SpotArray™ 72

Description
The high throughput Packard™ SpotArray 72 contact spotting system from PerkinElmer Life Sciences prints microarrays with speed and precision using TeleChem Stealth pins. The SpotArray's unique and flexible printhead accommodates up to 48 pins and creates compact arrays by selectively raising and lowering subsets of pins during printing. After printing, the pins are washed with a powerful pressure-jet pin washer and then vacuum-dried, eliminating carryover. Printing protocols are easily set up using the SpotArray 72's intuitive, Windows® 2000-based user interface. After protocol parameters are entered, several instrument sensors verify these parameters and instrument settings, ensuring error-free operation. The SpotArray 72 is equipped with HEPA air filters and humidity control to ensure accurate and consistent microarray printing.

Instrument Features
The SpotArray 72 prints microarrays using up to 48 TeleChem Stealth Quill pins. 72 slides (four blotting slides and 68 sample slides) may be printed using biological samples from up to four sample plates. The SpotArray 72's innovative three-part printhead creates compact arrays rapidly by selectively lifting and lowering sections of pins during printing. After sample printing, the pins are washed by a powerful pressure-jet cleaner and vacuum-dried.

- **Rapid Spoting:** The SpotArray 72 is one of the fastest pin-printing systems available. It is able to print 1536 duplicate samples on 68 slides in 1 hour.
- **Unique Printhead:** The SpotArray 72 has an optional three-part printhead that creates more compact arrays by selectively lifting subsets of pins during printing.
- **Flexible Printhead:** The printhead is easily removed and replaced for cleaning. The user may define the number of pins used for printing (from 1-48 pins). Pins are easily removed and rearranged to accommodate any desired printing pattern.
- **Environmental Control for More Consistent Spotting:** The SpotArray 72 is equipped with a positive-pressure enclosure and 0.3 micron HEPA filter for dust-free printing. The optional precision humidity control option allows the user to control spot morphology.
- **Powerful Pressure-Jet Pin Washer Eliminates Carryover:** After printing, the pins are lowered into a well where four high-pressure water jets clean the pins for a user-specified amount of time. The pins are then vacuum-dried. The user may specify lengths of wash and dry cycles, as well as the number of wash and dry cycles.

Software Features

- **Intuitive, Windows 2000-based User Interface:** During protocol setup, the user is guided through a series of straightforward graphical user interface screens. After plate contents, pin configurations, and desired printing parameters are selected from a series of simple menus, the screen displays a graphical representation of the completed microarray. During sample printing, the screen shows printing progress and the amount of time until the array will be completed.
- **Protocol Parameters and Instrument Setting are Verified by Instrument Sensors, Allowing Error-free Operation:** The SpotArray 72's unique design allows quick and easy protocol setup and verification. Protocol verification sensors detect sample plate and well location, sample plate lids, substrate location, and verify the pin configuration. Other sensors monitor humidity, wash pump pressure, and dryer pressure. The instrument sensors will detect any deviation from the experimental parameters entered by the user (for example a change in the wash pump pressure), and notify the user.
Sample Substrates
- The SpotArray 72 holds 72 standard glass microscope slides (four blotting slides and 68 sample slides)

Spotting Field Size and Location on Each Substrate
- X field = 22 mm maximum, starting 1.5 mm from left edge of substrate
- Y field = 73 mm maximum, starting 1.0 mm from the far end of substrate

Repeatability of Substrate Location
- ± 10 micron maximum X and Y
- ± 250 micron maximum Z top surface

Printhead Position Precision
- ± 1.0 microns

Pin Type
- TeleChem Chipmaker Stealth

Maximum Number of Pins
- 48 (4 x 12) on 4.5 mm spacing for 384-well plates
- 12 (2 x 6) on 9 mm spacing for 96-well plates

Plate Types
- The SpotArray 72 accommodates up to four (96- or 384-well) sample plates

Washer Type
- Pressure jet, four jets per pin

Wash Supply Capacity
- 3,750 one-second washes of 16 pins
- 1,250 washes of 48 pins

Dryer Type
- Vacuum, applying high-velocity moving air to the pin tips

Throughput
- Spots 1536 samples in duplicate in 1 hour

Electrical Requirements
- Input Voltage Configurations: 100, 115 and 230 VAC versions
- Frequency Range: 50–60 Hz
- Current Rating: 15A max
- Power Cord: Power cords specified for all standards worldwide

SpotArray 72 Catalog Numbers - 900-3011539000
- SpotArray 72 includes: Instrument module (controller, substrate holder, plate holder, pin washer/dryer, and printhead)
- Utility module: (power supplies, wash pump, vacuum pump)
- Reservoirs: (5-gallon tanks for wash fluid, wash waste fluid, humidity generation)
- Software: one-year warranty, instruction manual, “Getting Started” kit, four TeleChem Stealth SMP3 pins, 48 test pins, sample plates, slides, demo spotting dye, pin cleaning solution, ethernet cable and power cord.

Upgradeable to include: barcode reader, pin lifter, sample plate lid lifter, and humidity control

Options
- Humidity Control: Controls the humidity automatically (between 50%–65% RH) inside the enclosure
- Barcode Reader: Reads barcode labels on the end of each plate and slide
- Lid Lifter: Automatically lifts and replaces the lid from the sample plate in use
- Pin Lifter: Allows the printhead to selectively raise certain pins during printing to create more compact arrays

Physical Data

Main Modules
- To minimize use of bench space, the SpotArray 72 is divided into two main modules:
  - Instrument Module
    - The instrument module includes the controller, substrate holder, plate holder, pin washer/dryer, and printhead
  - Dimensions
    - Height: 17 in. (43 cm)
    - Width: 40 in. (100 cm)
    - Depth: 28 in. (70 cm)
  - Weight
    - 130 lb. (59 kg)
  - Utility Module
    - The utility module is a separate unit that may be placed on the floor. It includes the power supplies, humidity pump, and vacuum pump
  - Dimensions
    - Height: 14 in. (36 cm)
    - Width: 25 in. (64 cm)
    - Depth: 28 in. (71 cm)
  - Weight
    - 100 lb. (45.4 kg)

Reservoirs
- Reservoirs or tanks for wash fluid, wash waste fluid, and humidity generation are located outside the utility module
  - Wash Reservoir Capacity
    - 5 gallon (20 liter)
  - Wash Waste Reservoir Capacity
    - 5 gallon (20 liter)
  - Humidity Reservoir Capacity
    - 2.5 gallon (10 liter)

Ordering Information

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<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>810-00218</td>
<td>Humidity Control</td>
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<tr>
<td>810-00357</td>
<td>Lid Lifter</td>
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<tr>
<td>810-00695</td>
<td>Barcode Reader: Reads barcodes on sample plates and slides</td>
</tr>
<tr>
<td>810-00543</td>
<td>Pin Lifter: Selectively lifts subsets of pins to create more compact arrays</td>
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<tr>
<td>810-00001</td>
<td>Optional Computer: Pentium III, 800 MHz processor, 10 GB hard drive, 256 MB RAM, R/W CD ROM, 10/100 MB Ethernet NIC, Microsoft Explorer 5 and Windows 2000, 15 inch Sony Flat Panel LCD Sony Color Monitor, Optical Wheel Mouse and Keyboard</td>
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<tr>
<td>N10-00833</td>
<td>Monitor, Mouse and Keyboard: 15 inch Flat Panel LCD Sony Color Monitor, Optical Wheel Mouse and Keyboard</td>
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<tr>
<td>810-00923</td>
<td>Set of Four Additional Pins: Extra Set of four TeleChem Stealth Pins (SMP3)</td>
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