Optoplex™ CORPORATION

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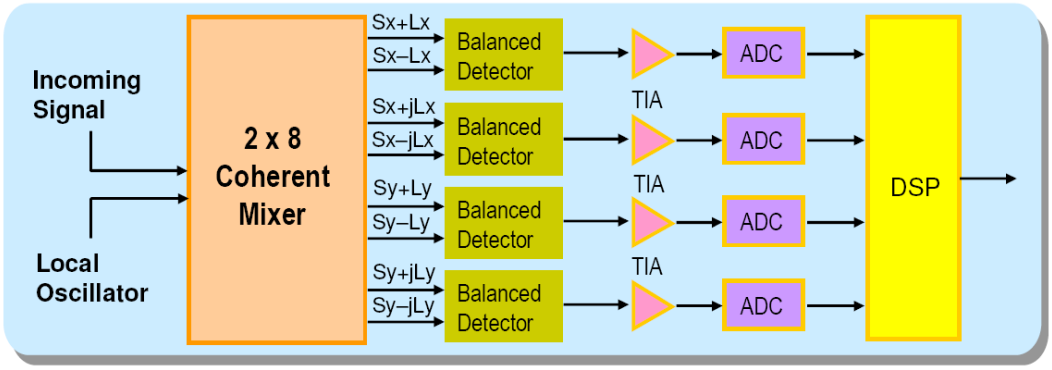
2x8 Coherent Mixer

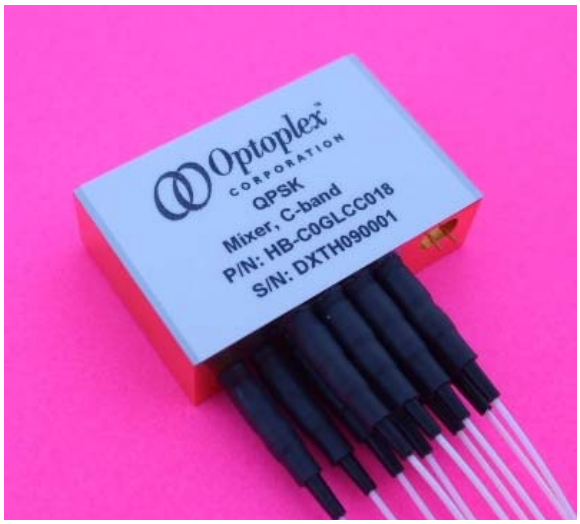
To be used for optical coherent detection such as DP-QPSK receivers, Optoplex's ten-port **2x8 Coherent Mixer** (aka QPSK mixer) combines the incoming signal with a local oscillator to generate eight light states in the complex-field space. The eight light output signals can then be coupled into four pairs of balanced detectors. The block diagram below shows the application of a **2x8 coherent mixer** in a DP-QPSK receiver. Since the mixing process is data rate independent, the devices can be used for any data rate in applications such as 40Gb/s or 100Gb/s transmission systems.



Optoplex's **2x8 Coherent Mixer** is free-space micro-optics-based and patent pending. The device exhibits highly athermal behavior in terms of insertion loss and phase error. When the output signals are detected by four pairs of balanced receivers, both the amplitudes and the relative phase information of the input signal can be extracted for signal amplification and cost-effective compensation of optical transmission impairments, such as dispersion and PMD, in the electronic domain.

Key Features and Benefits

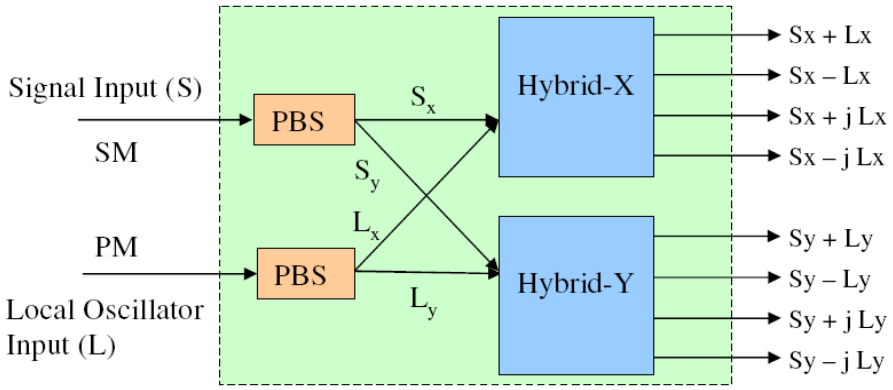
- Purely passive (no temperature control)
- Compact size
- Low insertion loss
- Low phase error
- <1 ps skew
- Colorless (wavelength independent)
- Data-rate independent



Applications

- Optical coherent detection
- DP-QPSK demodulation
- Transmission at 100Gb/s (preferred choice of modulation format)

2 x 8 Coherent Mixer Product Datasheet



Parameter		Unit	Specification
Wavelength Range (C-Band)		*nm*	1527 ~ 1567
Phase Difference[1] (between Sk+Lk and Sk+jLk, between Sk–Lk and Sk+jLk; k=x or y)		*deg*	90 ± 7
IL[1] (with connectors)	S (polarization scrambled) → All Outputs	*dB*	9.5 ~ 11
	L (45° linear polarized) → All Outputs	*dB*	9.5 ~ 11
IL Uniformity[1]	S to any outputs; L to any outputs	*dB*	<0.7
	Among All Others	*dB*	<1.0
Optical Return Loss		*dB*	>27
Optical Path Difference[1] (Skew, among S→ All Outputs)		*ps*	<1
Optical Path Difference[1] (Skew, among L→ All Outputs)		*ps*	<1
Polarization extinction ratio[1] (for either S or L)		*dB*	>18
Max. Input Optical Power		*mW*	300
Operating Temperature		℃	0 ~ 65
Storage Temperature		℃	–40 ~ 85
Dimension (L x W x H)[2]		*mm*	48 x 31 x 13
Fiber Type (for S, and All Outputs)		-	SMF-28 with 900um tight buffer
Fiber Type (for L)		-	PM with 900um loose tube
Fiber Pigtail Length		*m*	1.0 ± 0.1
Connector Type		-	TBD

Notes: 1. Over the stated spectral and operating temperature ranges and all polarization states.
2. Excluding ten collimator sleeves extending from one longer side.

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.