

Optical Module Eye Diagram

Article Overview

An eye diagram is a visual representation of the quality and integrity of digital optical signals, showing how well a transceiver can transmit and the receiver can interpret data.

What an Eye Diagram Represents

An eye diagram is generated by repeatedly capturing a digital signal from an optical module and superimposing multiple signal periods on an oscilloscope display, forming a pattern that resembles a human eye. The horizontal axis represents time (one bit period or Unit Interval), and the vertical axis represents signal amplitude or voltage. This visualization allows engineers to assess the combined effects of noise, dispersion, jitter, and intersymbol interference (ISI) on the transmitted signal. A wide-open eye indicates minimal distortion and high signal integrity, while a closed or narrow eye suggests degraded performance.

Key Parameters of an Eye Diagram

- **Eye Height:** The vertical distance between the top and bottom of the eye, indicating the margin between logic "1" and "0". A larger eye height means better noise tolerance and lower bit error rate (BER).
- **Eye Width:** The horizontal opening of the eye, representing the time window during which the signal can be correctly sampled. Greater eye width provides better tolerance to timing variations and jitter.
- **Jitter:** Variations in the timing of signal transitions, which can reduce the eye width and increase the likelihood of bit errors.
- **Extinction Ratio:** The ratio of the optical power of the "1" level to the "0" level. A...

Article Content

Apr 22, 2026

Eye Diagram

Diagram of the Eye Study the diagram below or click here for an interactive study guide and game! Cornea: curved to bend light into

Aug 15, 2025

Understanding the Eye Diagram in Optical Transceiver Testing

If we store each captured optical signal and display them in a persistence mode so that they accumulate and overlap, the combined

Aug 25, 2025

Understanding Eye Pattern Measurements Application Note

This application note reviews basic eye diagram definitions and terminologies, and presents several typical examples of

May 27, 2026

Optical module design resources | TI

View the TI Optical module block diagram, product recommendations, reference designs and start designing.

May 24, 2026

Introduction To Key Parameters Of Optical Module Eye Diagrams

To generate an eye diagram, an oscilloscope needs to measure a large volume of data and then recover the diagram

Jun 28, 2026

Eye pattern

OverviewCalculationModulationChannel effectsMeasurementsExternal links

In telecommunications, an eye pattern, also known as an eye diagram, is an oscilloscope display in which a digital signal from a receiver is repetitively sampled and applied to the vertical input (y-axis), while the data rate is used to trigger the horizontal sweep (x-axis). It is so called because, for several types of coding, the pattern looks like a series of eyes between a pair of rails. It is a tool for the evaluation of the combi

Sep 13, 2025

Optical Module Eye Diagram Test

Eye diagram testing and adjustment is an important stage to ensure that the optical module obtains the best signal.

Feb 27, 2026

Quickly understand the optical module eye chart test and use the ...

Optical module eye diagram test is a common optical test method used to measure the performance of optical modules during high

Feb 11, 2026

Introduction To Key Parameters Of Optical Module Eye Diagrams

An eye diagram is a pattern displayed on an oscilloscope by accumulating a series of digital signals. It is vividly

Jan 19, 2026

Eye Diagram (EYE)

The Eye Diagram element can also be used as a decoder when a reference signal or bit pattern is provided. In this mode, level

May 31, 2026

Internal Structure of Optical Modules

Optical modules are key components in fiber optic communication systems, responsible for electro-optical conversion,

Jun 28, 2026

The Role of Eye Diagrams in High-Speed Optical Design

When evaluating optical transceivers or media converters, engineers use eye diagrams to assess how the transmitted

Sep 28, 2025

Eye anatomy: Muscles, arteries, nerves and lacrimal

Learn everything about eye anatomy using this topic page. Click now to study the muscles,

Feb 17, 2026

Introduction to Main Parameters of Optical Module Eye Diagram

The eye diagram is a graph displayed by a series of digital signals accumulated on the oscilloscope. Because it is

Mar 08, 2026

Human eye | Definition, Anatomy, Diagram, Function, & Facts

Human eye, specialized sense organ in humans that is capable of receiving visual images, which are relayed to the

Apr 09, 2026

Eye pattern

In telecommunications, an eye pattern, also known as an eye diagram, is an oscilloscope display in which a digital signal from a

Sep 26, 2025

What Are Eye Diagram Fundamentals?--ETU-LINK

In optical module manufacturing (SFP, SFP+, 10G, 25G, 100G), eye diagram testing is a mandatory quality inspection

Jan 16, 2026

Optics of the Human Eye

Description This is a simulation demonstrating the optics of the human eye. It also shows how various lenses can be used to correct

Feb 20, 2026

The Eyes (Human Anatomy): Diagram, Optic Nerve, Iris, Cornea ...

WebMD's Eyes Anatomy Pages provide a detailed picture and definition of the human eyes. Learn about their function

Mar 19, 2026

Eye Anatomy: A Closer Look at the Parts of the Eye

Click on various parts of our human eye illustration for descriptions of the eye anatomy;

Sep 03, 2025

Eye Diagram in Optical Transceivers: Analysis, Testing, and Signal ...

Learn how eye diagrams reveal signal integrity in optical transceivers. Explore analysis methods, test standards, and

Feb 01, 2026

What Is Optical Module Eye Diagram?

3. A complete eye diagram should include all state groups from "000" to "111", and eight states form an eye diagram.

Oct 21, 2025

What is the Eye Diagram Test of Optical Transceivers?

The optical eye diagram is the result of superimposing the bits of the collected serial signal in

Sep 19, 2025

Mastering Eye Diagrams in Optical Communications

As Optical Communications emerged, Eye Diagrams became an essential tool for characterizing the performance of

Jun 13, 2026

Eye diagram in optical communication

Learn about the eye diagram in optical communication and its importance in analyzing and optimizing signal quality for high-speed

Apr 16, 2026

Eye Diagrams in Optical Communication

Learn how eye diagrams enhance optical signal analysis and ensure efficient, high-quality communication.

Dec 02, 2025

Eye pattern

Graphical eye pattern showing an example of two power levels in an OOK modulation scheme. Constant

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://www.iiss.co.za>

Email: sales@iiss.co.za

Phone: +27 63 174 2895

Address: Unit 8, Innovation Park, 15 Rivonia Road, Sandton, Johannesburg,
2196, South Africa

This document is for informational purposes only. Specifications subject to
change without notice.

