

SPECIFICATIONS
PARTICLE SENSOR
KS-17AF



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Outline

The KS-17AF is a modular sensor in a system which monitors the size and the particle number concentration in liquid based on the light-scattering method. Sample fluid contacting parts are made of sapphire and PFA, allowing direct measurement of hydrofluoric acid solutions.

By connecting the KS-17AF to the controller KE-40, a liquid-borne particle counter system with two size ranges can be created.

Particles are measured in two size ranges (≥ 0.06 and ≥ 0.1 μm). The rated sample fluid flow is 10 mL per minute. Only a part of the sample fluid is examined by the unit. The effective sample flow rate is 0.1 mL per minute.

The KS-17AF 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-17AF.

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

As the KS-17AF does not incorporate a flow control circuit for the sample fluid, the flow rate of the sample fluid must be controlled by external means.

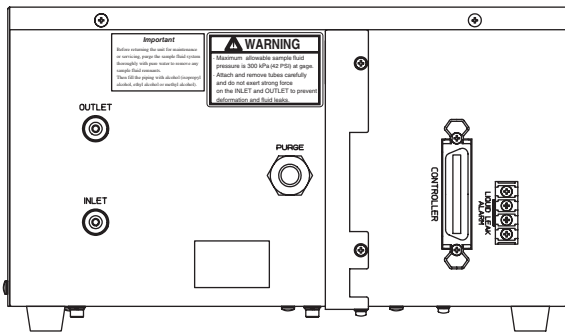
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Specifications

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) Internal particle detection mechanism uses Class 3B laser
Light detector	3-channel PIN type photodiodes
Materials of component parts exposed to sample fluid	Sapphire, 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 *The PSL spheres are calibrated according to the TEM (transmission electron microscopy) by the supplier, JSR Corporation.

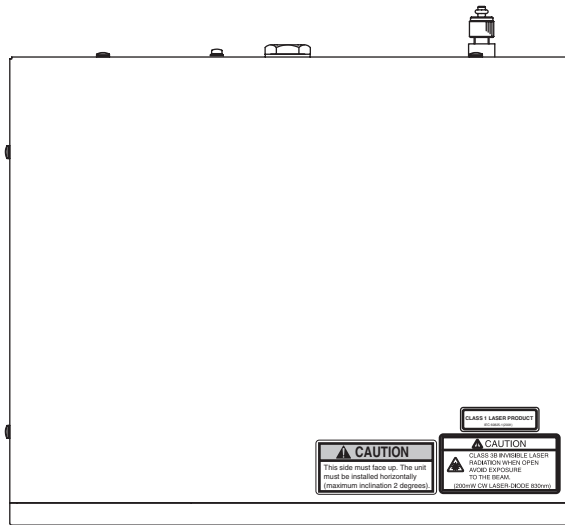
Minimum particle size	0.06 μm
Measurable particle size	0.06 to 0.2 μm (with PSL particles of refractive index 1.6 in pure water)
Measurement size range	Two channels ($\geq 0.06 \mu\text{m}$, $\geq 0.1 \mu\text{m}$)
Count efficiency	<p>$1 \pm 0.3\%$ (ambient temperature 20 to 25°C, relative humidity below 85%)</p> <p>$1 \pm 0.5\%$ (ambient temperature 15 to 30°C, relative humidity below 85%)</p> <p>Count efficiency is the comparison of particle counts between the unit and the reference instrument when measuring about 0.15 μm diameter PSL particles in fluid with refractive index of 1.26 to 1.38 at the range setting of $\geq 0.1 \mu\text{m}$.</p>
Sample flow rate	10 mL / min
Maximum particle number concentration	<p>100,000 particles / mL (coincidence loss 5% for 0.06 μm particles)</p> <p>Maximum particle number concentration depends on particle size. In the vicinity of 0.2 μm (maximum measurable particle), it is on the order of 3,000 particles / mL (coincidence loss 5%).</p>
Sample fluid temperature range	+15 to +30°C (no moisture condensation on flow cell)
Allowable sample fluid pressure	300 kPa or less (gauge pressure)
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 particle size are detected.
LIQUID LEAK	<p>Lit (green) during normal operation</p> <p>Lit (red) when leak was detected</p>
CELL	<p>Lit (green) during normal operation</p> <p>Lit (red) when contamination was detected or maximum particle number concentration exceeded</p> <p>Off when light source is off</p>

LASER	Lit (green) during normal operation Lit (red) when light source temperature is out of range Flashing (red) when light source output is below normal Off when light source is off												
POWER	Lit while power to unit is on												
Input/output connectors													
CONTROLLER	For connection of controller KE-40												
LIQUID LEAK ALARM	Shorted during normal operation, open when internal leak was detected (M3 terminal, fit in with 1.25 mm ² electric wire) Maximum load: 30 V DC, 1 A												
Power requirements	Supplied via Controller KE-40												
Installation inclination angle	Max. 2°												
Ambient conditions for operation	+15 to +30°C, less than 85% RH (no condensation)												
Ambient conditions for storage	-10 to +50°C, less than 90% RH (no condensation and no freezing in internal piping)												
Dimensions	173 (H) × 305 (W) × 278 (D) mm (maximum) 160 (H) × 300 (W) × 250 (D) mm (excluding joints and other protruding parts)												
Weight	Approx. 6.5 kg												
Supplied Accessories	<table> <tr> <td>Tube A vacuum pack (2×4 dia., 1.5 m flared PFA tube 2, union joint 1)</td> <td>1</td> </tr> <tr> <td>Particle size labels</td> <td>1</td> </tr> <tr> <td>Instruction manual</td> <td>1</td> </tr> <tr> <td>Instruction sheet for “Transport and Installation”</td> <td>1</td> </tr> <tr> <td>Liquid-borne particle counter usage precautions</td> <td>1</td> </tr> <tr> <td>Inspection certificate</td> <td>1</td> </tr> </table>	Tube A vacuum pack (2×4 dia., 1.5 m flared PFA tube 2, union joint 1)	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
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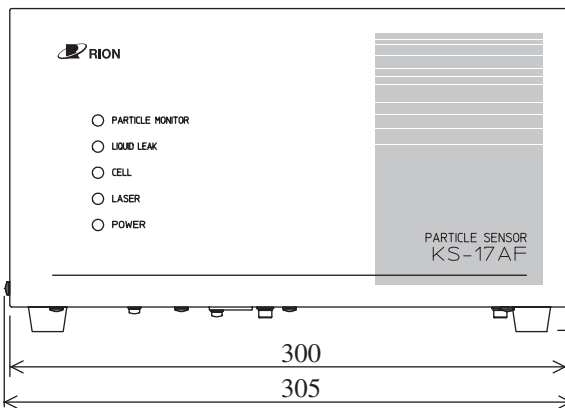
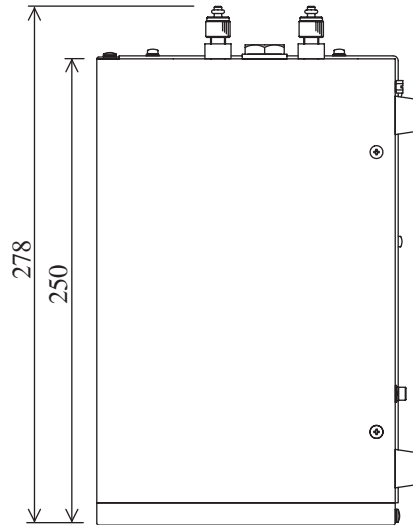


Rear view

Top view



Right side view



Front view

Unit: mm

Dimensional Drawings

Specifications subject to change without notice