

Telecom: FSS-BSS Compact

Frequency Converters / Receivers

Beyond Gravity Space Compact Frequency Converters and Receivers for FSS/BSS payloads meet the highest performance and reliability requirements. Application of new technology enables small adaptable, low mass converters and efficient manufacturing.

Heritage

Beyond Gravity Space has been supplying high performance and highly reliable microwave communication equipment for telecom satellites for more than 35 years.

Delivery record for telecom payloads:

- > 1300 FSS/BSS Units delivered
- > 700 Ka-band Channels delivered
- > 10 000 years accumulated operational time in orbit

Key features

Compact Converters and Receivers for telecom payloads

Converters and receivers for all the common combinations of uplink and downlink frequencies are available:

- C-band to C-band
- C-band to Ku-band
- Ku-band to C-band
- Ku-band to Ku-band
- K-band to Ku-band

Interfaces

RF input:	SMA (Converter and C-band Receiver) Waveguide (WR75/WR62) (Ku / K Receiver)
RF output:	SMA
DC & TM/TC:	MDM-25

Design features

- Modular design, adaptable to different requirements on frequency plan, TM/TC-interfaces, bus voltages etc.
- Internal high-stability local oscillator utilizing advanced temperature stabilization.
- Internal LO and DC/DC-converter.
- Small size and low mass.
- Low power consumption.
- Receiver version with integrated LNA and LNA output port as option.

Modularity

Our modular design allows the equipment to be configured for different frequency plans (including cross links between C- and Ku-band) as well as for a variety of DC-power and TM/TC interfaces.

Compact design

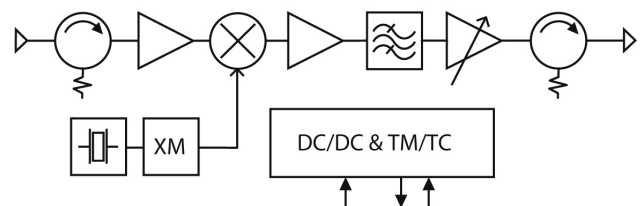
Extensive use of MMIC and miniaturization technologies (e.g hermetic LTCC hybrid technology) is employed to give small size and low mass. The high level of integration result in improved producibility and short lead times.

Production

- Well-known technologies and established processes
- Extensive clean-room facilities
- Highly automated testing and data collection
- Inhouse facilities for environmental testing

Converter block diagram

FSS/BSS Frequency Converter/Receiver



Technical data

Parameter	Typical Performance		
Frequency range Input	C-band 5.8-7.0 GHz	Ku-band 12.75-14.80 GHz	K-band 17.3-18.4 GHz
Frequency range Output	C-band 3.4-4.8 GHz	Ku-band 10.70-12.75 GHz 13.4-13.65 GHz	
Gain	20-35 dB (Converter version) 50-62 dB (Receiver version)		
Frequency stability	< 0.1 ppm over full temp range ± 2.5 ppm over full temp range and 15 years life time		
IP3	33 dBm		
Noise figure	14 dB (Converters) 1.4 dB (C-band Receivers) 1.7 dB (Ku-band Receivers) 2.1 dB (K-band Receiver)		
Phase noise	-120 dBc/Hz @ 10 kHz (LO = 3.3 GHz)		
Temperature range	-20°C to + 70°C		
Supply voltage	28-100 V		
Power consumption	10 W		
Mass	Converter: 0.7 kg		Receiver: 0.78 kg
Size	Converter: 140 x 50 x 92 mm		Receiver: 160 x 50 x 112 mm