

ThinkRF D4000

RF Downconverter

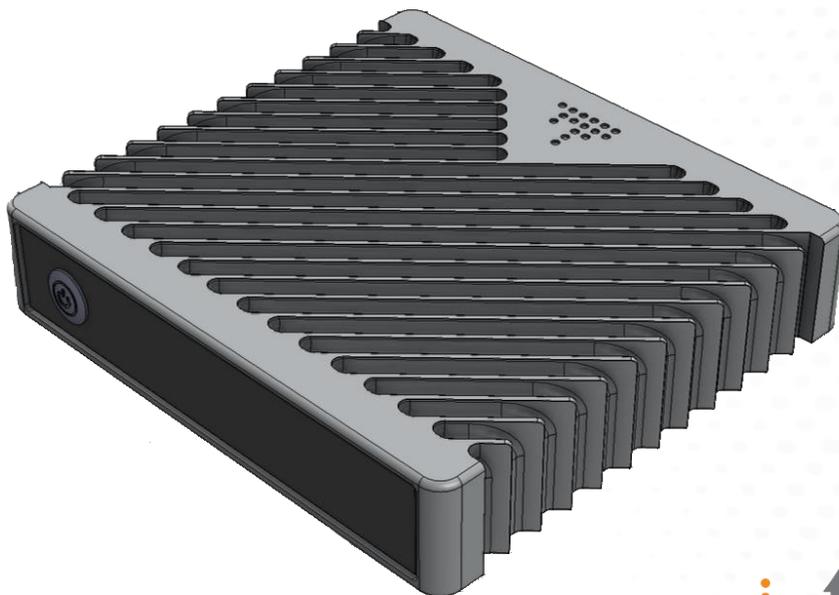
Extend your existing test equipment to 24-40 GHz

Features and Benefits

- Compact, low-power, portable, and cost-effective tuner
- Retain and upgrade your existing field, lab, and manufacturing test equipment
- 500 MHz real-time bandwidth with 100 kHz tuning resolution
- Standard SCPI control over Ethernet

Applications

- Spectrum monitoring & 5G analysis
- Signal analysis
- Electronic warfare
- Drive testing
- Transmission test
- Customer premise equipment test
- Interference testing



Portable, High Performance, 5G Ready

Today's high-band signal standards are using higher frequencies and wider bandwidths than ever before. The ThinkRF D4000 RF Downconverter extends existing RF test equipment to 40 GHz to meet these new wireless standards. This portable, high performance, and plug-and-play platform based on ThinkRF tuner technology enables purpose-built, 5G-ready solutions and is the industry's first 40 GHz RF Downconverter. Mobile operators and system integrators can retain existing field, lab, and manufacturing test equipment, extend the life of their investment, and reduce time to market and costs when measuring 5G signals in a variety of deployment scenarios and applications.

24-40 GHz RF In

1.536 GHz to the
Spectrum
Analyzer

100 kHz tuning
resolution

20 W @ 12V input
power consumption

Optional 10 MHz
clock synchronization

Control from the
Spectrum Analyzer or
from a computer



Your current field, lab, or manufacturing
test equipment



Features and Capabilities

Portable Frequency Downconversion

Measuring 7.6" x 7.6" x 1.6" and weighing less than 2.2lbs, the D4000 RF Downconverter features a compact design that makes it portable, versatile, and easy to use for 5G analysis in any deployment scenario without adding significant size, weight, and power (SWaP) requirements.



High Performance Wideband Analysis for 5G

Today's 5G standards are using increasingly higher frequencies and wider bandwidths. The D4000 RF Downconverter features RF input of 24-40 GHz and 500 MHz real-time bandwidth (RTBW) with 100 kHz tuning resolution for high performance analysis of modern waveforms. 10 MHz input and output clock references allow for multi-unit synchronization so users can run multiple units in parallel.



Plug-and-Play With Any Third-Party Hardware

With built-in preselect filtering, a single IF output at 1.536 GHz, and standard SCPI control over Ethernet, the D4000 RF Downconverter provides plug-and-play performance and seamlessly integrates with any vendor's RF hardware. Retain and upgrade your existing field, lab, and manufacturing test equipment and extend the life of your investment in hardware.





RF Specifications

Frequency		
Frequency Range		
RF In	24 to 40 GHz	
IF Out	1.536 GHz	
Real-Time Bandwidth (RTBW)		
	500 MHz	
Tuning Resolution		
	100 kHz	
Amplitude Accuracy @ IF Output		
	± 1.2 dB	
Amplitude Flatness		
	TBD	
Max. Safe RF Input Level		
	+ 10 dBm, 10Vdc	
Max. RF Input Operating Level		
	+10 dBm	
Noise Figure		
Normal Mode	34 dB (estimate)	
Pre-Amp On	24 dB (estimate)	
Bypass Mode	20 dB (estimate)	
Phase Noise (@ 35 GHz)		
1 kHz	-83 dBc/Hz (estimate)	
10 kHz	-93 dBc/Hz (estimate)	
100 kHz	-96 dBc/Hz (estimate)	
1MHz	-99 dBc/Hz (estimate)	
Third Order Intercept (TOI)		
	+10 dBm	@Pre-amp OFF
	-10 dBm	@Pre-amp ON
Image Rejection		
	60 dBc	@-25 dBm RF input
Spurious performance		
Non-Input related (Residual)	-90 dBm max.	
Spurious Free Dynamic Range (SFDR)	70 dBc min	@ - 30 dBm RF input
10 MHz Reference		
Output Level	+5 dBm min.	
Initial Tolerance	± 1.5 ppm @ 25°C	
Stability over temp	± 0.2 ppm (0 °C to 50 °C)	
Aging	± 0.5ppm/year	





General Specifications

Connectors

RF In	2.92mm female 50 Ω
IF Out	SMA female, 50 Ω
10 MHz Reference In and Out	SMA female, 50 Ω
10/100/1000 Ethernet	RJ45
Power	LEMO connector, 4 pin
Aux. GPIO	D-type, Female 15 pin

Status Indicators

PLL Lock / 10 MHz reference clock status
 Ethernet Link and Activity Status
 CPU and Power Status

Power

Physical Power Supply	Use AC Wall Power Adaptor provided	Input AC 120V-240V/+12V Output
Power Consumption	20 W @ 12V input	

Physical

Operating Temperature Range	-10°C to +55°C	
Storage Temperature Range	-51°C to +71°C	
Size (W x L x H)	188 x 194 x 40 mm (7.4 x 7.6 x 1.6 inches)	Approximately (including connectors)
Weight	<1.5 kg (3.3 lbs.)	Approximately

Regulatory Compliance

RoHS Compliance	RoHS/RoHS 2 (European Union)	
REACH	Per Regulation (EC) No 1907/2006 of the European Parliament	
Marks	CE, CSA, FCC	
EMC Directive	EN 61326-1:2013, FCC PT15 & IEC-003	Electromagnetic Compatibility
Low Voltage Directive	IEC/EN 61010-1, CSA/UL 61010-1	Safety

Software Specifications

APIs and Protocols

Standard SCPI	Control over Ethernet
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Ordering Information

Base Units

Base Units	Part Number	Description
24 to 40 GHz RF Downconverter	D4000	24 – 40 GHz RF Downconverter

Intellectual Property - Patents

The ThinkRF D4000 product line are protected by patents, (US8,675,781, US9,197,260, US9,350,404, US8,886,794) in the United States. This information is provided to satisfy the patent marking provisions including, but not limited to, the patent marking provisions of the America Invents Act (AIA) and is intended to serve as notice under 35 U.S.C. § 287(a), as amended by Section 16 of the AIA. Additional patents may be pending in the United States and/or elsewhere.

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