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### Bidirectional repeatability

Fine Z with  $\pm 30$  nm, CZ with  $\pm 7.5$   $\mu$ m and Theta with  $\pm 2$  arcsec



### Position accuracy

Total axial error of  $\pm 3$   $\mu$ m



### Position stability

Fine Z with  $\pm 3$  nm, CZ with  $\pm 50$  nm, and Theta with  $\pm 25$   $\mu$ arcsec

## Z3TM+ Combined Modules

 For semiconductor applications

The Z3TM+ module expands the range of motion platforms and integrates four independent degrees of freedom and an optional lift pin mechanism.

This module revolutionises motion control in the semiconductor industry through its advanced design with four degrees of freedom housed in a single module. With optional coarse Z-axes, this module provides unprecedented control over wafer motion profiles and improves precision and efficiency in semiconductor manufacturing.

Utilising flexure-based fine Z-axis technology, hysteresis issues are avoided while achieving nanometre-level resolution, accuracy and repeatability with higher dynamics. Embedded support for sample alignment further enhances process control and enables users to achieve unrivalled performance at wafer level.

### HIGHER CONTROL BANDWIDTH FOR Z TRACKING

In inspection systems, moving heavy tools to follow the surface limits speed and throughput. Z3TM+ solves this by moving the lighter substrate instead, increasing bandwidth and enabling faster, more efficient processing.

### 6 DOF TOOL POINT CONTROL

Many applications need precise XY positioning and perfect orthogonality to the tool, which is hard with traditional stacked systems. Z3TM+ adds Z, Rx, and Ry control to map and compensate stage errors, keeping the point of interest perfectly aligned for processing.

### VACUUM SUPPLY AT CHUCK LEVEL

Z3TM+ comes with 4 fully integrated and independent vacuum lines. These lines are compatible with the 364° theta stroke.

### WAFER HANDLING MADE EASIER

This module also comes with a 3-point electrical lift-pin mechanism to ease wafer loading and offloading.

## Integration example



> **Stroke:**  $\pm 2$  mm, CZ: 12 mm, Rx/Ry:  $\pm 0.08^\circ$  and Theta 364°

> **Move and settle time:** Z: 100 $\mu$ m @ 50nm in 60 ms / Theta: 1° @  $\pm 40$   $\mu$ deg in 70 ms