

Automated Colony Counters

AccuCount

The AccuCount™ series of automated colony counters are designed to count macroscopic and microscopic objects in a field displaying totals on a highly visible digital readout.

AccuCount™ 1000

The AccuCount™ 1000 is ideal for the **AMES Assay** using 35 to 100 mm petri dishes or 6, 12, and 24 format multi-well dishes. The transmitted illumination can be used whenever analyzing objects on a translucent or transparent background. Transmitted darkfield capability assists in analyzing transparent or low contrast objects. The reflected illumination makes it possible to analyze objects on opaque backgrounds, such as blood and chocolate agar.

The AccuCount's outstanding sensitivity and resolution permits counting of a wide range of object types and sizes, including [bacterial colonies, cells, and industrial particles](#).

AccuCount™ 1000 automated colony counter Macroscopic Automated Colony Counter



AccuCount™ 2000

The AccuCount™ 2000 automated counter is designed to automatically count microscopic objects in a field displaying totals on a highly visible digital readout. Its outstanding sensitivity and resolution permits counting of a wide range of object types and sizes, including bacterial colonies, cells, grains and industrial particles.

The AccuCount™ 2000 is ideal for scoring **Unscheduled DNA Synthesis** slides and the **Mammalian Cell Mutation Assay**. The external video camera can be easily interfaced to a wide number of microscopes.

AccuCount™ 2000 automated colony counter Microscopic Automated Colony Counter



Applications

APPLICATIONS	AccuCount™ 1000	AccuCount™ 2000
MACROSCOPIC COUNTING (> 0.1mm)	●	
MICROSCOPIC COUNTING (<0.1mm)		●
AMES TESTING	●	
ANTI-BODY PRODUCING CELL ASSAYS	●	
AUTORADIOGRAPHY GRAIN COUNTING		●
BACILLUS BACTERIAL COLONY COUNTING	●	
BACTERIAL COLONY COUNTING	●	
BACTERIAL MUTATION ASSAYS	●	
CLONAGENTIC COLONY COUNTING	●	
CANDIDIA FUNGI COLONY COUNTING	●	
COLIFORM COLONY COUNTING	●	
E. COLI BACTERIAL COLONY COUNTING	●	
AgNOR's - Ag STAINED NUCLEAR ORGANIZING REGIONS		●
MAMMALIAN CELL COUNTING	●	
MOUSE LYMPHOMA ASSAY	●	
NUCLEATED CELL COUNTING		●
PARTICLE COUNTING	●	●
PLAQUE FORMING CELL ASSAYS	●	
SALMONELLA BACTERIAL COLONY COUNTING	●	
STAPHYLOCOCCUS BACTERIAL COLONY COUNTING	●	
SURFACE TESTING	●	●
VIRAL COLONY COUNTING	●	
WATER TESTING	●	

PART No.	DESCRIPTION
4-101-0024	35 mm MASKING PLATE
4-101-0025	60 mm MASKING PLATE
Masking Plates are used to mask the stacking ring from the counter, eliminating any interference to the counts.	
7-196-0002	18 mm LENS
The size of the Lens determines the minimum size object the counter can detect.	
0-110-0003	UNIVERSAL TISSUE CULTURE STAGE
The Universal Tissue Culture Stage ensures correct placement and alignment of a tissue culture flask while counting. The Universal Dish Stop ensures correct placement and alignment of petri dishes while counting.	

AccuCount - How it Works

System Description - AccuCount™ 1000 and 2000

The systems consists of two units, a main unit and a video monitor. The main unit contains an illumination stage upon which the petri dish or objects to be counted are placed. An integrated CCD video camera scans the objects on the illumination stage and displays a total count of objects. The video monitor displays the objects to be counted and guides the operator in making the initial instrument adjustments. Each object is superimposed with a bright white dot to indicate that it is detected and will be counted. The use of the size control knob allows the operator to select the size of objects to be counted.

System Description - AccuCount™ 2000

The system is functionally identical to the AccuCount™ 1000 except that the main unit does not contain an illumination stage.

Illumination

Objects and their backgrounds vary widely, therefore the operator can select from three methods of illumination to enhance visibility and increase accuracy. 1) Transmitted - for routine objects of high contrast with relatively transparent backgrounds. 2) Reflected - for objects with high contrast with opaque backgrounds. 3) Darkfield - for objects with low contrast with relatively transparent backgrounds.

Object Recognition

The CCD video camera functions as a scanning light detector. An electronic beam moves across the objects in a series of horizontally adjacent lines, generating a continuous video signal. The video signal is compared with a present sensitivity and size threshold established initially by the operator. These thresholds are controlled by the sensitivity and size adjustments. Optimum sensitivity is determined by an operator assisted sensitivity indicator. When the thresholds are exceeded, a pulse is generated by each object. Therefore, the smaller particles and debris which are below the threshold are not detected. After the entire scan is completed, the total thresholds are exceeded, a pulse is generated by each object. Therefore,

the smaller particles and debris which are below the threshold are not detected. After the entire scan is completed, the total of signals exceeding the threshold is displayed as the count.

Counting Resolution

The CCD video camera in effect "sees" only one object at a time as it scans across and down the entire illumination area. The minimum object size that can be detected is related to the object diameter, optical magnification and the number of lines in the scanning pattern. The scanning lines are controlled by the CCD video camera and its electronic circuitry. The minimum object size that can be detected also depends upon the contrast between the object and the background. A minimum contrast level of 20% is required to accurately count objects 0.2 mm in diameter. As higher contrast levels are achieved, a minimum object size of 0.1 mm in diameter can be counted.

Closely spaced, clustered or overlapping objects may be counted as multiple or single units, depending on the orientation of the objects to the scan line. In general, such conditions are effectively overcome by employing the compensation factor within the instrument. Another technique is to rotate the subject which contains the objects, recording the average of a few counts at different object orientations. Optional lenses are available to optically magnify the objects by a factor of two, allowing their detection at about one-half of the normal size and spacing requirements.

Aperture

A very simple rapid adjustment at the start of the counting operation is used to establish the size and position of the scanning area. The entire subject may be viewed, but the area that is counted is segmented by the electronic aperture. The aperture is calibrated in square millimeters in the event a statistical comparison of different size areas may be needed. The aperture is viewed on the video monitor and appears as a brighter area superimposed over the subject being counted.