$LiNbO_3$ Intensity Modulator Bias Controller

QUAD, NULL, ±0.05 dB

DATASHEET

Return to the Webpage

The LNBC series bias controllers enhance the performance of intensity modulators by automatically biasing and stabilizing them at the quadrature point. This is achieved by injecting a low-frequency, low-amplitude dither signal and using built-in photodetectors to form a feedback loop for bias control. This loop helps maintain optimal performance and minimize temperature dependence. The bias is applied via an integrated microheater. The LNBC is designed for use with thin-film lithium niobate modulators that have integrated detectors and microheaters inside the modulator.

Features

- Automated Bias Control
- Long-Term Stability
- Small Footprint

Applications

- Radar
- RoF
- Laboratory Uses
- Concept Proving
- Instrumentation

Specifications

Parameter	Min	Typical	Max	Unit
Initialization		120		s
Optical output power stability		±0.05		dB
Supply voltage	4.5	5	5.5	V
DC bias output voltage	0		4.5	V
Quadrature point selection		QUAD+		V
Control step	0.04			V
Modulator Optical Input			20	dBm
Operating Temperature*	0		60	°C
Storage Temperature	-40		85	°C
Operating Humidity (no condensation)	20		70	%

* Higher operating temperature is available for customization.

RoHS COMPLIANT

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link]:

Rev 03/16/26

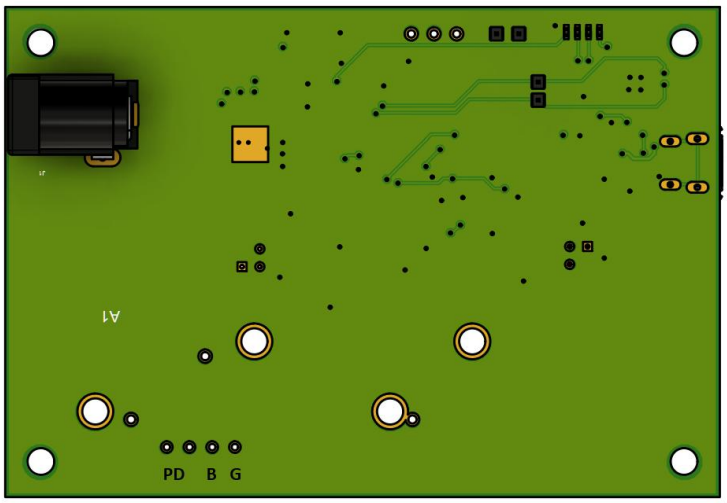
P +1 781-935-1200 E sales@agiltron.com W www.agiltron.com

$LiNbO_3$ Intensity Modulator Bias Controller

QUAD, NULL, ±0.05 dB

DATASHEET

Dimensions (mm)



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Pinout

Category	PIN	Description
Power Supply	Power Jack	5V power supply
Modulator Connection (ToDevice)	PD-	Connect to MPD cathode
	PD+	Connect to MPD Anode
	GND	Connect to heater bias electrode
	BIAS	Connect to another heater bias electrode
Communication	Micro USB 2.0	USB control
Dimensions	L x W x H	80 mm x 66 mm x 1.6 mm

Precautions

- This bias controller may not realize the control under special requirements, such as maximum and minimum point control and control under ultra-high optical power input. Please contact our sales and marketing staff if you have such special control requirements.
- Intensity modulator input optical power requirement: Please do not use the bias controller when the input optical power exceeds 23 dBm, as it may cause damage to the controller.
- Other usage requirements: Please keep the bias controller powered off when connecting or disconnecting the intensity modulator. A hot plug may damage the controlled intensity modulator.
- Double-check the connections before and after connecting the device to avoid modulator damage.
- The RF signal input to the modulator should be after the automatic bias control has been stabilized.

P +1 781-935-1200 E sales@agiltron.com W www.agiltron.com

$LiNbO_3$ Intensity Modulator Bias Controller

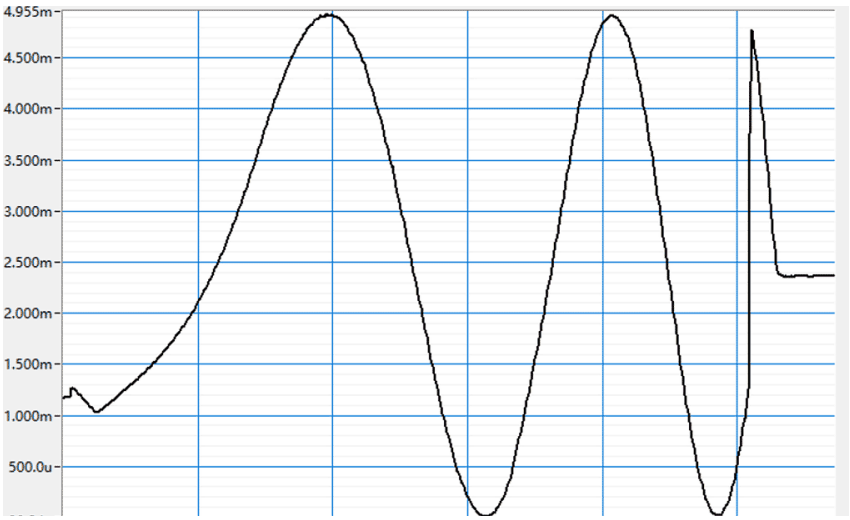
QUAD, NULL, ±0.05 dB

DATASHEET

Ordering Information (Part Number)

	☐	☐	☐	☐	1	1	1	☐	1
Prefix	**Configuration**	**Type**	**Function**	**RF Amplifier**				**Power Supply**	
LNBC-	Amplitude = 1	LNML 10G = 1 LNML 25G = 2 TLNM = 3 LNML 35G = 4	Quad = Q Null = U	Non = 1 Yes = 2				No = 1 Yes = 2	

Typical bias control curve of optical output (Y-axis in mW)

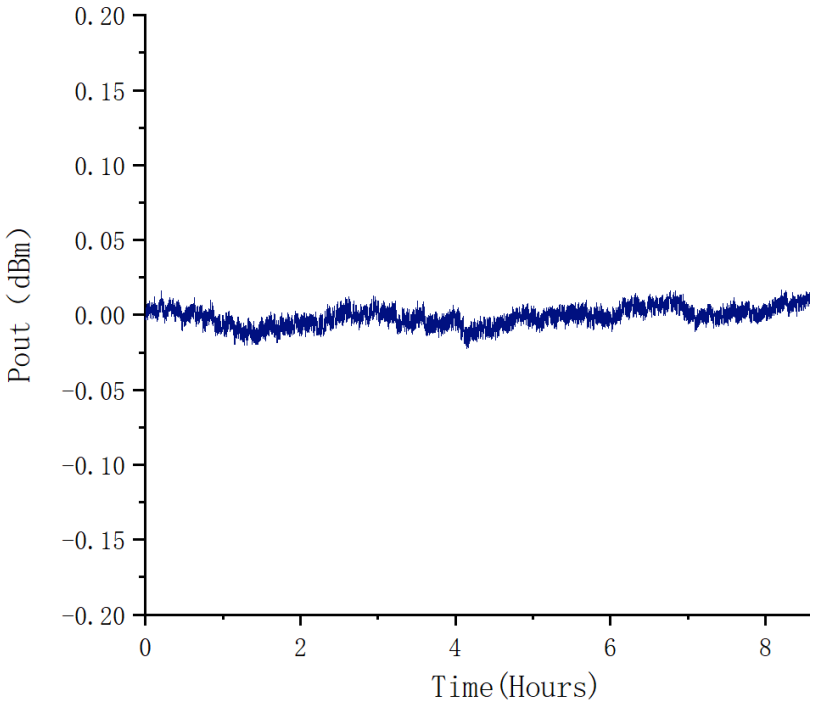


Once the wiring is complete, turn on the optical input to the modulator and then turn on the 5V power source for the controller for starting. Monitor the output optical power of the intensity modulator after power on, a curve similar to figure can be observed. Eventually, the device output light will be controlled at around half the maximum value, i.e., near the quadrature point. Generally, it lasts 5 minutes before locking to the quadrature point.

If the optical input to the modulator needs to be modified during the control process, press the reset button to restart the control process, or the working point will deviate.

P +1 781-935-1200 E sales@agiltron.com W www.agiltron.com

Output Optical Power Stability



Linear response of bias control voltage