

SPECIFICATIONS
PARTICLE SENSOR
KS-42D



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Outline

The KS-42D is a sensor which uses the light-obscuration method for measuring the particle number concentration in liquid. The particle count is determined for various sizes.

By connecting the KS-42D to the controller KE-40B1, a liquid-borne particle counter system with eight size ranges ($\geq 2 \mu\text{m}$, $\geq 3 \mu\text{m}$, $\geq 5 \mu\text{m}$, $\geq 7 \mu\text{m}$, $\geq 10 \mu\text{m}$, $\geq 25 \mu\text{m}$, $\geq 50 \mu\text{m}$, $\geq 100 \mu\text{m}$ (factory default setting)) can be created.

Using the KE-40B1, it is also possible to freely specify the size ranges for particle detection.

The KS-42D does not have measurement controls or a display for measurement results. It is designed to be used under control of a separate controller KE-40B1 which also supplies power to the KS-42D. The KS-42D incorporates a leak sensor. If a leak is detected within chassis, an alarm output can be activated.

As the KS-42D does not incorporate a flow control circuit for the sample fluid, the flow rate of the sample fluid must be controlled by external means.

The rated sample fluid flow is 25 mL per minute.

The KS-42D can be placed even if it is lain down.

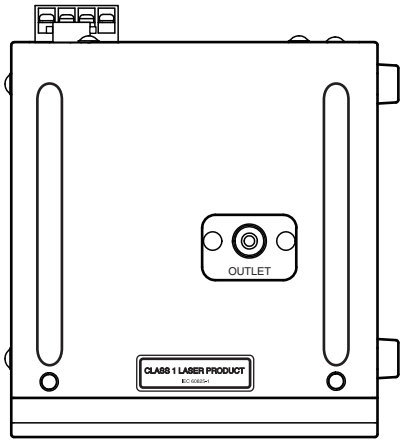
Specifications

Optical system	Light-obscuration method
Light source	Laser diode (rated output 5 mW; wave length 780 nm)
Laser product class	Class 1, IEC 60825-1 (2014) Internal particle detection mechanism uses Class 3B laser
Light detector	Photodiode
Materials of parts exposed to sample fluid	Synthetic quartz, PFA, perfluoro (fluorocarbon rubber)
Allowable sample fluid types	Fluids which do not corrode the fluid contact materials
Calibration	By polystyrene latex (PSL) particles with refractive index 1.6 in pure water
Minimum detectable particle size	2 μm (with PSL particles of refractive index 1.6 in pure water)
Measurable particle size range	2 μm to 100 μm (with spherical particles of refractive index 1.6 in pure water)

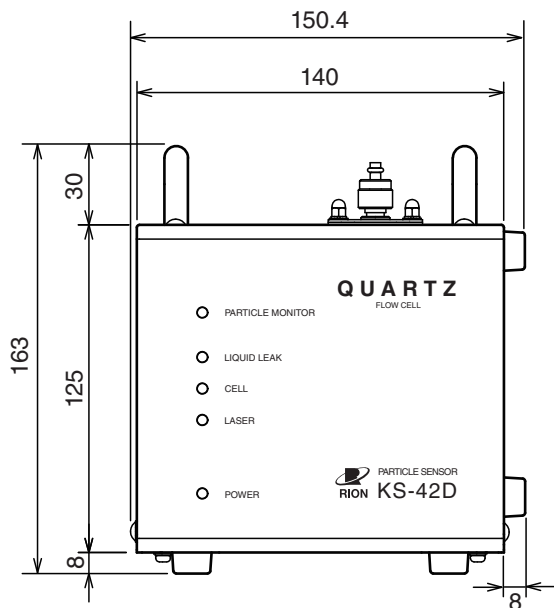
Measurement size range	Freely settable to 2 μm to 100 μm (The ranges can be set to 2 μm to 10 μm in 0.1 μm steps, and can be set to 10 μm to 100 μm in 1 μm steps. The setting is up to 10 channels and done by controller KE-40B1. Upper limit for smallest particle size channel (CH 1) is 9.9 μm) *The factory default setting is eight channels ($\geq 2 \mu\text{m}$, $\geq 3 \mu\text{m}$, $\geq 5 \mu\text{m}$, $\geq 7 \mu\text{m}$, $\geq 10 \mu\text{m}$, $\geq 25 \mu\text{m}$, $\geq 50 \mu\text{m}$, $\geq 100 \mu\text{m}$)
Counting efficiency	100% \pm 20% (measuring PSL particles in the range of 5 μm , using count of 2 μm and above for comparison with reference unit)
Sampling flow rate	25 mL / min
Maximum particle number concentration	6000 particles / mL (coincidence loss 5% for 2 μm particles) 4000 particles / mL (coincidence loss 5% for 10 μm particles) 13000 particles / mL (coincidence loss 10% for 2 μm particles) 10000 particles / mL (coincidence loss 10% for 10 μm particles)
Sample fluid temperature range	+5°C to +40°C (no moisture condensation on flow cell)
Allowable sample fluid pressure	-80 kPa to +300 kPa (gauge pressure)
Warm-up time	About 10 minutes
Sample fluid ports	
INLET	Sample fluid inlet, 2 mm \times 4 mm dia. flared tube joint
OUTLET	Sample fluid outlet, 2 mm \times 4 mm dia. flared tube joint
Indicators	Two color light emitting diode
PARTICLE MONITOR	Briefly flashes green when particles equal to or above minimum detectable particle size are detected
LIQUID LEAK	Lit (green) during normal operation Lit (red) when leak is detected within chassis
CELL	Lit (green) during normal operation Lit (red) when flow cell is contaminated or light source output is not normal Off when light source is off

LASER	Lit (green) during normal operation Flashing (red) when light source output is not normal Off when light source is off
POWER	Lit (green) while power to unit is on
Input/output connectors	
CONTROLLER	For connection of controller KE-40B1
LIQUID LEAK ALARM	Shorted during normal operation, open when internal leak is detected (M3 screw terminal, accepts either electric wire with a 1.25 mm ² cross section or spade (Y-type) terminals) Maximum load: 30 V DC, 1 A or less
Power requirements	12 V DC (supplied via controller KE-40B1)
Electric power consumption	Approx. 6.7 VA
Installation inclination angle	Max. 2° compared with direction that can be placed
Environmental Requirements	
Operation Environments	
	Indoor Use Only
Altitude	Up to 2000 m
Overvoltage Category	II (when connected to controller KE-40B1)
Pollution Degree	2
Protection Class	I
Ambient conditions for operation	
	+5°C to +40°C, 90% RH or less (no condensation)
Ambient conditions for storage	
	-10°C to +50°C, 90% RH or less (no condensation and no freezing in internal piping)
Dimensions	163 mm (H) × 150.4 mm (W) × 165 mm (D) (maximum) 125 mm (H) × 140 mm (W) × 151 mm (D) (excluding protruding parts)
Weight	Approx. 2.2 kg

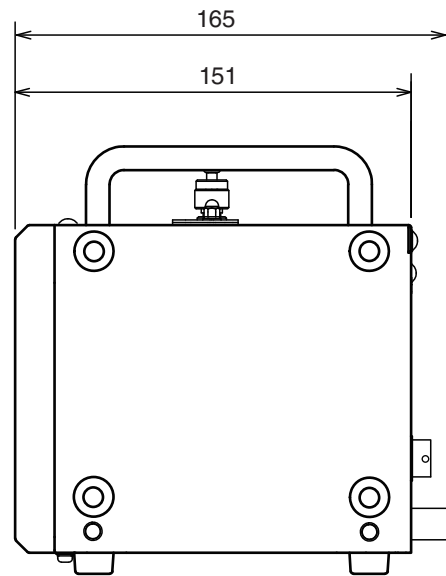
Supplied Accessories	Tube A vacuum pack		1
	(2 mm × 4 mm dia., 1.5 m flared PFA tube 2, union joint 1)		
	Connection cable A (1 m)	KS-42-121	1
	Flow cell cleaning brush (case, brush 2)		1
	Instruction manual		1
	Instruction sheet for “Transport and Installation”		1
	Liquid-borne particle counter usage precautions		1
	Inspection certificate		1
Option	Connection cable B (5 m)	KS-42-123	
	Stand	KS-42-S39	
Factory option	Particle size range extension to 150 μm	KS-42-S40	
	(Settable particle size range 2 μm to 150 μm. The ranges can be set to 2 μm to 10 μm in 0.1 μm steps, and can be set to 10 μm to 150 μm in 1 μm steps.)		



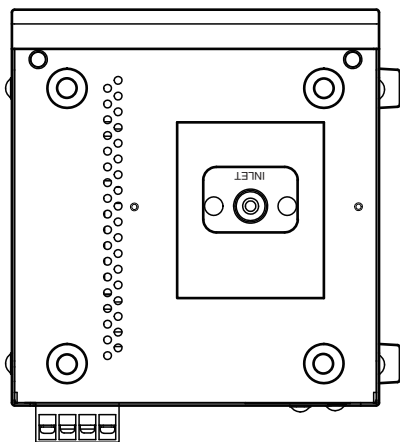
Top view



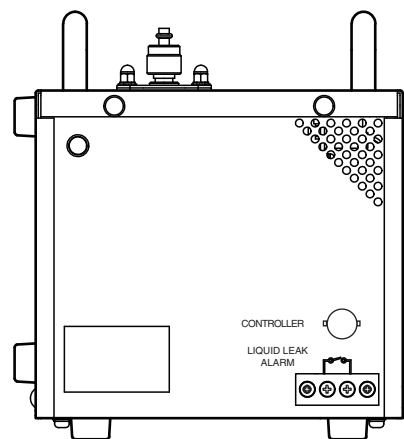
Front view



Right side view



Bottom view



Rear view

Unit: mm

Dimensional Drawings

Specifications subject to change without notice