

# FPD G-4000 Series

## Flat Panel Display Dispensing System

The FPD G-4000 series dispensing system with DispenseJet® technology is designed to meet high-volume production requirements for Gen 4 flat panel display manufacturing. The gantry design provides a small footprint and large XY dispense area (985 x 740 mm), setting it apart from moving table systems on the market.

The G-4000 is the system of choice for OLED OEM manufacturers and integrators that install work cells or entire flat panel production lines.

Asymtek's patented jet dispensing is an enabling technology for flat panel assembly applications because jetting eliminates traditional needle dispensing issues. Jet speeds for sealing and one drop fill (ODF) provide up to four times higher throughput over needle dispensing.

- *DJ-100 LC DispenseJet® valve*: Asymtek's piezo-activated high-speed jet is designed specifically for jetting liquid crystal (LC) material. Bottled LC material can be attached directly to the jet, eliminating problems with contamination and fluid waste associated with fluid transfer to syringes.

- *DJ-9000 DispenseJet® valve*: optimized for fast, accurate jetting of cell sealant lines and optical fill materials applied by ODF methodology for OLED applications.

The FPD G-4000 series offers significant cost savings and a lower cost of ownership compared to other dispensing equipment on the market for similar applications. It has a smaller footprint, higher throughput, better yield, and shorter set up time with less material waste. The base machine is lightweight and can be located on either the ground or upper floors without requiring expensive floor reinforcement.

Asymtek's Fluidmove® software includes the patented Calibrated Process Jetting (CpJ™) which automatically detects and corrects dispensing variances for superior process control. Laminated line variations are held to better than 5-percent.

The G-4000 system is designed for better than Class 100. Equipment interfacing is available through GEM/SECSII, custom PLC interface based on a standard template, or SMEMA-standard hardware and software protocols.



### FEATURES & BENEFITS:

- Asymtek's DispenseJet® valves greatly exceed the dispensing speed of traditional systems, allowing use of fewer heads, less tuning and less maintenance
- Typical jetted line speeds are 2 to 7 times faster than needle dispensing
- Jetting eliminates knit lines in seal applications
- Jetting provides tighter seal corner radii



- Closed-loop process control of fluid weight and flow rate for optimized throughput and yield
- Smaller platform footprint and jetting technology for twice the output of other systems on the market
- Available as a platform or a kit configuration for custom-integration suitable for a closed glove-box environment

# G-4000 SYSTEM SPECIFICATIONS:

## MOTION SYSTEM

Architecture:	H-Bridge Overhead Gantry
X-Y Type:	Linear DC servomotor driven, low-inertia, closed-loop, with linear encoder feedback
	Dual Y motors and dual encoders with anti-rotation control
Z Type:	Brushless DC servomotor with high-accuracy lead screw and linear encoder. The lead screw is self-locking at power loss.
X-Y Acceleration:	2.0 g peak with S-curve jerk control
X-Y Velocity:	1000 mm/s (40 in/s) maximum
X-Y Travel:	1065 x 870 mm (41.9 x 34.3 in.)
Z Travel:	45 mm (1.8 in.) maximum
X-Y-Z Encoder Resolution:	1 $\mu$ m
X-Y Positioning Accuracy:	$\pm 30 \mu$ m, 3 sigma
X-Y Repeatability:	$\pm 10 \mu$ m, 3 sigma

## DISPENSE AREA (X-Y)

### Single Action:

DJ-100 LC, DJ-9000 or DV-8000:	985 x 740 mm (38.8 x 29.1 in.)
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### Dual Action (Valve 1/Valve 2):

Dual DJ-9000s, dual DJ-100 LCs or DJ-9000/DV-8000:	925 x 740 mm (36.4 x 29.1 in.)
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Note: Larger X-dispense areas are achievable; contact the factory.

## VISION AND LIGHTING

Vision:	Automatic pattern recognition system allows for optical registration of the work piece to reliably locate dispensing sites (compensates for up to $\pm 7^\circ$ rotational part misalignment). Allows definition of both global and local fiducials. Giga Ethernet camera (fully digital) requires no A/D conversion which provides higher quality and faster system.
Lighting:	On-axis. Red/blue LED with 255 independent light levels for each color
Field of View:	6.3 mm (0.25 in.)

## CpJ™ WITH PRECISION SCALE

High-Accuracy Scale:	1 $\mu$ g resolution with 2 $\mu$ g repeatability, 5 g capacity (patents #6173864 and #5906682)
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**COMPUTER:** Laptop (dual core processor)

**OPERATING SYSTEM:** Windows® XP

**SOFTWARE:** Fluidmove® for Windows® XP with FPD-featured capabilities  
 German, Japanese, and English (Chinese TBD)

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Contact Asymtek for your specific application requirements.

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## FLUID DELIVERY METHOD

DJ-100 LC DispenseJet®:	Liquid crystal material for ODF
DJ-9000 DispenseJet®:	General use materials including sealants, optical fill ODF for OLED and all standard dispense material (configuration is application-dependent)
DV-8000 Heli-Flow®:	Configured for sealants, getters desiccant dispensing or other applications
Other valves:	Available
DispenseJet® Cycle Time:	DJ-9000: Up to 200 dots/sec DJ-100 LC: Up to 150 dots/sec

## FACILITIES REQUIREMENTS

Weight:	645 kg (1422 lbs.)
System Footprint:	1670 x 1424 mm (65.7 x 56.1 in.) all doors closed.
	Note: Control panel and keyboard extend outside this footprint.
Glass Loading:	Typically loaded from the rear; optionally loaded from left or right side (900-mm pass line – typical)
Air Supply:	700 kPa (95 psi, 7 bar)
Power (Mains):	180-260 VAC single phase, 25A, 50/60 Hz
Noise:	< 75 dBA
Vacuum:	5-10 cfm, 5 in.-Hg absolute (customer-provided)
Environmental:	5-55 °C, 5-90% RH (below 40 °C)

**STANDARDS COMPLIANCE:** SMEMA; CE

## OTHER STANDARD FEATURES

Configurable Light Beacon with audible alarm  
 Glass Sensitive Laser Height Sensor  
 HEPA Filter and Deionizers  
 Low Pressure Alarm  
 Programmable Temperature Control  
 Purge Cup

## OPTIONAL FEATURES

Base  
 Environmental Containment (contact factory)  
 Kit Configuration (contact factory for specifications)  
 Tooling

**Please contact us for the name of your local representative:**

- US Toll free: 1-800-ASYMTEK
- Email: [info@asymtek.com](mailto:info@asymtek.com)

**Or check our website: [www.asymtek.com](http://www.asymtek.com)**

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