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BIODOT . . .

is the leading supplier of systems for the research, development and manufacture of diagnostic tests. Its Mission is to enable, inspire and educate scientists to commercialize their R&D ideas through to manufactured product. Using its core competencies in low volume non-contact and contact dispensing, cutting and lamination equipment, and technology transfer services, BioDot has developed a range of equipment for the research and development, and manufacture of biosensors.

With a commitment to fully understanding our customer requirements, BioDot's personnel have a genuine wish to help you develop your research ideas. Our sales teams are highly trained in providing expert advice in both process and material handling needs. They are backed by strong support from teams of applications scientists and service engineers.

CONTENTS

| | |
|-------------------------------|----|
| BIOSENSOR INTRODUCTION | 3 |
| DISPENSING TECHNOLOGIES | 5 |
| LAMINATING TECHNOLOGIES | 7 |
| CUTTING TECHNOLOGIES | 9 |
| “HANDS ON” WORKSHOPS | 11 |
| PRODUCTS & OPTIONS | 13 |

Bringing Manufacturing
Strength to the
Laboratory

BIOSENSORS

Overview of biosensor manufacturing process:

A biosensor incorporates a biological sensing element, such as an enzyme, antibody, antigen, nucleic acid etc, which is associated with a physiochemical transducer. When an analyte is presented to the transducer, a chemical reaction takes place that provides an electrical signal that is proportional to the concentration of the analyte.

The process is:

- 1. The base electrode** - Typically the base transducer is made from plastic. A number of elements are screen printed onto the plastic, including:
 - Carbon/graphite mix
 - Conductors
 - Reference electrode
 - Insulators/dielectrics
- 2. The biological sensing element is then applied to the transducer.** Screen printing process is unsuitable for most biological materials, particularly with high temperatures used to cure the printed electrodes. The alternative is to dispense the material. BioDot's range of Aspirate and Dispense (AD series) systems uses its proprietary BioJet™ non-contact technology to deliver "on the fly" dispensing. The drop-on-demand technology allows quantitative dispensing from 20 nL to 4 µL in a given drop.

Often the researcher will need to experiment with a wide range of variables when developing a biosensor. These include:

- Changing drop volume with low coefficient of variables (c.v's)
- Adjusting drop chemistries, often through a laborious trial and error approach.
- Adjusting drop spacing
- Applying multiple analytes

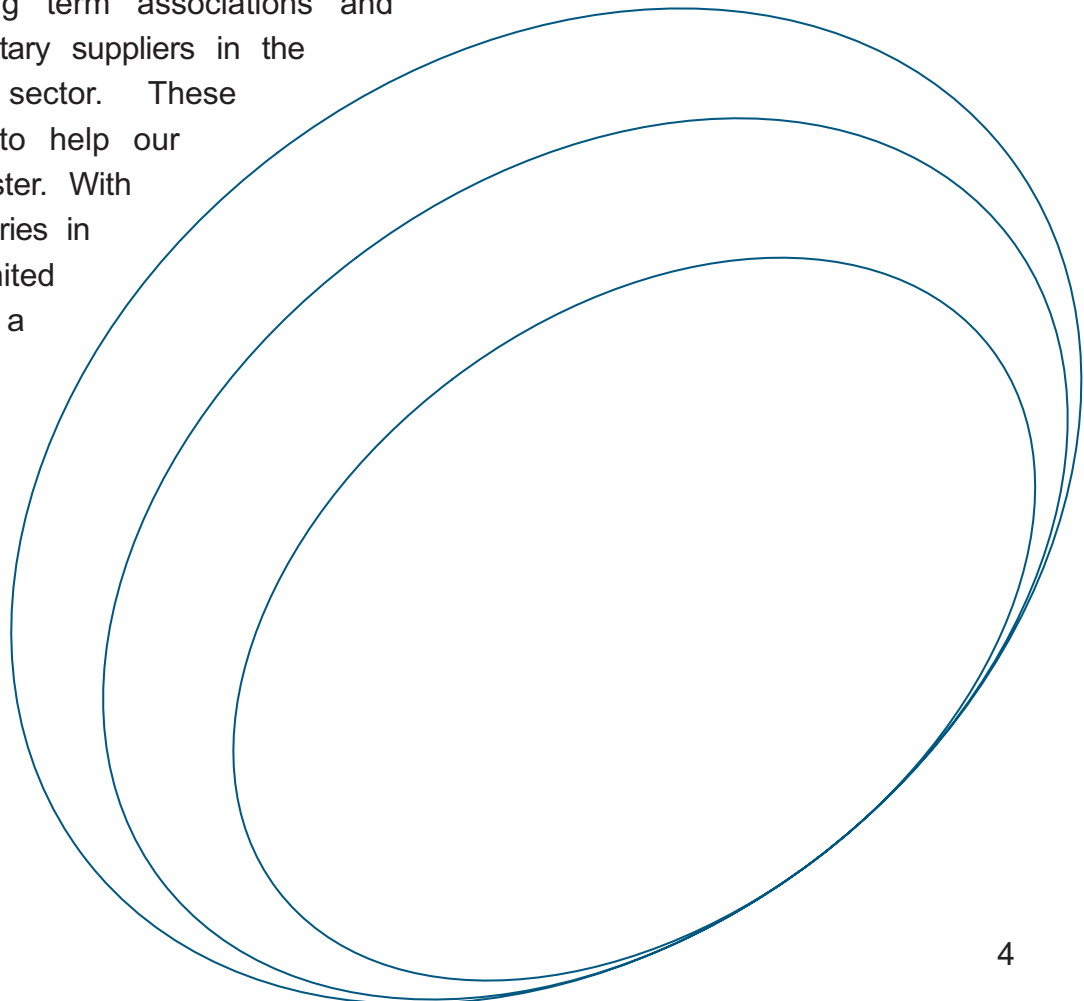
The BioJet Plus system combines high precision dispensing (typically less than 3% at 1 µL, 5% at 100 nL), with accurate XYZ stage movement (+/- 10 µm in X and Y). Its ability to aspirate and dispense, coupled with high level of control of the drop-on-demand volumes, allow combinatorial approaches to sensor development.

From a manufacturing viewpoint, BioDot offers a wide range of platforms with the BioJet Plus technology to allow researchers to scale-up their ideas from bench, through pilot production onto full manufacturing with a minimum of process development issues. On-the-fly dispensing allows extremely high manufacturing output with a typical card of 250 sensors being dispensed in less than 30 seconds.

3. The process continues to where the individual sensors need to be cut from the cards.

BioDot offers both rotary and guillotine cutters with a variety of blade options to suit the researcher's specific material. Furthermore, the cutting systems can incorporate magazine card feed and bottle collection to automate the manufacturing process.

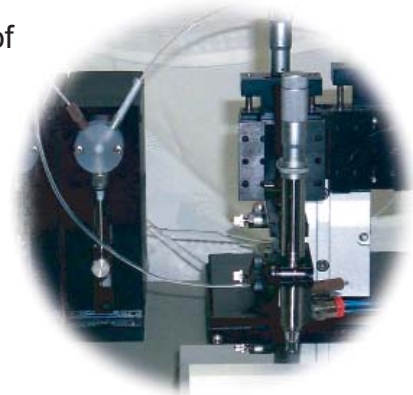
BioDot has developed long term associations and partnerships with complimentary suppliers in the rapid-test manufacturing sector. These associations allow BioDot to help our customers find solutions faster. With complete application laboratories in California, and in the United Kingdom, BioDot can offer a “hands on education course” at our facility, or through one of our “hands on” workshops that are offered globally throughout the year.



DISPENSING TECHNOLOGIES

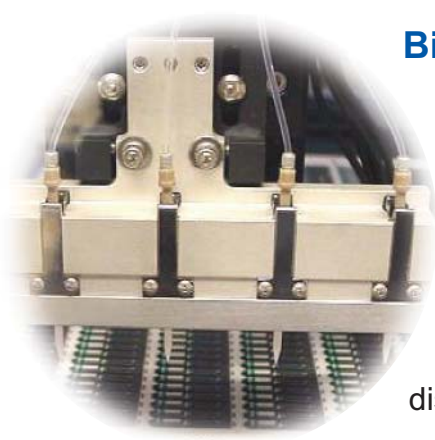
AirJet Quanti:

AirJet technology is non-contact, quantitative aerosol dispensing. BioDot's proprietary technology couples the AirJet with a high resolution syringe pump to meter exact amounts of reagents. This process produces a precise and easy to use method for dispensing microliter quantities of fluids. Unique design features ensure repeatability and allow for disassembly and cleaning without affecting calibration.



BioJet Plus:

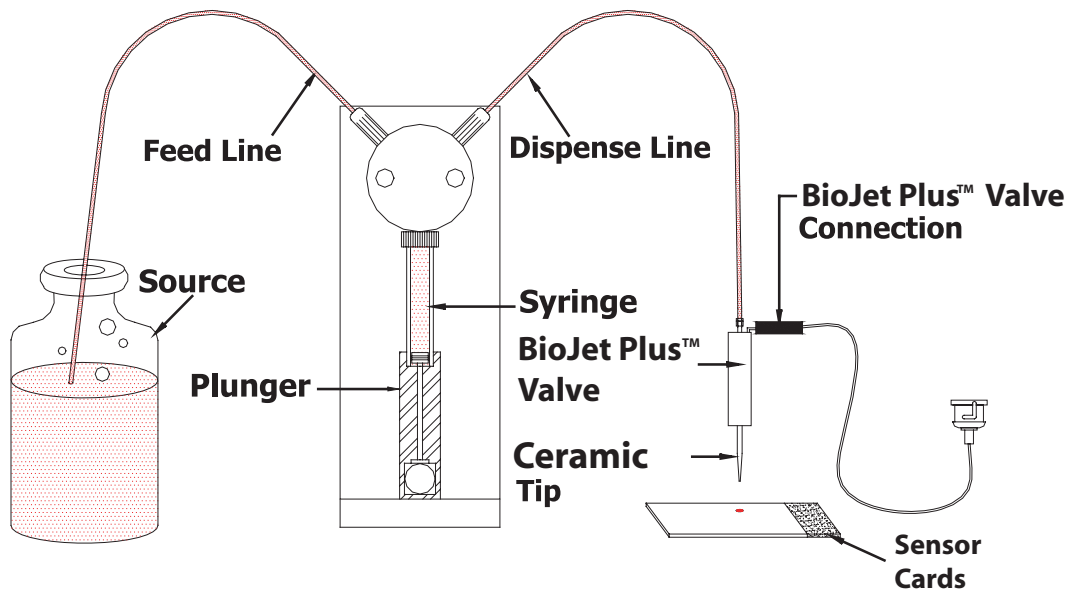
The proprietary BioJet Plus technology was developed for high speed dispensing. The technology involves (1) the coupling of a high speed micro solenoid valve with a high resolution syringe pump and (2) synchronization of the dispense system with the movements of the stage. The result is an extremely fast dispensing system which can deliver volumes from 20 nL to 4 μ L in a single drop. BioJet Plus can work in either an Aspirate/Dispense or Bulk Dispense modes.



Use BioJet Plus to dispense buffers, antibodies, enzymes or cells. BioJet Plus dispensing is independent of the substrate allowing flexible dispensing to biosensor chips, sheets, microtiter plates, glass slides or membranes. BioJet Plus systems are available from compact R&D systems to complete integrated manufacturing modules.

The patented BioJet Plus technology is able to place 500 nL into 1536 wells in 20 seconds. This revolutionary non-contact dispensing of drops "on the fly" is ideal for the most demanding biosensor applications where high speed and precise low volumes are required.

BioJet Plus™



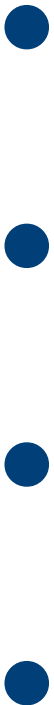
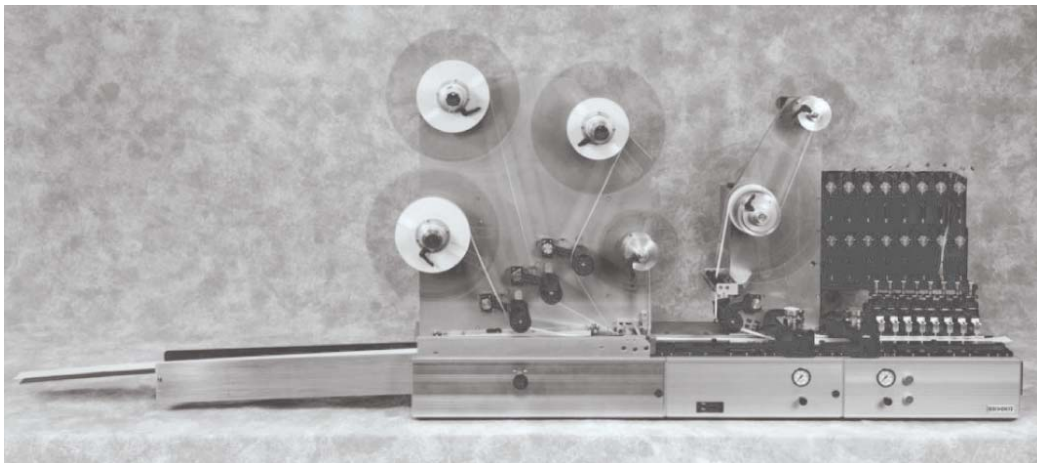
LAMINATING TECHNOLOGIES

The laminating step can be done in either batch or automated In Line modes.

Clamshell Lamination: For batch mode, a Clamshell or manual approach is designed for the accurate assembly of precut materials into a specific test strip product. Precut materials and plastic backing are brought together to form a laminated test strip. The Clamshell laminator contains top and bottom vacuum nests to hold test strip materials in place for the lamination process. The nests are customized to the customer's design but are easily interchangeable so other designs can be laminated as well. When the nests are brought together accurate alignment of the laminate is achieved.

In Line Lamination: For a continuous lamination process, automated lamination is needed. BioDot has evolved a modular lamination system suitable for test formats comprised of multiple layers joined by adhesives.

Each material is fed from adjustable spindles through guides and under a pressure roller to assure complete adhesion to the support backing. The automated system can also be configured with dispensing or cutting technologies.



CUTTING TECHNOLOGIES

Guillotine Cutting:

Guillotine cutting technology is designed to provide robustness, flexibility and precision in both R&D and high volume manufacturing environments.

Titanium nitrate coated, hardened steel blades with high cutting angles guarantee long blade life, while high cut angles coupled with controllable tension friction feed rollers guarantee cut quality and precision. Cut widths and processing speed are easily programmable via the hand-held terminal, so the unit can be used for processing product of different final widths or for cutting of longer sections of roll-stock for use as components. A reel-feed option completes the utility of the system for component cutting, while anti-static and bottle attachments for collection of final product provide added utility for finished part processing.

Simplicity of operation and maintenance, coupled with flexibility and high throughput capability makes this technology ideal for trouble-free operation in biosensor applications.



Rotary Card Cutting:

The Rotary Card Cutting System is a high speed precision strip cutting instrument used to cut sheet materials into thin strips down to 4 mm width. This module is also designed to cut a wide variety of rapid diagnostic test strip products from master sheets that include laminated and thick film circuit formats. A typical application is the cutting of lateral flow test strips which consist of a laminated card with up to 4 laminated layers. This system is primarily designed for high speed cutting of strips at rates in excess of 500 parts per minute which are typical for manufacturing operations. The module can be set up to collect slit parts in bulk or in bottles.

The Rotary Card Cutting System is designed for a quick exchange of blade set assemblies to modify cut widths. The module can be provided with a magazine feed and/or different collection chute options.

Its easy operation makes it ideal for use in either development or manufacturing environments.

“HANDS ON” WORKSHOPS

BioDot conducts worldwide workshops and seminars on the technology of manufacturing of Rapid Tests. In these workshops, BioDot and its strategic partners bring together experts in the various disciplines of rapid assay technologies to provide the most up to date information possible.

The workshops are a mixture of lecture and laboratory to present both a “classroom” and “hands on” style.

Classroom Sessions

- Introduction to Biosensors
- Screen Printing of Base Electrodes
- Enzyme Cocktail and Bio-stabilization Processes
- Materials and Selection Process to Build Circuits
- Sample Handling
- Adhesives and Tapes
- Dispensing Technologies
- Cutting Technologies
- Laminating Technologies
- Reading and Analysis
- Manufacturing Processes

“Hands On” Sessions

- Screen Printing
- Adding Electrochemistry to Base Electrode
- Laminating Processes
- Cutting Processes
- Reading and Analysis

*Agenda subject to change due to speaker availability.





**Emerging Quantitative
Rapid Assays Technologies**

| Location | Date |
|--------------------|-----------|
| San Diego | Oct. 2005 |
| Taipei, TW | Nov. 2005 |
| Tokyo, JP | Nov. 2005 |
| Salt Lake City, UT | Mar. 2006 |
| Beijing, CN | Apr. 2006 |
| Shanghai, CN | Apr. 2006 |
| Dublin, IE | Apr. 2006 |
| Chicago, IL | Jul. 2006 |
| Amsterdam, NL | Oct. 2006 |
| San Diego, CA | Oct. 2006 |
| Taipei, TW | Oct. 2006 |
| Salt Lake City, UT | Mar. 2007 |
| Amsterdam | May 2007 |
| Shanghai | Jun. 2007 |
| Shenzhen | Jun. 2007 |
| San Diego, CA | Jul. 2007 |
| San Diego, CA | Sep. 2007 |
| Minneapolis, MN | Apr. 2008 |
| Washington, DC | Jul. 2008 |
| Brussels | Sep. 2008 |
| San Diego, CA | Sep. 2008 |

**Practical Considerations of Development
& Manufacture of Biosensors**

| Location | Date |
|--------------------|-----------|
| San Diego, CA | Feb. 2005 |
| Boston, MA | Apr. 2005 |
| Florence, IT | May 2005 |
| Kenilworth, UK | Feb. 2006 |
| Toronto, CA | May 2006 |
| Kenilworth, UK | Feb. 2007 |
| Salt Lake City, UT | Mar. 2007 |
| Amsterdam | May 2007 |
| San Diego, CA | Sep. 2007 |
| Osaka | Oct. 2007 |
| Kenilworth, UK | Feb. 2008 |
| Salt Lake City, UT | Mar. 2008 |
| Minneapolis, MN | Apr. 2008 |
| Shanghai | May 2008 |
| Taipei | Jun. 2008 |
| San Diego, CA | Jun. 2008 |

PRODUCTS & OPTIONS . . .

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Dispensing Systems

Dispensing Platform Summary

| | AD3050 | AD3200 | AD3400 | AD6000 |
|---|----------------|--------------------------------|-----------------|-----------------|
| PC Controller with AxSys™ Software | Yes | Yes | Yes | Yes |
| Maximum # BioJet Plus Pumps | 4 | 16 | 32 | 96 |
| Dispense Area | 450 mm x 70 mm | 450 mm x 260 mm | 495 mm x 300 mm | 600 mm x 600 mm |
| Vacuum Pump(s) Needed | 1 | 1-2 depending on configuration | 2 | 2 |
| <i>Additional Configuration Options:</i> | | | | |
| Ability to add on Contact Dispensing | Yes | Yes | Yes | Yes |
| Ability to add on AirJet Dispensing | Yes | Yes | Yes | Yes |
| Helium Degasser | Yes | Yes | Yes | Yes |
| In Line Degasser | Yes | Yes | Yes | Yes |
| Chilled Source Position | No | No | Yes | Yes |
| Ultrasonic Wash | No | No | Yes | Yes |
| Pre-Dispense Vision Systems (Horizontal Camera) | No | No | Yes | Yes |
| Alignment Vision Systems (Vertical Camera) | No | No | Yes | Yes |
| Shuttle Systems | No | No | Yes | Yes |
| Indexing Conveyor | No | No | No | Yes |

AD3050

Research & Development System



PRODUCT DESCRIPTION

The AD3050 is a tabletop workstation designed for high speed aspirating and dispensing to a biosensor card or membrane. Its compact footprint and up to four BioJet Plus Pumps makes it ideal for a research laboratory to investigate biosensor applications.

Using the PC Controller and AxSys™ Software, both biological and chemical reagents can be dispensed with the proprietary BioJet technology. The three components synchronized together result in a precise, non contact, low volume delivery system.

FEATURES AND BENEFITS

SPEED

- "On the Fly" dispensing
- Non-Contact mode reduces wash time

FOOTPRINT

- Small design to accommodate research environment

MULTI-MODE DISPENSING

- BioJet Plus Non Contact Dispenser
- Aspirate and Dispense
- Continuous Dispense

PERFORMANCE

X-Y Table Speed

175 mm/second

Minimum Aspirate Volume

1 μ L

Minimum Dispense Volume

20 nL

Dynamic Dispense Range

20 nL - 250 μ L

Positioning Performance

Stepper Motor Resolution = 1.3 μ m

Repeatability < \pm 10 μ m

(95% Confidence)

SPECIFICATIONS

DIMENSIONS (L x W x H)
355 mm x 431 mm x 406 mm

WEIGHT
85 lbs (38.6 kg)

POWER REQUIREMENT
110/220 VAC; 50/60 Hz

VACUUM REQUIREMENT
Vacuum Wash Station: 2.1 CFM (~60 CL)



AD3050 shown with a Glucose
Biosensor Card

DISPENSING SPECIFICATIONS

DISPENSE MODES
Aspirate/Dispense (source to destination)
Continuous (bulk reservoir to destination)

DISPENSE AREA
450 mm x 70 mm

DISPENSE TO DISPENSE PRECISION
<10% CV at 50 nL, <7% CV at 100 nL; <4% CV at 500 nL

DISPENSE ACCURACY
 $\pm 7\%$ at 50 nL, $\pm 5\%$ at 100 nL

DISPENSE SPEED
< 10 seconds for a complete dispense to a 12 position Biosensor card
(shown above)

OPTIONS

UP TO 4 BIOJET PLUS PUMPS
HUMIDITY CONTROL
SUBSTRATE NEST
Magnetic Hold Down Nest

VACUUM PUMP
HELIUM DEGASSER
IN LINE DEGASSER

AD3200

Research & Development System



PRODUCT DESCRIPTION

The AD3200 is a workstation designed for development and pilot scale production. Its standard 8 BioJet Plus and nine-plate nest configuration makes it ideal for a medium throughput Biosensor laboratory.

The proprietary BioJet Plus technology was developed for high speed dispensing. The technology involves (1) the coupling of a high speed micro solenoid valve with a high resolution syringe pump and (2) synchronization of the dispense system with the movements of the stage. The result is an extremely fast dispensing system which can deliver volumes non contact from 20 nL to 4 μ L in a single dispensed drop. BioJet Plus can work in either an Aspirate/dispense or Bulk Dispense modes.

Use BioJet Plus to dispense buffers, antibodies, enzymes or cells. BioJet Plus dispensing is independent of the substrate allowing flexible dispensing to biosensor cards, microtiter plates, glass slides, or membranes.

FEATURES AND BENEFITS

SPEED

- "On the Fly" dispensing
- Non-Contact mode reduces wash time

MULTI-MODE DISPENSING

- Aspirate and Dispense
- Continuous Dispense
- Multi-reagent Priming

FLEXIBLE

- Suitable for R&D Biosensor applications
- Configured with 9 Position Microtiter Nest or 50 Glass Slides

PERFORMANCE

X-Y Table Speed

175 mm/second

Minimum Aspirate Volume

1 μ L

Minimum Dispense Volume

20 nL

Dynamic Dispense Range

20 nL - 250 μ L

Positioning Performance

Stepper Motor Resolution = 1.3 μ m

Repeatability < \pm 10 μ m

(95% Confidence)

SPECIFICATIONS

DIMENSIONS (L x W x H)

40" x 30" x 13" (each for 2 modules)

WEIGHT

160 lbs (72.7 kg)

POWER REQUIREMENT

110/220 VAC; 50/60 Hz

VACUUM REQUIREMENT

Vacuum Wash Station: 2.1 CFM (~60 CL)

DISPENSING SPECIFICATIONS

DISPENSE MODES

Aspirate/Dispense (source to destination)

Continuous (bulk reservoir to destination)

DISPENSE AREA

450 mm x 260 mm

DISPENSE TO DISPENSE PRECISION

<10% CV at 50 nL, <7% CV at 100 nL; <4% CV at 500 nL

VALVE TO VALVE PRECISION

<10% average CV at 100 nL (8 valves)

DISPENSE ACCURACY

±7% at 50 nL, ±5% at 100 nL

DISPENSE SPEED

20 seconds to fill a 1536 well plate with 500 nL/well (8 channels)

Note: All specifications are based on total experiment cv's, which include drop to drop plate filling (where applicable) and plate reader cv's.

OPTIONS

UP TO 16 BIOJET PLUS PUMPS

AIRJET DISPENSING

HUMIDITY CHAMBER & CONTROL

SUBSTRATE NEST

Glass Slide, Microtiter Plate, or Membrane

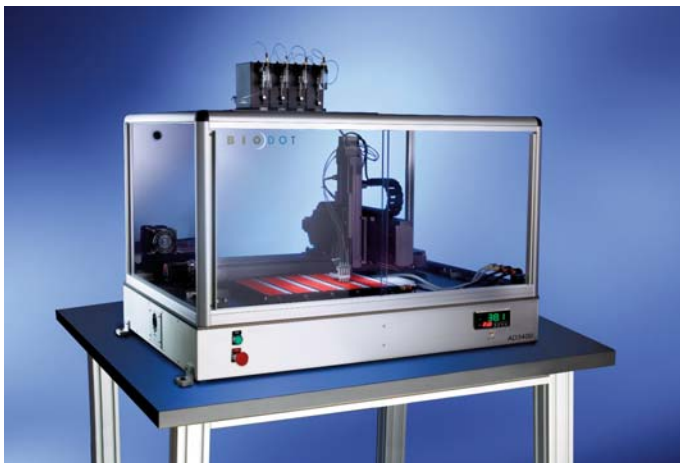
VACUUM PUMP

HELIUM DEGASSER

IN LINE DEGASSER

AD3400

Development to Pilot Production System



PRODUCT DESCRIPTION

The AD3400 is a workstation that is suitable for R&D through to production levels. With its superior positional accuracy and speed, it is foreseeable to begin biosensor projects on this system and then upgrade throughput using the same system. With a choice of 3 nests and mechanical shuttle, it allows users the ability to interchange substrates.

The proprietary BioJet Plus technology was developed for high speed dispensing. The technology involves (1) the coupling of a high speed micro solenoid valve with a high resolution syringe pump and (2) synchronization of the dispense system with the movements of the stage. The result is an extremely fast dispensing system which can deliver volumes non contact from 20 nL to 4 μ L in a single dispensed drop. BioJet Plus can work in either an Aspirate/dispense or Bulk Dispense modes.

Use BioJet Plus to dispense buffers, antibodies, enzymes or cells. BioJet Plus dispensing is independent of the substrate allowing flexible dispensing to biosensor cards, microtiter plates, glass slides, or membranes.

FEATURES AND BENEFITS

FLEXIBILITY

- Incorporate Multi Dispensing technologies
- Aspirate and Dispense Capability
- Bulk Dispense Capability

ACCURACY

- High resolution X-Y-Z positioning

UPGRADEABLE

- Suitable to add components to achieve batch production
- Ability to add contact and non-contact dispensing options
- Ability to add vision capabilities

PERFORMANCE

X-Y-Z Speed

250 mm/second

Minimum Aspirate Volume

1 μ L

Minimum Dispense Volume

20 nL

Dynamic Dispense Range

20 nL - 250 μ L

Positioning Performance

Stepper Motor Resolution = 1.3 μ m

Repeatability < \pm 10 μ m

(95% Confidence)

SPECIFICATIONS

DIMENSIONS (L x W x H)

1219 mm x 762 mm x 1000 mm (48" x 30" x 39.5")

WEIGHT

500 lbs (227 kg)

POWER REQUIREMENT

110/220 VAC; 50/60 Hz

VACUUM REQUIREMENT

Vacuum Wash Station: 2.1 CFM (~60 CL)

DISPENSING SPECIFICATIONS

DISPENSE MODES

Aspirate/Dispense (source to destination)

Continuous (bulk reservoir to destination)

DISPENSE AREA

495 mm x 300 mm

DISPENSE TO DISPENSE PRECISION

<10% CV at 50 nL, <7% CV at 100 nL; <4% CV at 500 nL

VALVE TO VALVE PRECISION

<10% average CV at 100 nL (8 valves)

DISPENSE ACCURACY

±7% at 50 nL, ±5% at 100 nL

DISPENSE SPEED

20 seconds to fill a 1536 well plate with 500 nL/well (8 channels)

Note: All specifications are based on total experiment cv's, which include drop to drop plate filling (where applicable) and plate reader cv's.

OPTIONS

UP TO 32 BIOJET PLUS PUMPS

AIRJET DISPENSING

SYRINGE DISPENSING

FRONT LINE DISPENSING

PIN DISPENSING

HUMIDITY CONTROL

SUBSTRATE NEST

Glass Slide, Microtiter Plate, or Membrane

VACUUM PUMP

HELIUM DEGASSER

IN LINE DEGASSER

ULTRASONIC WASH STATION

BARCODE READER

VISION SYSTEM

SHUTTLE SYSTEM

AD6000

Production System



PRODUCT DESCRIPTION

The AD6000 is a workstation designed for high throughput biosensor manufacturing. Optical (wet/dry sensors) and Vision Inspection (CCD camera) systems can be configured on the AD6000 for verification of substrate positioning and reagent spot dispensing.

BioJet Plus proprietary non contact dispensing technology, links high resolution syringe pump liquid displacement with micro-solenoid actuated valve, controlling drop ejections. BioJet Plus synchronizes all parameters to achieve “on the fly” dispensing at very high speeds without compromising drop positional accuracy.

FEATURES AND BENEFITS

SPEED

- “On the Fly” dispensing
- Non-Contact mode reduces wash time

ACCURACY

- High resolution X-Y-Z overhead gantry for precise motion control
- Programmed parameters guarantee repeatability

MULTI-MODE DISPENSING

- Aspirate and Dispense
- Continuous Dispense
- Ability to Configure Both Non Contact and Contact Dispensing

FLEXIBLE

- Suitable for Sheet or Chip Format Sensors
- Optional Shuttle Carrier for Continuous Operation

PERFORMANCE

X-Y Table Speed

250 mm/second

Minimum Aspirate Volume

1 μ L

Minimum Dispense Volume

20 nL

Dynamic Dispense Range

20 nL - 250 μ L

Positioning Performance

Stepper Motor Resolution = 1.3 μ m

Repeatability < \pm 10 μ m

(95% Confidence)

SPECIFICATIONS

DIMENSIONS (L x W x H)

122 cm x 113 cm x 170 cm (48" x 44.5" x 67")

WEIGHT

800 lbs (363.6 kg)

POWER REQUIREMENT

110/220 VAC; 50/60 Hz

VACUUM REQUIREMENT

Vacuum Wash Station: 2.1 CFM (~60 CL)

DISPENSING SPECIFICATIONS

DISPENSE MODES

Aspirate/Dispense (source to destination)

Continuous (bulk reservoir to destination)

DISPENSE AREA

600 mm x 600 mm

DISPENSE TO DISPENSE PRECISION

<10% CV at 50 nL, <7% CV at 100 nL; <4% CV at 500 nL

VALVE TO VALVE PRECISION

<10% average CV at 100 nL (8 valves)

DISPENSE ACCURACY

±7% at 50 nL, ±5% at 100 nL

DISPENSE SPEED

20 seconds to fill a 1536 well plate with 500 nL/well (8 channels)

Note: All specifications are based on total experiment cv.s, which include drop to drop plate filling (where applicable) and plate reader cv.s.

OPTIONS

UP TO 96 BIOJET PLUS PUMPS

AIRJET DISPENSING

SYRINGE DISPENSING

FRONT LINE DISPENSING

PIN DISPENSING

HUMIDITY CONTROL

SUBSTRATE NEST

Glass Slide, Microtiter Plate, or Membrane

VACUUM PUMP

HELIUM DEGASSER

IN LINE DEGASSER

ULTRASONIC WASH STATION

BARCODE READER

VISION SYSTEMS

DUAL SHUTTLES

Ordering Information

| | |
|--|--|
| <p>AD3050</p> <p>1-4 BioJet Plus Channels Magnetic Hold-down Nest Integrated Wash/Vacuum Station Computer Controller</p> | <p>Nest Options: Vacuum Nest: 6001-A106</p> <p>Humidity Control: 115 V: 6001-A110-01 230 V: 6001-A110-02</p> |
| <p>AD3200</p> <p>1-16 BioJet Plus Channels 9 Microtiter Plate Positions or 50 Slide Nest or Vacuum Magnetic Hold-down Nest Integrated Wash/Vacuum Station Computer Controller</p> | <p>Nest Options: Plate Nest: 6022-A063 Slide Nest: 6022-A060 Vacuum Nest: 6022-A064</p> <p>Humidity Control: 115 V: HC3200-01 230 V: HC3200-02</p> |

AD3400

1-32 BioJet Plus Channels
9 Microtiter Plate Positions or 50 Slide
Nest or Vacuum Magnetic Hold-down
Nest
Integrated Wash/Vacuum Station
Computer Controller
Humidity Chamber & Controller

Nest Options:

Plate Nest: 6046-A041
Slide Nest: 6046-A042
Vacuum Nest: 6046-A043

Humidity Control:

115 V: 6001-A179-01
230 V: 6001-A179-02

Other Options:

Single Shuttle
Horizontal Pre-Dispense Vision System
Vertical Alignment Vision System
Vacuum Pump(s)
Helium Degasser
In Line Degasser
Chilled Source Position
Ultrasonic Stations
Chemical Inert Fluid Paths
Ceramic Tip Orifices

AD6000

up to 96 BioJet Plus Channels
20 Microtiter Plate Positions or 100
Slide Nest or Vacuum Magnetic Hold
down Nest
Integrated Wash/Vacuum Station
Computer Controller
Humidity Chamber & Controller

Nest Options:

Plate Nest: 6048-A011
Slide Nest: 6048-A012
Vacuum Nest: 6048-A013

Humidity Control:

115 V: 6001-A179-01
230 V: 6001-A179-02

Other Options:

Dual Shuttles
Horizontal Pre-Dispense Vision System
Vertical Alignment Vision System
Vacuum Pump(s)
Helium Degasser
In Line Degasser
Chilled Source Position
Ultrasonic Stations
Chemical Inert Fluid Paths
Ceramic Tip Orifices

PRODUCTS & OPTIONS

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Laminating Systems

LM5000

Batch Laminating System



PRODUCT DESCRIPTION

The LM5000, also known as the Clamshell, is a manually operated module designed for the accurate assembly of precut materials into a specific test strip product. Precut membrane, absorbent material, conjugate pads and plastic backing are brought together to form a laminated lateral flow test strip. The Clamshell laminator offers maximum productivity for a manually operated system.

The Clamshell Laminator contains top and bottom vacuum nests to hold test strip materials in place for the lamination process. The nests are customized to the customer's design but are easily interchangeable so other designs can be laminated. When the nests are brought together accurate alignment of the laminate is achieved.

FEATURES AND BENEFITS

PRECISION ALIGNMENT

- Material Aligned with Dowel pins and a Custom Design Nest

CONVENIENT

- All Materials are Laminated at Once
- Does Not Require Scored Plastic Backing
- Versatile for R&D and Manufacturing Needs

SIMPLE

- Easy Operation
- High Throughput

SPECIFICATIONS

DIMENSIONS (L x W x H)

Standard: 16" x 12" x 3"

500 mm Nest: 24" x 12" x 3"

WEIGHT

27 lbs (12.3 kg)

VACUUM REQUIREMENT

25 CRM @ 18 in Hg

OPTIONS

ADDITIONAL CUSTOM NESTS

VACUUM PUMP

LM6000

In Line Laminating System



PRODUCT DESCRIPTION

The LM6000 provides continuous lamination of materials onto a plastic support backing with adhesive.

The Automated Laminating system is a modular design to accommodate various numbers and types of materials. Each material is fed from adjustable spindles through guides and under a pressure roller to assure complete adhesion to the plastic support backing. The system provides ability to individually remove kiss cut adhesive liners for individual laminate materials. For fragile materials alignment is controlled through automated tracking. After lamination the materials can either be cut and stacked in a collection chute or rewound onto a take-up reel.

Other process steps such as dispensing, slitting, punching and inspection can also be integrated into the system. For materials that are not available or cannot be processed in roll formats a magazine feeding system has been designed.

The system can also be partially or completely enclosed for control of the manufacturing environment.

FEATURES AND BENEFITS

PRECISION AND ACCURACY

- Sensor and Guides accurately align material during lamination.

FLEXIBILITY

- Various numbers and types of materials can be used.

USER-FRIENDLY

- Microprocessor control with the ease of keypad entry.

PERFORMANCE

Linear Web Speed:

Up to 4"/sec (100 mm/sec)

Lamination Roller Pressure:

0-40 PSIG

Lamination Tolerance:

<+/-0.01"(0.25mm)

Liner Take-up Reel:

Max OD 8.0" (200 mm)

SPECIFICATIONS

DIMENSIONS (L x W x H)

9' x 22' x 40' (configuration dependent)

WEIGHT

~1047 lbs (configuration dependent)

POWER REQUIREMENT

110/220 VAC; 50/60 Hz (for all models)

AIR REQUIREMENT

Air Supply: 0 - 90 psi (when AirJets & Capstan are configured)

DISPENSING SPECIFICATIONS

DISPENSERS

Up to 8 in any combination

MEMBRANE WIDTH

Minimum: 0.20" (5 mm) *

Maximum: 3.85" (98 mm)

* Material dependent

LINEAR WEB SPEED

Up to 4"/sec (100 mm/sec)

WEB TRACKING

± 0.25 mm on take-up roll

± 0.25 mm on dispense tracking

MATERIALS SPECIFICATIONS

PLASTIC BACKING:

Width up to 100 mm

Reel Core 3.0" (35 mm)

Reel OD 18.0" (460 mm) max

LAMINATION WEBS: 13-100 MM WIDTH

Reel Core: 3.0" (75 mm)

Reel OD: 12" or 16" max

OPTIONS

DISPENSE MODES

Front Line Quanti

AirJet Quanti

BioJet Quanti

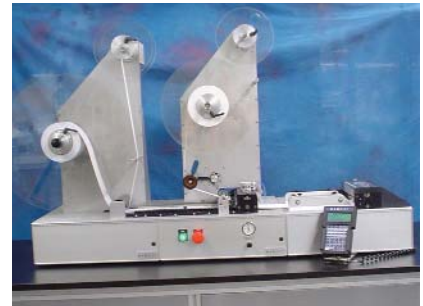
CUTTING MODULES

SLITTING MODULES

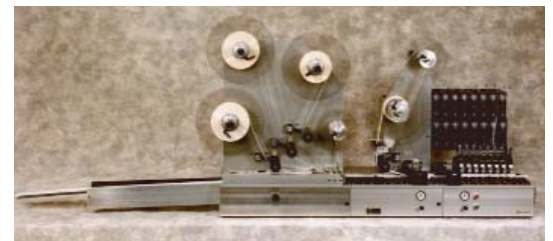
INSPECTION STATIONS

PUNCHING MODULES

ENVIRONMENTAL ENCLOSURES



Laminating System configured with a Guillotine Cutting Module



Laminating System configured with a Dispensing Module

Ordering Information

| | |
|--|--|
| <p>LM5000</p> <p>300 mm Nest or 500 mm Nest</p> | <p>Options:</p> <p>Additional Nests: LM5000 N</p> |
| <p>LM6000</p> <p>Inline Continuous Laminator Modular Design Handheld Controller</p> | <p>Options:</p> <p>Reel Feed: 6033-A022</p> <p>Material Feed 1: 6033-A004</p> <p>Material Feed 2: 6033-A005</p> <p>Material Feed 3: 6033-A006</p> <p>Membrane Feed: 6033-A003</p> <p>Capstan: 6033-A001</p> <p>Inspect & Mark: 6033-A012</p> <p>Cutter: 6033-A008</p> <p>Dancer: 6033-A020-01</p> <p>Magazine Collection: 6033-A009</p> <p>7 ft. Chassis: 6007-A020-01</p> |

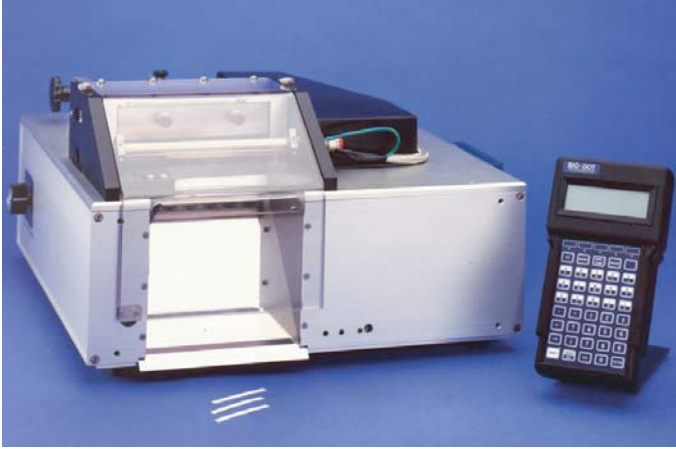
PRODUCTS & OPTIONS

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Cutting Systems

CM4000

Guillotine Cutting System



PRODUCT DESCRIPTION

The Guillotine Cutting module is a resilient, fully automatic system. The standard hold-down bar provides high quality cut precision. Additionally, two set screws allow the blade to be easily removed and cleaned without recalibration. Various blade angles are available to optimize cuts.

Cut widths and quantities are easily programmed through its Handheld terminal. Programs may be stored for system reference in either development or manufacturing environments.

FEATURES AND BENEFITS

COST EFFICIENT

- Friction Fed Mini Rollers Eliminate Unnecessary Waste of the Master Strip

USER FRIENDLY

- Simple Handheld Operation
- Safety Interlock Device
- Easy Blade Cleaning

FLEXIBLE

- Adjustable Material Guides
- Various Blade Speeds

PERFORMANCE

Cut Accuracy

± 0.25 mm (or 5% cut length)

Cutting Speed

240 Maximum Cuts/minute *

Cut Width

Minimum: 1 mm

Maximum: Infinite

Material Handling

Individual Components

Assembled Devices

* Faster cycle time is operator dependent

SPECIFICATIONS

DIMENSIONS (L x W x H)
36 cm x 43 cm x 25 cm

WEIGHT
52.3 lbs (24 kg)

POWER REQUIREMENTS
110/220 VAC; 50/60 Hz
0-90 psi Air Pressure (for anti-static option)

MATERIAL REQUIREMENTS
Standard Strip Width: <10 cm
Optional Strip Width: <20 cm

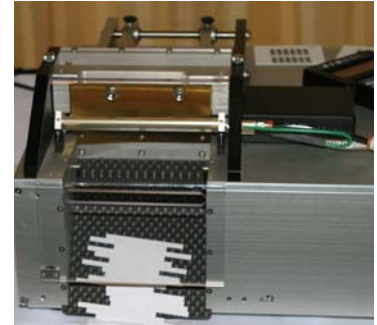
OPERATION

MANUAL CARD FEED
SAFETY INTERLOCK

OPTIONS

BLADE ASSEMBLIES
30, 45, 60
Various compound angles

LEADING EDGE SENSOR
REEL FEED WITH DANCER
REEL FEED WITHOUT DANCER
ACCEPT/REJECT CHUTE
MAGAZINE FEED
ANTI STATIC



CM4000 shown with cut
sensor cards

RCC4000

Rotary Card Cutter



PRODUCT DESCRIPTION

The Rotary Card Cutter is a compact system designed for fast cutting of paper, assembled cards, or other diagnostic materials. The standard configuration is with 5 mm blades, however other optional blade assemblies are available.

The Rotary Card Cutter can be configured with various types of collection chutes. Whether a bottle fill or removable collection chute, the Rotary Card Cutter can be modified for most cutting applications.

Its easy operation makes it ideal for use in either development or manufacturing environments.

FEATURES AND BENEFITS

THROUGHPUT

- Up to 500 Parts/minute

EASE OF USE

- Touch Button Control
- Easy Blade Replacement
- Simple Cleaning Operation

FLEXIBLE

- Suitable for High Speed Cutting
- Optional Collection Chutes

PERFORMANCE

Cut Precision
0.1 mm

Cutting Speed
7 sec. cycle time *

Material Handling
Individual Components
Assembled Devices

* Faster cycle time is operator dependent

SPECIFICATIONS

DIMENSIONS (L x W x H)
67.69 cm x 34.51 cm x 39.09 cm

WEIGHT
165 lbs (75 kg)

POWER REQUIREMENTS
110/220 VAC; 50/60 Hz
0-90 psi Air Pressure
(for anti-static option)

MATERIAL REQUIREMENTS
Maximum Source Width: 300 mm
Minimum Cut Width: 3 mm
Maximum Card Thickness: 2 mm

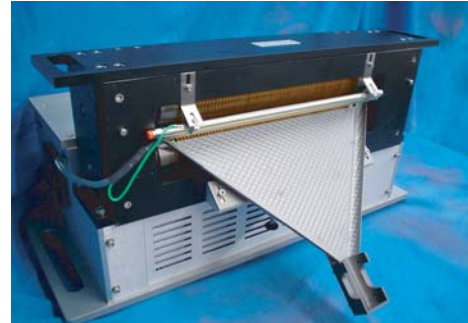
OPERATION

MANUAL CARD FEED
SAFETY INTERLOCK

OPTIONS

BLADE ASSEMBLIES
5 mm - 6 mm
Various angles

SINGLE OR DUAL BOTTLE FILL
SINGLE OR DUAL COLLECTION CHUTE
AUTOMATIC REJECTION OF END PIECES
MAGAZINE FEED
ANTI STATIC



Rotary Card Cutter shown with an
optional Single Bottle Fill

Ordering Information

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|---|---|
| <p>CM4000</p> <p>Guillotine Cutting Module 1 Titanium Nitrate Coated Blade Handheld Controller</p> | <p>Blade Options: 30 Blade: 6008-0021-01 45 Blade: 6008-0021-02 60 Blade: 6008-0021-03</p> <p>Leading Edge Sensor: 6008-A006</p> <p>Anti Static: 6002-A007 115 V: 6002-A007-01 230 V: 6002-A007-02</p> <p>Air Compressor: 2002-0002</p> |
| <p>RCC4000</p> <p>Rotary Card Cutting Module 1 Titanium Nitrate Coated Blade Set</p> | <p>Blade Set Options: 5 mm: 6013-A101-01 6 mm: 6013-A101-03 7 mm: 6013-A101-04</p> <p>Collection Trays: Removable Inspection Tray: 6013-A114 Fixed Inspection Tray: 6013-A104 Pivoting Inspection Tray: 6013-A112 Dual Bottle Tray: 6013-A113</p> <p>Air Compressor: 2002-0002</p> |

PRODUCTS & OPTIONS

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**“Hands On”
Workshops**

Ordering Information

The “Hands On” workshops are offered throughout the years at various geographic locations. Due to the “Hands On” format, attendance is limited to a set number of delegates.

| Location | Date |
|--------------------|-----------|
| Salt Lake City, UT | Mar. 2007 |
| Amsterdam | May 2007 |
| Shanghai | Jun. 2007 |
| Shenzhen | Jun. 2007 |
| San Diego, CA | Jul. 2007 |
| San Diego, CA | Sep. 2007 |
| Osaka | Oct. 2007 |
| Kenilworth | Feb. 2008 |
| Salt Lake City, UT | Mar. 2008 |
| Minneapolis, MN | Apr. 2008 |
| Amsterdam | May 2008 |
| Shanghai | May 2008 |
| Taipei | Jun. 2008 |
| San Diego, CA | Jun. 2008 |
| Washington, DC | Jul. 2008 |
| Brussels | Sep. 2008 |
| San Diego, CA | Sep 2008 |



To register for the next workshop, log on to www.biodot.com and download the registration form.