 dB / Min. -9 dB	Typ. -13 dB / Min. -9 dB
Output Return Loss (50 Ohm)	Typ. -16 dB / Min. -12 dB	Typ. -13 dB / Min. -10 dB	Typ. -13 dB / Min. -10 dB
Noise Figure At max. gain	Typ. 12 dB / Max 14 dB	Typ. 14.5 dB / Max 16.5 dB	Typ. 15 dB / Max 17 dB
Maximum Operational Input level	-30 dBm At max gain		
OP1dB At max. gain	Typ. +15 dBm / Min. +13 dBm	Typ. +12.5 dBm / Min. +10.5 dBm	Typ. +12 dBm / Min. +10 dBm
OIP3 At max. gain	Typ. +25 dBm / Min. +23 dBm	Typ. +23.0 dBm / Min. +21.0 dBm	Typ. +22.5 dBm / Min. +20.5 dBm
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	-90 dBc / Hz	
	@10KHz offset	-95 dBc / Hz	
	@100KHz offset	-98 dBc / Hz	
	@1MHz offset	-110 dBc / Hz	
Spurs In-band	Non-carrier related	< -70 dBm (At -5dBm Output. Non-Harmonic)	
	Carrier Related (>1MHz Offset)	< -55 dBc (At -5dBm Output. Non-Harmonic)	
Spurs Out-of-band	Carrier related	< -60 dBc (At -5dBm Output)	
	Non-carrier related	< -75 dBm (At -5dBm Output)	
LO Breakthrough	< -65 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		
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.

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

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