

DPN Inkwell Arrays: C-8MW2

Inkwell Arrays are used to coat DPN[®] pen tips with ink material. The DPN[®] pen arrays are dipped into micron-sized cavities (or “microwells”) containing different inks for coating the pen array tips. NanoInk has designed a series of Inkwell chips to meet the needs of inking the different DPN pen tips that are available for use.

The Inkwell chips are $\sim 1 \text{ cm}^2$, easily fitting onto the sample puck of the DPN 5000 or NSCRIPTOR[™] Systems, or the stage of the NLP 2000 System. The C-8MW2 Inkwell Array chip is designed specifically to be used with Type C, D, and F probes that have $35 \mu\text{m}$ pitch arrays, and Type E probes that have $70 \mu\text{m}$ pitch arrays.

The C-8MW2 Inkwell Arrays feature eight 2 mm diameter reservoirs with a depth of $85 \mu\text{m}$. The reservoirs are filled with ink using a micropipette and can accommodate about $1\text{-}2 \mu\text{l}$ of ink. Use of several reservoirs allows the pen arrays to be coated with the same or different inks depending on the pen and Inkwell chosen. The reservoirs supply ink to the microwells by capillary wicking in micron-sized conduits, or “microchannels.” The microchannels run from individual reservoirs to different parts of the Inkwell chip, where they feed the microwells. The system was designed to keep the microwells full of ink, even as the ink supply slowly evaporates from the reservoir. The reservoirs are linked to the $20 \mu\text{m}$ diameter microwells via $40 \mu\text{m}$ wide channels that lead into $6 \mu\text{m}$ wide microchannels. Further details of the measurements of the eight reservoir chips are shown in Figure 1 and Figure 2.

The C-8MW2 Inkwell Array has three distinct areas. The central area has six microwells connected to six reservoirs, and two side areas connected to two additional reservoirs. The

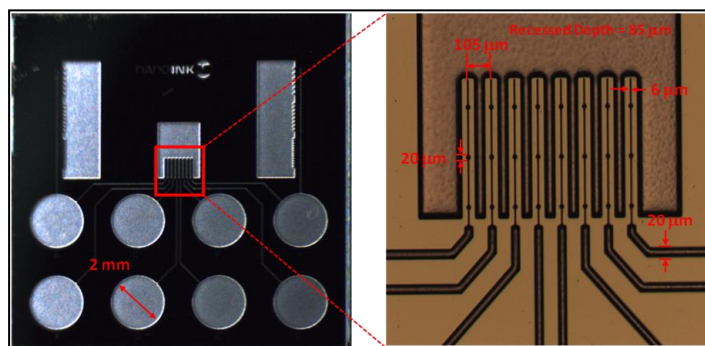


Figure 1: Optical microscope images showing (left) an overview of the C-8MW2 Inkwell and (right) the dimensions of the microchannels and microwells in the central area.

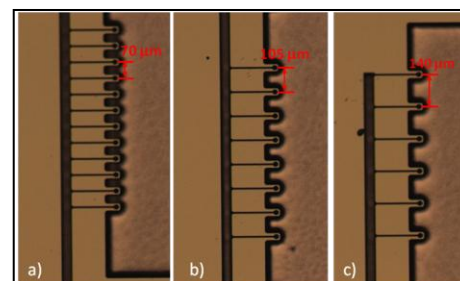


Figure 2: Optical microscope images displaying one of the side areas with microwells useful for inking 1D probe arrays that have a $35 \mu\text{m}$ pitch with the same ink. a) Spaced to ink every other tip b) Spaced to ink every third tip c) Spaced to ink every fourth tip.

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(continued)

spacing between the microchannels in the central area is 105 μm , corresponding to the spacing between three 26 pen cantilevers on side F-1 of the Type F pens (35 μm pitch). These channels will also fit every other pen tip which is spaced 35 μm apart on the side C-2 of Type C and side D-1 of Type D pens.

The C-8MW2 Inkwells also have two side areas from a single reservoir that can ink several tips at one time with the same material. These wells are very useful for multiplexing several inks by allowing the user to ink either every other tip, every third tip, or every fourth tip simultaneously, depending on the pen array used. This side is also used for inking the pen arrays of the Type E pens which have a 70 μm pitch.

Ordering Information

Item Name: Inkwell Arrays, C-8MW2

Item Number: IWL-0021-01

Compatible with the NSCRIPTOR, DPN 5000, and NLP 2000 systems

For more information including pricing, please contact NanoInk Sales Department at sales@nanoink.net or 1-847-679-NANO.