



## Lightwave Modulator for QPSK/QAM

### OVERVIEW

The Optilab LM-QPSK-R is a high-performance Quadrature Phase Shift Key (QPSK) lightwave modulator solution designed for optical communication up to 80 Gb/s or beyond using polarization maintaining (PM) optical fiber. The user's external PM laser source couples into a dual IQ drive speed MZI modulator for QPSK modulation, with dual broadband modulator drivers which provide high-quality, single-ended voltages to drive the QPSK LiNbO<sub>3</sub> modulator, with independent control and monitoring on both amplified signals. Adjustable RF gain and eye crossing through the front panel interface and LabVIEW software can be performed. The LM-QPSK-R has a built-in Automatic Bias Controller (ABC) which allows for stable long-term operation. The LM-QPSK-R can also be used for Quadrature Amplitude Modulation (QAM). Contact Optilab for more information.

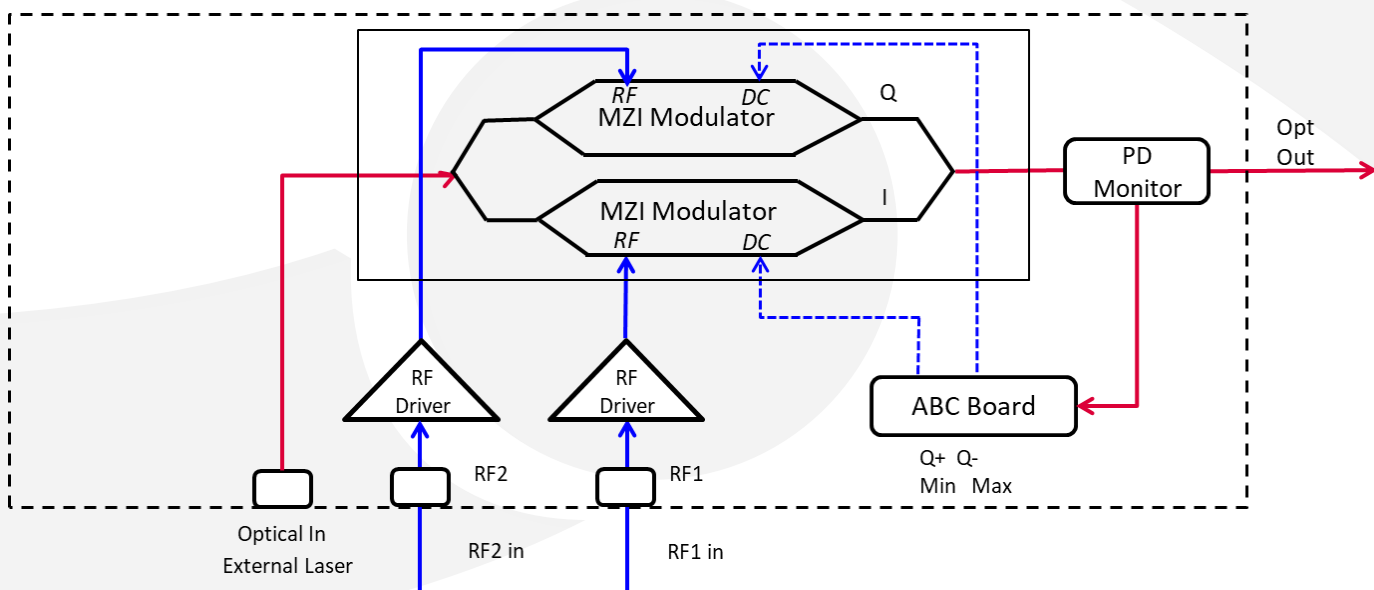
### FEATURES

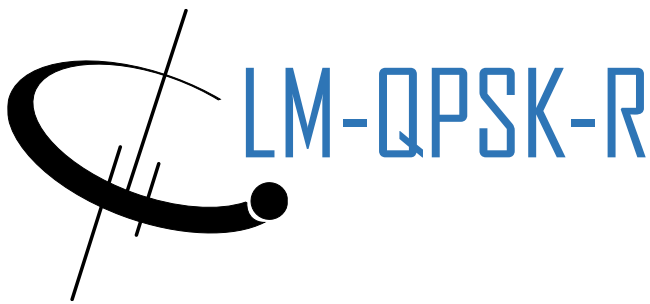
- Up to 80 Gb/s Data Rate
- Dual IQ Modulator
- Integrated Modulator Driver
- Bandwidth Options: 40/60/80 Gb/s
- Automatic Bias Control
- USB Interface

### USE IN

- Optical Networks
- Coherent Communication
- Research and Development
- Test and Measurement

### FUNCTIONAL DIAGRAM





SPECIFICATIONS

GENERAL

Bit Rate / Bandwidth	See Table I
Operation Wavelengths	1520 nm to 1610 nm
Optical Input Power	+20 dBm max.
Optical Output Power	2 dBm min. @ 14 dBm input
Input RF Power	250 mV to 750 mV typ.
Eye Crossing Adjustment	Available
Driving Voltage (2V $\pi$ )	7 V typ. @ 22 Gb/s
Modulator Bias Mode	Automatic bias control for QPSK / QAM
Bias Operation Point	Null

Table I. Bandwidth Options

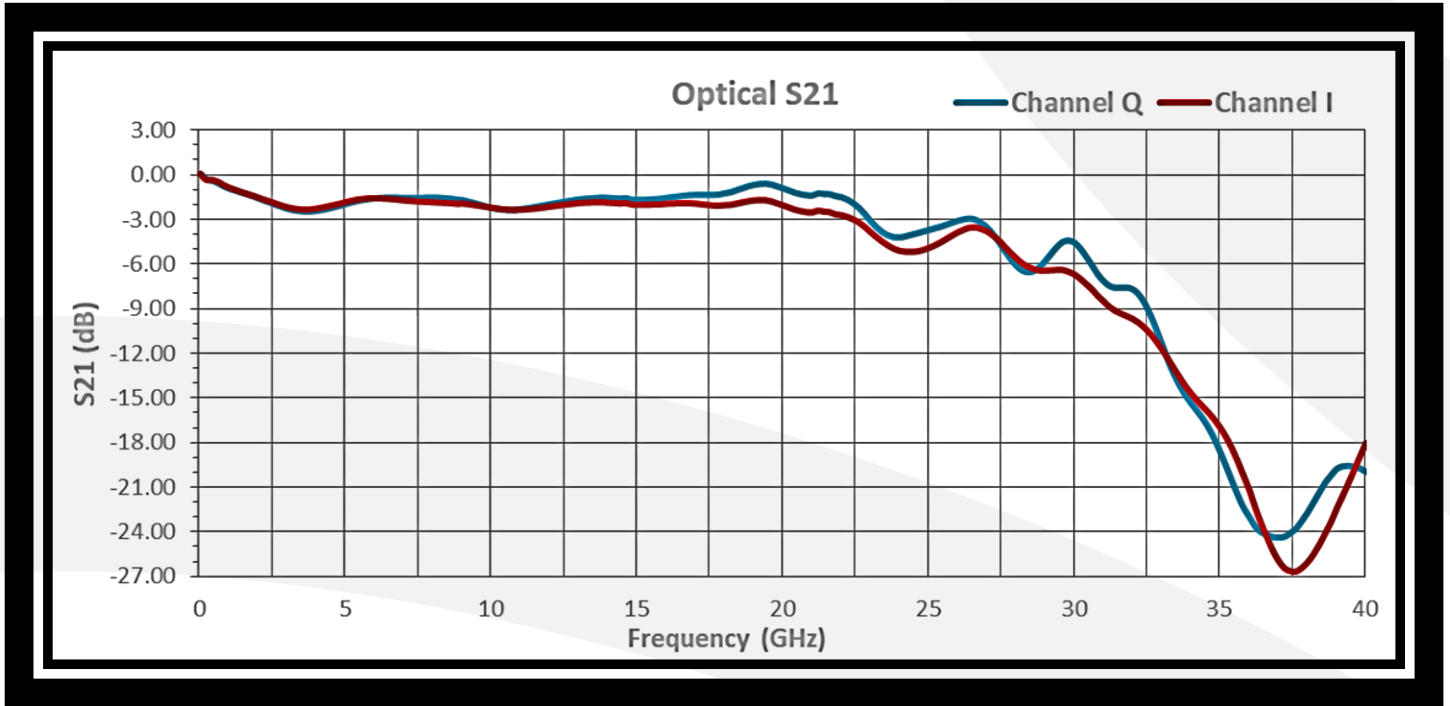
Model #	Bit Rate	Analog Bandwidth
LM-QPSK-40-R	40 Gb/s min.	15 GHz typ. for each modulator
LM-QPSK-60-R	60 Gb/s min.	25 GHz typ. for each modulator
LM-QPSK-80-R	80 Gb/s min.	35 GHz typ. for each modulator

MECHANICAL

Operating Temperature	-10°C to + 60°C
Storage Temperature	-50°C to +90°C
Operating Humidity	0% to 85% Relative Humidity
Power Supply	100 – 240 VAC, 50 – 60 Hz
Housing Dimensions	1RU, 482.60mm x 470.57mm x 44.00mm
RF Input Connector	K type Female ; V type Available
Optical Connectors	FC/APC; Other Options are Available
Optical Input Fiber Type	PANDA PM
Optical Output Fiber Type	PANDA PM
Remote Control Interface	RS232 Communication

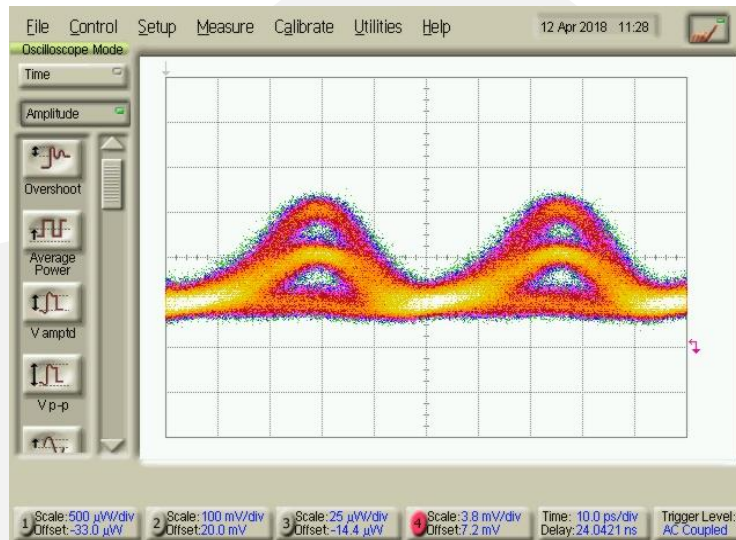


Typical Frequency Response: S21 for LM-QPSK-60-R

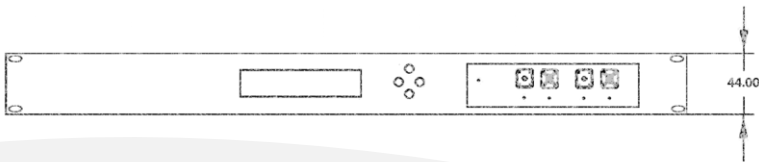


Typical Eye Diagram

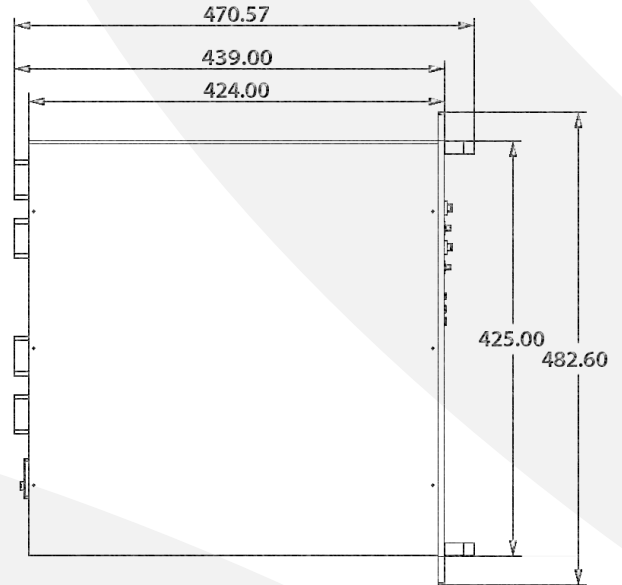
43 Gb/s Eye



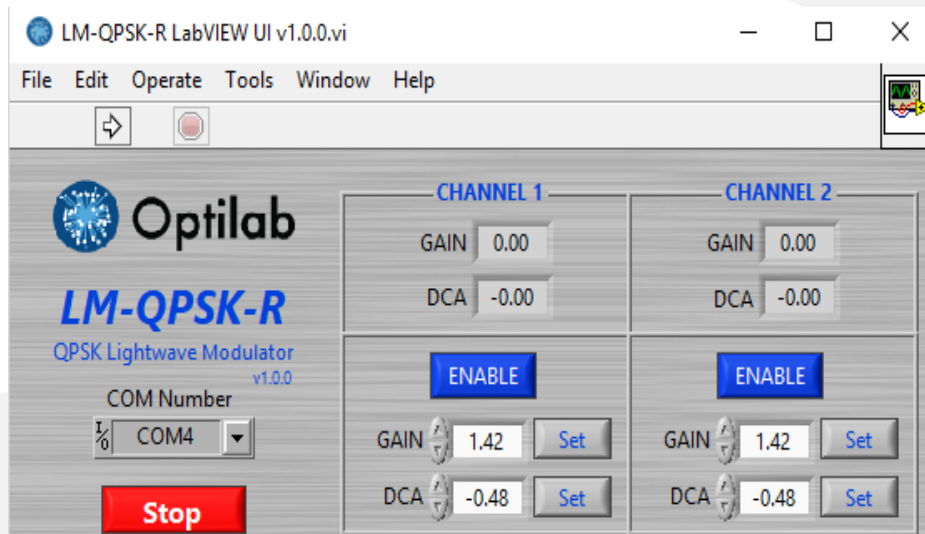
## Mechanical Drawing



Unit: mm



## Remote Interface





# LM-QPSK-R

## Related Item

- LT-QPSK-R



The Optilab LT-QPSK-R is a high-performance Quadrature Phase Shift Key (QPSK) lightwave transmitter designed for optical communication up to 80 Gb/s or beyond using Integrated internal laser. Contact Optilab for more information.