What program is used in the automatic optical module coupler



Overview

Its modular architecture allows flexible configuration based on specific application needs, making it a preferred solution for industrial photonic packaging.

Key Takeaways

LabVIEW is commonly used for controlling automatic optical module couplers, while Ansys Lumerical MODE is used for design and simulation of waveguides and couplers. LabVIEW for Automation and ControlIn practical automated optical module couplers, LabVIEW is widely employed to manage the alignment and measurement processes. It provides a computer interface to control x-y-z motorized stages for precise fiber positioning and to acquire optical power measurements from devices like Thorlabs PM100D power meters.

LabVIEW allows the system to scan in XYZ, record motion coordinates, measure coupling power, and return to the optimal optical peak position, enabling rapid and repeatable alignment of multiple waveguides on a silicon wafer. The software can integrate with motion controllers and analog voltage output devices, such as the USB-3103, to drive fine adjustments for each fiber.

GBCS Auto-

Alignment Software

© 2026 AK OPTICAL SYSTEMS - All rights reserved

Some commercial systems, like Newport's auto-alignment solutions, use GBCS auto-alignment software. This software automates fiber alignment by scanning in three dimensions, analyzing optical parameters such as output power, insertion loss, and polarization dependence, and optimizing the coupling process for telecom or photonic devices. It is often paired with motorized stages and XPS motion controllers to achieve sub-micron precision in production environments.

Ansys Lumerical MODE for Design and Simulation

For the design and simulation of optical couplers, Ansys Lumerical MODE is used. This software models waveguide and coupler performance using Finite Difference Eigenmode (FDE), variational FDTD, and Bidirectional Eigenmode Expansion (EME) solvers. It allows engineers to simulate light propagation, modal overlap, and spatial field distributions, which helps optimize coupler designs before physical implementation.

Py

Lumerical, a Python-based interface, enables automation of simulations and integration with other Ansys tools for multiphysics analysis. SummaryLabVIEW: Controls motorized stages, power meters, and alignment routines for automated optical coupling.

GBCS Auto-

Alignment Software: Optimizes fiber alignment and coupling in production systems.

Ansys Lumerical MOD

E: Simulates and designs waveguides and couplers for high-accuracy optical performance. These programs work together to ensure efficient, precise, and repeatable optical module coupling, from initial design to automated production testing.

Article Content

Fiber Alignment

The automated alignment software is designed to align the fiber components by scanning in XYZ, recording the motion coordinates and the coupling power and then commanding the system to return

Automatic Fiber-optic-coupling Alignment System

Piezoelectric ceramics, driver circuits, controllers, photodetectors, and other peripheral devices form an optoelectronic circuit, and a simulated-annealing algorithm is used to automatically align spatial light

© 2026 AK OPTICAL SYSTEMS - All rights reserved

PWS-HE Series Full-Auto Coupling System | Motorized 6-Axis Vision ...

Its modular architecture allows flexible configuration based on specific application needs, making it a preferred solution for industrial photonic packaging. Optional modules such as adhesive dispensing

Experimental Research on Automatic Alignment and Control

A fiber coupler based on two-dimensional (2D) piezoelectric ceramics was developed, which uses the stochastic parallel gradient descent (SPGD) algorithm to realize the automatic

Ansys Lumerical MODE | Optical Waveguide & Coupler Design Software

Use Lumerical MODE to simulate electromagnetic propagation for large propagation lengths in waveguide or fiber devices. The software automatically sweeps device length and periodicity.

Automatic Fiber-optic-coupling Alignment System

Highly efficient coupling can directly improve communication quality, and using automatic alignment can significantly reduce the coupling-alignment difficulty. This chapter presents the...

Automatic Alignment Fiber Optic Coupling System for Optimal Signal ...

This report describes an automated alignment system developed to aid in the process to evaluate the optical characteristics of waveguides manufactured for research in optical communications.

Active Photonics Alignment | Fiber Optic Alignment Stages | PI

PI''s FMPA is the fastest, most flexible, most robust solution. FMPA is implemented in the E-712 controller''s modular firmware to enable fast, simultaneous alignment and tracking of multichannel

Understanding DSP in Coherent Optical Modules

In coherent optical modules, the Digital Signal Processor (DSP) acts as the brain of the system, processing both incoming and outgoing signals to correct distortions, ensure data integrity,

(PDF) Design, Manufacture and Assembly of 3D Integrated Optical ...

The fabrication and assembly of 3D optical modules based on active interposer-integrated edge couplers and TSV are realized in this paper.

Optical Simulation and Design Software | Ansys Optics

© 2026 AK OPTICAL SYSTEMS - All rights reserved

Ansys Optics solutions offer robust design, optimization, and verification simulation software backed by world-class support. These tools empower designers to

Fiber Optical Coupler: Design, Working, and Its Types

An optical coupler is one of the most commonly used devices in the telecommunication and electronic industry. Since its introduction, it has become

Fundamentals of an Optical Module

Fundamentals of an Optical Module As an important part of fiber-optic communication, an optical module is a photoelectric converter which converts electrical signals into optical signals and vice versa. An

What are the Internal Components of an Optical Module?

2. ROSA (Receiver Optical Sub Assembly) The main function of ROSA is to convert optical signals to electrical signals. The built-in devices include PD / APD, demux, coupling

Understanding Optical Coupler and Optical Splitters

Bandwidth coupler and splitters are some of the most important passive devices which are widely used in a number of applications for improving the performance of the whole system in one

The FOA Reference For Fiber Optics

The SC, which was introduced in the mid-1980s, used a new invention, the molded ceramic ferrule, that revolutionized fiber optic termination. Ceramic was an ideal

Optocoupler Basics: Definition, Types, and Features

An optocoupler is a coupling device used to couple optical signals. It''s primarily employed to combine and split signals in optical networks, and it''s also referred to as a directional coupler. Image alt:

Optocoupler Tutorial for Beginners

An optocoupler uses light to transfer signals from one circuit over to another. This guide shows you how they work and how to use them.

Related Video Reference

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

© 2026 AK OPTICAL SYSTEMS - All rights reserved

Contact Us

Continue your research online:

Website: https://aboutkitchens.biz
Technical inquiry: https://aboutkitchens.biz/project-desk.html
North American project location: Research Triangle Park, North Carolina, United States

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

© 2026 AK OPTICAL SYSTEMS - All rights reserved