Bias-Adjustable Range Converter (BARC)

Summary: The Bias-Adjustable Range Converter (BARC) is an easy-to-use analog electronics module for interfacing between different electronic components. The BARC allows users to scale voltage ranges, set hard output limits, add variable DC offsets, and convert between bipolar and unipolar signals.

The BARC includes a convenient visual LED indicator showing the output voltage relative to the user-selected voltage limits. If the signal exceeds the limits, the red clipping indicators will illuminate, and the output will be clamped by the internal circuitry. A variable gain can be applied to scale the input while an adjustable DC offset can be optionally summed with the input to produce a scaled and shifted output signal. When converting from unipolar to bipolar signals, a selectable input offset can be applied to recenter the signal around 0 V, maximizing the available gain.

High Speed

Low Noise

Adjustable

Compact

Easy-to-Use

Example Use Cases:

- Convert between electronic signals with different voltage ranges (e.g. 0-5 V into -10 to 10 V)
- Adjust signal amplitude to maximize dynamic range of an ADC
- Add an adjustable DC offset to a ramp signal (e.g. for locking an optical cavity)
- Controlling a VCO for an acousto-optic modulator

Specification	BARC
Bandwidth (@30 deg phase rolloff)	3 MHz
I/O Connector Type	BNC
Power Supply	+15 V DC
Voltage Gain	0-20x
Input Impedance	50/1M ohm
Min/Max Output Voltage	-10/10 V
Dimensions (excluding connectors)	130x90x43 mm
Typical electrical power draw	0.5 Watts (300 mA @15 V)

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