NDR505

Compact & Rugged RF Distribution for High Performance 4-Channel 18 GHz SDRs

The NDR505 is a compact signal conditioning unit designed to switch different antenna arrays to the inputs of a 4 channel 18 GHz phase coherent software defined radio (SDR) or tuner for applications such as signal identification and direction finding. It is designed to accept inputs with the following characteristics:

- Two high-band inputs covering the range 4-18.5 GHz. Signals undergo high pass filtering and variable gain.
- Two low-band inputs covering the range 0.475 to 4.25 GHz. Signals undergo band pass filtering and variable gain.
- One 0.4 to 18.5 GHz 'all-band' path which applies variable gain but no filtering. This path could accept the output of a higher frequency down converter, for example.
- One test input which accepts signals in the range 0.4 to 18.5 GHz and either distributes it through the different signal paths, or outputs the signal directly, to enable path-matching calibrations to be performed by the external system.

The unit is compact, rugged, and exhibits extremely clean RF characteristics, making it an ideal partner to Epiq's highest performing SDRs. It also allows for flexible deployment with two gain settings to compensate for different RF cable lengths.

Key Features

- Can take multiple 4-element arrays and switch them to the inputs of a 4 channel, phase-matched SDR or tuner:
  - 2x High band paths
  - 2x Low band paths
  - 1x All band path
- Test signal input for calibration
- Signal conditioning
- Two gain settings to compensate for different cable lengths
- Rugged, designed to fly

Specifications at a Glance

Category	Output	F_{Min}	F_{Max}	LO Tuning	Timing Inputs	CPU Enabled	GPU Enabled
RF Dist & Cal	Analog	475 MHz	18.5 GHz	NA	None	No	No

Max Rx Channels	Max Tx Channels	IBW_{Max}	$SFDR_{Typ.}$	Weight	Typ. Power Consumption	Interfaces	ADC bits/ DAC bits
20 down to 4	0	-	-	2.85 lb. 1.3 kg	50 W	SMA & Custom	NA

Specifications

Environmental Specifications	
Temperature (operating)	-40 to +85 °C
Temperature (Storage)	-55 to +85 °C
Size	6.375 x 4.25 x 1.22 inches 162 x 108 x 31 mm
Weight	2.85 lb./ 1.3 kg
Supply Voltage	+12 V
Power Consumption (Max)	50 W
Shock & Vibration	Rugged, suitable for airborne
Altitude	35,000 feet
Digital Specifications	
Digital Interface	D38999/21NB35PA, 13 Pins
Control Voltages	LVTTL
Other	
Export Classification	5A991.b
CE-Marked	No

RF Specifications	
All	
Connector Types	SMA
Phase Coherence	Maintained between groups of 4 channels
Switching Speed	<150 µs of receiving command

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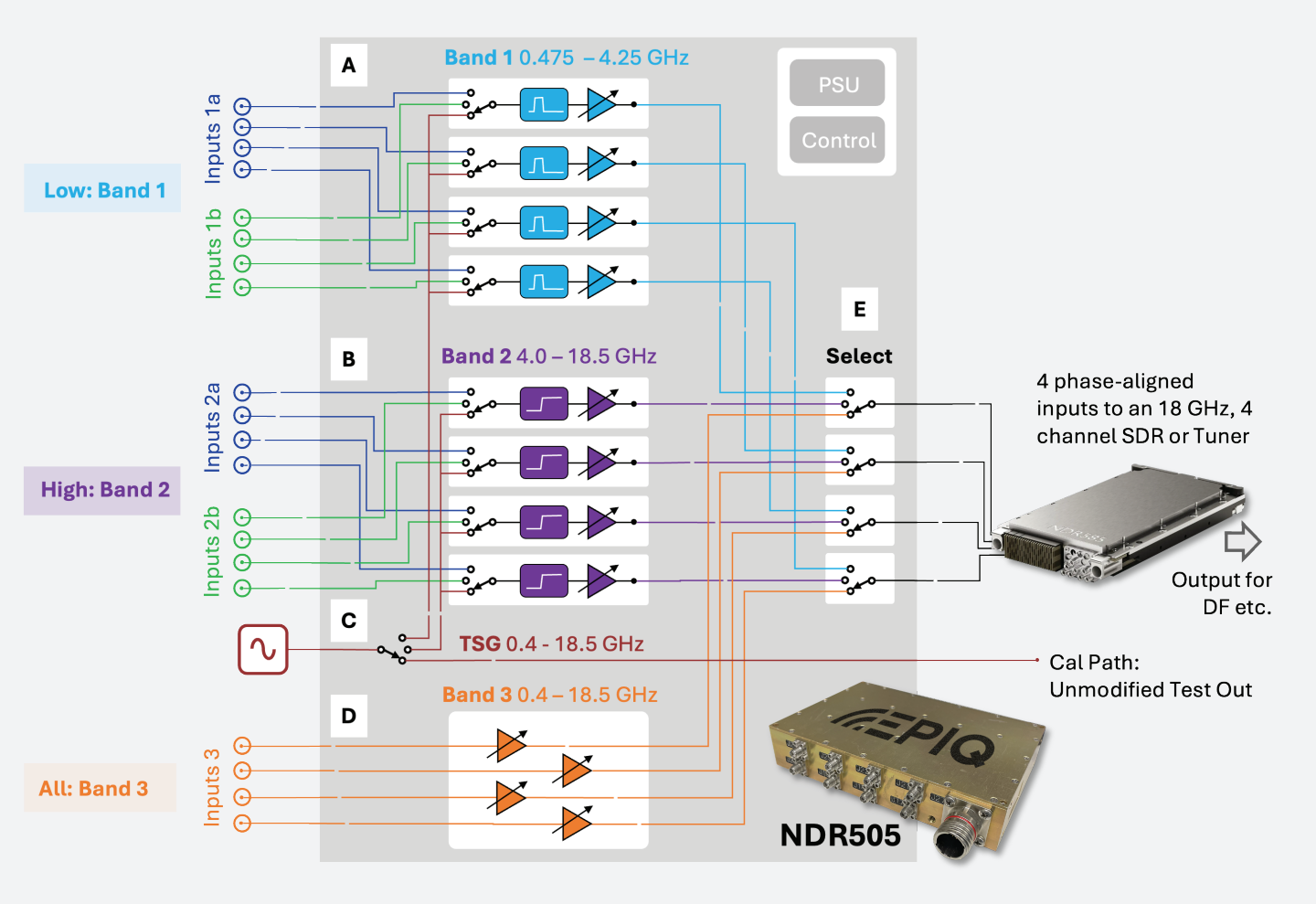
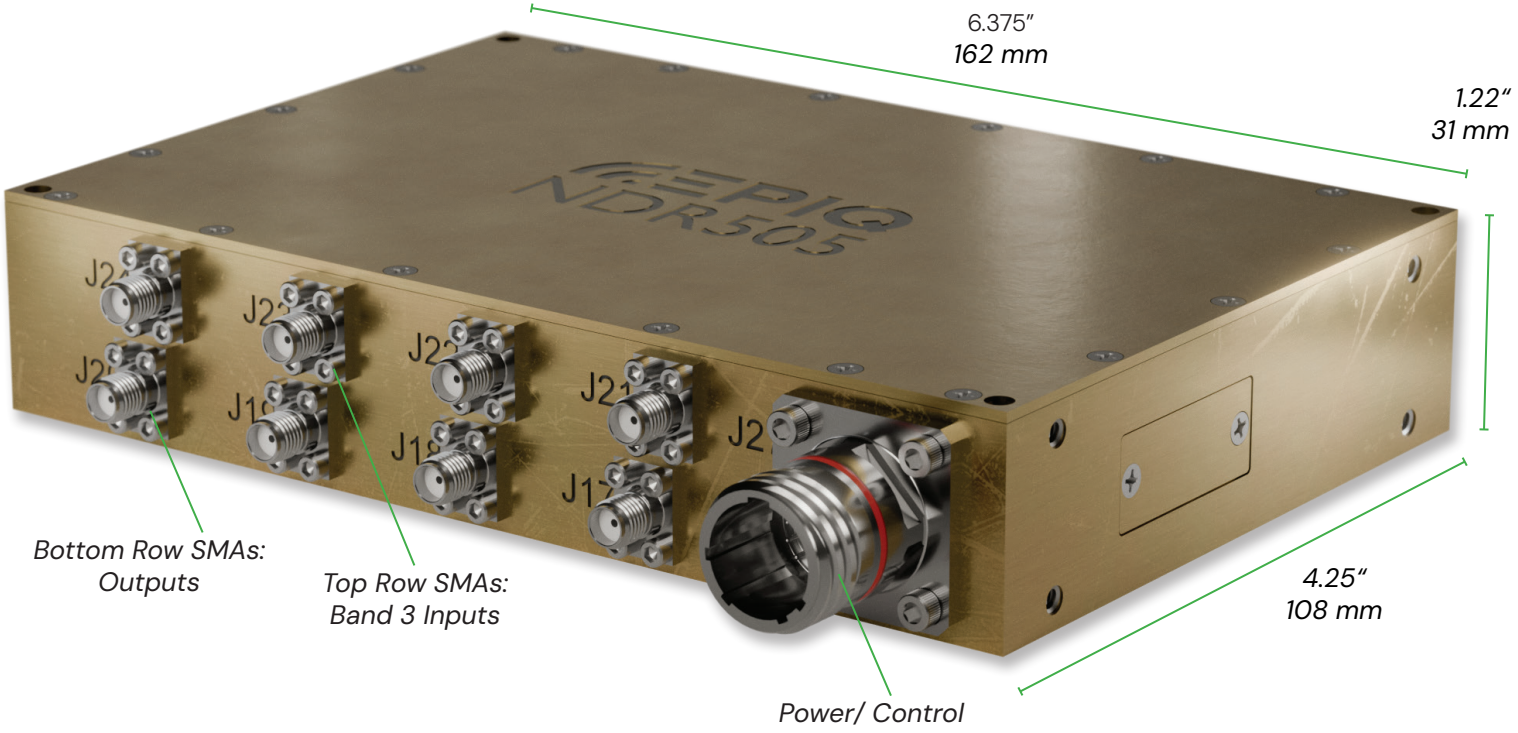
Low Band 1 Inputs	
Inputs	2 sets of 4, switched and conditioned
Frequency Range	475 MHz to 4.25 GHz
Low Gain (typ.)	27 dB mid-band
High Gain (typ.)	35 dB mid-band
Noise Figure	6 dB nominal
IIP3	0 dBm nominal
High Band 2 Inputs	
Inputs	2 sets of 4, switched and conditioned
Frequency Range	4 to 18.5 GHz
Low Gain (typ.)	26 dB mid-band
High Gain (typ.)	40 dB mid-band
Noise Figure	12 dB nominal
IIP3	-20 dBm nominal
All Band 3 Inputs	
Inputs	1 set of 4, switched and conditioned
Frequency Range	0.4 to 18.5 GHz
Low Gain (typ.)	1 dB mid-band
High Gain (typ.)	15 dB mid-band
Test Signal Inputs	
Frequency Range	400 MHz to 18.5 GHz
Insertion Loss Via Signal Conditioning Paths (max)	9 dB
Insertion Loss, Through Path (max)	3 dB
Outputs	
Signal Paths	1 set of 4 output SMAs
Test Path	1
Clocking	
Reference	None

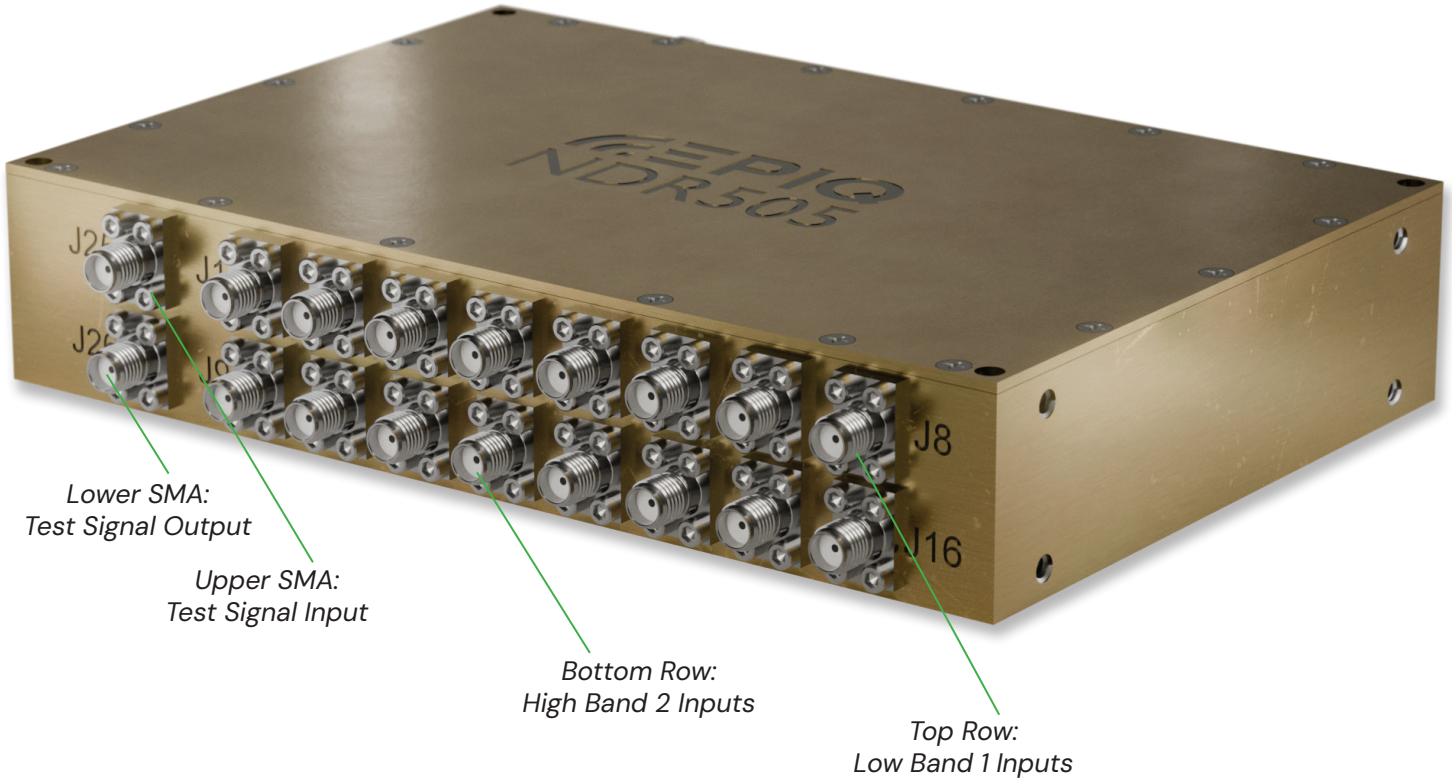
Data subject to change without notice.

NDR505 Block Diagram



Physical Views





Companion Products

NDR504 - Add 40 GHz to Your System

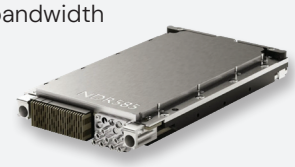
The NDR504 4-channel down converter module was designed to pair with phase-coherent platforms. The converter is crazy-small, rugged, designed to fly and ideal for direction-finding and geolocation applications. Outputs below 18 GHz.

Example Multi-Channel Channel SDRs and Tuners from Epiq

Below are some examples of companion SDRS and tuners from Epiq; the full range of our products is available in the comparison table here.

4 Channel, 18 GHz

NDR585 High Performance 3U VPX Tuner
- 20 MHz to 18 GHz
- 500 MHz instantaneous bandwidth
- 4 channels receive
- Analog output



Matchstiq X40 Low-SWaP SDR Platform
- 1 MHz to 18 GHz
- 450 MHz instantaneous bandwidth
- 4 channels receive, 1 transmit
- CPU/ GPU-enabled

NDR551 High Performance Rackmount SDR
- 20 MHz to 18 GHz
- 80 MHz instantaneous bandwidth
- 4 channels receive
- VITA 49 streaming output

VPX400/410 Combination Tuner & SDR SOSA/CMOSS VPX Cards
- 1 MHz to 18 GHz
- 450 MHz instantaneous bandwidth
- 4 channels receive, 1 transmit

8 Channel, 18 GHz

NDR888 High Performance Rackmount Tuner
- 20 MHz to 18 GHz
- 500 MHz instantaneous bandwidth
- 8 channels receive (4 optional)
- Analog output

The Epiq Family of Products

Specifications subject to change without notice.

Epiq Solutions exports its products strictly in accordance with all US Export Control laws and regulations which shall apply to any purchase or order.

ABOUT EPIQ

Epiq Solutions develops high performance tools for engineering teams and government-focused organizations requiring situational awareness and detailed insight into their RF environments in order to identify and act against wireless threats.

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