



Technical Note 194

CellDrop Variable Chamber Height

Introduction

Most automated cell counters rely on single use plastic slides with a fixed chamber height to perform cell counts. Standard dimensions of the slide enable the counter to calculate the total cells in a sample by counting the number of cells present in a known volume. CellDrop™ Automated Cell Counters do not require slides, but instead use a patented DirectPipette™ Technology developed by DeNovix Inc. This method allows users to load a sample directly into the measurement chamber formed between two parallel sapphire surfaces (Figure 1). The CellDrop is capable of setting three different chamber heights allowing greater measurement accuracy across a wider range of cell densities and sizes compared to slide-based systems.

CellDrop Automated Cell Counters include three chamber height options to accommodate a wide range of sample concentrations. Adjusting the chamber height varies the volume of sample and consequently the number of cells that are deposited on the measurement surface. The default chamber height is 100 μm which is recommended for most samples. By editing the protocol settings within a count app the chamber height can be adjusted to 50 μm for extremely dense samples or to 400 μm for very dilute samples or larger cells or particles. The smaller 50 μm chamber height can also be useful in shortening the time required for cells to settle before counting.

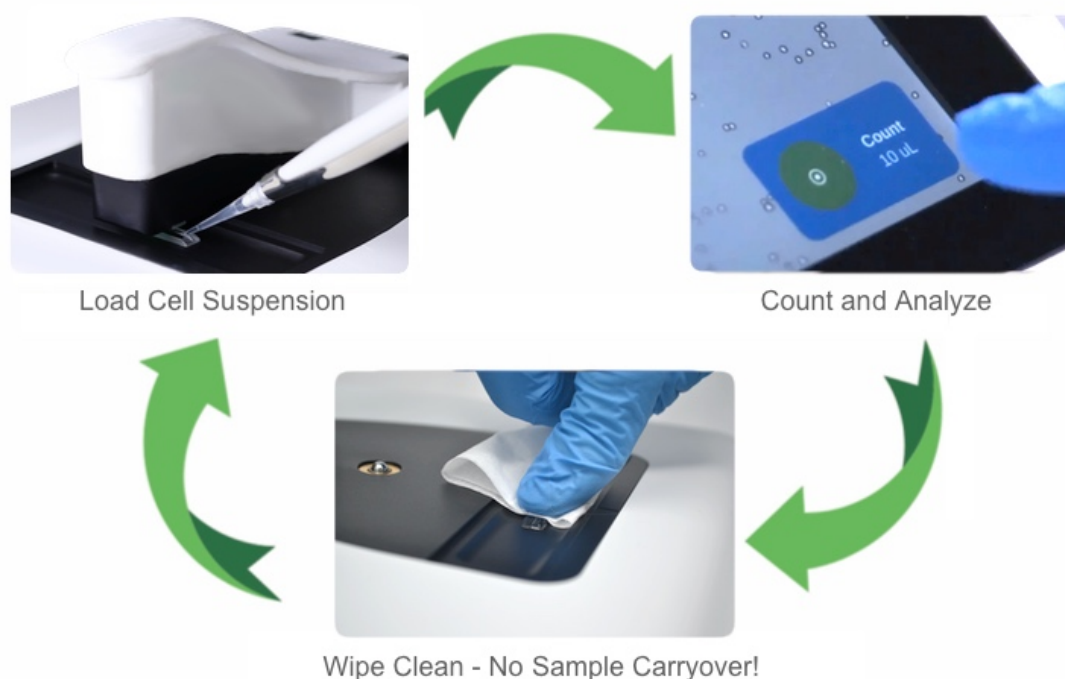


Figure 1 – DirectPipette™ Technology

Chamber Height Guidelines

The ability to adjust the chamber height enables direct measurement of cell densities between 7.0×10^2 and 2.5×10^7 , while removing the need for time consuming dilution or concentration steps. The table below summarizes the appropriate chamber heights and sample volumes to use with different cell concentrations.

Standard Magnification (FLi & BF)

Gap Height (um)	Volume (uL)	Minimum Density (cells/mL)	Maximum Density (cells/mL)
400	40	7.0E+02	3.1E+06
100	10	2.9E+03	1.3E+07
50	5	5.9E+03	2.5E+07

Higher Magnification (FLxi & BFx)

Gap Height (um)	Volume (uL)	Minimum Density (cells/mL)	Maximum Density (cells/mL)
400	40	4.3E+03	2.6E+07
100	10	1.7E+04	1.0E+08
50	5	3.4E+04	2.1E+08

Advantages of DirectPipette™ Technology

- Simple load, measure and wipe clean workflow.
- No slides required.
- No plastic waste.
- Accurately measure across a wider range of cell densities than slide-based systems.
- Cells or particles larger than 100 µm in diameter can be accommodated by using the 400 µm chamber height (full size range 4 to 400µm).

9-AUG-2024

