

VIEW RESULTS OCT
1, 2008 - 17:55:01
100 of 100, NEWEST
ID: A456374 Total cell
conc./ml 4.20 x 10⁶
Live cell conc./ml 2.10 x
10⁶ Live cells 50% SEP
2, 2008 - 11:25:45 [99
of 100] Total cell conc./
ml 5.32 x of IQ/OQ
system check 11:44:32



TC10™ Automated Cell Counter



Researchers often need to count cells prior to cell culture or before starting processes and analytical techniques that require an accurate and consistent number of input cells. Counting cells with a microscope and a hemocytometer is a tedious task with varying results. The TC10 cell counter is truly automated, providing a total count of mammalian cells and a live/dead ratio in one simple step with accurate, reproducible results. Speed up your cell counting and accelerate your research.

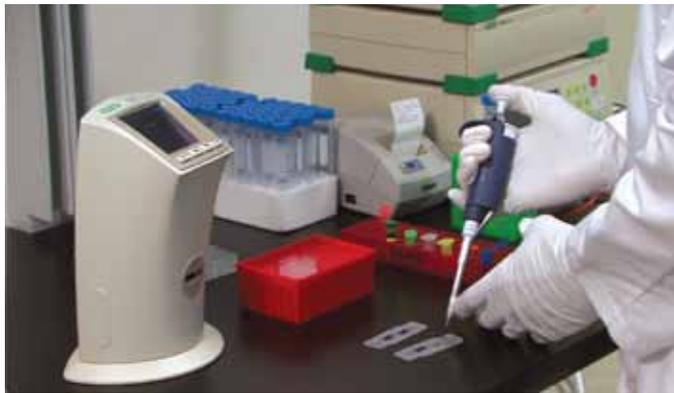
TC10 Automated Cell Counter





With the TC10 automated cell counter, you can:

- **Fit cell counting into your schedule** — count cells quickly, accurately, and consistently within 30 sec using the built-in auto-focus
- **Configure results to your needs** — determine total cell count without dye or use trypan blue dye to assess total cell count and cell viability
- **Have results at your fingertips** — print count results and dilution calculations from the TC10 thermal label printer
- **Easily archive your results** — transfer counts and cell images using a USB key and access up to 100 counts stored in the onboard memory
- **Trust your counts** — confirm instrument functionality with the TC10 verification slide
- **Conserve precious cells** — use only 10 μ l of suspended cells



The TC10 cell counter is an extremely compact, stand-alone instrument that does not require a computer to operate. With its small footprint, the TC10 counter conveniently fits any laboratory setting with limited bench space. Its fast setup and intuitive operation let you quickly and easily start counting cells.

Truly Automated

Increase your productivity with automated cell counting. The TC10 cell counter performs automated counting of mammalian cells in one simple step, immediately initiating a count when you insert the slide. Its built-in auto-focus and sophisticated image analysis algorithm produce accurate, consistent cell counts within 30 seconds.



Load the sample onto a slide.



Insert the slide into the TC10 cell counter.

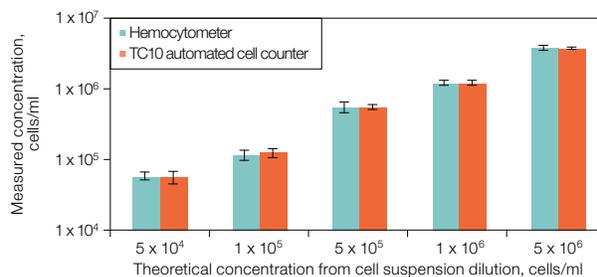
Total Cell Count

Bio-Rad's TC10 automated cell counter gives you the accuracy of a hemocytometer and provides results within 30 seconds. By utilizing microscopy with an innovative auto-focus and a sophisticated image analysis algorithm, it eliminates the subjectivity of manual cell counting. These features remove bias and human error associated with other cell counting systems that require a manual focus step. The TC10 counter analyzes multiple focal planes, determines the best plane to measure total cell count against the background, and then counts cells based on physical properties such as size and shape.

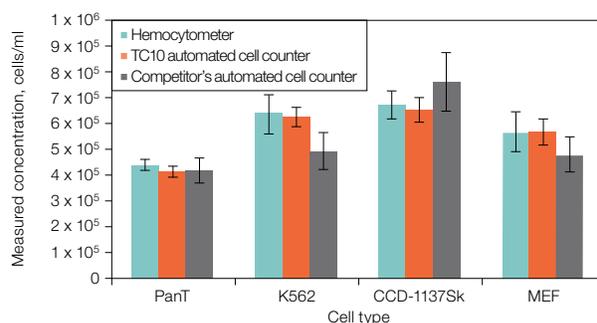
Accurate and Reproducible Results

The cell counting accuracy of the TC10 counter is comparable to results obtained with a hemocytometer when counting cells within the ranges of 5×10^4 – 1×10^7 cells/ml and 6–50 μm cell diameter. The broad concentration range eliminates the need to dilute cells prior to counting, which may be necessary when counting cells by other methods. The counting algorithm successfully discriminates and counts individual cells within clusters of up to five cells, providing accurate counts without the need to extensively declump cells prior to loading.

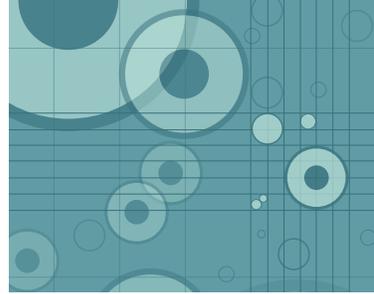
The accurate, consistent cell counts from the TC10 counter lead to more reproducible results with downstream processes and analysis, saving money and time by enabling successful experiments the first time.



The TC10 cell counter demonstrates accurate cell counts across an extended range of cell concentrations. MEF cells were concentrated, serially diluted, and counted with a hemocytometer and a TC10 automated cell counter. The TC10 counter and hemocytometer cell counts showed no statistically significant differences. Precision is indicated by the standard deviations; error bars represent average standard deviations. Cell counts on the TC10 counter were performed on four different instruments with six sample replicates.



The TC10 cell counter demonstrates accurate cell counts across a range of cell sizes. Small (PanT), medium (K562), and large (CCD, MEF) cells were counted with a hemocytometer, a TC10 automated cell counter, and a competitor's automated cell counter. The TC10 counter and hemocytometer cell counts showed no statistically significant differences. Precision is indicated by the standard deviations; error bars represent average standard deviations. Cell counts on the TC10 counter were performed on four different instruments with six sample replicates.



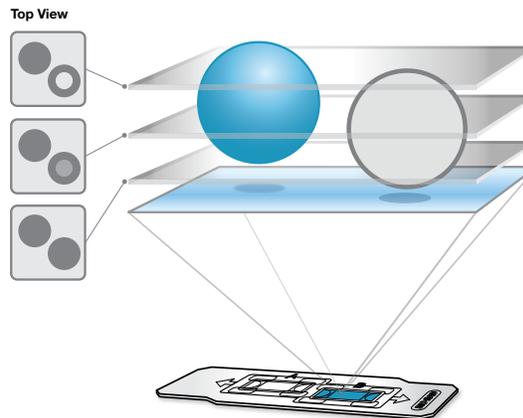
counter; counting automatically begins.

Obtain a total cell count (without trypan blue dye) or total and live cell counts (with trypan blue dye) in 30 seconds.

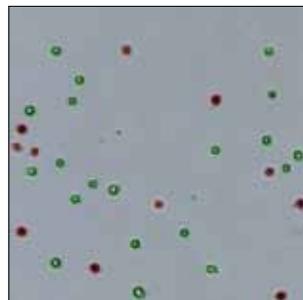
Cell Viability

The TC10 cell counter can count samples with or without trypan blue dye. Simply add the dye solution to the cell suspension, insert the slide, and the TC10 counter auto-detects the presence of the trypan blue dye in the sample — no user input is required. Along with the cell count, it assesses cell viability via trypan blue dye exclusion in just 30 seconds.

Using a single focal plane to assess cell viability can lead to inaccurate conclusions because of light scattering and the alignment of cells at different heights in a counting chamber. After measuring the total cell count against the best focal plane, the TC10 counter scores each cell across multiple focal planes to precisely determine if it is viable. You can get all the data you need about your cell cultures faster and easier than using a hemocytometer.



Multifocal plane analysis.

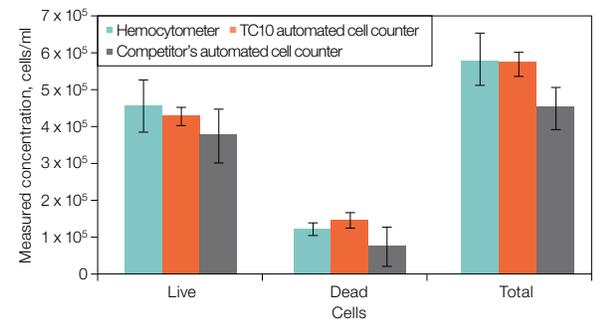


Assessment of cell viability via trypan blue dye exclusion. Annotated image is from a cell count exported from the TC10 counter and viewed as a JPEG image on a computer. Green circles, live cells; red circles, dead cells.

Effect of multifocal plane analysis on live/dead count accuracy for HeLa cells.

Viability Assessment	Live Cells, %	Dead Cells, %
Single best focal plane*	35	65
Multiple focal planes*	65	35

* On single focal plane, 30% of live cells were misidentified as dead cells.



The TC10 cell counter demonstrates accurate counts of viable cells. Jurkat cells mixed with trypan blue (1:1) were counted with a hemocytometer, a TC10 automated cell counter, and a competitor's automated cell counter. The TC10 counter and hemocytometer cell counts showed no statistically significant differences. Precision is indicated by the standard deviations; error bars represent average standard deviations. Cell counts on the TC10 counter were performed on four different instruments with six sample replicates.



Typical Experiment Workflow

Bio-Rad offers powerful building blocks for your cellular research, providing the flexibility and reliability you need to accelerate discovery. The TC10 automated cell counter takes the guesswork out of cell counting, letting you have confidence in your results. Use it in combination with other analysis tools from Bio-Rad to streamline your experiments and get more reproducible results.



Grow cells



Count cells



Perform siRNA

Analysis Options

After viewing cell count results, you can choose to view an image of the counted cells on the TC10 screen with the ability to zoom in on an image with the click of a button. An annotated JPEG file of the cell image can be exported via the USB port for further analysis on a computer or to provide traceability of the count results.

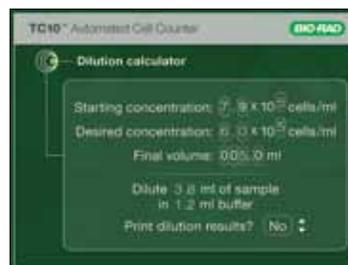
You can use the onboard dilution calculator to determine the adjustments required for your next experiment. If trypan blue dye was used during the count, the instrument accounts for the 1:1 dilution with the dye in the calculation results, and only the live cell concentration will be used in the calculations.

A TC10 thermal label printer can be connected to the TC10 cell counter to print count results onto labels. These can be placed into a laboratory notebook as a record of the count. Dilution calculator results can also be printed, which is convenient for preparing cells for the next experiment.

Results from 100 counts are stored in the TC10 cell counter so you can always go back and recover them based on their automatically assigned time and date stamp. Previous count results can be exported via the USB port and opened in a Microsoft Excel spreadsheet, allowing easy comparison of data between experiments and traceability of the count results.



Cells can be viewed on the TC10 cell counter screen.



Dilution calculator.



Histogram of live and dead cell counts (sample with trypan blue dye).





A transfection



Count cells



Check RNA quality



Use qPCR to quantitate effect of silencing

Counting Slides

The counter uses disposable TC10 counting slides, eliminating setup, cleaning, and maintenance steps; the disposable slides also minimize exposure to biohazardous samples. The dual-chamber slide can provide counts for two separate samples or dilutions; each chamber requires only 10 μ l, saving precious cells. The patent-pending design of the TC10 counting slides evenly distributes the cells throughout the counting chamber, ensuring accurate and consistent cell counts.



Verification

The TC10 verification kit is used to verify functionality of the TC10 cell counter. It also serves as a positive control for cell counting experiments. The kit includes a ready-to-use TC10 verification slide, which can be reused several times without the user variability that is due to pipet variation associated with calibration beads.

Essential Workflow Tool

Knowing the number of input cells is important for standardization of experiments and for measurement of assay impact. Processes that require accurate and consistent numbers of input cells include transfection, cell proliferation or viability studies, and quantitative PCR. The TC10 cell counter is the ideal research tool to eliminate the tedium of an important step in these workflows, letting you focus on your downstream experiments and results.

For researchers performing cell culturing, it is essential to measure the number of cells grown in tissue culture to determine the level of confluence before diluting cells into smaller aliquots for optimal cell growth. Examples of other processes that benefit from the speed and accuracy of automated cell counting include flow cytometry, toxicology studies, viral production, high content screening, and high content analysis.



Cell lines counted on the TC10 automated cell counter.*

Cell Name	Morphology	Organism	Source Organ/Disease	Growth Properties
CCD-1137Sk	Fibroblast	Human	Skin (foreskin)	Adherent
CHO	Epithelial	Chinese hamster	Ovary	Adherent
COS-7	Fibroblast	African green monkey	Kidney	Adherent
HeLa	Epithelial	Human	Cervix carcinoma	Adherent
Jurkat	Lymphoblast	Human	Acute T-cell leukemia	Suspension
K562	Lymphoblast	Human	Bone marrow, chronic myelogenous leukemia	Suspension
MCF-7	Epithelial	Human	Mammary gland, adenocarcinoma	Adherent
MEF	Fibroblast	Mouse	Embryo	Adherent
NIH 3T3	Fibroblast	Mouse	Embryo	Adherent
PP034	Lymphoid	Human	B cell	Suspension
Vero	Epithelial	African green monkey	Kidney	Adherent

* The TC10 counter can count cells with a round shape after trypsinization.

Other samples counted on the TC10 automated cell counter.

Sample Name	Organism
<i>Amoeba species*</i>	Unicellular protozoan
Bio-Plex® beads*	Magnetic and polystyrene beads
<i>Chlamydomonas*</i>	Unicellular flagellate
<i>Entamoeba histolytica*</i>	Unicellular protozoan
<i>Myxomycetes*</i>	Slime mold spores
<i>Saccharomyces cerevisiae**</i>	Unicellular fungus

* Total cell count only; samples do not incorporate trypan blue dye.

** Total cell count only; cells are not within the cell viability range.

Specifications

Counting time	30 sec
Cell concentration range	5 x 10 ⁴ –1 x 10 ⁷ cells/ml
Optimal cell concentration range	1 x 10 ⁵ –5 x 10 ⁶ cells/ml
Cell diameter range	
Total count	6–50 µm
Live count	10–50 µm
Dimensions (W x D x H)	19 x 15 x 25.4 cm (7.5 x 6 x 10")
Weight	2.2 kg (4.8 lb) (without the external power supply)

Ordering Information

Catalog # Description

TC10 Automated Cell Counter

- 145-0001 **TC10 Automated Cell Counter**, 100–240 V, includes instrument, USB key, 30 TC10 dual-chamber counting slides (60 counts), 1.5 ml TC10 trypan blue dye
- 145-0009 **TC10 Automated Cell Counter with Printer**, 100–240 V, includes instrument, USB key, TC10 thermal label printer, 1 roll of 185 labels, 30 TC10 dual-chamber counting slides (60 counts), 1.5 ml TC10 trypan blue dye

Kits and Reagents

- 145-0003 **TC10 Counting Kit**, includes 30 TC10 dual-chamber counting slides (60 counts), 1.5 ml TC10 trypan blue dye
- 145-0021 **TC10 Trypan Blue Dye**, 0.4% in 0.81% sodium chloride and 0.06% potassium phosphate dibasic solution, sterile filtered, sufficient for 750 counts (10 µl/count), 5 x 1.5 ml
- 145-0022 **TC10 Trypan Blue Dye**, 0.4% in 0.81% sodium chloride and 0.06% potassium phosphate dibasic solution, sterile filtered, sufficient for 1,500 counts (10 µl/count), 10 x 1.5 ml
- 145-0014 **TC10 Verification Kit**, includes TC10 verification slide, protocol

Catalog # Description

Accessories

- 145-0005 **TC10 Thermal Label Printer**, includes label printer, USB cable, 1 roll of 185 labels
- 145-0007 **Thermal Printer Labels**, 1 roll of 185 labels, for TC10 thermal label printer
- 145-0015 **TC10 Counting Slides**, 150 dual-chamber slides (300 counts)
- 145-0016 **TC10 Counting Slides**, 300 dual-chamber slides (600 counts)
- 145-0017 **TC10 Counting Slides**, 600 dual-chamber slides (1,200 counts)
- 145-0018 **TC10 Counting Slides**, 900 dual-chamber slides (1,800 counts)
- 145-0019 **TC10 Counting Slides**, 1,200 dual-chamber slides (2,400 counts)
- 145-0020 **TC10 Counting Slides**, 2,400 dual-chamber slides (4,800 counts)

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