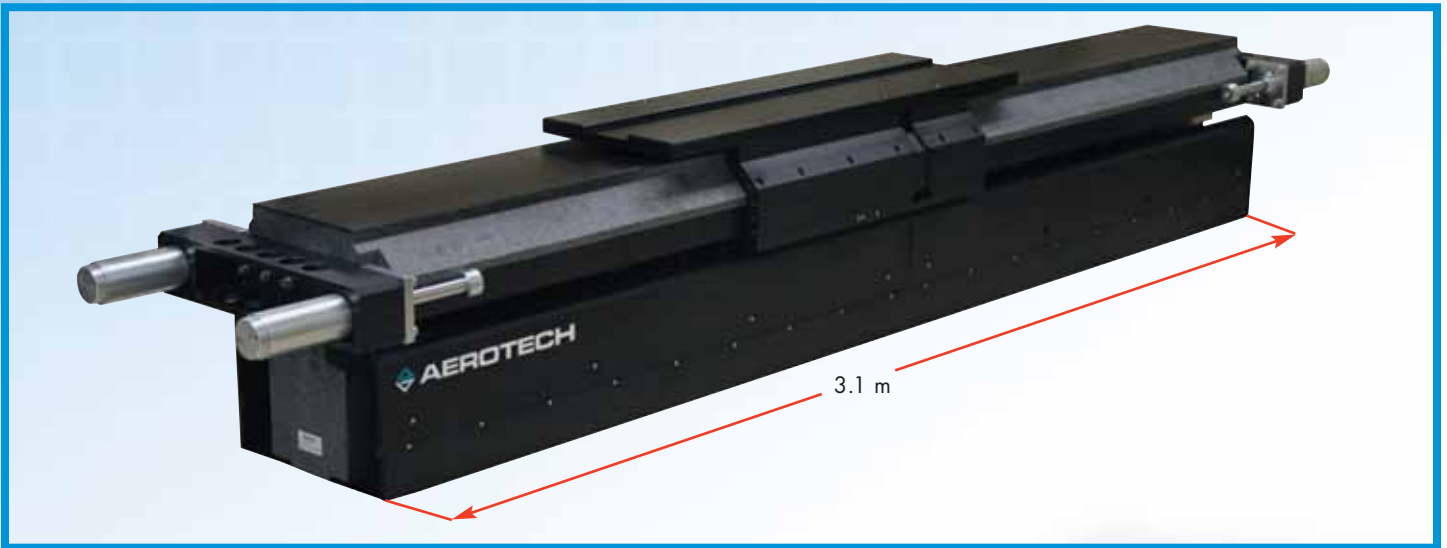
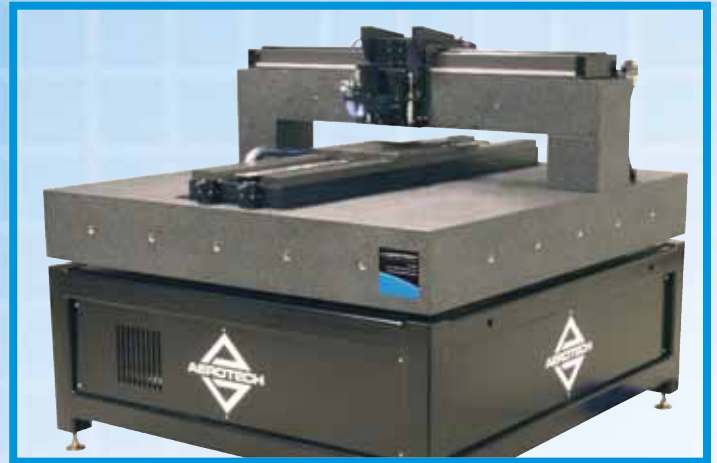




# Automation Solutions for Solar Panel Inspection and Scribing

Aerotech Manufacturing Solutions for Crystalline Silicon and Thin-Film Photovoltaic Panels



*Dedicated to the  
Science of Motion*  
[www.aerotech.com](http://www.aerotech.com)



**Aerotech Worldwide**  
United States • Germany • United Kingdom • Japan • China

# Automation Solutions for Solar Panel

Aerotech's mechanical systems and state-of-the-art controls offer unparalleled

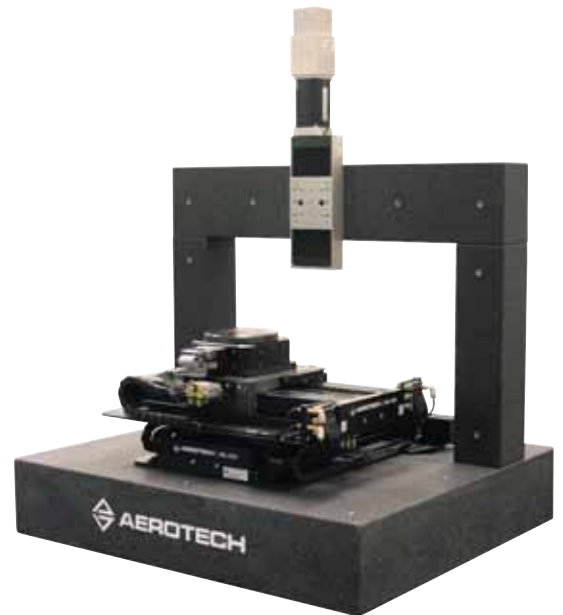
## Industry-Leading Gantry Technology

- High speed for increased throughput
- High accuracy for a better final product
- Direct-drive linear motor technology for low maintenance and higher throughput
- Rugged, low-maintenance design for high MTBF



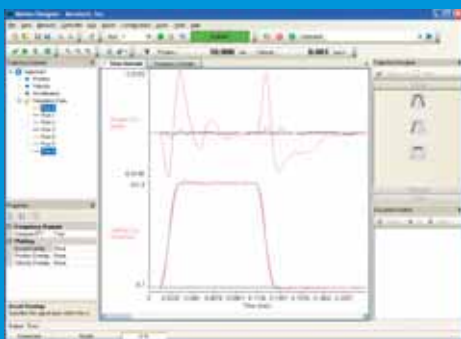
## SolarScribe® Platform

- Industry-leading mechanical and air-bearing stage technology for smooth motion
- Split-axis or gantry configurations to meet your process needs
- Up to 2.5 m travel to process your longest panels
- Complete customization to your specific application means quicker setup



## Wafer Level Photovoltaic Processing

- Stacked XY or split-axis options designed for your application
- Available with mechanical air-hybrid-bearing technologies to meet any process need
- Optional theta for de-skew increases throughput

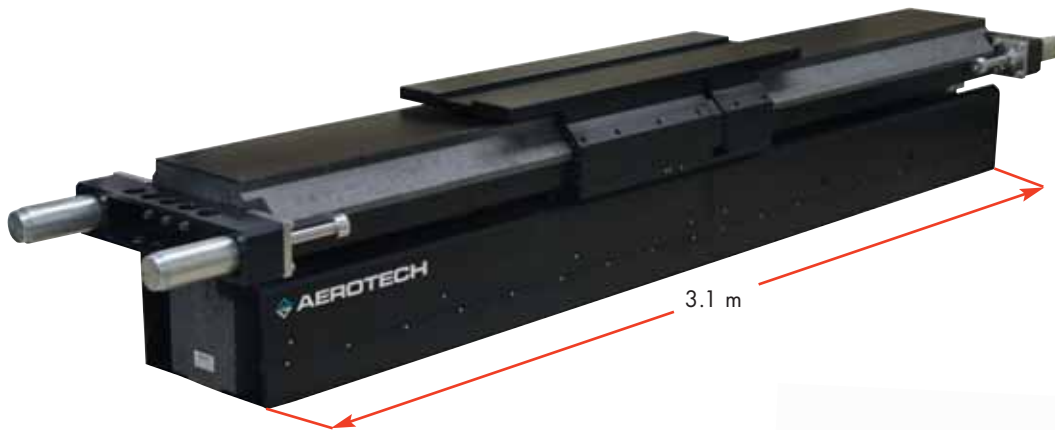


**Motion Designer** is a graphical tool for creating and optimizing motion trajectories



# Inspection and Scribing

throughput, power, and precision for photovoltaic manufacturing.

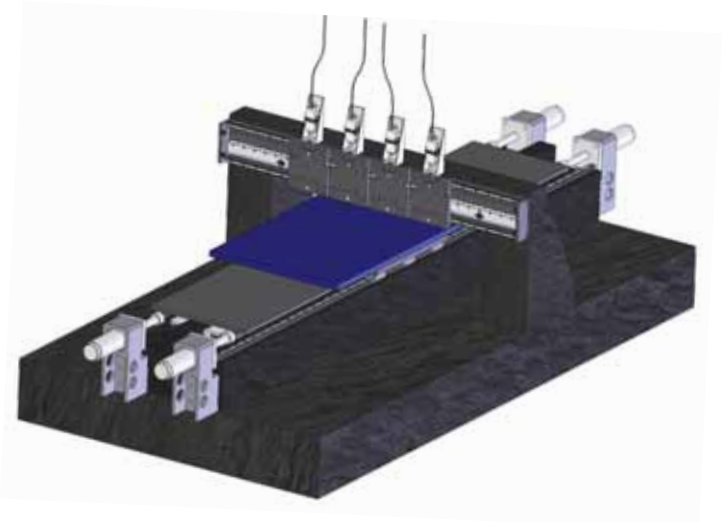


## High-Speed Scan Axis

- 2 m travel for your largest panel scribing applications
- 3 m/s velocity for high throughput
- 5 g acceleration speeds turnaround time

## Custom Options Include:

- Multi-head cross-axis for accurate parallel-line scribing
- Throughput enhancing parallel linear motor configurations
- Theta stage with integral brake, multiple Z-axis options, passive or active vibration isolation, machine base, and control enclosure
- Gantry, split axis, or stacked XY configurations to meet your requirements



## Powerful, High-Quality Linear Motors

- Highest force per unit volume available
- Highly efficient
- Noncontact design for long life and zero maintenance

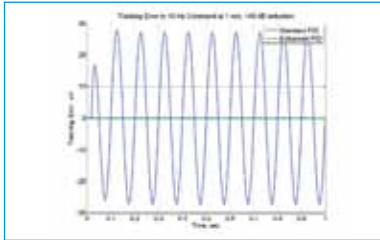
Automation 3200 software – the only motion controller with all-digital drive electronics provides the most powerful automation platform available.



Enhanced Throughput Module (ETM) improves positioning performance and throughput by directly compensating for base vibrations

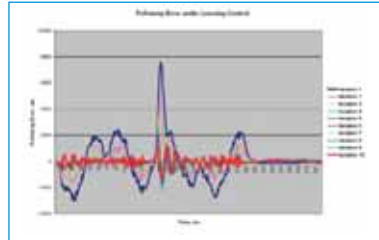
# State-of-the-Art Control Electronics and Software

## Advanced Control Capabilities



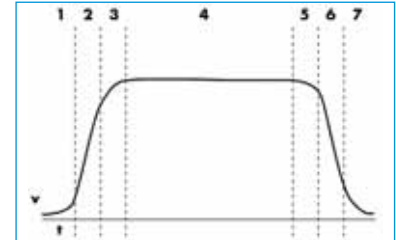
### Harmonic Cancellation

- Reduce position error on periodic trajectories
- Reject periodic disturbances
- Built-in setup wizards
- Adapts to magnitude and frequency of error source



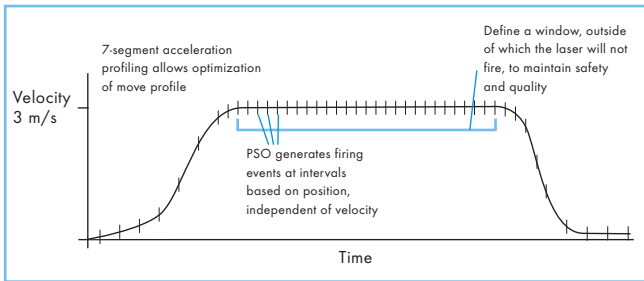
### Iterative Learning Control

- Repeating move sequences can be learned and optimized
- Reduce following error
- Increase dynamic accuracy
- Increase production rates



### Seven Segment Acceleration

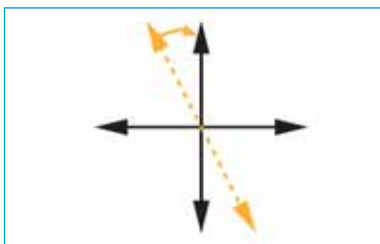
Specify the acceleration profile in seven segments, providing precise control over system motion.



### Position-Synchronized Output for Precise Laser Control

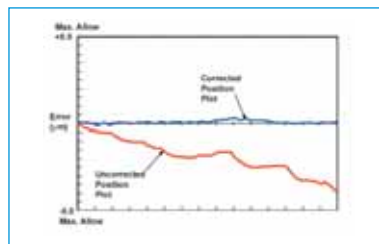
Aerotech's Position Synchronized Output (PSO) functionality fires a laser based on real-time position feedback on up to 3 axes, providing uniform pulse spacing on your material during 2D and 3D processing. Coordinating a motion subsystem with laser firing minimizes heat-affected zones and improves quality on photovoltaic panels for maximum efficiency.

## Standard Control Capabilities



### Orthogonality Correction

Improve X-Y planar accuracy by simply entering the known orthogonality error and the controller will compensate.



### Axis Calibration

Compensate for repeatable mechanical errors in a positioning system.



### Gantry Mode

Complex gantry control is reduced to a few simple commands to handle dual motor and/or dual feedback configurations.

### WORLD HEADQUARTERS

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