

Camalot

Electronic Assembly Equipment

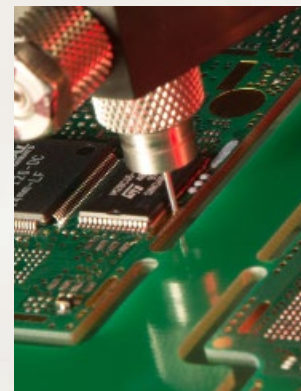
TW EAE

Prodigy™ Dispensing System



Innovation, performance and flexibility driven specifically toward the needs of the Automotive, Smartphone and Semiconductor markets.

Smarter, Faster and Highly Versatile



Prodigy:

Decades of experience have contributed innovative and patented solutions that provide increased productivity and high-quality results for the Automotive, Semiconductor and EMS market segments.

Proprietary Features

- Tilt and Rotate
- Dynamic Dual Head
- IR Sensors
- Syringe Cooling
- Jetting technology
- OpenApp communications

Smart, Faster and Highly Versatile

The Camalot® dispenser is designed and built to deliver extremely accurate dispensing at high speeds, exceptional frame stability and state of the art drive systems enable 1.5g's of acceleration and XYZ positional repeatability of less than 10 microns. An innovative and rigid frame design combined with advanced linear drive architecture enables fast point to point moves, high accuracy and long-term repeatable performance. All pumps and options are field configurable allowing easy reconfiguration of the equipment if dispensing requirements change over time.



Prodigy guarantees process excellence

- Best in class accuracy and throughput
- Selection of Jet and Auger pump technologies
- Closed loop controls
- 2000+ systems in service
- Worldwide support network

Configurable transport system

Prodigy can accommodate a broad range of product sizes and weights. A unique board staging function increases the dispense area to 890 mm x 600 mm an upgraded conveyor option capable of transporting >8kg products opens up more possibilities for automation of the dispense processes.

An optional dual lane conveyor system can accommodate up to 6 heated zones (3 per lane), productivity is optimized by multitasking the dispense operation between front and rear lanes.



Camalot Prodigy

Pump Options and Applications

Superior pump technology is the key to accurate and repeatable precision dispensing, Camalot owns and designs all of the pumps offered on our systems. These proprietary pump technologies are fully integrated within the motion control system and driven by innovative software controls to create a robust dispense process. Closed-loop control provided by a weight scale and vision inspection techniques facilitates a “hands off” setup and allows a continuous means to monitor and maintain the tightest of process requirements.



NuJet™

- Designed and developed by Camalot
- Speeds up to 300 Hz
- Auto-tune for closed-loop calibration
- Dot sizes < 300 microns
- Underfill, encapsulation, epoxy type application
- Dual pump pitching down to 28 mm



635 SD

- Suited for dot type applications
- Footed and unfooted needles
- Precise material delivery
- Controllable dispense speed
- Fine pitch auger for Microdot applications



NanoShot™

- Suited for underfill and UV coating
- High speed - Up to 600 Hz
- Auto-tune feature for closed-loop calibration
- Dot sizes < 300 microns
- Capable of 50,000 DPH



680 SD

- Suited for inline type applications
- Positive shutoff/no drip design delivery
- Carbide parts reduce wear from abrasive materials
- High material flow rates

Application vs Pump	Jetting Pumps		Auger Pumps	
	NanoShot	NuJet	635 SD	680 SD
Underfill	X	X		X
Corner/Edge Bond	X	X	X	X
SMT/UV/Flux	X	X	X	
Encap/Potting	X	X		X
Solder Paste			X	X
TIM			X	X
Silver Epoxy	X	X	X	X

Highlighted pumps are the recommended application choices

Innovative and Patented Features



ADVANCED TILT AND ROTATE

This patented option provides reduced wet-out areas and improved capillary flow for underfill applications by accurately dispensing on side walls of packages, the motion also provides the means to dispense around tall components and connectors accessing hard to reach areas. State-of-the-art

rotary actuators provide a fast, high precision, zero backlash mechanism that allows articulation of the dispense pump in sub-degree increments in both axes.

OPENAPPS 4.0 - MES COMMUNICATIONS

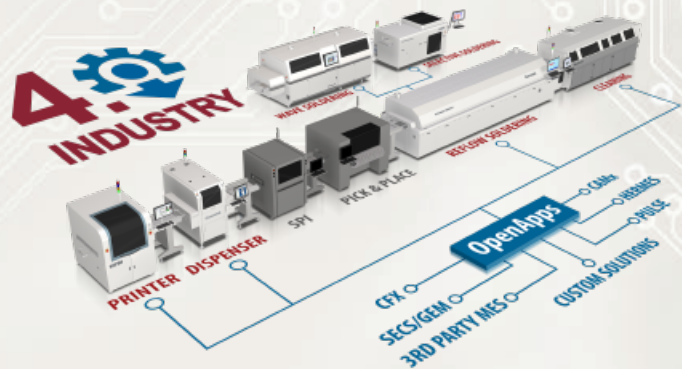
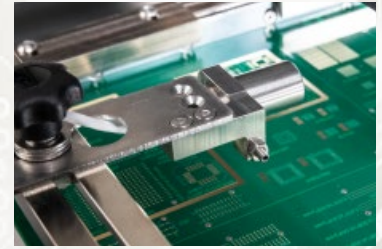
An open architecture source code which provides customers and third parties the capability of developing custom interfaces in support of Industry 4.0 initiatives and Manufacturing Execution Systems (MES).

Applications are also available to support various industry protocols such as:

- SECS/GEM, CFX, Pana iLnB, Hermes and others upon request

IR TEMPERATURE SENSORS

A constant product temperature through the dispense process is critical to ensure process stability and repeatability for underfilling of high I/O count devices such as BGA's, and Flip Chips. The patented IR (Infrared) Temperature Sensors measure in "real time" the top-side board temperature which allows the system to provide closed-loop control to maintain the product within the specified temperature range. Temperature is monitored through pre-heat, dispense heat and post-heat zones.



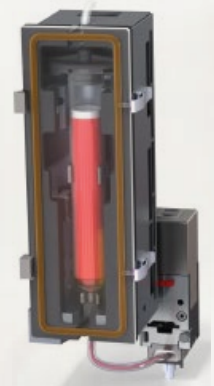
DYNAMIC DUAL HEAD (DDH)

The first and foremost dual head system that automatically corrects for part to part inconsistencies. The DDH option uses a unique and innovative mini XY drive system on a second Z-Axis to correct in "real-time" and allow synchronous dispensing of both pumps regardless of part to part rotation. This patented technology dramatically increases productivity with no sacrifice to yield and is compatible with jetting and needle-based pumps.



SYRINGE COOLER FOR UNDERFILL MATERIAL

Proprietary syringe cooling technology preserves the 'pot life' of underfill materials by maintaining the syringe at a controlled temperature within the heated machine. Field proven to provide reduced material waste, less downtime and increased stability.



Smarter & Faster

CAMALOT PRODIGY SPECIFICATIONS

XY AXIS

Repeatability ¹	±10 microns @ 3 sigma
Speed	1000 mm/sec
Acceleration	1.5g peak
Encoder Resolution	0.5 microns
Gantry Drive System	Linear motors/encoders

Z AXIS

Repeatability ²	±10 microns @ 3 sigma
Encoder Resolution	0.6 microns
Z-Axis Type	Closed-loop DC servo ball screw drive

DOT PLACEMENT PERFORMANCE

Needle ²	40,000 DPH (3 mm pitch)
Jet Pump	50,000 DPH (3 mm pitch)

DISPENSE AREA

Single Head (standard)	440 mm x 558 mm
Single Head (with staging)	up to 890 mm x 600 mm (consult factory)
Dual Head (standard)	360 mm x 558 mm
Dual Head (with staging)	up to 810 mm x 600 mm (consult factory)

BOARD HANDLING

Conveyor Type	Single or Dual Lane - ESD flat belt with auto width adjust
Min/Max Conveyor Width	25.4 mm to 558 mm (610 mm optional)
Above Board Clearance	25.4 mm standard - (37 mm optional)
Underboard Clearance	30.5 mm
Transport Height	895 mm to 965 mm
Conveyor Weight Capacity	3.6 kg (8 kg optional)
Conveyor Options SMT	Edge clamps w/vacuum support
Conveyor Lift Chucks	330 mm x 250 mm - contact vacuum or non-contact convection heating
Chuck Temperature Range	Ambient to 130°C

¹ Full gantry speed

² 0.5 mm dot diameter, 2.5 mm needle lift

STANDARD FEATURES

Laser height sensor	Auto vision alignment
Single needle cleaner	Material low level sensor
XYZ calibration station	Auto-width conveyor (single lane)
Light tower with alarm	Pre-dispense and purge stations
Vision System	Dual on axis lighting with CCD camera
Computer and OS	Desktop PC with Microsoft Windows 10
Program Storage	Local hard drive, USB ports and Ethernet
Industry Standards	SMEMA, CE UKCA, Semi S2, S8 and S22

ADDITIONAL OPTIONS

Tilt and Rotate	Dynamic Dual Head
IR Sensors	2nd dispense head
Syringe Cooler	Dual Mode Weight Scale
MES Communications	Large/heavy board capability
Custom vision algorithms	2nd needle cleaner
Clean room compliance	Dot/Line inspection capability
SECS/GEM	UL compliance

FACILITIES

Power Requirement	200 to 250 VAC, 50/60 Hz, 20A
Air Supply	10 CFM at >95 PSI filtered @ 5 microns
Machine Dimensions (W x D x H) (excluding light tower)	848 mm x 1735 mm x 1531 mm - small footprint 1270 mm x 1735 mm x 1531 mm - large footprint
Machine Weight	1000 kg to 1200 kg
Crated Dimensions (W x D x H) (excluding light tower)	1420 mm x 2200 mm x 1910 mm
Crated Weight	1250 kg to 1450 kg

ITW EAE is a division of Illinois Tool Works, Inc. It is a consolidation of all of its Electronic Assembly Equipment and Thermal Processing Technology. The group includes world-class products from MPM, Camalot, Electrovert, Vitronics Soltec and Despatch.

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Electronic Assembly Dispensers

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