



SFC4200

C-Band Frequency Synthesized Downconverter



SFC4200 C-Band Frequency Synthesized Downconverter

HIGHLIGHTS

- ▶ High Performance at a Low-Cost in a 1.75" High Chassis
- ▶ Built-in Receive Signal Strength Detection
- ▶ High Receive Intercept/Dynamic Range
- ▶ Low Phase Noise
- ▶ 125 KHz Frequency Resolution
- ▶ RS232/422/485 Operator Serial Interface
- ▶ 'Plug-and-Play' Compatibility with Radyne Low-Cost 1:1 & 1:N Switches
- ▶ Available in Extended Frequency Bands

THE NEW STANDARD IN PERFORMANCE

The Radyne ComStream SFC4200 C-band Synthesized Frequency Downconverter has been designed to provide performance that meets or exceeds industry standards. The SFC4200 features also provide ease of integration and operation.

Designed to handle extreme ratios of adjacent carrier power, the SFC4200 offers the highest standard input P1 dBm in the industry at -19 dBm. With a typical noise figure of 10 dB at 40 dB gain, the SFC4200 can receive signals below -110 dBm with an aggregate input power of -25 dBm. This represents a receive dynamic range in excess of 85 dB. At 40 dB of gain standard, or with the 60 dB gain option, the SFC4200 will easily integrate into any size earth station while eliminating the need for receive line amplifiers, even for installations that employ power splitters on the downlink.

Linearity of the converter is equally impressive. The SFC4200 boasts a two-tone IMD product of 60 dBc for a combined output power of 0 dBm.

Output P1 dBm of the converter is +20 dBm. In most installations this allows IF power splitters to be used without the need for IF distribution amplifiers.

SIGNAL TRACKING FEATURE

The SFC4200 features receive signal power detection. The ability to measure the received signal strength and to make that information available to the system operators allows the SFC4200 to perform double-duty for a variety of earth station overhead requirements.

Signal strength measurements are available to the operator through the RS232/RS485 Operator Serial Interface as well as through a visual display on the front panel of the unit.

PROTECTION SWITCH VERSATILITY

The Radyne ComStream SFC Converter products feature 'plug-and-play' ease of installation with the RCU101 1:1 or the RCU108 1:8 Redundancy Control Units. Identical firmware enables any converter to be plugged into the backup slot and assume the role of protection switch controller. It is the backup converter that learns and stores the frequency, gain and channel settings of the primary converters. In the event the stored setting of the primary converter is changed, the backup converter will notify the user via the front panel and the RS232/RS485 interface.

All circuits are protected upon installation of the switch and upon completion of the learning process. This eliminates the need for complicated software configurations that might otherwise leave a circuit vulnerable. Likewise, replacing a failed converter is as simple as plugging in a replacement.



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SPECIFICATIONS

INPUT CHARACTERISTICS

Frequency:	3.625-4.20 GHz Standard 3.40-4.20 GHz Extended Option
Impedance:	50 Ohms
Return Loss:	≥20 dB
P1 dBm input:	-19 dBm
Input Dynamic Range:	-25 dBm Aggregate Signal Power to -110 dBm Carrier Level
Connector:	N, type-F

OUTPUT CHARACTERISTICS

Frequency:	70 MHz ± 18 MHz standard; 140 MHz ± 36 MHz optional
Impedance:	75 Ohms
Return Loss:	≥ 23 dB
P1 dBm Output:	+20 dBm
Connector:	BNC, F

TRANSFER CHARACTERISTICS

Type:	Double conversion, no spectral inversion
Gain:	40 dB Maximum @ 0 dB total attenuation Options to 60 dBm
Gain control:	40 dB in 0.1 dB increments (0 dB to +40 dB conversion gain)
Gain Ripple:	± 0.25 dB/36 MHz, ± 0.5 dB/76 MHz
Gain Slope:	± 0.05 dB/ MHz
Gain stability:	± 0.25 dB/24 hr., ± 1.0 dB 0 to 50° C
Noise Figure:	12 dB Max.
Spurious:	-80 dBm LO related spurious (in-band) at min. attenuation -60 dBc signal related spurious (in-band) at min. attenuation
Line Frequency Spurious: Third Order Intercept:	< -50 dBc @ 60 Hz +30 dBm -60 dBc IMD two tones with 0 dBm total output power
AM/PM Conversion: Image Rejection:	0.1° /dB >80 dB

GROUP DELAY

Linear:	0.025 nsec./MHz
Parabolic:	0.005 nsec./MHz ²
Ripple:	1 nsec. pk-pk for ± 18 MHz

FREQUENCY SYNTHESIZER CHARACTERISTICS

Resolution:	125 KHz Step Size
Stability:	± 5 x 10 ⁻⁹ over temperature (0 to 50° C) ± 1 x 10 ⁻⁹ /24 hours
Accuracy:	± 5.0 x 10 ⁻⁹ after 20 minutes

SINGLE SIDE BAND PHASE NOISE

Offset	C-Band Standard
10 Hz	-50 dBc/Hz
100 Hz	-70 dBc/Hz
1 KHz	-80 dBc/Hz
10 KHz	-88 dBc/Hz
100 KHz	-95 dBc/Hz
1 MHz	-110 dBc/Hz
External Reference	10 MHz, 0 dBm, 50 Ohms (5 MHz optional)

RX SIGNAL STRENGTH DETECTION

Sensitivity (TSS):	-80 dBm @ 40 dB gain referenced to the RF input connector -40 dBm @ 0 dB gain referenced to the RF input connector
Dynamic range:	30 dB @ any gain setting
Absolute Accuracy:	± 2 dB
Relative Accuracy:	± 1 dB LCD Display, ± 0.2 dB (8-Bit Serial Data)
Maximum Detectable Signal:	-20 dBm referenced to RF port @ 10 dB gain -10 dBm referenced to IF output port (IF power - Gain = Rx Signal)

OPERATOR INTERFACE

Remote Operator M&C Serial Port Configurable to RS-232, RS-422, or RS-485.	
Remote Features Include:	Frequency, gain & channel control, status reports, signal strength monitoring, fault isolation, reference offset control.
Front Panel Controls & Indicators:	LCD Root Menu display provides indication & control of: Frequency, Channel, Gain, Rx Signal Strength, Status, Switch Status
Rear Panel Connections:	RF Input (N-type 50 Ohms), IF Output (75 Ohm BNC), Operator Serial Port (DB 9-pin), 10 MHz REF In (BNC), REF Out (BNC), Fault/Test (DB 9-pin), Switch Interface (DB 15-pin), Equipment RS485 Interface (DB 9-pin), IEC 320/C13 Power Entry Module/Switch, #10 ground lug
Front Panel Test Ports:	LO Monitor -15 dBm, RF monitor -15 dB, IF Monitor -15 dB

PHYSICAL CHARACTERISTICS

Size:	19" x 1.73" x 21" deep
Weight:	12 lb.
Primary Power:	100-240 Vac, 50-60 Hz, 1.0 A
Power Consumption:	50 Watts

ENVIRONMENTAL CHARACTERISTICS

Operating Temperature:	0 to 50° C
Humidity:	to 95% non-condensing
Altitude:	To 8,000 Feet AMSL
Shock & Vibration:	No loss of frame synchronization at the BER Test set due to a standard hammer drop test on any outside surface of converter. Likewise, no loss of frame sync for temp gradient of ± 22° C/hr.
Non-Operating Temperature:	-32 to +65° C

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