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HIGH EXTINCTION RATIO MINI MODULATOR BIAS CONTROLLER (BOARD LEVEL)

PRELIMINARY

Features

- PCB level
- User selectable locking slope (QUAD+ ↔ QUAD-, NULL ↔ PEAK)
- User selectable locking mode (Quad+/Quad- ↔ Null/Peak)
- Two operation modes: calibration mode and locking mode
- Calibration off mode for quick system setup in locking mode
- Access for external photo-detector
- High extinction ratio

Product Description

The mini Modulator Bias Controller is a full-function miniature OEM version of the Modulator Bias Controller (MBC) family. It is designed to be used in analog systems and/or applications. The Modulator Bias Controller can be used to lock the working point of the modulator at the positive slope quadrature (quad+), negative slope quadrature (quad-), null or peak points of its characteristic curve. This board features an extremely small pilot tone which allows for an exceptionally high extinction ratio of > 45 dB, depending on the limits of the modulator. The locking modes and slopes are selectable by changing the jumper positions on the PCB. A pig-tailed photo-detector is included. An external photo-detector may also be used.

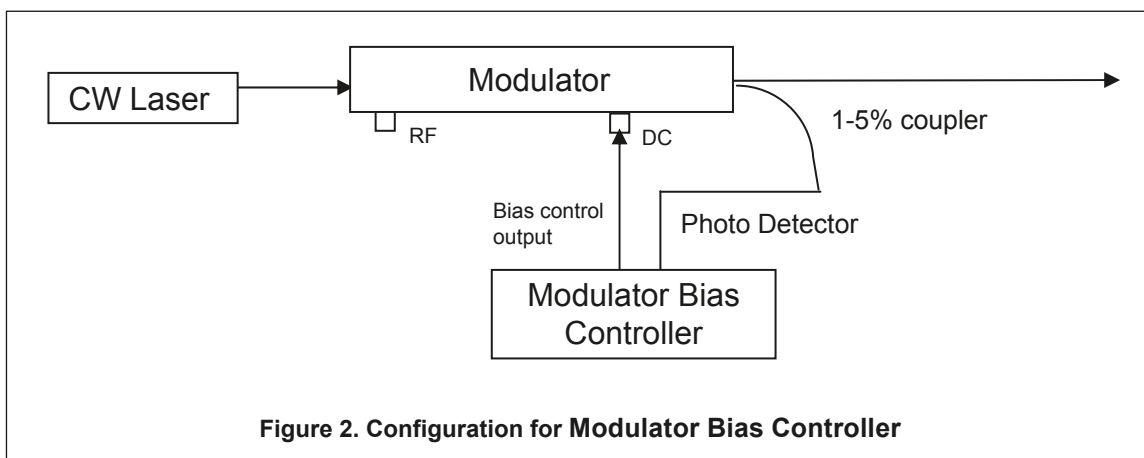
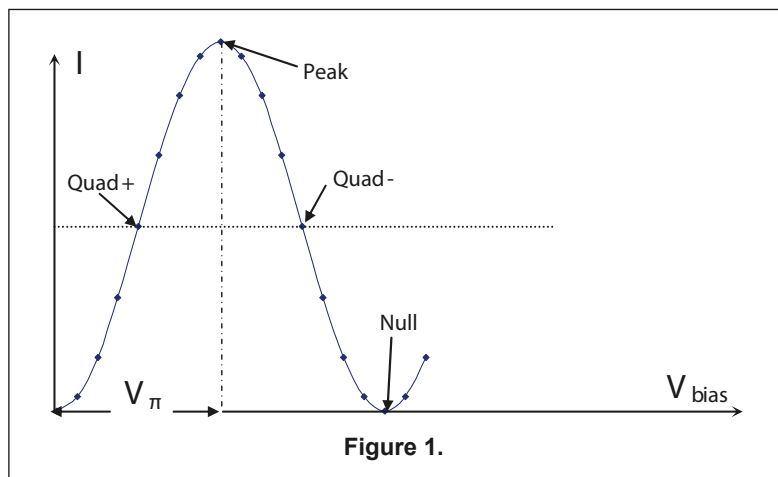
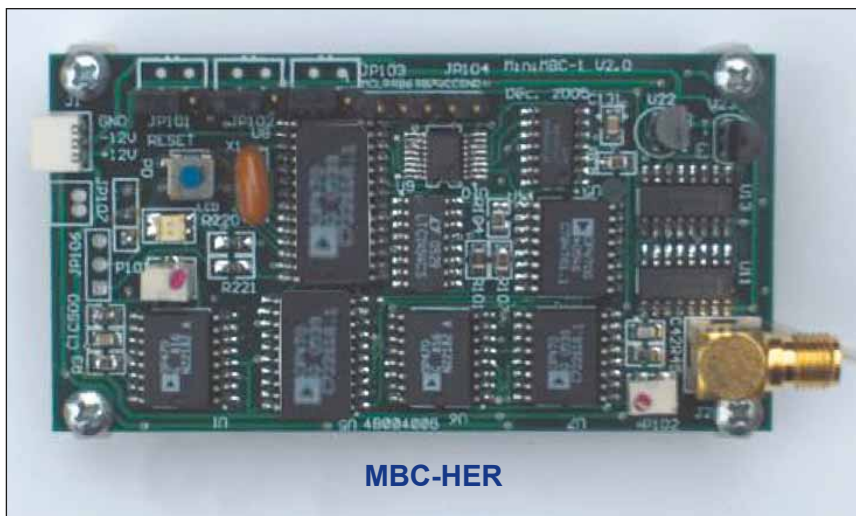


Figure 2. Configuration for Modulator Bias Controller

Specifications

| Parameters | Min. | Typ. | Max. |
|--|------------------------------|------|-------|
| Part Number | MBC-HER | | |
| Optical Performance | | | |
| Detector Input Power ¹ (dBm) | Null mode | -20 | -10 |
| | Peak, Quad mode | -30 | -10 |
| Optical Wavelength (nm) | 1000–1650 | | |
| Electrical Performance | | | |
| Bias Voltage (V) | -13.5 | | 13.5 |
| Null Mode Extinction Ratio ² (dB) | | 30 | 53 |
| Locking Slope | Positive or Negative | | |
| Locking Mode | Quad+ (Quad-) or Null (Peak) | | |
| Pilot Tone | | | |
| Modulation Depth (QUAD) ³ (%) | | 1 | 2 |
| Pilot Tone Vpp (Null) (mV) | | 6 | |
| Pilot Tone Frequency (QUAD) (Hz) | | 1000 | |
| Pilot Tone Frequency (NULL) (Hz) | | 2000 | |
| Power Supplies | | | |
| Positive Power Voltage (V) | 14.5 | 15 | 15.5 |
| Negative Power Voltage (V) | -14.5 | -15 | -15.5 |
| Positive Power Current (mA) | | 60 | |
| Negative Power Current (mA) | | 40 | |
| General | | | |
| Operating Temperature (°C) | 0–70 | | |
| Storage Temperature (°C) | -40–85 | | |
| Dimension (inch) | 1.6 x 3.05 x 0.65 | | |
| Weight (lb) | 0.2 | | |

¹ For a given input, detection power refers to the coupled optical power to the photodiode of MBC when the modulator output is at its minimum attenuation (The detection power does not describe the detected power at locking status).

² In this case, the modulator output power was greater than 0 dBm. 1% coupler was used. The extinction ratio will be close to, but not exceed, the extinction ratio of the modulator.

³ Optical Modulation Index = amplitude of modulation/ V_{π} .

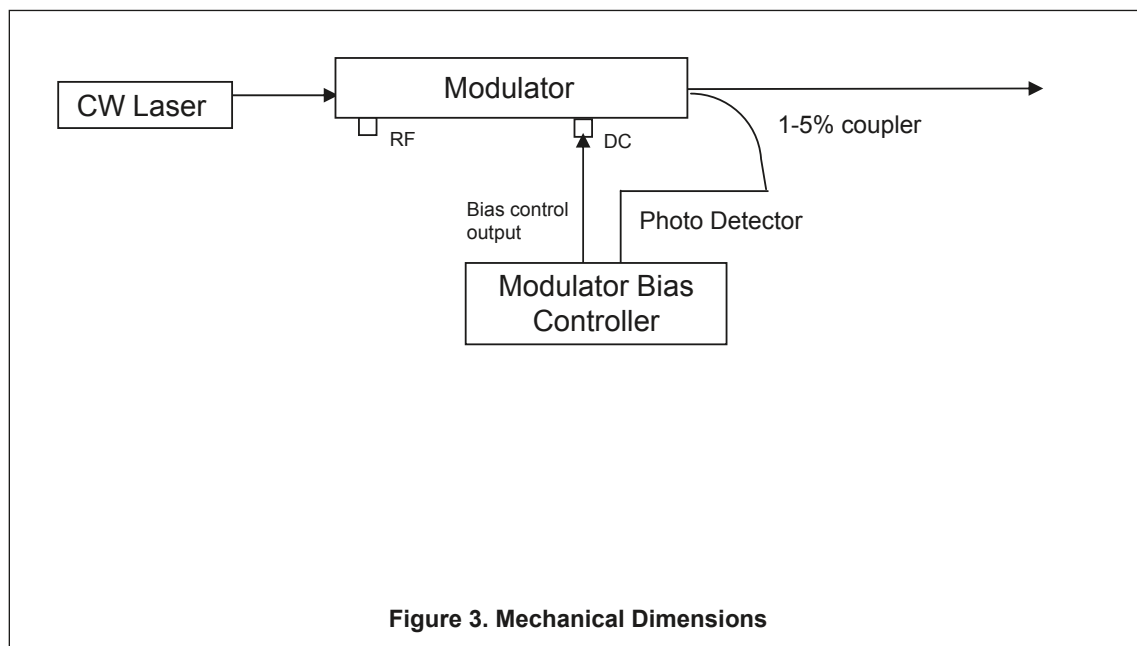


Figure 3. Mechanical Dimensions