



# SFC2100A

## Ka-Band Frequency Synthesized Downconverter



### HIGHLIGHTS

- ▶ Local or Remote Control
- ▶ 32 Stored Configuration Settings
- ▶ High-Performance at a Low-Cost in a 1.75" High Chassis
- ▶ High Receive Intercept/Dynamic Range
- ▶ Low Phase Noise
- ▶ 125 kHz Frequency Resolution
- ▶ RS-232/-422/-485 Operator Serial Interface
- ▶ Available in Extended Frequency Bands

### THE NEW STANDARD IN PERFORMANCE

The Radyne SFC2100A Ka-Band Synthesized Frequency Downconverter has been designed to provide performance that meets or exceeds industry standards. The SFC2100A features also provide ease of integration and operation.

Designed to handle extreme ratios of adjacent carrier power, the SFC2100A offers the highest standard input P1 dBm in the industry at -20 dBm. With a typical noise figure of 12 dB at 30 dB gain, the SFC2100A 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 30 dB of gain standard, or with the 50 dB gain option, the SFC2100A 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 SFC2100A boasts a two-tone IMD product of 60 dBc for a combined output power of -10 dBm.

Output P1 dBm of the converter is +15 dBm. In most installations this allows IF power splitters to be used without the need for IF distribution amplifiers.

### MONITOR AND CONTROL

All of the configuration, monitor and control functions are available at the front panel. Operating parameters such as frequency, channel, gain, gain offset and switch settings (backup only) can be readily set and changed at the front panel.

Additionally, all functions can be accessed with a terminal or personal computer via a serial link (RS-232, RS-485, or Ethernet) for complete remote monitor and control (M&C) capabilities.

Extensive fault monitoring with masking capability, along with time and date stamped event storage are available.

# SFC2100A Ka-Band Frequency Synthesized Downconverter

## SPECIFICATIONS

### INPUT CHARACTERISTICS

Frequency:	17700 - 18800 MHz (Plan A) 18800 - 19300 MHz (Plan B) 19200 - 20200 MHz (Plan C) 20000 - 21200 MHz (Plan D)
Impedance:	50 Ohms
Input Level:	-40 dBm Nominal
Return Loss:	≥20 dB
P1 dBm Input:	-20 dBm
Input Dynamic Range:	-25 dBm Aggregate Signal Power to -110 dBm Carrier Level
Connector:	WR-42 Waveguide

### OUTPUT CHARACTERISTICS

Frequency:	70 MHz ±20 MHz Standard 140 MHz ±40 MHz Optional
Impedance:	75 Ohms (50 Ohms Optional)
Return Loss:	≥23 dB Maximum; -26 dB Typical
P1 dBm Output:	+15 dBm
Connector:	75 Ohm BNC, F (50 Ohm BNC, F Optional)

### TRANSFER CHARACTERISTICS

Type:	Double Conversion, No Spectral Inversion
Gain:	30 dB Maximum @ Minimum Attenuation Higher Gain Options Available
Gain Control:	30 dB in 0.2 dB Increments
Gain Ripple:	±0.5 dB/36 MHz ±0.75 dB/72 MHz (140 MHz Input Option)
Gain Slope:	±0.025 dB/MHz (36 MHz Minimum)
Gain Stability:	±0.25 dB/24 Hours, ±2.0 dB; 0 to 50°C
Noise Figure:	12 dB Max. @ 0 dB Attenuation
Spurious:	-70 dBm Local Oscillator Related Spurious (In-Band) at Minimum Attenuation -60 dBc Signal Related Spurious (In-Band) at Minimum Attenuation
Intermodulation Distortion:	-60 dBc IMD Two Tones with -10 dBm Total Output Power
AM/PM Conversion:	0.2°/dB @ -10 dBm Output
Image Rejection:	80 dB

### FREQUENCY SYNTHESIZER CHARACTERISTICS

Resolution:	125 kHz Step Size
Stability:	±5 x 10 <sup>-9</sup> Over Temperature (0 to 50° C) +1 x 10 <sup>-9</sup> /24 Hours
Accuracy:	±5.0 x 10 <sup>-9</sup> After 20 Minutes

### SINGLE SIDE BAND PHASE NOISE

Offset	Ka-Band Standard
100 Hz	-70 dBc/Hz
1 kHz	-80 dBc/Hz
10 kHz	-82 dBc/Hz
100 kHz	-92 dBc/Hz
1 MHz	-110 dBc/Hz
Ext. Reference	10 MHz, 0 dBm, 50 Ohms (5 MHz Optional)

### GROUP DELAY

Linear:	0.03 nsec./MHz Maximum
Parabolic:	0.01 nsec./MHz <sup>2</sup>
Ripple:	1.0 nsec. p-p for ±18 MHz

### OPERATOR INTERFACE - DOWN CONVERTER AND UP CONVERTER

Front Panel:	Keypad Control, LED Indicators, and LCD Indicators
Remote Interfaces:	Terminal (RS-232), ASCII and RLLP (RS-232/ RS-485) Serial Interface, and SNMP (Ethernet) 10 Base-T

#### Converter Settings:

Monitored and/or controlled from the front panel or remotely, using the RS-232/RS-484 or Ethernet remote port:

- Frequency
- Current Channel
- Event Buffer
- Power Supply Voltages
- Terminal Emulation and Baud Rate
- Converter and Frequency Type
- RF Detector, IF Detector, and DAC Attenuation Voltages
- Channel Gain
- Gain Offset
- Faults Status and Mask
- Frequency Reference Status and Offset Control
- Remote Protocol, Baud, Line, and Echo Modes
- Converter Band and User Minimum/Maximum Frequencies

LED Indications: Standby, LO Fault, Ext Ref Online, Power, Fault, Event, Remote Sig Fault (Upconverter Only)

Rear Panel Connections: RF Input (WR-42 Waveguide), 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 RS-485 Interface (DB-9 Pin), IEC/EN60320/C13 Power Entry Module/Switch, #10 Ground Lug

Front Panel Test Ports: RF Monitor -25 dB; IF Monitor -15 dB

### PHYSICAL CHARACTERISTICS

Size:	19" x 1.75" x 19" Deep (48.2cm x 4.44cm x 48.26cm deep)
Weight:	12 lb. (5.44 kg)
Primary Power:	100 to 240 VAC, 50 - 60 Hz
Power Consumption:	50 Watts

### ENVIRONMENTAL CHARACTERISTICS

Operating Temperature:	0 to 50°C
Humidity:	To 95% Non-Condensing
Altitude:	To 8,000 Feet (2.438 meters) AMSL
Shock and 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 temperature gradient of ± 22°C/hour

Non-Operating Temperature: -32 to +65°C, 99% Humidity, Non-Condensing

**U.S.A./Canada:** 3138 East Elwood Street, Phoenix, Arizona 85034 USA Tel: +(1) 602.437.9620 Fax: +(1) 602.437.4811  
6340 Sequence Drive, San Diego, California 92121 USA Tel: +(1) 858.458.1800 Fax: +(1) 858.657.5400  
**Europe/Middle East/Africa:** Charwell House, Wilsom Road, Alton, GU34 2PP, United Kingdom Tel: +(44) 1420.540.233 Fax: +(44) 1420.540.232  
**Latin America:** 3138 East Elwood Street, Phoenix, Arizona 85034 USA Tel: +(1) 561.487.7972 Fax: +(1) 561.892.2363  
**China:** Room 405, Building B, Heqiao Mansion, No. 8 Guanghua Road, Chaoyang District, Beijing 100026 China Tel: +(86) 10.658.31975 Fax: +(86) 10.658.31974  
**Asia-Pacific:** 150 Cecil Street, #08-02, Singapore 069543 Tel: +(65) 6325.1956 Fax: +(65) 6325.1950  
JI M.T. Haryono Kav 25, Jakarta, Indonesia 12820 Tel: +(62) 21.521.3733 Fax: +(62) 21.252.0142  
www.radn.com

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