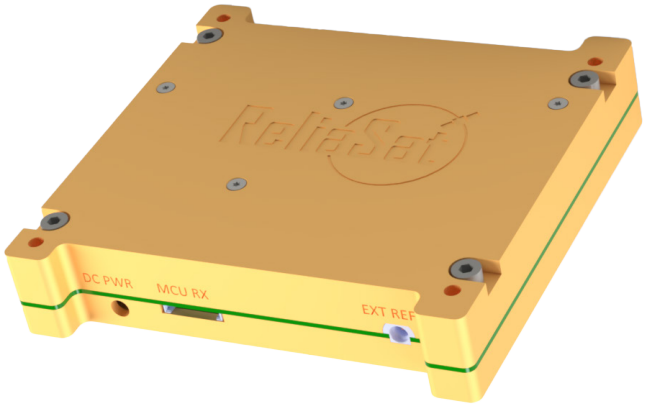
Receive Module
27-30 GHz

Product Datasheet

BDC400
Integrated Ka-Band Block Downconverter (BDC).

Overview
The BDC400 serves as a standalone transceiver module for Ka-band frequencies, emphasizing its capability to function efficiently in satellite communications within LEO. The receiver aspect is engineered for high sensitivity and precision.



Features
- RX Input Frequency: 27-30 GHz
- RX IF Frequency: 1-4 GHz
- RX Input Power Range: -120 to -30 dBm
- Conversion Gain: 30-35 dB
- Gain Flatness: ±1 dB over typical channel bandwidth from SDR
- Noise Figure: Less than 2.5 dB
- Image Rejection: 62 dB

Applications
- Satellite communications
- High speed data communications
- IOT
- Security
- 5G

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Specification Overview

Receiver

Parameter	Typical		Unit
Rx Input Frequency Range	27-30		GHz
RX Input Power Range	-120 to -30		dBm
IF Output Frequency Range	1-4		GHz
IF Output Power Range	-90 to 0		dBm
Reference Frequency	10 or 100 (on-board or external)		MHz
Reference Stability	±0.28 (-40 °C to +85 °C)		PPM
Conversion Gain	30-35		dB
Gain Flatness Across Full 1-4 GHz Band	±2.5		dB
Gain Flatness Over Typical Channel Bandwidth from SDR	±1		dB
Typical Phase Noise	10 MHz	100 MHz	dBc/Hz
1 kHz	-83	-89	dBc/Hz
10 kHz	-86	-90	dBc/Hz
100 kHz	-108	-95	dBc/Hz
1 MHz	-122	-119	dBc/Hz
Spurious (in band1-4 GHz)	-60		dBc
Image Rejection	62		dB
Noise Figure	<2.5		dB
Supply Voltage Range	7-42		Vdc
DC Power @ 12 VDC	<6		W
DC Current @ 12 VDC	0.5		A

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Mechanical and Environmental

Mechanical

Parameter	Typical	Unit
PCB Dimensions	96 x 91 x 1 (max)	mm
Mechanical Enclosure Required	Yes	
Mechanical Enclosure Dimensions	95.89 x 90.17 x 90.03	mm
Total Mass	<1	kg
Form Factor Requirement	Cube Sat	
Enclosure Material Requirement	>2.4 mm thick aluminium	mm
Enclosure Planting Requirement	Gold or Nickel	
RF Connector Types	SMPM edge mount	
DC Connector Types	DC flying leads	
IF Signal Connector Types	SMP edge mounts	
Current Sensor, Temperature Sensor, Frequency Synthesiser Lock & DC Power Enable Connections	6-pin Pico-Lock Connector	

Environmental

Parameter	Typical
Operating Temperature Range	-40 °C to +85 °C
Operating Environment	
Radiation Tolerance (kRad)	
Vibration Requirement	
Vacuum Requirement	
Compliance Standards	

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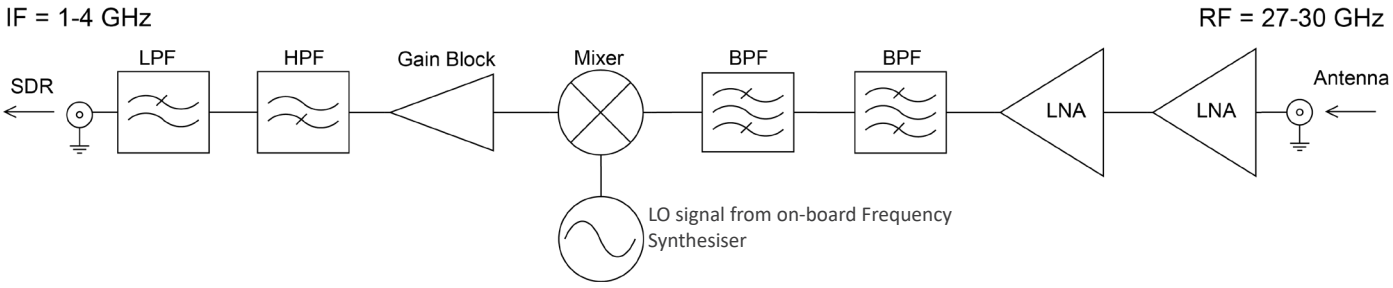
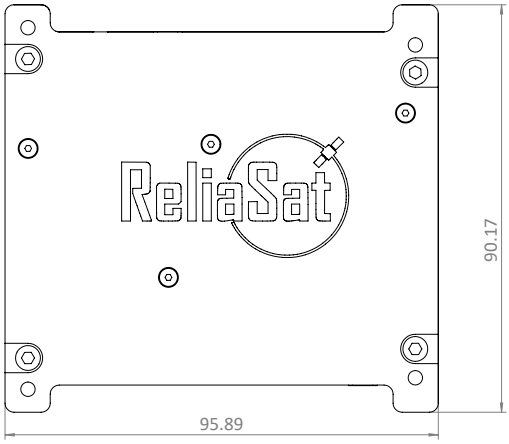
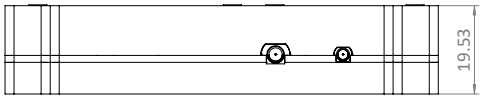
Simplified Schematic Diagram

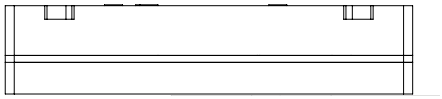
Downconverter Ka-band 27-30



Mechanical Enclosure Preliminary Dimensions







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