

Combining Automatic Handling Technology and Colony Counting Technology

PDH series is an automatic petri dish handler for PSF Colony Counter series. Easy automatic measurement can be performed by only set the petri dishes. Since the petri dish lid can be opened and closed automatically, highly accurate colony counting can be performed even if there are mark, label, etc. It is also possible to measure colonies around the petri dish as an option. Remote control by network is available.



Speed & Time saving

Achieves high-speed measurement of 100 petri dishes / hour. You may leave machine until operation complete.

Easy

Simply set the petri dish and then push a button to achieve easy automatic colony counting. Automatic output of measurement reports is also possible.

Reliability

Reduced human error and realized stable and constant measurement.

Large number of samples

In PDH-521T9, 105 petri dishes can be installed at the same time. Customization up to 600 petri dishes is possible.

Samples management

Measurement conditions and sample information can be automatically entered using a QR code or barcode. It is also possible to mix samples with different types and measurement conditions.



Safety Precaution

- ☐ Make sure to read the instruction manual carefully before use.
- ☐ Specifications and appearance of products may change due to further improvement without prior notice.
- ☐ The actual color of the product may be slightly different from the printed picture in this brochure.

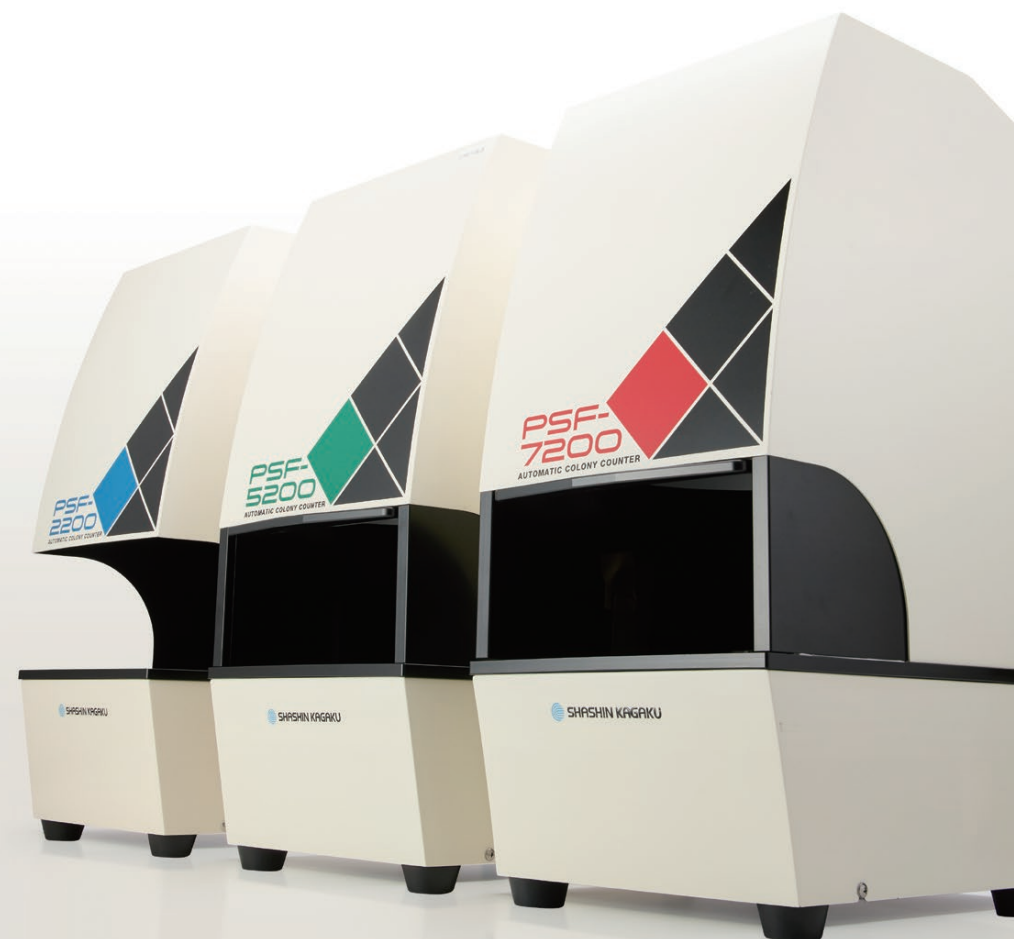
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AUTOMATIC COLONY COUNTER PSF series



NEW

Lighting automation improves operability and convenience.

Improve your work efficiency with problem solutions.

Our Colony Counters solve these problems

- Problem 1** **Manual counting methods take time and also there is huge quantities of specimen.**
 - Manual counting takes too much time and delays other operations.
 - Counting operation causes stiff neck and shoulders.
- Problem 2** **Measurement results are not consistent due to visual counting.**
 - Accurate measurement is hard when measuring coliform bacteria larger than 0.5mm.
 - Due to physical condition of the day, it may be possible to miss small colonies.
- Problem 3** **Measurement accuracy decreases when in measuring a widespread colony.**
 - There might be possibly existing beneath the widespread colonies on the surface of pouring culture medium, however it counts as single colony.
- Problem 4** **Existing measuring devices is unable to measure separately in terms of various color case.**
 - In terms of manual counting, it uses different color marker to count, however this makes less work efficiency.

10 minutes manual counting method makes just 5 seconds.

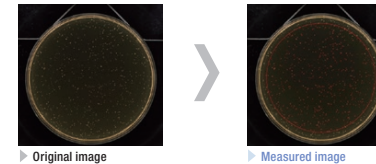
It may differ depending on the number and kind of the colonies.

Automatic Colony Counter will solve various problems.

Manual counting methods take time and also there is huge quantities of specimen.

- 1 Problem solution**

In case of more than 300 colonies in one petri dish, it takes 5 minutes by manual measurement, but it takes only 3 seconds by automatic measurement.



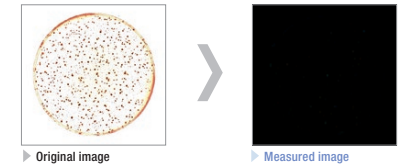
Reason

High speed image processing makes quick operation. Without fatigue, it enables to complete with one single person even many specimen case.

Measuring method is not consistent due to visual measurement.

- 2 Problem solution**

Individual measurement with fixed size range of colonies makes stable and consistent measurement.



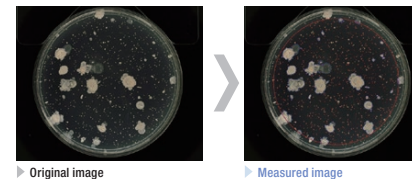
Reason

The area calculation of each colonies enabled to measure individually only designated diameter. As long as culture medium thickness is fixed, it enabled to measure only designated colony by fixed binary coefficient.

Measurement accuracy decreases when in measuring a widespread colony.

- 3 Problem solution**

It measures only the area could be measured accurately and enables CFU conversion.



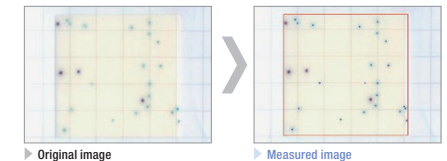
Reason

In terms of automatic measurement, widespread colonies can be excluded automatically from measurement objects. Measurable areas are automatically calculated and it enables accurate CFU conversion.

Existing measuring devices is unable to measure separately in terms of various color case.

- 4 Problem solution**

Max 8 kinds of colonies can be measured individually. For example, "separate by different colors", "separate by different colors and sizes", "separate by different colors and brightness". It is possible to set conditions appropriately up to culture medium and colonies.

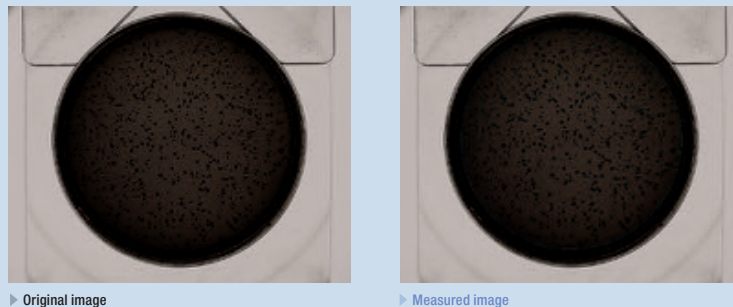


Reason

This devices is equipped with color camera. Condition setting can be done easily by simple clicking the measurement objects on the display.

What is "Automatic Colony Counter".

It is a device that enables to count immediately the number of colonies in a designated area.



We provide solution about further problems below.

- 1** Various shape of colonies is possible to measure automatically?
- 2** Colonies with residue are possible to measure?
- 3** Various size of colonies is mixed, but is it possible to measure them automatically?
- 4** Very tiny and thin colonies are possible to measure?
- 5** Colonies are large and sticking together, then is it possible to measure under this condition?
- 6** Is it possible to compare visual measuring result and the result of automatic one.

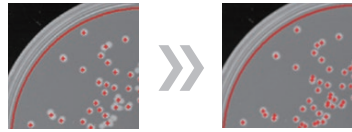
- Solutions**

Colonies are selected by the brightness and their color information, therefore it does not matter for the shape.
- As long as colonies and residues size are different, it is possible to measure.
- It is possible to set a wide range of colony sizes to measure all of them.
- It is possible to measure all as colony, for instance, brighter objects than culture medium.
- It is possible to measure separately by overlap differentiation function.
- It is possible to measure petri dishes marked with a pen by visual measurement.

Standard software corresponds to various kind of specimen like round or square patri dishes, or spiral plates.

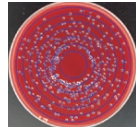
Overlap differentiation function

Overlapping colonies can be automatically separated for individual measurement.



Measurement on spiral plate

Standard software includes spiral plate measurement.



Any kind of spiral plater can be used by changing the area freely and it corresponds to 2 patterns (Ring type and Spiral type).
A ring type can output the number of colonies and spiral type can output cumulated colony within measurable area.

Adjustment function for uneven brightness

Even if the thickness of culture medium is not uniform, the brightness can be adjusted and measured with high accuracy.



Image of uneven thickness



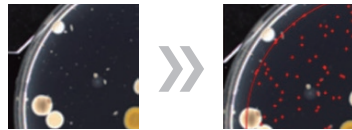
Simple binarized image



Image of adjustment function

Selective counting function by size

Due to selective counting function by size, it enables to count after removing scattered colonies.



Separate measurement by color extraction

Up to eight colors of colonies can be measured separately.



Specifications/ Products

Model	PSF-1100	PSF-2200	PSF-5200	PSF-7200	PSF-5200L	PSF-7200L	PSF-7200W
Dimensions of main unit	W280×D351×H630 mm						W700×D700×H1220 mm
System configuration	Main Unit only. (PC and Monitor are not included.)						
Camera	USB2.0 Color CMOS		USB3.0 Color CMOS				
Number of pixels	3 MP	6 MP	12 MP	20 MP	12 MP	20 MP	20 MP
Calculated resolution	67 μm	50 μm	34 μm	28 μm	50 μm	42 μm	69 μm
Measurement object	Viable bacteria Colonies on petri dishes, Petri films, filters, compact dry, film media, Plaques and Inhibition zones*.						
Maximum count area**	100×134 mm				152×165 mm		250 ×250 mm
Round Petri Dishes	up to φ100mm				up to φ150mm		up to φ200mm
Multi-well plates	6, 12, 24-wells. Optional software required.						
Measurement time	1 to 5 seconds per petri dish						
Maximum number of colonies	20,000 colonies (settings can be changed)						
Light shielding	Dust cover Shading Sliding Door is optional.			Shading Sliding Door			Rolling curtain
Top lighting (reflective)	Fixed type	Height adjustable***					none
Bottom lighting	Darkfield and brightfield						
lighting on/off	Manual	Controlled by Software					
Bright/dark field switching	Manual	Controlled by Software					Manual
Operating environment	10-35 °C, 20-80% humidity						
Weight	19 Kg						70 Kg
Power Source	AC 1φ100-240V 50/60Hz						

* Optional software is required to inhibition zone measurement. This software is standard only in PSF-7100W.

** For square petri dishes, use one that is smaller than the maximum count area.

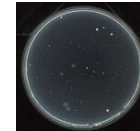
*** It is possible to change the height position of the top lighting. By this function, the outline of colonies can be clearly photographed.

Japan's top Automatic Colony Counter with wide variety of measurement cases.

General viable bacteria

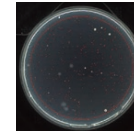
General viable bacteria cultured on agar media. All colonies in the measurement area were counted.

▶ Original image



Agar media, general viable bacteria

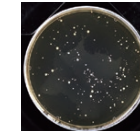
▶ Measured image



All colonies in the measurement area were counted. Image is without manual correction

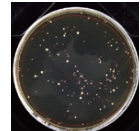
Lactic bacteria

▶ Original image



All colony counting with a petri dish cover. If condensation laminates as a small mist, it enables to measure with cover.

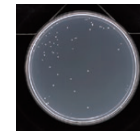
▶ Measured image



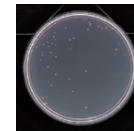
Mutagen testing (Ames)

Even if the number of colonies increase or decreases by dilution, it enables to count accurately on the same setting regardless of the number of colonies.

▶ Original image

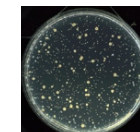


▶ Measured image



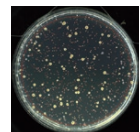
Food industry and food distribution industry

▶ Original image



A measurement of general viable bacteria. All colonies in the measurement area were counted.

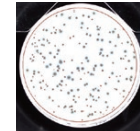
▶ Measured image



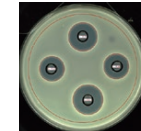
Pharmaceutical industry

It enables to measure colonies, inhibition zones in one device.

Plaque



Inhibition zone measurement



Optional software is required for inhibition zone measurement.

Specimen examples for each machines

Compares to PSF-1100, PSF-2200 can shoot sharper image with high contrast of colonies and culture media, therefore it can enhance measurement accuracy of tiny colonies.

Image of PSF-1100 type with top light

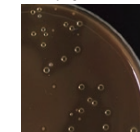
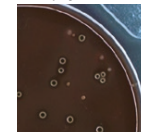


Image of PSF-2200 type with top light

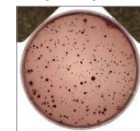


Due to clearer image of PSF-2200, it enables to enhance measurement accuracy for thin colony or same color colonies. PSF-5200/7200 could take more clear pictures.

Water Analysis industry

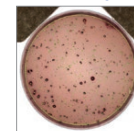
Desoxycholate medium, Original image of coliform bacteria

▶ Original image

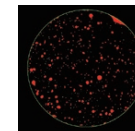


Desoxycholate medium, Original image of coliform bacteria

▶ Measured image



Desoxycholate coliform bacteria colonies. Measured image larger than 0.5mm



Selected image in setting condition. The area marked color is the colonies larger than 0.5mm.