ETL Systems
Excelling in RF Engineering

Model Number:
FN-D-C1L1-24426XX-XXXX

Falcon Series
Frequency Converter Module
C-Band to L-Band Block Downconverter

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

C-Band to L-Band block downconverter module with variable gain and slope.
The 1U chassis has the capacity for up to four hot-swap frequency converter modules. These can be all upconverters, all downconverters or a mix of both.

Frequency Converter Module

Frequency Converter Module Compact form factor allowing multiple modules to be housed in the Genus chassis. Each module occupies 4 slots in the chassis.

Hot Swap & replaceable RF Frequency Converter modules

Redundancy configurations Field-replaceable 2+1 or 1+1 redundant configuration

Variable Gain & Slope For balancing input signals.

Frequency Conversion Down conversion from C-Band to L-Band.

Chassis Options

Local control & monitoring via HMI high resolution touchscreen

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

Compact indoor & outdoor chassis options, which can be part populated

Secure protocols with SNMPv3 and HTTPS

Flexible Module Configurations choose from a mixture of up and down converters with different operating frequencies.

Remote control & monitoring via RJ45 Ethernet port with SNMP & web browser interface

Field replaceable Internal reference source and external reference inject port with auto detection

Indoor Chassis

Outdoor Unit

ETL Systems
New technologies
in RF distribution

Model Number:
FN-D-C1L1-24426AA-XXXX

Frequency Downconverter Module - RF Parameters		Redundancy - RF Parameters		
Model Numbers		FN-D-C1L1-24426AA-XXXX	SWF-G1S-CX-111A-xxxx	SWF-G1S-CX-117-xxxx
Size		4 slots wide	4 slots wide	4 slots wide
Redundancy		Standalone module	1+1 (**Note:** This column denotes specs for 24426 in 1+1 configuration)	2+1 (**Note:** This column denotes specs for 24426 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		1150—2150 MHz		
Mean Conversion Gain		Max. 35 ± 1.5 dB / Min. 0 ± 1.5 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 Any 40MHz ±0.3 dB	Full L-Band ±1.7 dB	Full L-Band ± 2.0 dB
Slope Compensation		0-6 dB (pivot point at 2150MHz)		
Slope Control Steps		1 dB		
Input Return Loss (50 Ohm)		Typ. -18 dB / Min. -15 dB	Typ. -13 dB / Min. –9 dB	Typ. -13 dB / Min. –9 dB
Output Return Loss (50 Ohm)		Typ. -18 dB / Min. -15 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	-68 dBc / Hz		
	@100Hz offset	-80 dBc / Hz		
	@1KHz offset	-90 dBc / Hz		
	@10KHz offset	-106 dBc / Hz		
	@100KHz offset	-107 dBc / Hz		
	@1MHz offset	-115 dBc / Hz		
Spurs In-band	Non-carrier related	< -75 dBm (At -5dBm Output. Non-Harmonic)		
	Carrier Related (>1MHz Offset)	< -60 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		< -75 dBm		
Image Rejection		>60 dB		
Conversion stages		Dual		
External Reference Input Frequency		10MHz or 100MHz (auto detection)		
External Ref Input Leve		0dBm ± 10dB		
IF Monitor Port		Yes		
Mute		60 dB		
Spectral Inversion		Non-inverting		
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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New technologies
in RF distribution

Model Number:
FN-D-C1L1-24426AB-XXXX

Frequency Downconverter Module - RF Parameters		Redundancy - RF Parameters		
Model Numbers		FN-D-C1L1-24426AB-XXXX	SWF-G1S-CX-111A-xxxx	SWF-G1S-CX-117-xxxx
Size		4 slots wide	4 slots wide	4 slots wide
Redundancy		Standalone module	1+1 (**Note:** This column denotes specs for 24426 in 1+1 configuration)	2+1 (**Note:** This column denotes specs for 24426 in 2+1 configuration)
Input Frequency Range		3400 – 4200 MHz		
Output Frequency Range		950—1750 MHz		
Mean Conversion Gain		Max. 35 ± 1.5 dB / Min. 0 ± 1.5 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 Any 40MHz ±0.3 dB	Full L-Band ±1.7 dB	Full L-Band ± 2.0 dB
Slope Compensation		N/A		
Slope Control Steps		N/A		
Input Return Loss (50 Ohm)		Typ. -18 dB / Min. -15 dB	Typ. -13 dB / Min. –9 dB	Typ. -13 dB / Min. –9 dB
Output Return Loss (50 Ohm)		Typ. -18 dB / Min. -15 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	-68 dBc / Hz		
	@100Hz offset	-80 dBc / Hz		
	@1KHz offset	-90 dBc / Hz		
	@10KHz offset	-106 dBc / Hz		
	@100KHz offset	-107 dBc / Hz		
	@1MHz offset	-115 dBc / Hz		
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Spurs Out-of-band	Carrier related	< -60 dBc (At -5dBm Output)		
	Non-carrier related	< -75 dBm (At -5dBm Output)		
LO Breakthrough		< -75 dBm		
Image Rejection		>60 dB		
Conversion stages		Dual		
External Reference Input Frequency		10MHz or 100MHz (auto detection)		
External Ref Input Leve		0dBm ± 10dB		
IF Monitor Port		Yes		
Mute		60 dB		
Spectral Inversion		Non-inverting		
Spec version		0.2	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.
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