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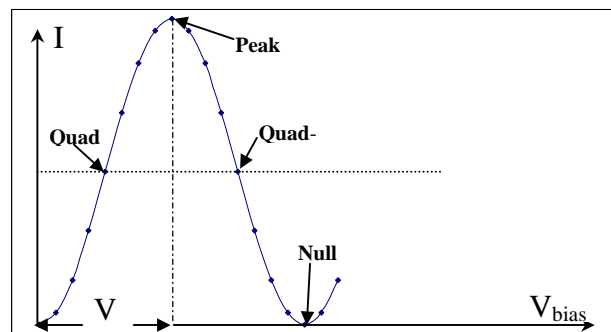
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Specification for Dual-Parallel-MZ Modulator Bias Controller (0053) for DQPSK Application

(Last updated on 1/7/2010, Rev.1.0)

Dual-Parallel-MZ-Modulator Bias Controller model 0053 is a device specially designed to control the bias positions for dual-parallel-modulator used for DQPSK applications. DQPSK (Differential quadrature phase-shift key) modulator can improve optical transmission properties such as total reach, dispersion tolerance, or spectral efficiency. Since the Dual Parallel modulator is a combination of phase modulator and Mach-Zehnder modulators, there are three bias points requiring controllers. YY Labs' Dual-Parallel-MZ modulator bias controller has been developed especially for this kind of device.

YY Labs' Dual-Parallel-MZ modulator bias controller (DPMZ MBC 0053) is a full-function miniature OEM version of the Modulator Bias Controller (MBC) family. It simultaneously sets the first and second modulators at Null points and the third modulator at quad point. The slope of each point is selectable from the board.



Features of Dual-Parallel-MZ-MBC (DP MBC 0052B)

- Three modulators can be controlled with one controller (1st, 2nd modulator at Null/peak mode, the 3rd at Quad);
- User selectable locking slope (NULL \leftrightarrow PEAK);
- Two photodiodes are integrated in the controller with an option to use the external PD integrated in the modulator to replace one of the photodiode.
- Two operation modes: calibration mode and locking mode;
- Both differential bias outputs and single side bias outputs are provided.
- Calibration-off mode for quick system setup in locking mode;
- Low profile (3.55" * 1.85" * 0.65").

1. Dual-Parallel-MZ-MBC Specifications

PARAMETERS	MIN	TYP	MAX	UNITS
Optical Performance				
Detector Input Power ¹	-30		-10	dBm
Optical wavelength	1000		1650	nm
Electrical Performance				
Bias voltage	-13		13	V
Null Mode Extinction Ratio ²		25	40	dB
Locking Slope	Positive or Negative			
Locking Mode	Two Null (Peak) positions, one Quad+ or (Quad-) position			
Pilot tone				
Modulation Depth (QUAD) ³		2		%
Modulation Depth (Null)			0.1	%
Pilot Tone Frequency		1K		Hz
Power Supplies				
Positive Power Voltage	14.5	15	15.5	V(DC)
Negative Power Voltage	-15.5	-15	-14.5	V(DC)
Positive Power Current		100		mA(DC)
Negative Power Current		60		mA(DC)
General				
Operating temperature	0		70	Degree C
Storage Temperature	-40		+85	Degree C
Dimension	3.55x1.85x0.65 inch			
Weight	0.2 lb			

1. For a given input, detection power refers to the coupled optical power to the photodiode of DPMZ-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 distinction ratio will be close but not exceed the distinction ratio of the modulator.
3. Optical Modulation Index = amplitude of modulation/ V_{π} .

Major Application

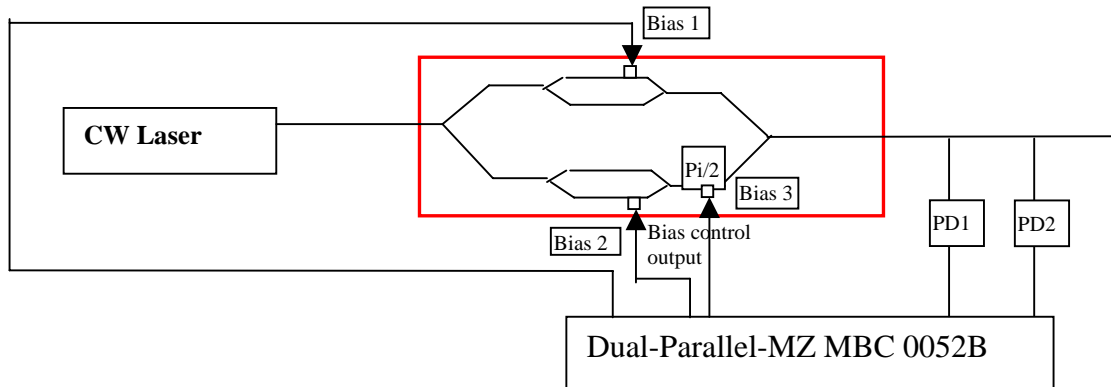


Figure 2. Configuration of DPMZ modulator bias controller for DQPSK application