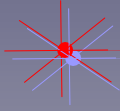


# Laser particle photometer



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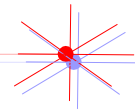


# LD-3B

An Aerosol is a group of particles suspended in air. Aerosols can be introduced into the body primarily through the respiratory system. Total dust measurements indicate concentrations that can enter the nose and mouth of a worker as well as that which can settle on the skin while the respirable fraction of dust is that portion which can reach the lower or gas exchange part of the respiratory system. This respirable fraction has been defined for sampling purposes all over the world.

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# Outlines and Features



## Outline

The LD-3B is an aerosol photometer designed to read the relative mass concentration of aerosol. It is factory-calibrated by Polystyrene latex particles (regulated standard by JIS). The LD-3B is designed to read mg/m<sup>3</sup> directly, however it should be remembered that the calibration is strictly valid for the calibration particle. To measure the accurate mass concentration of the aerosol at hand, a comparison measurement using the gravimetric method will be needed to convert a conversion factor (so called the K factor) to the instrument.

Although the instrument has been upgraded with new functions, the operation principles remain the same as instruments such as the Sibata P-5, LD-1, and LD-3. If you have had experience with our former instruments, operation of this instrument should be a piece of cake.

## The K "factor"

You will find a calibration sheet ticket with your instrument. The K factor written on your ticket is only valid for the calibration of your instrument (To see that your instrument is reading the write count). As said in the above outline, you need a comparison measurement using the gravimetric method. After your comparison measurement you are able to calculate the K factor as follows.

$$K=C/R$$

K: K factor = concentration conversion factor (mg/m<sup>3</sup>\*CPM)

C: Concentration of the gravimetric sample (mg/m<sup>3</sup>)

R: Count per minute on your LD-3B (CPM)

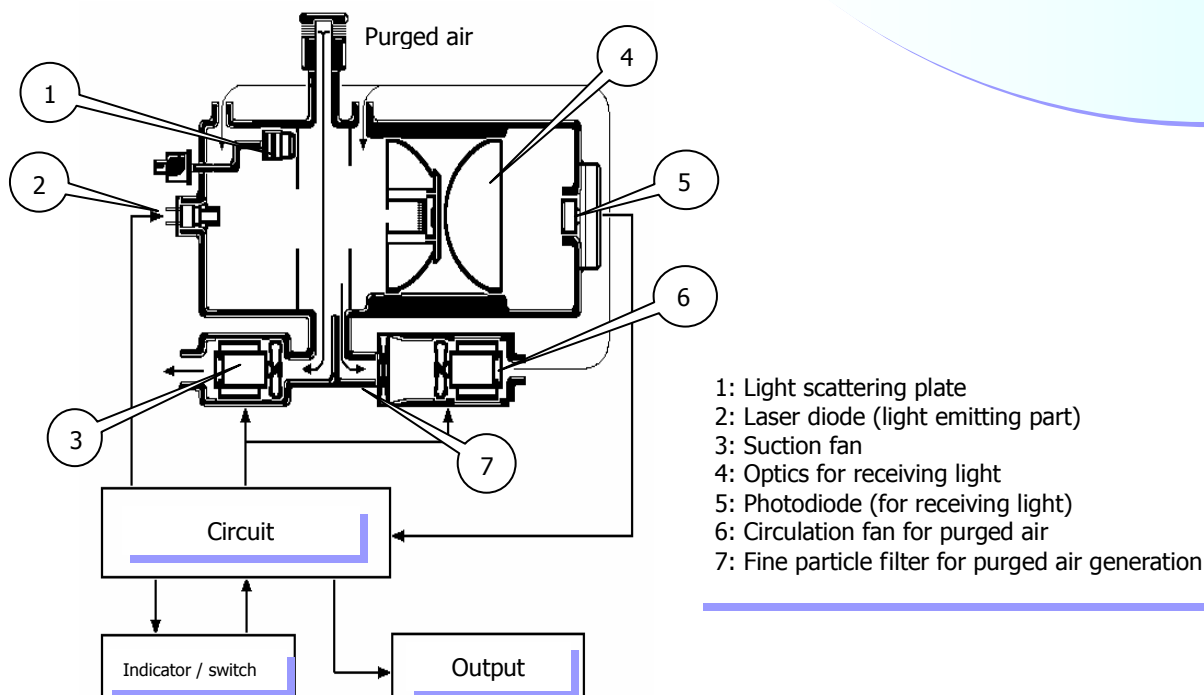
## Features

- \* Data is stored in the memory and downloadable right to your PC on Excel through a RS232C cable sold separately with Software.
- \* The K factor will automatically convert mass concentration to give you a more accurate measurement than any other photometer with out this strategy.
- \* Calibration value is stored in the memory even after turning the power off.

## Principle

The LD-3B utilizes the light scattering method to detect aerosol. Suspended particles are illuminated by a laser diode and the scattered light is detected by a photodiode. Purged clean air is circulated, creating an air curtain to protect the optical surfaces and to avoid zero drifts.

## Block diagram of the LD-3B



# Specifications

Code Number	8000-42
Measuring principle / source	Light scattering method / Laser diode
Calibration particle	Polystyrene latex particle
Measuring accuracy	+/- 10% for the calibration particles
Measuring range	0.001 – 10mg/m <sup>3</sup>
Operating temp. / humidity	0 – 40°C / 5- 90% RH (without dew)
Power supply	12V 8 x U3 batteries
Display	Graphic liquid crystal display with back light
Indications on Display	<ol style="list-style-type: none"> <li>1. Measurement time (Down timer)</li> <li>2. Measured value (00000-99999) 5 digits</li> <li>3. Measurement mode</li> <li>4. Battery power</li> <li>5. K value</li> <li>6. Graphic (by pushing switch during measurement)</li> </ol>
Measurement modes	<ol style="list-style-type: none"> <li>1. Measuring time (Down timer mode) To Set measurement time by using equipped down timer. (Initial set time for measurement is 1 min in down timer mode.) The available measurement spans are 6 sec, 10 sec, 30 sec, 1 min, 2 min, 3 min, 5 min, and 10 min.</li> <li>2. Manual To manually operate the start and stop of measurement.</li> <li>3. LOG (Logging) The measurement data is stored in the memory during measurement. Able to set measurement time span.</li> <li>4. Span Sensitivity adjustment is done by measurement and memory of the value of the light scattering calibration-plate.</li> <li>5. BG (Back ground) Back ground value is measured and stored in the memory while filling the detector with purged air. When this is done, the air-sampling inlet must be closed.</li> </ol>
Dimensions / Weight	185(W) x 69 (D) x 105 (H) / Approx. 1.2 kg (discluding batteries)

## Spare parts & Options

### Nickel-hydrogen battery pack



Rechargeable battery pack & Battery Charger QC-961  
Code no. 8000-032 & 8000-033

### TRIPOD



(For long term measurement)  
Code no. 8016-3

### Adaptor for air suction & exhaust



Useful to connect tubing  
Code no. 8000-T04