PIXID 700: SYSTEM SPECIFICATIONS

System Modules, Test Packages, and Timing Chart

DESCRIPTION

The Pixid 700 introduces a new paradigm for active alignment. It is designed specifically for optical devices with complex light paths, where rapid flexibility is needed for the new product introduction (NPI) development, but those same process learnings from NPI need to be transformed to the mass production system. The Pixid 700 does just that.

INCREASED APPLICATION/PROCESS FLEXIBILITY:

- Open modular architecture (more options for far field target modules)
- Open architecture for complex or long light beam paths
- Flexible, customizable software (shorter development time for custom algorithms/software)
- Single or dual lens alignment

OPTIONAL HIGHER RESOLUTION POSITIONING:

- 5nm linear resolution
- 0.2µrad angular resolution

IMPROVED COMPATIBILITY WITH MICRO-OPTICS APPLICATIONS:

- In-site dispensing (can dispense adhesive after AA)
- Multiple align-dispense-cure-align-dispense-cure cycles
- Direct P&P from lens tray with AA grippers (reduced material handling of components)
- Better support for multi-lens applications

Device under assembly can be rotated (or shifted) between lens align/attach steps

SOFTWARE

The Pixid 700 software framework uses a modern node-based architecture to allow for both quick prototyping and a seamless transition to mass production. At its core is a robust inter-process communications protocol that allows for multiple programs, either collocated on a single PC or spread amongst a network, to work in concert and orchestrate complex automation processes. By delegating different process control and analysis tasks to separate programs, new functionality can be rapidly prototyped and integrated with an existing system via the addition of new nodes.

The Pixid 700 software is designed to scale to the hardware requirements of a project, capable of controlling a stand-alone benchtop tester, a fully automated active alignment assembly system, or anything in between. The core design makes process control hardware-agnostic, allowing

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easy integration of new electronics or actuators as needed for a given application. Multiple programming languages are supported (currently C++, C#, Python, and IEC 61131-3 Structured Text, with paths to add others as needed) which greatly simplify the integration of external libraries and data collection systems, whether from a customer or 3rd party.

A process scripting layer exists for rapid application development (powered by Python), while the highly performant inter-process communications framework allows for multiple separate worker nodes performing rapid image analysis and process control. These nodes can leverage the powerful active-alignment algorithm library developed from Kasalis's many years of expertise in the subject.

Integration with an RTOS layer via PLC communications allows for real-time motion and IO control, which in combination with all the other features ensures that cycle times can be driven down when a product moves from prototyping to mass production. Overall the Pixid 700 software system is designed to be a flexible yet performant automation platform to take your complex optical product from a sketch on a whiteboard through NPI and into mass production.

ALIGNMENT MODULE

The Pixid 700 alignment module comprises of a 5- or 6-axis (X, Y, Z, θx, θy, and θz) motion stack for optics positioning during the active alignment process.

ALIGNMENT MODULE SPECIFICATIONS

AA DEGREES OF FREEDOM	6 (X, Y, Z, θx, θy, and θz)
LINEAR (X,Y,Z) RESOLUTION	5nm
ANGULAR (θx, θy, θz) RESOLUTION	0.2µrad
UV CURE SOURCE	365nm, 385nm LED, or broadband
UV DELIVERY	Integrated into lens grippers

DISPENSE MODULE

The Pixid 700 has a large range of target modules, from camera module targets of different wavelength and field height to collimators for far field of view to speckle-free targets for projected images.

Dispense Technology	Positive Displacement Pump	Micro-jetting Technology
Site Recognition & Dispense Verification	Machine vision camera with illumination	Machine vision camera with illumination
Dispense Pattern Options	Lines, arcs, dots (or any combination)	Lines, arcs, dots (or any combination)
Linear Positional Resolution	1 µm	1 µm
Minimum Bead Width	300um	100um

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TARGET MODULES

The Pixid 700 is designed for applications with complex light paths such as LiDAR or other projector-based applications. Kasalis offers any combination of the following options for projector alignment targets.

OPTION	Beam profiler
OPTION	Speckle-free projection screen with imaging camera
OPTION	Optical power meter
OPTION	Folding mirrors, relay optics, camera feedback, beam steering to receiver
OPTION	Collimators

CUSTOM OPTICAL FIXTURES

Kasalis provides a fixture for mechanically and electrically engaging your device to the Pixid system.

INTERFACE	Parallel, MIPI, HiSpi, Serial LVDS, sub-LVDS, SLVS-EC
COMMUNICATION	SPI, I2C
SENSOR RESOLUTION	Any

BASE MODULE AND SAFETY ENCLOSURE

The base module is built on a compact footprint. The safety enclosure protects the operator from moving parts and UV light exposure and also prevents external light from affecting the alignment and testing.

BASE MODULE SPECIFICATIONS

SYSTEM FOOTPRINT	Variable
FACILITY POWER REQUIREMENT	110VAC/15A or 220VAC/7.5A
FACILITY AIR REQUIREMENT	80 psi minimum
FACILITY VACUUM REQUIREMENT	House vacuum (if needed)
MACHINE INTERNAL CLEANROOM CLASS	Class 100 (ISO 5)
LIGHT TOWER	Included
PRIMARY OPERATOR INTERFACE	Touch panel monitor

About Kasalis

Kasalis is a proven market leader in active alignment and designs industry leading optical alignment manufacturing systems. Kasalis systems precisely align and assemble optical electronic devices for a variety of products and industries that include AR and VR headsets, LiDAR systems, laptops, cell phones, cameras and automotive displays. With over 20 years of experience, Kasalis has emerged as a premier active alignment technology company driving the enhanced development of current and next-generation capabilities of electronic devices.

Kasalis is a technology division of Jabil, a $26 billion global company with over 50 years of experience delivering technology, manufacturing and supply chain solutions to the world's leading brands.