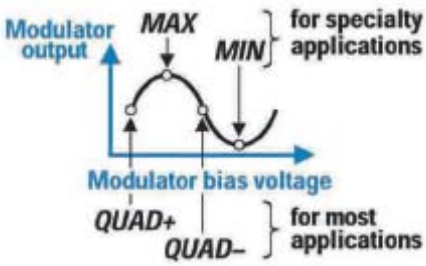
PHOTONICSystems, Inc.®
WE LIGHT THE WAY®

HIGH PERFORMANCE FIBER OPTICS

PSI-0303
DIGITAL MODULATOR BIAS CONTROLLER

PRODUCT DESCRIPTION

The PSI—0303 digital modulator bias controller is a full featured laboratory instrument designed for precise control of Mach-Zehnder interferometer fiber optic modulators. Designed to operate in the presence of a digital modulation signal, these controllers accurately prevent bias point drift from any of four preset or one user set modulator transfer function points. Through use of a proprietary control algorithm, the controller maintains bias control without the use of a dither signal.



Measurements are simplified through use of the PSI-0303 in your link or component evaluation set-up. With an internal optical coupler and photo-detector an internal feedback path automatically establishes lock on the desired bias point.

Photonic Systems, Inc. (PSI) is a recognized expert in the design, analysis and implementation of high performance fiber optic systems.

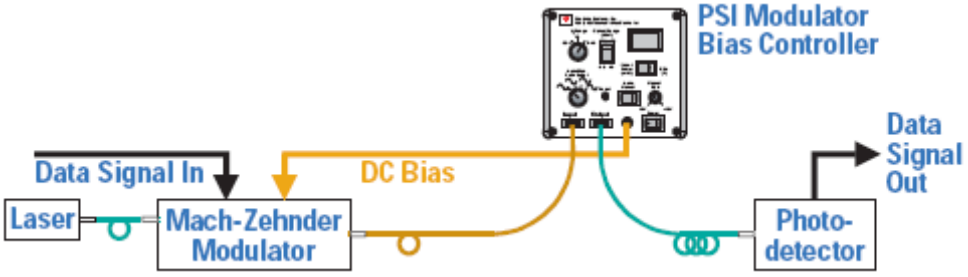
With decades of collective experience, the PSI team offers comprehensive fiber optic engineering solutions to government, military and commercial customers.

Automatic control modes allow the operator to select Quad+, MAX, Quad– or MIN bias points. A 10-turn potentiometer provides manual control for fine tuning to a specific bias point. An LCD display shows the bias voltage and optical output power. All features allow for simplified characterization of a modulator's Vπ, optical insertion loss, optical extinction ratio and rate of bias point drift.

BENEFITS

- ✓ **COMPLETE-** INCLUDES OPTICAL COUPLER AND PHOTO-DETECTOR
- ✓ **ACCURATE-** MAINTAINS DRIFT TO WITHIN 2° AT QUAD POINTS; +/- 0.2° AT MAX AND MIN POINTS
- ✓ **EASY TO USE—** FRONT PANEL OPTICAL AND BIAS CONNECTIONS, LCD READOUT OF BIAS VOLTAGE AND OPTICAL POWER

Beyond standard specifications, PSI can modify the PSI-0303 to meet the exact requirements of your application. Please contact PSI for information on custom requirements.



PHOTONICSystems, Inc.®
WE LIGHT THE WAY®

900 Middlesex Turnpike, Bldg 5
Billerica, MA 01821

Phone: 978-670-4990
Fax: 978-670-2510
E-mail: info@photonicsinc.com
www.photonicsinc.com

Applications

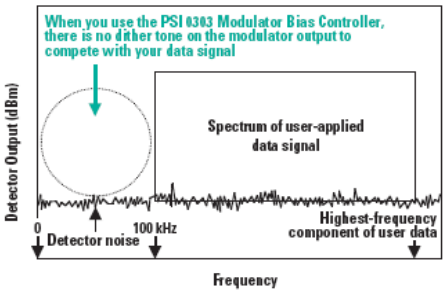
- **Modulator design**
- **Fiber optic component evaluation**
- **Spectroscopy systems**
- **Data communications systems**

PHOTONICSystems, Inc.®
WE LIGHT THE WAY®

PSI-0303 Digital Modulator Bias Controller

Specifications

Parameter		Typical Value	Units
Fiber Type		SMF-28	—
Wavelength		1300-1550	nm
Optical Insertion Loss		0.8	dB
Input Optical Power	Quad + or - Max or Min	0 to –15 0 to –10	dBm
Output DC Bias Voltage		+/-15	V
DC Bias Port Impedance		<1	Ω
Modulator Vπ standard Range; unit may be factory set for other values as needed		2.4– 7.6	V
Dither Frequency		n/a	
Bias Point Error *Quad+ or Quad– point* *Max or Min point*		 +/- 5 +/-3	 Deg.
Initial Auto Bias Point Acquisition Time		10, maximum	sec.
Drift Compensation Response Time *0 to -10 dBm input power* *-10 to –20 dBm input power*		 5 5	 sec. sec.
Case Dimensions (WxHxD)		5.75x5.25x8.75	In.
Case Weight AC Adapter Weight		3.5 0.5	Lb. Lb.
Storage Temperature		-25 to +60	Deg. C
Power		115v +/-9% @25mA	—

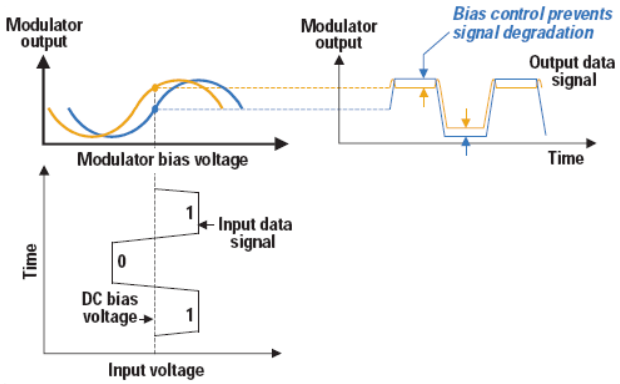


The PSI 0303 Digital Signal Modulator bias controller (U.S. Patent pending) has a desirable spectral output: *none at all.*

When you apply digital data (at 2.5Gbps, 10Gbps, or any other data rate) to a modulator controlled by the PSI 0303, its output light is modulated by your digital data only: *there is no dither tone present!*

Why use a Modulator Bias Controller?

Ideally, the desired Mach-Zehnder modulator bias point—in this example, the blue point on the curve shown here—would occur at a specific DC voltage that remains constant despite any variation of environmental conditions. However, effects in the modulator's electro-optic material can cause the transfer function to "drift" to the left or right—see, for example, the orange curve—such that a specific DC bias voltage may yield a QUAD+ point on the transfer function curve now and a different point on the curve after a slight change in the environmental conditions. As the figure at right shows, this small bias point drift can have a large impact on signal fidelity.



Options

P/N suffix	Description
-019-xxxx	Custom Optical Wavelength (user specified, nm)
-003	High Optical Power
-004	High Bias Voltage
-001, -002	Optical connector (FC standard, others user specified); SC, APC
-018	Polarization maintaining fiber, coupler and connectors
-024	Polarization maintaining coupler & connectors combined with high optical power; input range 100uW to 10mW

Phone: 978-670-4990
Fax: 978-670-2510
E-mail: info@photonicsinc.com
www.photonicsinc.com

PHOTONICSystems, Inc.®
WE LIGHT THE WAY®

900 Middlesex Turnpike, Bldg 5
Billerica, MA 01821

Rev. 8/25/05