ETL Systems
New technologies
in RF distribution

Model Number:
FN-D-C1F2-24135-XXXX

Falcon Series
Frequency Converter Module
C-Band Agile Downconverter

C-Band to IF-Band agile downconverter with variable gain. 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.

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

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.

Resilience from dual redundant hot-swap power supplies & field replaceable CPU & HMI

Image for indication only. Actual units may vary.

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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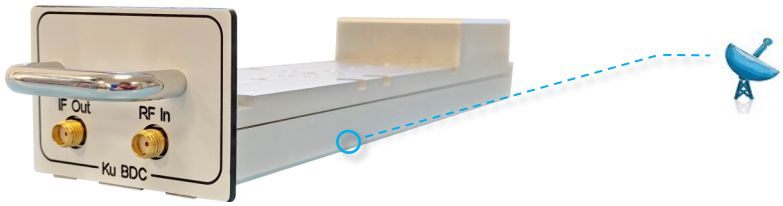

Frequency Converter Module

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-C1F2-24135-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 24135 in 1+1 configuration)	2+1 (**Note**. This column denotes specs for 24135 in 2+1 configuration)
Input Frequency Range		3600-4800 MHz (1kHz step size)		
Output Frequency Range		70 ± 20 MHz 140 ± 40 MHz		
Conversion Gain		Max 35 ± 2 dB / Min 5 ± 2 dB	Max 33.1 ± 2 dB / Min 3.1 ± 2 dB	Max 29.1 ± 2 dB / Min -0.9 ± 2 dB
Gain Steps		0.25 ± 0.2 dB		
Gain Flatness (50 Ohm)		Full IF band: ±0.5 dB		
Input Return Loss (RF-Band, 50 Ohm)		Typ. -16 dB / Min.-14 dB (50 Ohm)	Typ. -13 dB / Min.-11 dB	Typ. -13 dB / Min.-11 dB
Output Return Loss (IF-Band, 50 Ohm)		Typ. -18 dB / Min.-15 dB (50 Ohm)	Typ. -15 dB / Min.-12 dB	Typ. -15 dB / Min.-12 dB
Noise Figure (At max gain)		Typ. 8 dB / Max. 10 dB	Typ. 9.2 dB / Max. 11.2 dB	Typ. 11.2 dB / Max. 13.3 dB
Maximum Operational Input Level		–30 dBm (At max gain)		
OP1dB (At max gain)		Typ. +13 dBm / Min.+10 dBm	Typ. +12.3 dBm / Min.+9.3 dBm	Typ. +10.3 dBm / Min.+7.3 dBm
OIP3 (At max gain)		Typ. +25 dBm / Min.+22 dBm	Typ. +24.3 dBm / Min.+21.3 dBm	Typ. +22.3 dBm / Min.+19.3 dBm
Group Delay (max pk-pk)		2 ns		
Internal Reference Stability		±5x10^{-8} over 0 to 50°C		
Phase Noise (Typical values)	@10 Hz offset	-70 dBc / Hz		
	@100 Hz offset	-80 dBc / Hz		
	@1 Hz offset	-95 dBc / Hz		
	@10 KHz offset	-100 dBc / Hz		
	@100 KHz offset	-103 dBc / Hz		
	@1 MHz offset	-110 dBc / Hz		
Spurs In-band (@ -5 dBm output)	Non-carrier related	<-75 dBm		
	Carrier Related	<-55 dBc		
Spurs Out-of-band (@ -5 dBm output)	Non-carrier related	<-75 dBm		
	Carrier Related	<-60 dBc		
LO Breakthrough		<-60 dBm		
Image Rejection		> 60 dB typ		
External Reference		Input Freq. 10 MHz. Auto detection. 1 required per chassis		
External Ref. Input Level		+3 dBm ± 3dB. Subject to change		
Mute		60 dB		
Number of conversion stages		Dual		
Spectral Inversion		Non-inverting		
Redundancy		Supported, based on chassis configuration		
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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