

# S-BAND FREQUENCY CONVERTERS

Low Phase Noise Synthesized Converters



SATELLITE TRACKING SOLUTIONS

SAFRAN DATA SYSTEMS offers synthesized low phase noise frequency converters presented in a 1 U panel height and operating in the standard S-band:

- Up Converter
- Down Converter
- Tracking Down Converter
- Echo Down Converter
- Test Translator

An excellent internal synthesizer provides fine frequency tuning. An internal frequency reference is standard but external reference can also be used (automatic synchronization).



Satellite communications



Tracking earth stations



S-band TT&C



Beacon reception



Military and civil



AIT

DUAL CONVERSION, NO SPECTRAL INVERSION

1 HZ FREQUENCY STEPS

PHASE NOISE 20DB BETTER THAN IESS 308-309

LOW GROUP DELAY DISTORSION

HIGH OUTPUT LEVEL STABILITY

AUTOMATIC SYNCHRONIZATION ON 10 MHZ EXTERNAL REFERENCE

# S-BAND FREQUENCY CONVERTERS

## TECHNICAL SPECIFICATIONS

### IF characteristics

IF central frequency ..... 70MHz  
 IF bandwidth ..... < 36MHz @ 3dB  
 Impedance ..... 50 Ohms  
 VSWR ..... < 1.3

### RF characteristics

Frequency ..... refer to model table  
 Frequency setting steps ..... 1Hz  
 Frequency reference ..... 10 MHz, internal or external  
 Frequency stability .....  $\pm 2 \cdot 10^{-8}$  in 0°C to +50°C  
 .....  $\pm 5 \cdot 10^{-10}$  per day @ 20°C  
 External reference level ..... 3dBm  $\pm$ 3dB  
 Output power ..... (1dB compression)

#### • UC • DC • TRK • Echo

..... +10dBm @ max gain  
 • Test Translator ..... 0dBm @ max gain

#### 3<sup>rd</sup> order intercept point (IP3)

#### • UC • DC • TRK • Echo

..... +20dBm @ max gain  
 • Test Translator ..... +10dBm @ max gain

AM/PM conversion ..... 0.25°/dB @ Pout= -10dBm

Phase Noise (@frequency offset from carrier, typical)

#### • UC • DC • TRK • Echo

..... 66 dBc/Hz @ 10 Hz  
 ..... 78 dBc/Hz @ 100 Hz  
 ..... 81 dBc/Hz @ 1 kHz  
 ..... 91 dBc/Hz @ 10 kHz  
 ..... 104 dBc/Hz @ 100 kHz  
 ..... 125 dBc/Hz @ 1 MHz  
 • Test Translator ..... 64 dBc/Hz @ 10 Hz  
 ..... 76 dBc/Hz @ 100 Hz  
 ..... 79 dBc/Hz @ 1 kHz  
 ..... 90 dBc/Hz @ 10 kHz  
 ..... 103 dBc/Hz @ 100 kHz  
 ..... 124 dBc/Hz @ 1 MHz

Impedance ..... 50 Ohms  
 VSWR ..... < 1.3

### Interfaces

Rear panel connectors:	•UPC •DNC •TRK •Echo	•TT
RF	N female	N female
IF	BNC female	N female
Ext. 10 MHz ref. input	SMA female	SMA female
RS485 M&C interface	SUBD	SUBD
	9 pins male	9 pins male
Ethernet M&C interface	RJ45	RJ45
Front panel connectors:		
Monitor output	SMA female	SMA female
	(except DC, TRK, ECHO)	
LO monitor	SMA female	SMA female

## MODEL TABLE

### Converter S-UP

• Up converter ..... 2025 to 2120MHz 70MHz Ref. SM01026637A

### Converter S-DN

• Down converter ..... 2200 to 2300MHz 70MHz Ref. SM01026636A

### Converter S-TRK

• Tracking Down converter ... 2200 to 2300MHz 70MHz Ref. SM01026640A

### Converter S-ECHO

• Echo Down converter .... 2025 to 2120MHz 70MHz Ref. SM01026638A

### Converter S-TLT

• Test Translator .... 2025 to 2120MHz 2200 to 2300MHz Ref. SM01026639A

### Transfer characteristics

Common ..... •UPC •DNC •TRK •Echo •Test Translator

Conversion sense ..... Positive - No inversion

Gain control range ..... 31.75dB

Gain step ..... 0.25dB

Level stability .....  $\pm 0.25$  dB for  $\pm 5^\circ\text{C}$  over 16MHz bandwidth

Amplitude response .....  $\pm 0.25$  dB over 16MHz bandwidth

Absolute delay stability ... < 0.2 ns @ 25°C  $\pm$ 10°C over 16MHz bandwidth

Image rejection ..... > 80dB

LO leakage ..... < -70dBm

Signal related spurious .... -60 dBc @ max gain

Specific ..... •DNC •TRK •UPC •Echo •TT

Channel configuration ..... 1, 2 or 2x2 1 1 1

Mute (RF on/off) ..... - > 60dB - -

Maximum gain ..... 40dB 35dB 35dB 20dB

Phase tracking ..... < 10 rss between any channels

Noise figure @ max gain ..... 12dB 18dB 15dB 15dB

Group delay over 16 MHz bandwidth ..... 3 ns 2 ns 3 ns 2 ns

Signal independent spurious @ max gain ..... -60dBm -70dBm -60dBm -65dBm

### Mechanical characteristics

Weight ..... 33 lb (15kg nominal)

Dimensions ..... 1Ux19"x560mm rackable (44.5x482x560mm)

Power consumption ..... < 150 VA

Power supply ..... 110-240 VAC; 47-63 Hz

Temperature operating ..... 0°C to 50°C

Temperature storage ..... -40°C to +70°C

Relative humidity operating ..... 0 to 85%

Relative humidity storage ..... 0 to 95%

### GLOBAL SALES

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