

# X-band Fixed Frequency Converters



INDOOR MODEL

## IN-SNEC®

ZODIAC DATA SYSTEMS offers fixed frequency converters operating in the standard X-band and presented in a indoor/outdoor mounting plug and play panel:

- Up Converter
- Down Converter

An ultra stable internal frequency reference is available but external reference can also be used (5 or 10 MHz automatic synchronization).



OUTDOOR MODEL

## For Remote Sensing Block Converters

### Applications

- Direct conversion from 8020 - 8420 MHz to 720 MHz  $\pm$  200 MHz
- Remote sensing : Direct interface with LNA and High Data Rate Receiver

### Main Features

- Monitoring and Control (gain, mute and alarms) through a dongle or a parallel or serial link.
- LNA power supply provided (converter generated +15 VDC / 300 mA limited) and alarm copy.
- Converter DC power supply could be provided on connector and through IF line (Outdoor version).

### Main Benefits

- **Outstanding Dynamic range**
  - ◆ Low Noise Factor
  - ◆ High Output Intermodulation Product
  - ◆ Low image rejection and spurious
  - ◆ Highly efficient frequency filtering
- **Ultra Low Phase Noise**
  - ◆ IESS -30 dB typical phase noise
  - ◆ 0.1° RMS typical 100 Hz - 1 MHz integrated phase noise
- **Easy to use, easy to install**
  - ◆ Single DC power supply (Outdoor version)
  - ◆ Single AC (100 - 240 V  $\pm$ 10%) power supply (Indoor version)
  - ◆ No M&C required
  - ◆ Internal Frequency Reference
- **Rugged packaging for outdoor**
  - ◆ IP65 compliant
  - ◆ Extended temperature range

### Options

- Frequency band extension: 8120 - 8520 MHz RF input/output
- External 5/10 MHz synchro through IF input/output
- M&C asymmetric TTL
- LNA DC power supply via RF connector

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AEROSAFETY & TECHNOLOGY  
Telemetry & Telecommunications

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## Technical specifications

### Frequency bandwidth

DC	RF input	8020 - 8420 MHz
	IF output	520 - 920 MHz
UC	IF input	520 - 920 MHz
	RF output	8020 - 8420 MHz

### IF characteristics

Impedance	50 $\Omega$
VSWR	< 1.5 guaranteed (1.3 typ) on 50 $\Omega$ load
Output power	@1dB compression point DC > +15 dBm UC > +7 dBm
OIP3	
DC	> +28 dBm
UC	> +20 dBm

### RF characteristics

External reference level	0 dBm $\pm$ 3 dB
Impedance	50 $\Omega$
Input Noise Figure	< 13 dB
VSWR	1.3 typ., 50 $\Omega$ load

### LO characteristics

Type	fixed frequency LO
Frequency 7500	MHz (option : 7600 MHz)
Internal Frequency reference	100 MHz, lockable on external 5/10 MHz reference
Internal Frequency reference stability	< 1 ppm ideal with IN-SNEC's HDR
Phase noise @ frequency offset from carrier, typical	
	-75 dBc/Hz @ 100 Hz
	-95 dBc/Hz @ 1 kHz
	-100 dBc/Hz @ 10 kHz
	-120 dBc/Hz @ 100 kHz
	-130 dBc/Hz @ f>1 MHz

### Interfaces INDOOR OUTDOOR

RF	SMA female	N female
IF	SMA female	N female
REF input	SMA female	N female
Test	SMA female	SMA female (option)
M&C SubD	female	MIL-C26482/ HE301B male 19 pins
LNA Power Supply and M&C		
	SubD female	MIL-C26482/ HE301B female 6 pins
M&C dongle	SubD male	MIL-C26482/ HE301B female 10 pins

# X-band Fixed Frequency Converters

## MODEL TABLE

### Indoor versions

‣ Down Converter	Ref. SM01011905B
‣ Up converter	Ref. SM01011906B

### Outdoor versions

‣ Down Converter	Ref. SM01003240A
‣ Up converter	Ref. SM01002003A

### Options

‣ Option A	8120 - 8520 MHz RF input/output bandwidth <i>Consult factory for other RF input/output frequency bandwidth</i>
‣ Option B	External 5/10 MHz synchro through IF input/output
‣ Option C	M&C asymmetric TTL
‣ Option D	LNA power supply via RF line

### Transfer characteristics

Frequency sense	No inversion
Gain value	DC 30 dB typ. $\pm$ 1 dB UC 25 dB typ.
Gain adjustment range	30 dB per 1 dB step (0.5 dB option available).
Gain flatness in the band	$\pm$ 1 dB max.
Gain stability with temperature	$\pm$ 1.5 dB max.
Group delay over $\pm$ 200 MHz bandwidth	< 3 ns max.
Image rejection	> 60 dBc
Output In band signal related spurious level	< -60 dBc @Ps= -5dBm
Output Signal independent spurious level	< -70 dBm
Mute efficiency	UC -80 dBc / -80 dBm

### Mechanical characteristics INDOOR

Weight	18 lb (8 kg)	7 lb (3 kg)
Dimensions	1Ux19"x16.14" rackable (1Ux482x410mm)	13.2"x8.3"x2.4" (335x210x60 mm)
Power consumption	< 60W	13W nominal
Power supply	100-240 $\pm$ 10%VAC ; 47-63 Hz	18 - 36 VDC
Operating temperature	0 to +50°C	-30 to +70°C
Storage temperature	-40 to +70°C	-40 to +85°C
Relative humidity	85% operating	IP65

### OUTDOOR

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