

Automation of Fiber Array Assembly Fixtures



Overview

Automated Assembly of 500-Count, Laser-Welded, Fiber-Optic Arrays at Density Limit
John R. Marciante, Per Adamson, Robert Balonek, Mike Cinquino, Joey Lawson, and Jordan P. Leidner
Discover how SmarAct's precision technology enhances fiber array assembly for optimal performance in photonic systems. Alternatively, PI's Engineered Subsystems Group stands ready to assemble and ship custom automation subassemblies like the one. Fiber Array Units (FAU) Flyer Download
Focuslight provides key optical components for FAUs, including engineered V-groove arrays and protective lids, ensuring precise fiber alignment and durability. These assemblies consist of a fiber array on one end and a standard fiber optic connector (such as MPO, LC, SC) on the other. Modular motion platforms, advanced control, and optional vision feedback ensure reliable alignment and bonding of single fibers and fiber arrays. We can provide component-level solutions up to full automation systems. Using our advanced Automation1 motion control platform.



Article Content

Oct 24, 2025

Automated Multi-Channel Fiber Array Alignment

The setup for multi-channel automated fiber assembly, based on the proven >> double-sided fiber alignment system and PI's multi-axis gantry system, offers an idea for further workflow automation.

Feb 10, 2026

Automated PM-fiber array assembly with high-precision four DOF ...

In the self-developed assembly cell, the fiber handling tool-head operations automatically to pick up, manipulate and tack single fibers to a glass plate or fiber to chip.

Aug 25, 2025

Fiber Array Units (FAU)

With large-scale manufacturing and automated assembly capabilities, we support high-precision, high-channel-count, and mass production needs for reliable optical communication system performance.

Aug 27, 2025

Overcoming challenges when qualifying... • Santec Holdings Corporation

The BRM-100's internal optical switch allows for automated testing of multiple ports within an FAU assembly with high repeatability, $\pm 0.005\text{dB}$, yielding precise power switching across all fiber array ports.

Jul 31, 2025

Automated Assembly of 500-Count, Laser-Welded, Fiber-Optic Arrays ...

We have developed a new technique for high-count fiber array connector production. Fully automated manufacturing was demonstrated for 500-count arrays with $250\mu\text{m}$ center-to-center spacing and sub ...

Jan 01, 2026

Programmable direct-patterning assembly enables high-density and ...

This study presents an automated paradigm for assembling high-density fiber Bragg sensor arrays on complex surfaces. The framework ensures signal fidelity and structural integrity, ...

Feb 27, 2026

SmarAct's Fiber Array Assembly | SmarAct GmbH | Mar 2026

SmarAct's precision systems enable automated fiber array assembly with sub-micron accuracy and high repeatability. Modular motion platforms, advanced control, and optional vision feedback ensure ...

Sep 11, 2025

Automated Fiber Array Assembly with SmarAct ...

Discover how SmarAct's precision technology enhances fiber array assembly for optimal performance in photonic systems. In fiber handling and array assembly, ...

Sep 13, 2025

Fiber Optic Cable Assembly Automation in Semiconductor Manufacturing

The semiconductor and optical communication processes are advancing towards higher density and faster speeds, significantly increasing the precision and stability requirements for fiber ...

Nov 11, 2025

Overcoming challenges when qualifying... • Santec ...

The BRM-100's internal optical switch allows for automated testing of multiple ports within an FAU assembly with high repeatability, $\pm 0.005\text{dB}$, yielding precise power ...

Dec 20, 2025

Automated Fiber Array Assembly with SmarAct Precision Systems

Discover how SmarAct's precision technology enhances fiber array assembly for optimal performance in photonic systems. In fiber handling and array assembly, precise alignment is essential to minimize ...

May 26, 2026

Optical Assembly Automation System – Aerotech US

Our optical assembly automation solutions can be designed with an exact application or process in mind or with the flexibility needed for general process development.

Contact Us

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