

## Four Fluid Low Temperature Printhead

### Product Description

The PH-46 is a drop-on-demand printhead that contains four independent fluid reservoirs and dispensing devices. The mounting block for the dispensing devices optionally contains a heater and thermocouple, allowing the fluids to be dispensed at up to 50°C. The 2 mL (1.5 and 0.5 mL optional) polypropylene reservoirs can be capped and used to store fluids off-line, and unused fluid can be fully recovered. PEEK and PTFE fittings and tubing combine with the reservoir to make an inert fluid path. A broad range of materials can be dispensed using the PH-46, including bioactive, optically active, sensor, and other materials. Drop volumes ranging from 5 pL to as high as 0.5 nL have been dispensed.



### Standard Features

- Four independent fluid reservoirs and dispensing devices.
- All parts cleanable / reusable.
- 2 mL capacity removable polypropylene reservoir can be used for off-line fluid storage. Unused fluid recoverable; 250 µL minimum load volume.
- Compatible with Jetlab<sup>®</sup> 4xl, Jetlab<sup>®</sup> 4xl-A, and Jetlab<sup>®</sup> II.

### Available Options

- MJ-AT devices available in orifice diameters 10-80µm.
- 1.5 mL and 0.5 mL polypropylene reservoirs.
- Operation to 50°C.

## Ordering Information

- PH-46** Four fluid heated drop-on-demand printhead. H for heated option.
- PH-46H**
- MJ-AT-01-xxx** Low-temperature device with MINSTAC threaded fluid fitting, xxx denotes orifice diameter in microns.
- C-05** Ten (10) 2 mL capacity polypropylene reservoirs.
- C-05a** C-05 plus one set of replacement tubing, fittings, and fluid block.

## Support Equipment

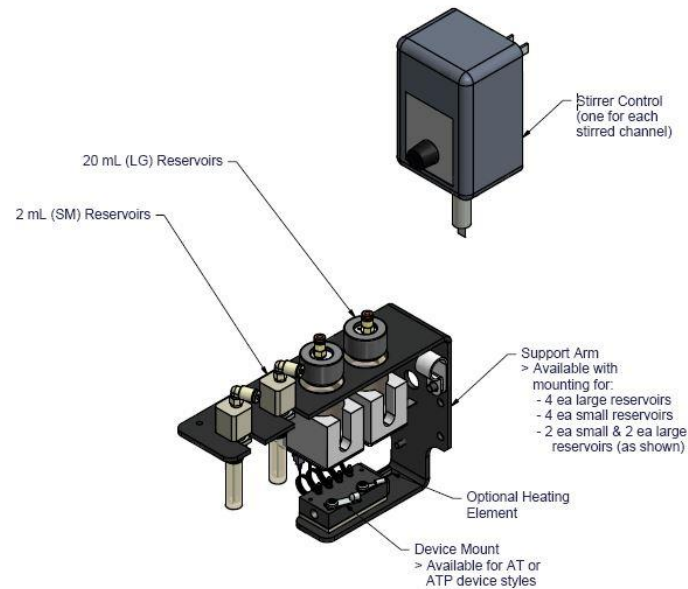
The PH-46 may be combined with the following components and subsystems to create a functional subsystem.

- CT-M5-01** JetDrive™ V controller, including command set and stand-alone control program. Includes built in strobe delay. Level 02 firmware (complex waveforms) included.
- CT-PX-08** Eight channel relay unit for multiplexing output of JetDrive III. USB interface. Controlled by JetServer program.
- CT-PT4** Four channel Pressure / Thermal Controller and four CP-01 manual pneumatic channels.
- CP-01** Add one TS-01 temperature controller for the PH-41H.
- TS-01**
- CM-VS-01** Basic Optics System: CCD camera, power supply, lens, fine focus, mounting block.

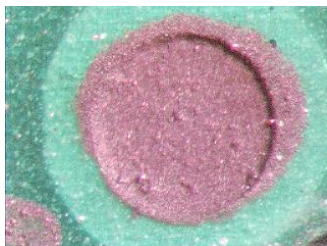
## Addition Information

Available at [microfab.com](http://microfab.com)

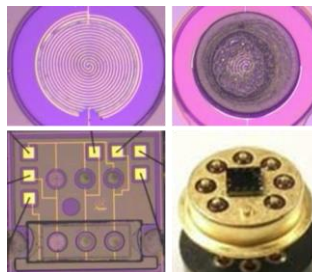
- Drawings with dimensions
- Equipment selection guide
- Integration Guide
- Cleaning Guide



Nano-copper ink printed onto PWB.



Chemo-resistive sensor, 350µm well.



Eight fluorescent dies printed as 75µm spots on 200µm centers.

