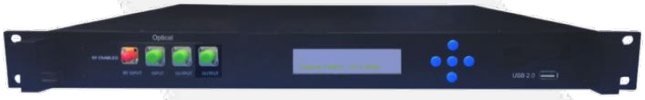
LM-DPSK-R



DEVICE

Lightwave Modulator for Dual Phase Shift Key, up to 50 Gb/s

OVERVIEW

The Optilab LM-DPSK-R is a high performance Binary Phase Shift Key (DPSK) lightwave transmitter designed for Optical Communication up to 40 Gb/s or beyond. The LM-DPSK-R incorporates an internal laser source (DFB, tunable laser) which couples into a high low drive speed MZI modulator for BPSK/ DPSK modulation, with a broadband modulator driver. The LM-DPSK-R has a built-in Automatic Bias Control board which allows for stable long-term operation, with up to 4 bias operating modes. Adjustable RF gain through the front panel interface and LabVIEW software can be performed. Contact Optilab for more information.

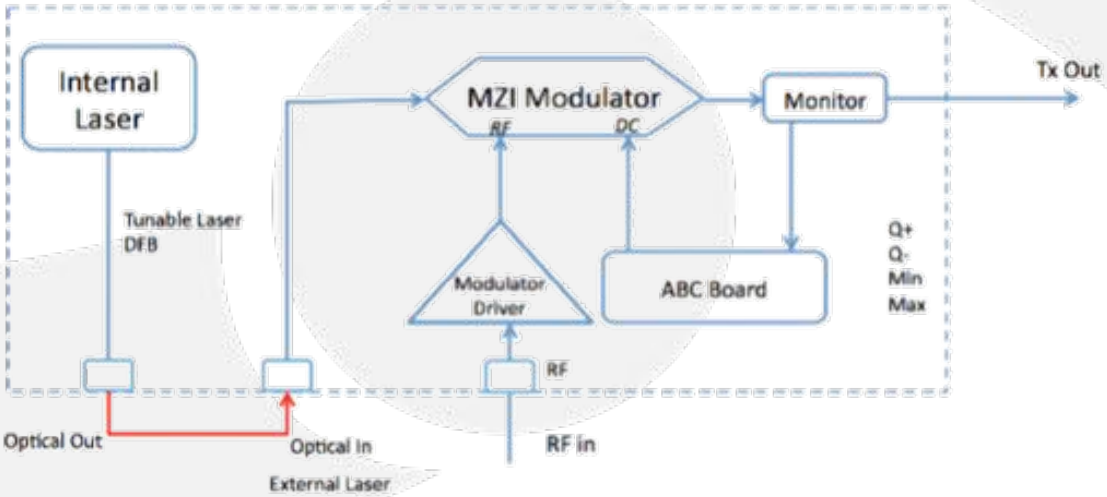
FEATURES

- Up to 50 Gb/s bit rate
- Integrated modulator driver
- Four auto bias modes
- Low drive modulator for 2 π modulation
- Customizable Options:
  - Laser source (Tunable, DFB)
  - Bandwidth (10/20/30/40/50)
  - PM output fiber

USE IN

- Optical communications
- Free space communication
- Picosecond pulse generation
- Research and development
- Test and measurement

FUNCTIONAL DIAGRAM



LM-DPSK-R

SPECIFICATIONS

GENERAL

Bit Rate/Bandwidth	See Table 1.0
Internal Laser Source	See Table 2.0
External Optical Input Level	+ 20 dBm max.
Impedance	50 Ω typ.
Optical Output Power	6 dB typ.
Modulator Bias Mode	Automatic bias control modes
Input RF Voltage Range	250 mW to 750 mW typ.
Eye Crossing Adjustment	Available

MECHANICAL

Operating Temperature	-10 °C to +60 °C
Storage Temperature	-50 °C to +90 °C
Power Supply Requirements	110/220 VAC, 50-60 Hz
Optical Connectors	FC/APC, others optional
Input Fiber Type	PANDA PM
Output Fiber Type	SMF-28 standard; PANDA PM optional
RF Input Connector	See Table 1.0
Remote Control	USB 2.0 and LabVIEW software included
Alarm	Bias mode status, over temperature
Dimensions	1RU 482.6 (L) mm x 470.57 (W) mm x 44 (H) mm

TABLE 1.0 BANDWIDTH OPTIONS

Model #	Bit Rate	Analog Bandwidth	RF Connector
LM-DPSK-10-R	12 Gb/s min.	10 GHz typ.	SMA type
LM-DPSK-20-R	20 Gb/s min.	17 GHz typ.	K type
LM-DPSK-30-R	32 Gb/s min.	25 GHz typ.	K type
LM-DPSK-40-R	40 Gb/s min.	32 GHz typ.	K type
LM-DPSK-50-R	50 Gb/s min.	40 GHz typ.	V type

TABLE 2.0 LASWER SOURCE OPTIONS

Model #	Laser Source	Wavelength	Linewidth
LM-DPSK-R-DO	DFB O band	1310 ± 5 nm	1 MHz typ.
LM-DPSK-R-DC	DFB C band	1550 ± 5 nm	500 kHz typ.
LM-DPSK-R-DL	DFB L band	1580 ± 5 nm	500 kHz typ.
LM-DPSK-R-TC	Tunable C band	1527 – 1567 nm	10 kHz typ.
LM-DPSK-R-TL	Tunable L band	1570 – 1608 nm	10 kHz typ.
LM-DPSK-R-CL	Tunable C+L band	1527 – 1608 nm	10 kHz typ.

ORDERING OPTIONS

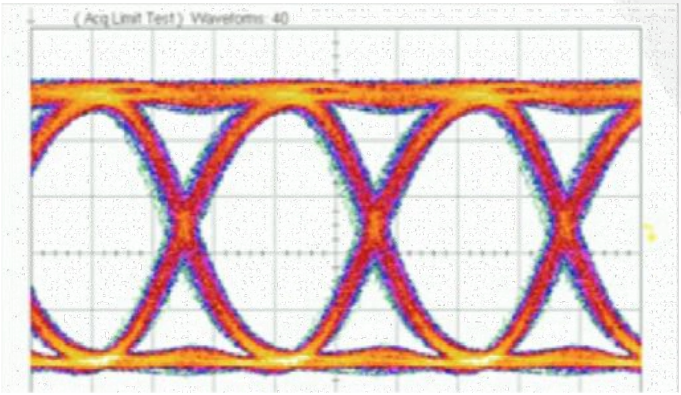
LM-DPSK-XX-R-YY-ZZ

XX Bandwidth: See Table 1.0
YY Laser Source: See Table 2.0
ZZ PM: Polarization Maintaining Output

Product specifications and description are subject to change without notice. © 2018 Optilab, LLC. LM-DPSK-R. Nov 2018 Rev. 1.0

LM-DPSK-R

EYE DIAGRAM

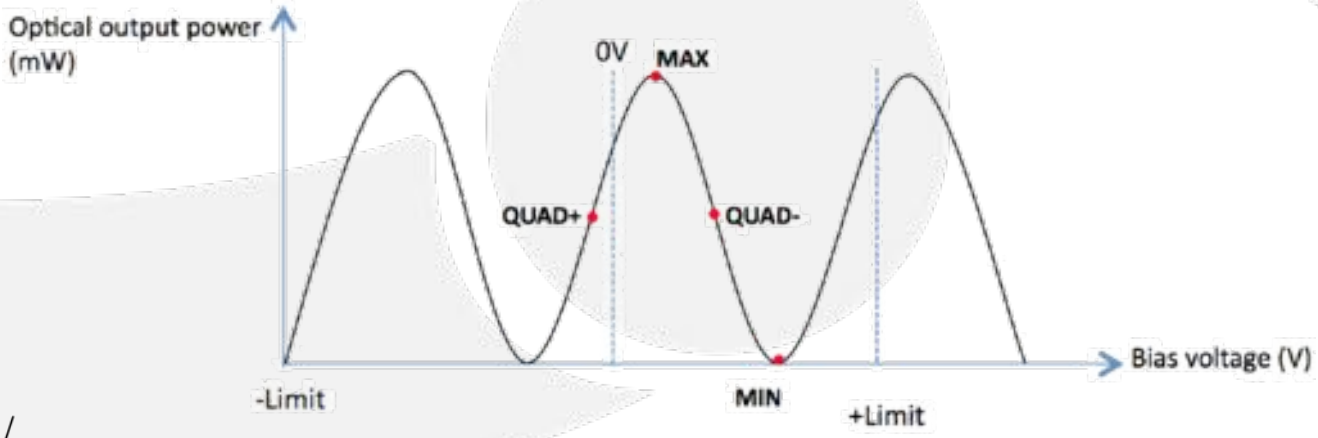


BIAS CONTROL MODE

Mode	Operation Conditions	Modulation Format
Q+	Set to quadrature point of positive slope	Analog, NRZ
Q-	Set to quadrature point of negative slope	Analog, NRZ
Min	Set to min. point of modulator curve	Pulse, RZ, BPSK
Max	Set to max. point of modulator curve	Pulse, RZ

BIAS SETTING MODES FOR LM-DPSK-R

Based on a sophisticated phase measurement of a small dither signal, the LM-DPSK-R provides four selectable operating modes: quadrature (Quad +), inverted quadrature (Quad -), minimum (Min), or maximum (Max) points.



LM-DPSK-R

GENERAL SPECIFICATIONS

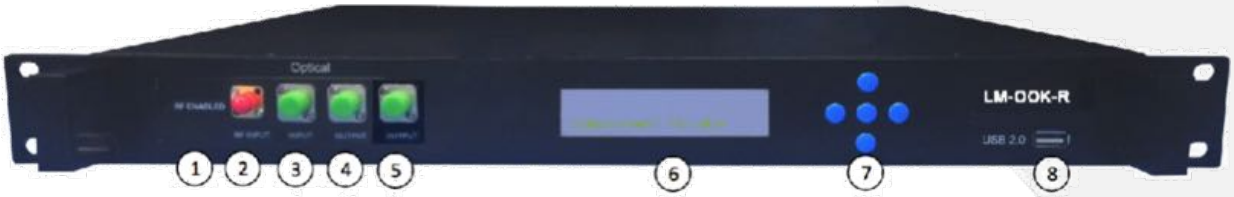
	C-Band	L-Band
Laser Wavelength	From 1527 to 1567 nm	From 1570 to 1607
Wavelength Accuracy	± 1 pm	
Wavelength Setting Resolution	1 pm (continuous)	
Wavelength Stability	± 1 pm over 24 hours	
Output Power	40 mW typ.	
Output Stability	0.02 dB over 8 hours	
Linewidth (FWHM)	< 10 kHz instantaneous, < 100 kHz with SBS disabled	
Carrier to Noise Ratio (CNR)	50 dBc typ. @ -5 dBm	
Side Mode Suppression Ratio	55 dB typ.	
Relative Intensity Noise (RIN)	< -157 dB/Hz @ 13 dBm	
Polarization Extinction Ratio	20 dB min.	
Optical Isolation	30 dB min.	
Fiber Type	PANDA 1550 PM Fiber	

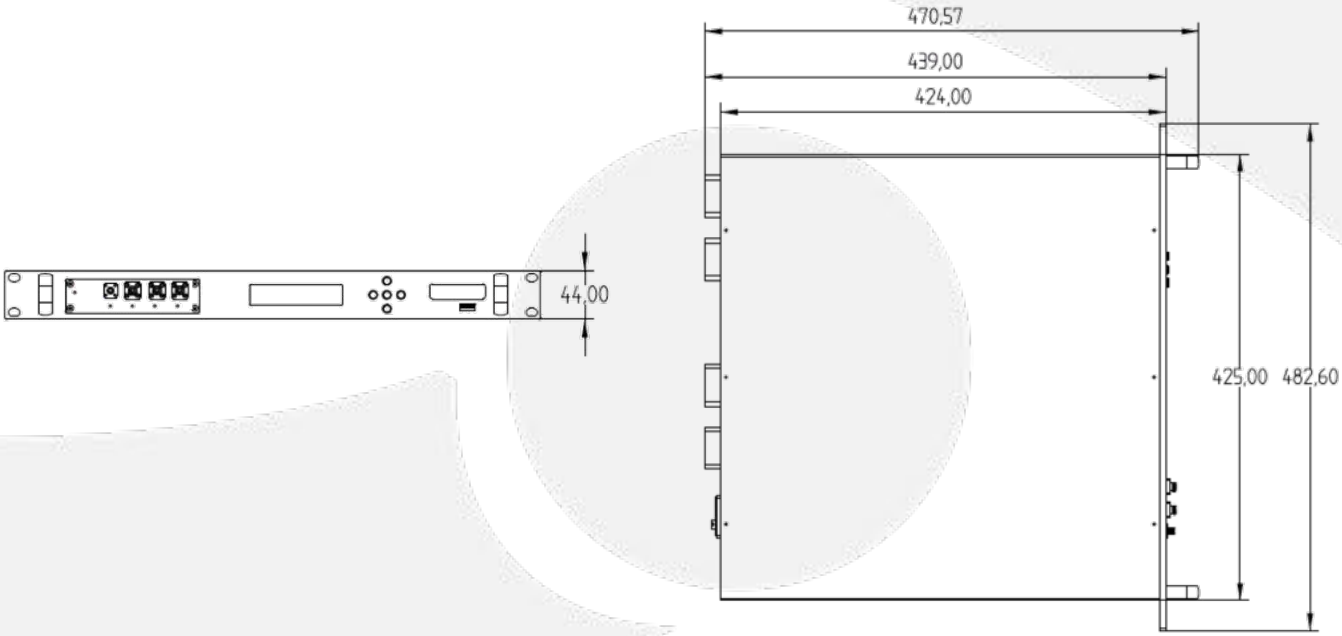
LM-DPSK-R REMOTE LABVIEW INTERFACE

Optilab offers remote interface via Labview software for laser, modulator driver and MZI modulator parameter adjustment and status monitoring, contact Optilab for more details.

LM-DPSK-R

DETAILED LAYOUT



1	RF Power Indicator	5	Optical Out
2	RF In	6	LCD Display
3	Laser In	7	Interface Buttons
4	Laser Out	8	USB Socket

MECHANICAL DRAWING