

Optical Coherent Detection Receiver

Overview

Optical coherent receivers operate on the principle of mixing an incoming optical field (information channel) with a high power local oscillator (LO) signal prior to detection by the photodetector. tion assisted by digital signal processing (DSP). The objective of this tutorial chapter is to briefly review the operating principles of state-of-the-art ong-haul coherent optical communications systems. We review detection methods, including noncoherent, differentially coherent, and coherent detection, as well as a hybrid method. It allows the coherent detection of polarization-multiplexed optical signals in the C-Band by mixing the test signal with a built-in local laser. • Optical coherent receiver in a compact 19"-chassis • Coherent detection of high-speed optical dual-polarization m-PAM and m-QAM signals > 40, > 70 and 110 GHz versions available Applications • Test and measurement • Development of multi-terabit transmission systems and components • Polarization.



Article Content

Sep 23, 2025

ID Photonics | CORX – Coherent Optical Receiver

It allows the coherent detection of polarization-multiplexed optical signals in the C-Band by mixing the test signal with a built-in local laser oscillator. It is designed as a reference receiver for transmitter ...

May 09, 2026

Chapter 10 Coherent Optical Communication Systems

In this section, we describe the implementation of the functionalities of the optical M-PSK transmitter and receiver using various photonic devices, i.e., a QM, a balanced receiver, a phase-diversity receiver ...

Jul 05, 2026

Coherent detection in optical fiber systems

The most advanced detection method is coherent detection, where the receiver computes decision variables based on the recovery of the full electric field, which contains both amplitude and phase ...

Apr 06, 2026

Fundamentals of Coherent Optical Fiber Communications

This paper reviews the history of research and development related to coherent optical communications and describes the principle of coherent detection, including its quantum-noise ...

Feb 25, 2026

COHERENT AND ADVANCED PHOTODETECTORS AND ...

Coherent's Coherent and Advanced Photodetectors and Receivers offer exceptional performance for a wide variety of applications, including Communications, Test & Measurement, and Research and ...

Dec 05, 2025

90 Optical Hybrids and Integrated Receivers For Coherent ...

The optical performance of the 90deg optical hybrid is same as those described in previous sections, except for the output collimators are replaced by single-ended photodetectors.

Dec 26, 2025

Coherent Detection

A typical schematic diagram of coherent detection in a lightwave receiver is shown in Fig. 9.1.2, where the incoming optical signal and the optical LO are combined in an optical coupler.

Mar 23, 2026

COHERENT RECEIVER FRONTENDS

- Optical coherent receiver in a compact 19"-chassis
- Coherent detection of high-speed optical dual-polarization m-PAM and m-QAM signals > 40, > 70 and 110 GHz versions available

Aug 08, 2025

Ultrahigh-speed graphene-based optical coherent receiver

Here, the authors demonstrate a high-speed optical coherent receiver for optical communications based on graphene-on-plasmonic slot waveguide photodetectors.

Mar 04, 2026

Optical Coherent Receiver Analysis

Optical coherent receivers operate on the principle of mixing an incoming optical field (information channel) with a high power local oscillator (LO) signal prior to detection by the photodetector.

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