

**AZORES**

MODEL  
**6700**



high-resolution flat panel display  
**photolithography**



# STEPPER TECHNOLOGY

MODEL  
6700

## Meeting the Challenge of Mobile Display Applications

The Model 6700 addresses the demanding requirements of the mobile display industry. Based on proven Azores stepper technology, the 6700 has been enhanced with optimal throughput and resolution in a Gen 3.5 configuration. The system is available with either a 160 mm imaging field, providing improved throughput at 5 µm resolution, or a 80 mm imaging field, with resolution down to 2.5 µm.

The Model 6700 PanelPrinter™ is a “step and repeat” system. Light from a mercury arc lamp is projected through a mask, or reticle, that contains display and circuit patterns. The mask is imaged through a projection lens to photoresist material coated on the substrate. The substrate is then moved, or “stepped,” to a second position to expose an adjacent area. Stepped images are “stitched” together and precise alignment is ensured across the substrate. The system repeats the process until the entire substrate is patterned. Once this has been completed, the substrate is unloaded and developed with an alkalai solution, such as TMAH or sodium hydroxide (NaOH), and the exposed material (the portions not masked by the reticle pattern) is removed.

## High Resolution Imaging

A family of high performance projection lenses enable high-resolution imaging as low as 1 µm or up to 5 µm under actual manufacturing conditions. A high power

lamp provides an increased illumination intensity. Both image field stitching error and total overlay accuracy are  $\leq + 0.5 \mu\text{m}$ .

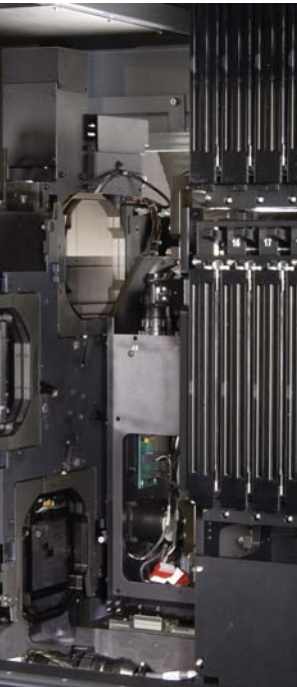
- **High-Fidelity Projection Lens and Illumination System.** Features corrected optics with real-time auto-focus measurement and compensation.

- **Automated Reticle Handling and Storage System.** Up to 60 masks can be stored on the system, with automatic loading of up to 4 masks per layer.

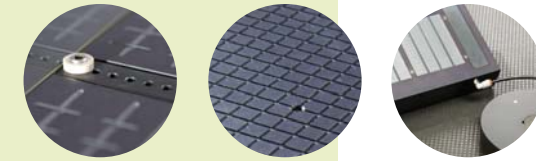
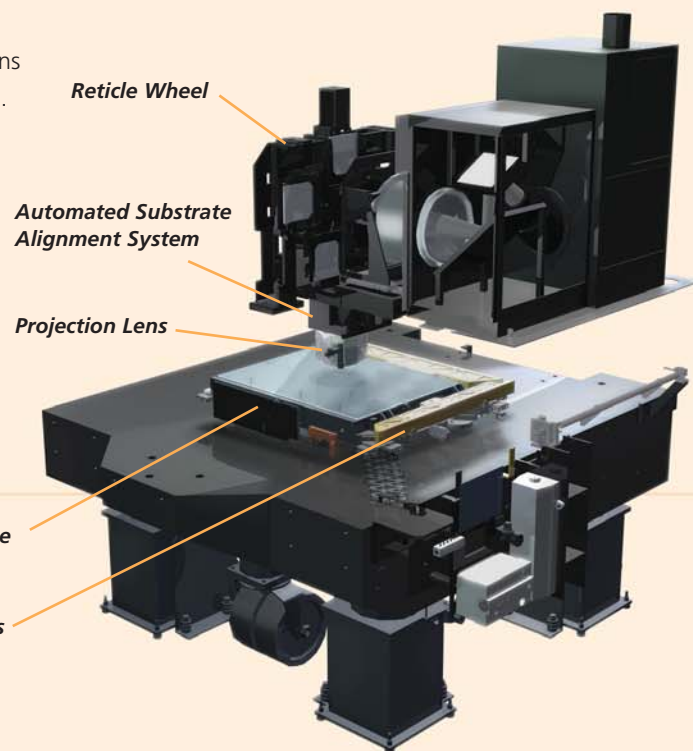
- **Automated Substrate Alignment System.** An off-axis alignment system captures alignment fiducials for global and enhanced global alignment.

- **Precision X-Y Stage.** A novel motion provides the industry's smallest footprint. A laser-interferometer controlled stage is integrated with a metrology package for precise system calibration.

- **Metrology Sensors.** A sophisticated suite of metrology sensors calibrates and optimizes system performance, including: lens distortion optimization, lens focus, illumination uniformity, and alignment baseline relative to the center of the lens.

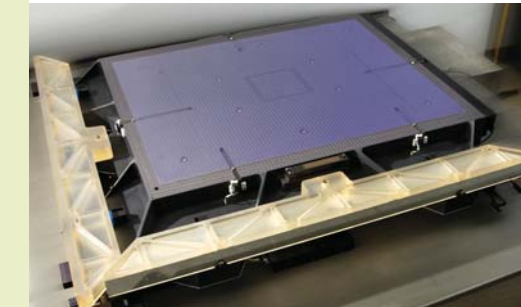


Reticle Storage

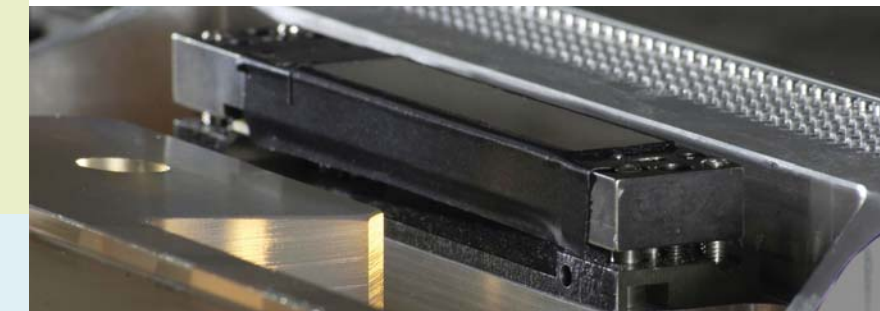


## Mix and Match

The integration of subsystem technology developed by Azores, combined with precision lens and platform options available, means that Azores steppers can be inserted into a production line in a “mix and match” setup with other lithography systems. The Azores system can then be used to image critical layers on substrates, while ensuring grid registration and alignment with other stepper systems that are imaging resists for less critical layers in the same process line.



X-Y Stage



Metrology Sensors

## MODEL 6700 | Specifications

### System Configuration

Substrate	Up to Gen 3.5	
Stage Accuracy	High Velocity Laser Interferometer	
Alignment	Bright Field Cross-Based	

Lens Type	8010 ghi(i)	160x1
Reduction Ratio	2x	1x
Image Field Diameter	80 mm	160 mm
Maximum Square Image Format	56.5 x 556.5 mm	113 x 113 mm
Depth of Focus (DOF)	9 µm	15 µm
Minimum Feature	2.5 µm L/S	5.0 µm L/S



## IMPORTANT FEATURES

- **Fast Focus Speed.** Steppers employ real-time auto-focus measurement and compensation for focusing at each exposure site, ensuring CD control across the lens field. Instead of moving the platform, the lens system is moved using fast, precise voice coil technology. Focus compensation is completed in < 0.1 seconds, within the X, Y stage settle time for each step, so there is no adverse impact on throughput.
- **Automatic Magnification Adjustment.** Lenses provide  $\pm 30$  ppm real-time magnification adjustment; therefore, every substrate is compensated according to the alignment results, ensuring precise alignment.
- **Fast Reticle Exchange.** Reticle wheel ensures fast and accurate reticle exchange. Handler features one-axis rotation instead of the normal three-axis movement, resulting in less exchange time.

- **Reticle Chuck.** Azores steppers feature a patented "six degrees of freedom" chuck, which enables the highest possible accuracy in layer-to-layer registration and image field stitching.
- **Auto Calibration.** Calibration procedures for lens, reticle, and platform are accomplished automatically and in a sequential process in as few as five minutes. Avoids exposure of test substrates for calibration prior to production.
- **Other Features:**
  - N-point alignment capability for critical process layers
  - Communication protocol interfaces available for integrating OEM handlers
  - Anti-reflective coating stage and improved chuck flatness
  - Advanced system diagnostics that may be accessed remotely by Azores technicians for service, support, and maintenance

## ABOUT AZORES

### About Azores

**W**ith more than 35 years of combined experience, Azores delivers high-quality products and services to an expanding global base of customers. Azores Corp was incorporated in March of 1999 by former employees of MRS Technology, Inc. Now Azores Corp is a leading global supplier of precision photolithography equipment for semiconductor and other growth industries. Azores is located in a 40,000 square-foot corporate headquarters in Wilmington, Massachusetts, USA, and provides local sales and customer support throughout Asia, Europe, and The Americas. The company's headquarters features a two-story facility

specifically designed for manufacturing photolithographic steppers, with 15-foot high ceilings and 10,000 square feet of Class 1000 clean room, as well as customer support and training.



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