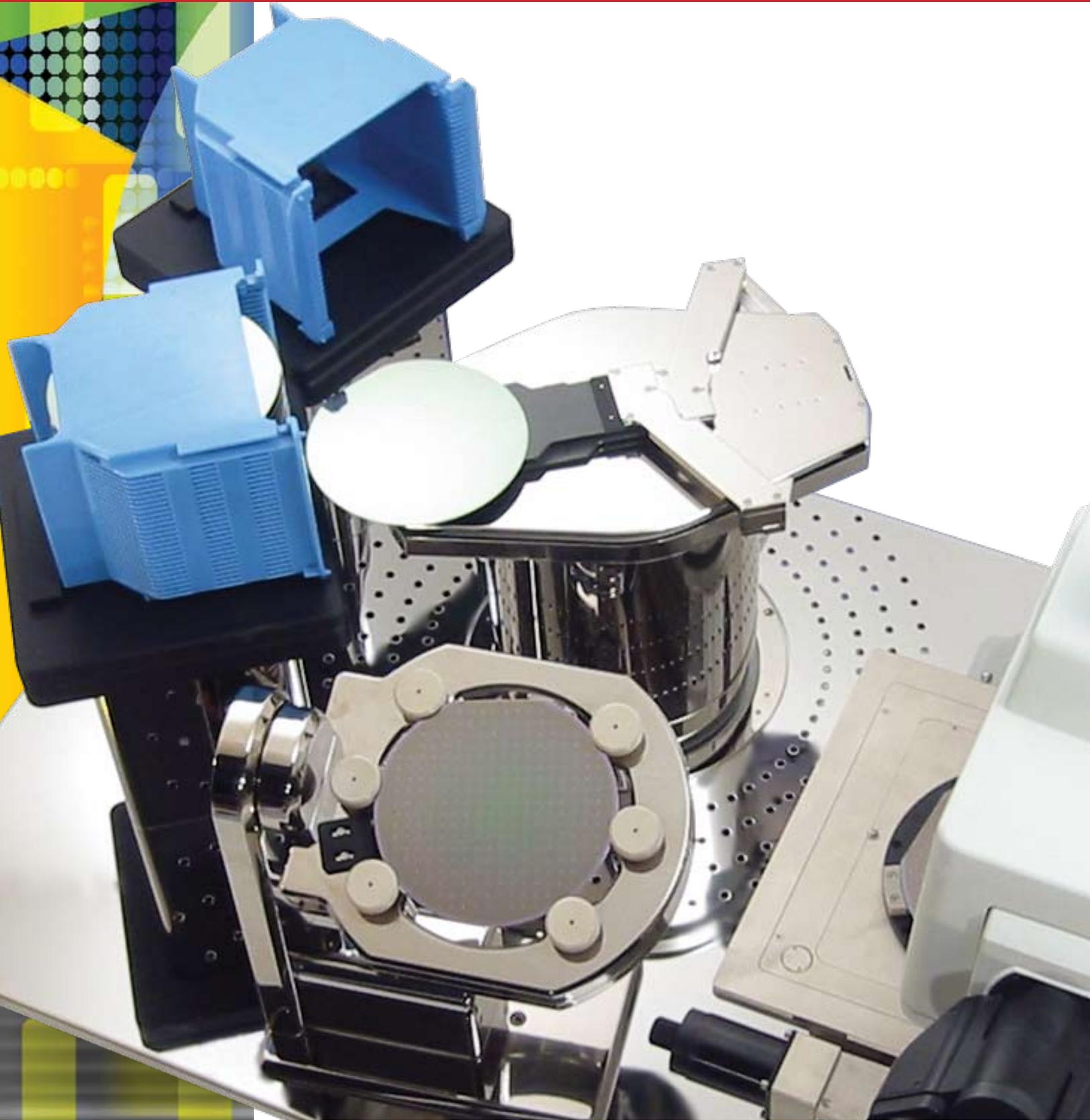


# SemiAutomation

Components and Systems for Wafer Handling

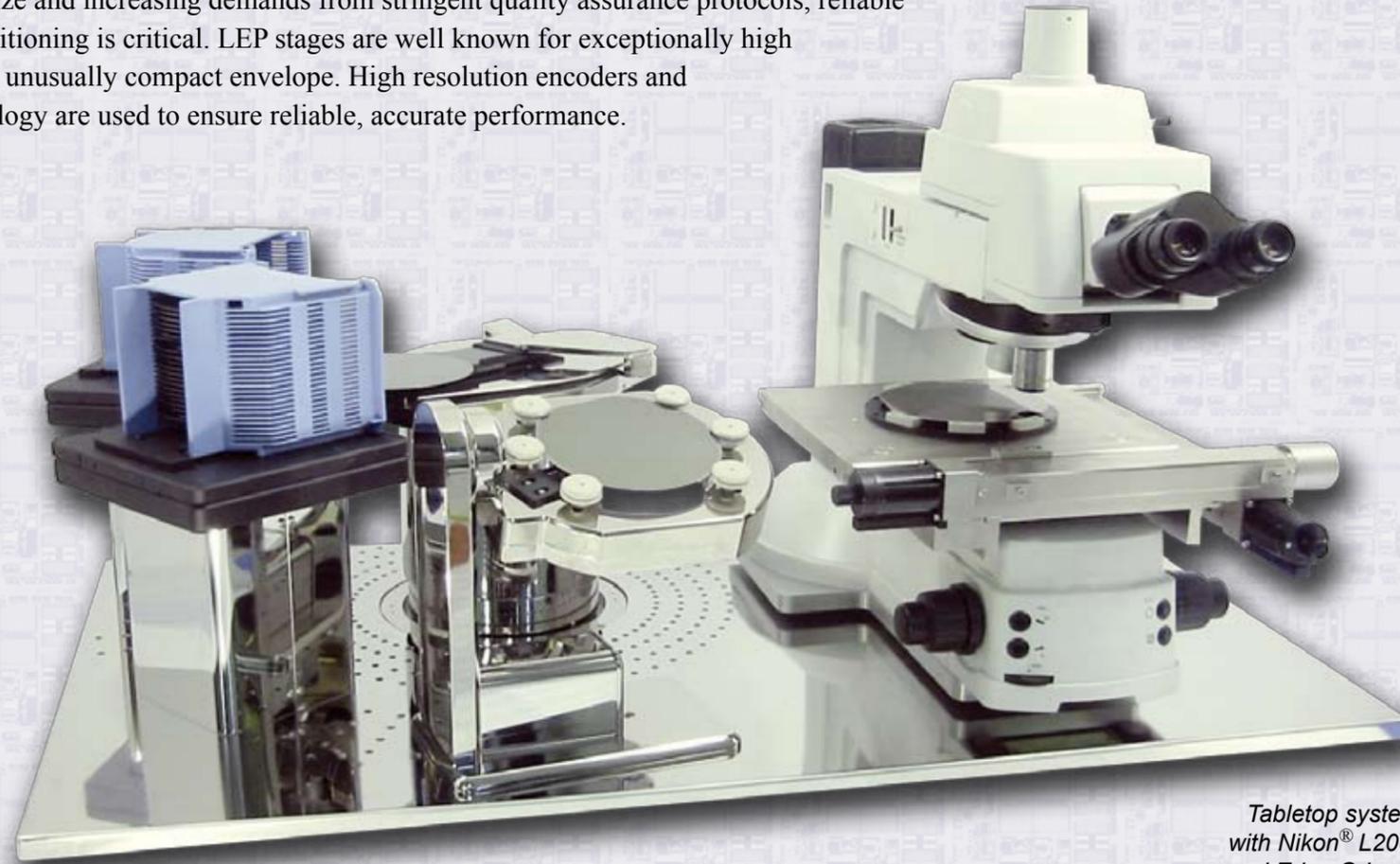
New Technology to Meet New Requirements



## Automation for Inspection and Measurement

Ludl Electronic Products designs and manufactures precision components for wafer handling and positioning. Extending unique designs and philosophies, LEP has developed some of the most flexible and practical systems. Utilizing the unique approach of offering systems at every level of complexity and integration, an LEP system can be a turn-key inspection station or a sub-system that can be used with other instrumentation. LEP also offers individual components for more custom and proprietary applications. The principle components of an inspection system include the wafer handling and XY positioning stages. Additional components for macro inspection and wafer alignment are typically included depending upon the system requirements.

With shrinking die size and increasing demands from stringent quality assurance protocols, reliable and accurate XY positioning is critical. LEP stages are well known for exceptionally high performance with an unusually compact envelope. High resolution encoders and reliable drive technology are used to ensure reliable, accurate performance.



*Tabletop system shown with Nikon® L200 microscope and Edge Gripper module for 150mm wafers*

Precision wafer handling ensures that wafers are transferred reliably and efficiently, with the highest possible throughput. The LEP wafer handling robot features a proven design with a unique top-side design. The top-side design dramatically improves the reliability of the system by keeping all of the critical components in a very small envelope. The small envelope enables the design to be light weight and very compact.

Integrating all of the components is essential. Utilizing the LEP modular controller system, the robot, XY stage and peripherals share a common control platform. This efficient scheme saves cost and simplifies software integration and facilitates system troubleshooting.

## Motorized Stages

High precision, low profile stages specifically designed for wafer inspection feature encoder options for up to 50nm resolution. Precision crossed roller guide bearings and ground ball screws assure stable performance and long life. Adjustable end-limits and customized mounting systems integrate with most microscopes and optical instruments.



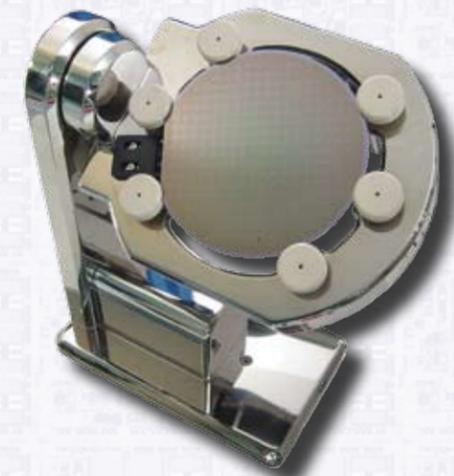
## Wafer Handling Robots

The popular, proven dual arm LEP robot features a very compact footprint and unique topside design for easy system integration, service, setup and maintenance. Utilizing an over/under wafer transfer the robot can achieve efficient high throughput rates without excessive motion.



## Edge Handling Options

The Edge Gripper module performs three functions: alignment, frontside, backside inspection and wafer inversion. Utilizing a motorized capstan system, the module has the ability to grip and rotate the wafer through 360 degrees for alignment and inspection. The tilting axis allows for front side and back side inspection as well as normal or flipped transfer. Each axis is fully programmable for speed and position to accommodate almost any inspection requirement.



## System Information

### Facilities Requirements

Power	100-240VAC 50-60Hz 250 watts
Vacuum	24in. Hg
Footprint	from 46"x27" depending upon configuration

### Performance

Throughput	400wph, dependent upon transfer and inspection sequence
Wafer exchange	8 seconds
Uptime	> 98%

### Configuration

Microscope compatibility	Most current industrial microscopes are supported
Robot transfer stations	1-7, typical configuration: 2 cassettes, aligner, microscope/stage
Wafer compatibility	2" to 8" (50-200mm), options for all substrates and thicknesses

## Ordering Information

Ludl Electronic Products manufactures hundreds of different items for microscope automation and wafer handling. Below is a partial list of components and accessories that are available for semiconductor wafer systems.

### Robot/Stage/Controller

99A336	200mm dual arm robot, DC servo drive with standard end-effectors
99A336-NF	200mm dual arm robot, DC servo drive without end-effectors
99S103	200x200mm motorized XY stage for microscope

### Platform

99A228	Wafer inspection system baseplate for microscope
99A229-C	Wafer inspection system baseplate - custom configuration

### Accessories

99A035-13	Flat/Notch finder
99A035-6	Flat/notch finder with tilt/wobble macro inspection
99A346	Edge gripping flat/notch finder with wafer inversion for 150mm wafers
99A348	Edge gripping flat/notch finder with wafer inversion for 200mm wafers
73000351	Operator keypad with firmware
	Many specialized end-effectors and wafer chucks available



**Ludl Electronic Products Ltd.**

171 Brady Avenue  
Hawthorne, NY 10532  
USA

(888) 769-6111 • [www.ludlsemi.com](http://www.ludlsemi.com) • [sales@ludl.com](mailto:sales@ludl.com)

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