

## Optical DQPSK Demodulator

Optoplex's **Optical DQPSK demodulator** converts *differential quadratural phase modulation* to *amplitude modulation* over the entire C+L band in support of data transmission rates of 20 or 40 Gb/s. DQPSK demodulator is designed for the next generation optical communications systems utilized in commercial, defense and space exploration markets. The device plays a key role in improving signal quality and performance to meet the expanding demand for higher data rates and more complex transmission formats within current and next generation systems without major capital expenditure.

- DQPSK demodulator uses half the transmission rate to achieve the same data rate (20-Gb/s system for 40-Gb/s data rate, with four phase states as compared to two in DPSK format).
- A lower transmission rate saves cost on many other components and electronics and is more tolerant to dispersion.
- 20-Gb/s system is the highest transmission rate possible for the 50-GHz channel spacing system.
- Optoplex's fully integrated DQPSK demodulator combines a power splitter and both I- and Q-arms.

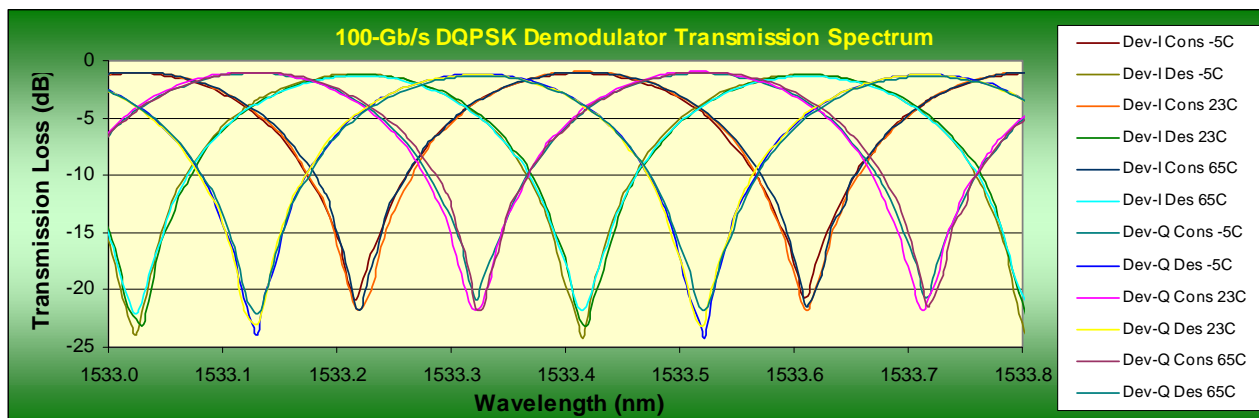
### Key Features and Benefits

- Athermal design
- C+L-band coverage by a single device
- Low temperature-dependent frequency shift (TDFS)
- Low polarization-dependent frequency shift (PDFS)
- Fully and semi-tunable versions are available with independent I- and Q-arm control
- Wide bandwidth
- Low insertion loss & PDL
- High power handling
- Telcordia GR-1221 qualified



### Applications

- 10 or 20 Gb/s DQPSK signal reception
- Data rate optimization
- Extend transmission distances



## DQPSK Demodulator Standard Product Datasheet<sup>1</sup>

Parameter	Unit	Specification
Wavelength Range (C-Band)	nm	1527 to 1567
Wavelength Range (L-Band)	nm	1567 to 1607
Free Spectral Range <sup>1</sup> (FSR, ~1/2 of the nominal data rate, only typical values are listed)	GHz	10.7, 21.5, 28 or 32.5
FSR Error <sup>2</sup>	%	< 1
Insertion Loss <sup>2</sup> (including all connectors)	dB	5.7 Typical; 6.0 Max
Extinction Ratio <sup>2</sup>	dB	> 18
PMD <sup>2</sup>	ps	< 0.1
Return Loss	dB	> 40
PDL <sup>2</sup>	dB	< 0.2
PDFS <sup>2</sup>	deg	< 3
Optical Path Delay <sup>2</sup> (Skew, among Input → I <sub>1</sub> , I <sub>2</sub> , Q <sub>1</sub> , Q <sub>2</sub> )	ps	< 1.0
Tuning Time Constant <sup>3</sup>	sec	< 1.0
Tuning Range	FSR	> 1.5
Power Consumption (total for I- & Q-arm)	W	1.0 Typical; 2.0 Max
Tuning Voltage (for each of I- & Q-arm)	V	0 ~ 5
Maximum Input Optical Power	mW	300
Operating Temperature	°C	-5 ~ 65
Storage Temperature	°C	-40 ~ 85
Dimension (L×W×H) <sup>4</sup>	mm	50×41×11
Fiber Pigtail Type	-	SMF-28 with 900 μm loose tube
Connector Type	-	TBD
Fiber Pigtail Length	m	1.0±0.1

### Notes:

1. Values listed are typical examples, customer can specify.
2. Over the stated spectral and operating temperature ranges and all polarization states.
3. Defined as the time required to reach half-way from the starting and ending points.
4. Not including five collimator sleeves extending from one longer side by 21 mm.

**Optoplex Corporation**, located in Fremont, California, is an ISO9001:2000 certified supplier of cutting-edge photonic components and modules for dynamic wavelength management and signal conditioning. The company designs, develops, manufactures, and markets innovative fiber-optic products to communications networks, and provides customized solutions to instrument, defense, spectroscopy and sensing industries. By combining its proprietary optical design and packaging technology with its state-of-the-art optical coating expertise and facility, Optoplex supplies DPSK demodulators, DQPSK demodulators, 90° optical hybrids, 2-port tunable optical filters, 3-port reconfigurable optical add/drop multiplexers (ROADMs), optical interleavers, flat-top comb filters, optical performance monitors (OPMs), and portable spectrometers.