

# **SPECIFICATIONS**

PARTICLE SENSOR

**KS-41**



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## Outline

The KS-41 is a sensor which uses the light-scattering method for measuring the concentration of particles floating in photoresist solutions. The particle count is determined for various sizes.

By connecting the KS-41 to the controller KE-40, a liquid-borne particle counter system with four size ranges can be created.

Particles are measured in four size ranges ( $\geq 0.15 \mu\text{m}$ ,  $\geq 0.2 \mu\text{m}$ ,  $\geq 0.3 \mu\text{m}$ ,  $\geq 0.5 \mu\text{m}$ ), and the rated sample fluid flow is 10 mL per minute.

The KS-41 does not have measurement controls or a display for measurement results. It is designed to be used under control of a separate controller which also supplies power to the KS-41.

The unit incorporates a leak sensor. If a leak is detected, an alarm output can be activated.

As the KS-41 does not incorporate a flow control circuit for the sample fluid, the flow rate of the sample fluid must be controlled by external means.

- \* All company names and product names mentioned in this specifications are trademarks or registered trademarks of their respective owners.

## Specifications

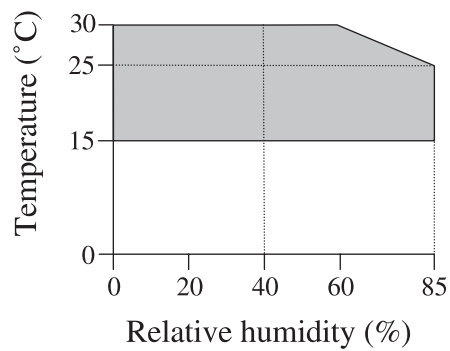
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| Optical system                                       | 90° sideway light-scattering method   |
| Light source   | Laser diode (rated output 200 mW; wave length 830 nm)   |
| Laser product classification                         | Class 1, IEC 60825-1 (2001)<br>Internal particle detection mechanism uses Class 3B laser  |
| Light detector                                       | PIN type photodiodes  |
| Materials of component parts exposed to sample fluid | Synthetic quartz, PFA   |
| Allowable sample fluid types                         | Fluids which do not corrode the fluid contact materials   |
| Calibration  | Polystyrene latex (PSL) spheres* with refractive index 1.6 in pure water<br>*The PSL spheres are calibrated according to the TEM (transmission electron microscopy) by the supplier, JSR Corporation. |
| Minimum particle size                                | 0.15 $\mu\text{m}$  |
| Measurable particle size                             | 0.15 to 2 $\mu\text{m}$<br>(with PSL particles of refractive index 1.6 in pure water)   |

|                                 |   |
|---------------------------------|---|
| Measurement size range          | Four channels ( $\geq 0.15 \mu\text{m}$ , $\geq 0.2 \mu\text{m}$ , $\geq 0.3 \mu\text{m}$ , $\geq 0.5 \mu\text{m}$ )  |
| Count efficiency                | $50 \pm 10\%$<br>(measuring PSL particles in the range of $0.3 \mu\text{m}$ , using count of $0.2 \mu\text{m}$ and above for comparison with reference unit)                              |
| Sample flow rate                | 10 mL/min   |
| Maximum particle concentration  | 12000 particles / min (coincidence loss 5% for $0.15 \mu\text{m}$ particles)  |
| Sample fluid temperature range  | +15 to +30°C (no moisture condensation on cell)   |
| Allowable sample fluid pressure | 300 kPa or less (gauge reading)   |
| Warm-up time                    | 10 minutes  |
| Sample fluid connectors         |   |
| INLET                           | Sample fluid inlet, 2×4 dia. flared tube joint  |
| OUTLET                          | Sample fluid outlet, 2×4 dia. flared tube joint   |
| PURGE                           | Purge gas inlet, Rc 1 / 8 (1 / 8 PT female)   |
| Indicators                      |   |
| PARTICLE MONITOR                | Briefly flashes green when particles above minimum size are detected.   |
| LIQUID LEAK                     | Lit (green) during normal operation<br>Lit (red) when leak was detected   |
| CELL                            | Lit (green) during normal operation<br>Lit (red) when contamination was detected or particle concentration exceeded<br>Off when light source is off                                       |
| LASER                           | Lit (green) during normal operation<br>Lit (red) when light source temperature is out of range<br>Flashing (red) when light source output is below normal<br>Off when light source is off |
| POWER                           | Lit while power to unit is on   |
| Input/output connectors         |   |
| CONTROLLER                      | For controller KE-40 connection   |
| LIQUID LEAK ALARM               | Shorted during normal operation, open when leak is detected.<br>Maximum load: 30 V DC, 1 A  |
| EXT                             | Test output   |

Power requirements      Supplied via Controller KE-40

Installation inclination angle  
Max. 2°

Ambient conditions for operation  
Shaded section  in the following graph (no condensation)

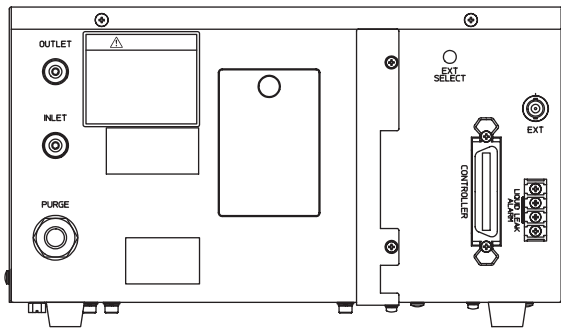


Ambient conditions for storage  
-10 to +50°C, less than 90% RH  
(no condensation and no freezing in internal piping)

Dimensions      305 (W) × 173 (H) × 278 (D) mm (maximum)  
300 (W) × 160 (H) × 250 (D) mm  
(excluding joints and other protruding parts)

Weight      Approx. 7.5 kg

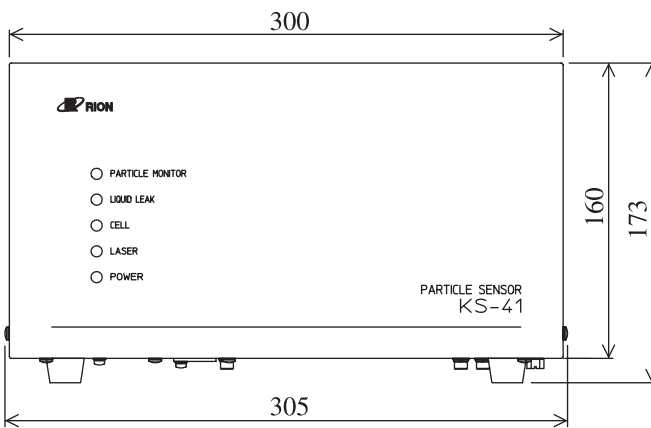
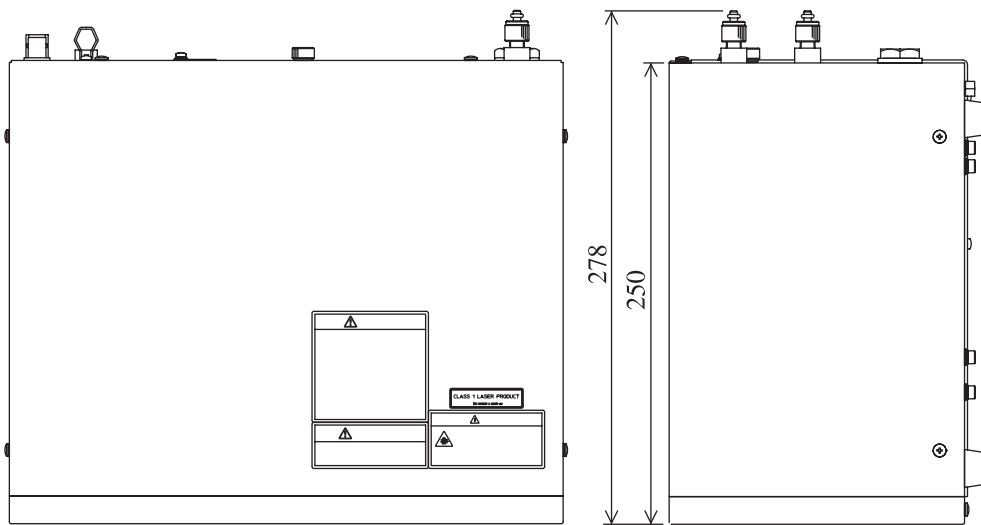
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| Supplied Accessories | Tube A vacuum pack                                 | 1 |
|                      | Cleaning Brush set                                 | 1 |
|                      | Particle size labels                               | 1 |
|                      | Instruction manual                                 | 1 |
|                      | Instruction sheet for "Transport and Installation" | 1 |
|                      | Liquid-borne particle counter usage precautions    | 1 |
|                      | Inspection certificate                             | 1 |



Rear view

Top view

Side view



Front view

Unit: mm

### Dimensional Drawings

Specifications subject to change without notice