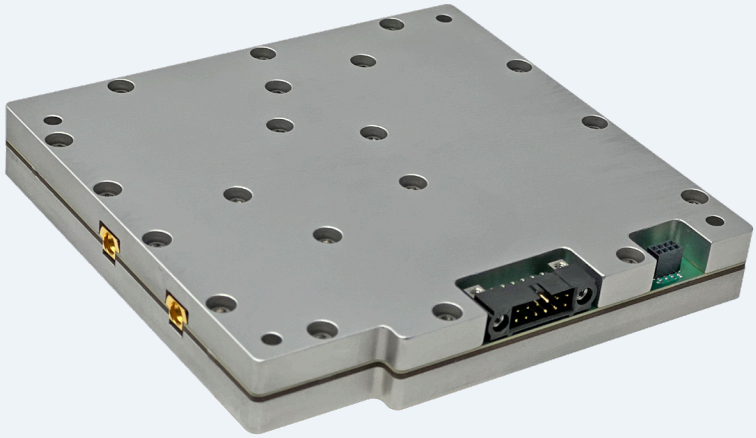

Innovation for Low Earth Orbit

The TSYS1055 is a radio / signal agnostic frequency extender card that enhances the capabilities of CubeSat / SmallSat radio systems.

The module allows radio architectures designed with a fixed tunable frequency range (such as the Analog Devices Radio-Verse technology) to extend the usable Rx frequency range up to 12 GHz.

The system was originally developed to extend a AD9361-based SIGINT receiver system's frequency range from 600 - 6000 MHz to 600 - 12000 MHz, eliminating the need for a radio re-design.

TSYS1055

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TSYS1055 FEATURES

- Product outline sized to fit standard CubeSat internal dimensions and mounting holes
- Selectable "Bypass" mode with no input conversion (600-6000 MHz)
- Selectable "Frequency Extension"mode to expand Rx frequencies from 6000-12000 MHz
- External 10 MHz reference input
- Rx Noise Figure, Phase Noise, and Spurious Performance suitable for LEO RF communications links
- Low DC current draw for power sensitive applications
- 1-wire serial temperature reporting

CHARACTERISTICS/SPECIFICATIONS

RF Performance Specifications

Parameter	Min.	Typ.	Max	Unit	Notes
Operating Frequency (Input)	7000	—	12000	MHz	
Operating Frequency (Output)	1000	—	6000	MHz	
Linear Conversion Gain Extender Mode	39	—	44	dB	
Linear Conversion Gain Bypass Mode	39	—	42	dB	
Maximum Input Power	—	—	-20	dBm	
Maximum Output Power	—	—	5	dBm	By design - to protect Rx path of radio
Gain Flatness (Peak to Peak)	—	1	—	dB	
Input Return Loss	—	—	-6	dB	
Noise Figure - Extender Mode	—	2.5 - 3.5	5	dB	
Noise Figure - Bypass Mode	—	2	3.5	dB	
Spurious	—	—	-50	dBm	
Out of Band Harmonics	—	—	60	dBc	

Electrical Specifications

Parameter	Min.	Typ.	Max	Unit	Notes
Supply Voltage Range	—	12	—	VDC	
Quiescent Current Draw (Extender Mode)	—	0.33	—	A	
Quiescent Current Draw (Bypass Mode)	—	0.19	—	A	

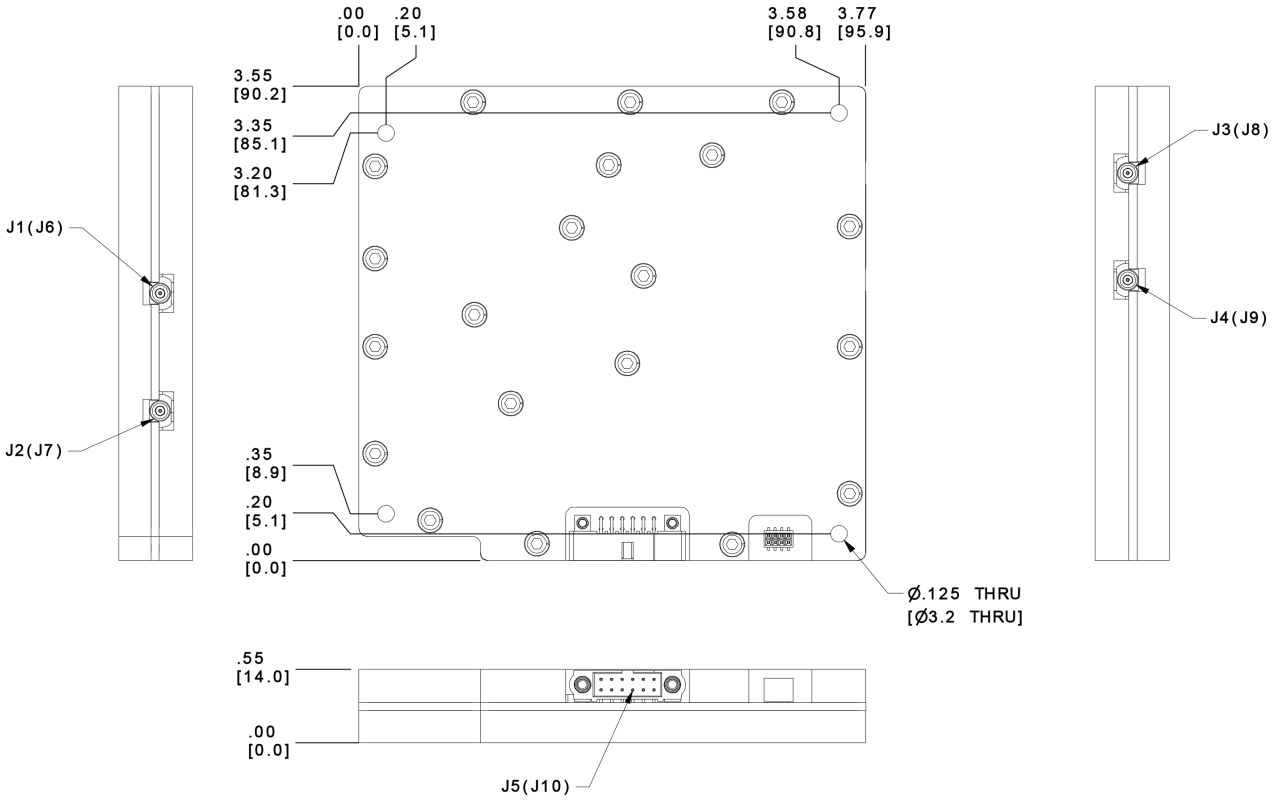
Environmental Specifications

Parameter	Min.	Typ.	Max	Unit	Notes
Operating Temperature	-40	—	+85	°C	Amplifier Temperature at TX
PA Shut-off Temperature	—	+85	+90	°C	
Cooling	Baseplate Conduction			—	

Mechanical Specifications

Parameter	Value	Unit	Notes
Dimensions	3.77 x 3.55 x 0.55 (96.01 x 90.17 x 13.97)	in (mm)	L x W x H
RF Connectors - Antenna	SMP-M	Part Number	Mating Connector Type: SMP-F
DC/Control Connector	Harwin M80-5411242	Part Number	Mating Connector PN: M80-4611205
Mounting	#M2.5 Through Holes	—	See Mechanical Drawing Below
Weight	7.1 (201.282)	oz (g)	

MECHANICAL DRAWING



DC/CONTROL CONNECTORS

DC Connector
(Harwin PN: M80-5411242)

Pin	Description	Type	I/O	Notes
1	+VDC	Power	Input	Supply Voltage
2	+VDC	Power	input	Supply Voltage
3	Enable	Digital	Input	On/Off Control
4	TEMP GND	Power	Input	Ground
5	TEMP V+	Power	Input	Ground
6	TEMP Data	Power	Input	Ground
7	GND	Power	Input	Ground
8	GND	Power	Input	Ground
9	SGND	Signal	—	Signal Ground
10	ANT Select	Digital	Input	Low = J1 (J6) antenna port (default), High = J2 (J7) antenna port
11	LO Select	Digital	Input	Low = LO mode 1 (default), High = LO mode 2
12	Mode Select	Digital	Input	Low = Down-converter disabled, RF pass though (default), High = Down-converter enabled and switched in with selected LO

CABLE OPTIONS

For available cable options, please contact us for inquiries and pricing.