

# Microplotter® Proto

## Benchtop picoliter printing



### Key Features

- Noncontact deposition
- Features as small as 20 µm
- Viscosities up to 450 cP
- True contiguous lines
- Consistent spot size & shape with coefficients of variability of 10%
- 3-axis positioning with 10 µm resolution
- Integrated digital video capture
- Automated surface calibration
- Interchangeable holding platen for a variety of substrate sizes
- SonoGuide™ software for full automation and control
- SonoDraw™ software as a CAD layout tool

### Applications

- Rapid prototyping
- Macroelectronic printing
- MEMS printing
- Protein microarrays
- MALDI-ToF spotting
- Patterning of live cells

### For More Information

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The SonoPlot Microplotter® Proto is a benchtop picoliter fluid dispensing system for the microarray and printed electronics markets with significant advantages over existing products in deposited feature size and type, regularity of volumes dispensed, and flexibility for the user.

The core of the Microplotter® technology is a dispenser that uses controlled ultrasonics to deposit fluid in a non-contact manner. This patented technology can produce picoliter droplets that form features on a surface as small as 20 µm wide. When combined with automatic surface height calibration, coefficients of variability for deposited feature diameters as small as 10% can be achieved. A wide range of fluids can be used, including aqueous solutions and many organic-solvent-based mixtures. Fluids that other dispensers struggle with, such as graphene or carbon nanotube suspensions, or fluids with viscosities up to 450 cP, can be deposited with ease. The ultrasonic pumping action is also an efficient cleaning mechanism for quickly depositing many solutions sequentially.

In addition to spots, the Microplotter® Proto can draw true continuous lines. These are uniform elements, not made from overlapping droplets like other technologies, and are particularly well-suited to the printed electronics field.

### Technical Specifications

|                               |                                                   |
|-------------------------------|---------------------------------------------------|
| <b>Feature size</b>           | 20 µm - 200 µm                                    |
| <b>Feature types</b>          | Droplets and contiguous lines                     |
| <b>Deposition volume</b>      | ≥ 1 pL                                            |
| <b>Deposition variability</b> | As low as 10%                                     |
| <b>Viscosity</b>              | ≤ 450 cP                                          |
| <b>Positioning</b>            | 31 x 31 x 7 cm (X, Y, Z axes)<br>10 µm resolution |
| <b>Calibration</b>            | Automatic surface height calibration              |
| <b>Camera</b>                 | Digital video capture & recording                 |
| <b>Computer</b>               | <b>To be provided by user</b>                     |
| <b>Software</b>               | SonoGuide control & SonoDraw CAD tools included   |
| <b>Dimensions</b>             | 58.4 x 59.7 x 61 cm (23 x 23.5 x 24 in.)          |
| <b>Weight</b>                 | 30 kg (66 lbs)                                    |
| <b>Power</b>                  | 3.0 A for 100-120 V or 1.5 A for 220-240 V        |

## Microplotter® Pro

### Benchtop picoliter printing



### Key Features

- Noncontact deposition
- Features as small as 5  $\mu\text{m}$
- Viscosities up to 450 cP
- True contiguous lines
- Consistent spot size & shape with coefficients of variability of 10%
- 3-axis positioning with 5  $\mu\text{m}$  resolution
- Integrated digital video capture
- Automated surface calibration
- Interchangeable holding platen for a variety of substrate sizes
- SonoGuide™ software for full automation and control
- SonoDraw™ software as a CAD layout tool

### Applications

- Rapid prototyping
- Graphene / carbon nanotube printing
- Additive repair
- Polymer microstructure fabrication
- pOLED printing
- High-density protein microarrays
- Patterning of live cells

### For More Information

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The core of the Microplotter® technology is a dispenser that uses controlled ultrasonics to deposit fluid in a non-contact manner. This patented technology can produce picoliter droplets that form features on a surface as small as 5  $\mu\text{m}$  wide. When combined with automatic surface height calibration, coefficients of variability for deposited feature diameters as small as 10% can be achieved. A wide range of fluids can be used, including aqueous solutions and many organic-solvent-based mixtures. Fluids that other dispensers struggle with, such as graphene or carbon nanotube suspensions, or fluids with viscosities up to 450 cP, can be deposited with ease. The ultrasonic pumping action is also an efficient cleaning mechanism for quickly depositing many solutions sequentially.

In addition to spots, the Microplotter® Pro can draw true continuous lines. These are uniform elements, not made from overlapping droplets like other technologies, and are particularly well-suited to the printed electronics field.

### Technical Specifications

|                               |                                                             |
|-------------------------------|-------------------------------------------------------------|
| <b>Feature size</b>           | 5 $\mu\text{m}$ - 200 $\mu\text{m}$                         |
| <b>Feature types</b>          | Droplets and contiguous lines and arcs                      |
| <b>Deposition volume</b>      | $\geq 0.6$ pL                                               |
| <b>Deposition variability</b> | As low as 10%                                               |
| <b>Viscosity</b>              | $\leq 450$ cP                                               |
| <b>Positioning</b>            | 31 x 31 x 7 cm (X, Y, Z axes)<br>5 $\mu\text{m}$ resolution |
| <b>Calibration</b>            | Automatic surface height calibration                        |
| <b>Camera</b>                 | Digital video capture & recording                           |
| <b>Computer</b>               | Microsoft Windows & Mac OS Compatible software              |
| <b>Software</b>               | SonoGuide control & SonoDraw CAD tools included             |
| <b>Dimensions</b>             | 60 x 59 x 42 cm (23.6 x 23.2 x 16.5 in.)                    |
| <b>Weight</b>                 | 30 kg (66 lbs)                                              |
| <b>Power</b>                  | 3.0 A for 100-120 V or 1.5 A for 220-240 V                  |