

SPECIFICATIONS
PARTICLE SENSOR
KS-17B



3-20-41 Higashimotomachi, Kokubunji, Tokyo 185-8533, Japan

Outline

The KS-17B is designed to be used as an in-line sensor in a system for measuring the size and number of particles in pure water, using the light-scattering method. Measurement results are output via a built-in interface. The KS-17B consists of the sensor unit and the power supply unit.

Particles are measured in two size ranges ($\geq 0.05 \mu\text{m}$ and $\geq 0.1 \mu\text{m}$), the rated sample flow rate is 10 mL per minute and the effective sample flow rate is 0.1 mL per minute.

The KS-17B incorporates a serial interface and an interface for multi-point monitoring system so that the control by the external equipment and collection of the measurement data are possible. The control by sensor controller KZ-70 and a display for measurement results are possible via the interface for multi-point monitoring system.

This unit cannot control the flow rate, the additional flow control system should be prepared.

Specifications

Optical system	90° sideway light-scattering method
Light source	Laser diode (rated output 200 mW; wavelength $830 \text{ nm} \pm 10 \text{ nm}$)
Laser product class	Class 1, IEC 60825-1 (2014) Internal particle detection mechanism uses Class 3B laser
Light collector	Spherical lens (half angle 40 degrees)
Light detector	3 channel PIN type photodiodes
Materials of parts exposed to sample	Synthetic quartz, PFA, perfluoro (fluorocarbon rubber)
Allowable sample fluid types	Pure water (For cleaning purposes, fluids which do not corrode the fluid-contacting parts may be passed through the system.)
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	0.05 μm
Measurable particle size	0.05 μm to 0.2 μm (with PSL particles of refractive index 1.6 in pure water)

Measurement size range	Two channels ($\geq 0.05 \mu\text{m}$, $\geq 0.1 \mu\text{m}$) (Four channels in optional configuration)
Counting efficiency	$1.0\% \pm 0.3\%$ (ambient temperature $20\text{ }^{\circ}\text{C}$ to $25\text{ }^{\circ}\text{C}$, relative humidity below 85%) $1.0\% \pm 0.5\%$ (ambient temperature $15\text{ }^{\circ}\text{C}$ to $30\text{ }^{\circ}\text{C}$, relative humidity below 85%) Determined by comparative measurement with suspension of $0.15 \mu\text{m}$ range PSL particles in fluid, using $\geq 0.1 \mu\text{m}$ range
Sample flow rate	10 mL / min (needed for normal performance of the KS-17B) The effective sample flow rate is 0.1 mL per minute multiplied the rated sample flow rate by the counting efficiency.
Maximum particle number concentration	100000 particles / mL (coincidence loss 5% for $0.05 \mu\text{m}$ particles) Maximum particle number concentration depends on particle size. In the vicinity of $0.2 \mu\text{m}$ (maximum measurable particle), it is on the order of 3000 particles / mL (coincidence loss 5%).
Maximum inclination for placement of the unit	2 degrees
Sample fluid temperature range	$+15\text{ }^{\circ}\text{C}$ to $+30\text{ }^{\circ}\text{C}$ (no moisture condensation on cell)
Allowable sample fluid pressure	700 kPa or less (gauge pressure) Warm-up time 10 minutes
Sample fluid connectors	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 PURGE : Purge gas inlet, Rc 1 / 8 (1 / 8 PT female)

Indicators

LIQUID LEAK	Lit in green during normal operation. Lit in red when leak is detected within chassis.
CELL	Lit in green during normal operation. Lit in red when particle detector cell contamination is detected, or when maximum particle number concentration in sample flow is exceeded. Off when light source is off.
LD	Lit in green during normal operation. Lit in red when light source temperature exceeds allowable range. Flashes red when light source output falls below rated level. Off when light source is off.
POWER	Lit in green while the unit is powered.
SERIAL	Briefly flashes green when normal communication is being carried out. Briefly flashes red when a communication error has occurred.
DATA LINK	Briefly flashes green when normal communication is being carried out. Briefly flashes red when a communication error has occurred. Lit in red when address setting is out of range.
ALARM (1,2)	Lit in orange when the ALARM terminal output an alarm signal.

Input / output connectors

DC IN:	DC input for the power supply unit KZ-50
SERIAL:	Serial interface (D-SUB, 9-pin)
DATA LINK:	Interface for configuring a multi-point monitoring system
ALARM (1, 2):	Relay contacts for alarm output Operating under control by the multi-point interface Maximum load: 30 V DC, 1 A
LIQUID LEAK ALARM:	

Shorted during normal operation. Open when leak is detected.
Maximum load: 30 V DC, 1 A

Power requirements Supplied via power supply unit KZ-50 (90 V to 250 V AC, supplied power cord only for use in Japan, 100 V AC)

Power consumption Maximum 40 VA (including power supply unit)

Ambient conditions for operation

+15 °C to +30 °C, less than 85% RH (no condensation)

Ambient conditions for storage

-10 °C to +50 °C, less than 85% RH (no condensation and no freezing in internal piping)

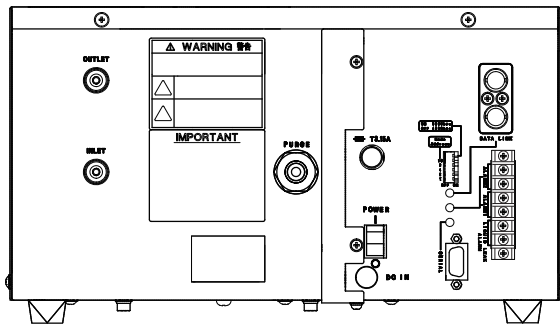
Dimensions and weight

Main unit (KS-17B): 173.2 mm (H) × 304.7 mm (W) × 278.2 mm (D) (maximum)
160 mm (H) × 300 mm (W) × 250 mm (D) (excluding protruding parts)
Approx. 6 kg

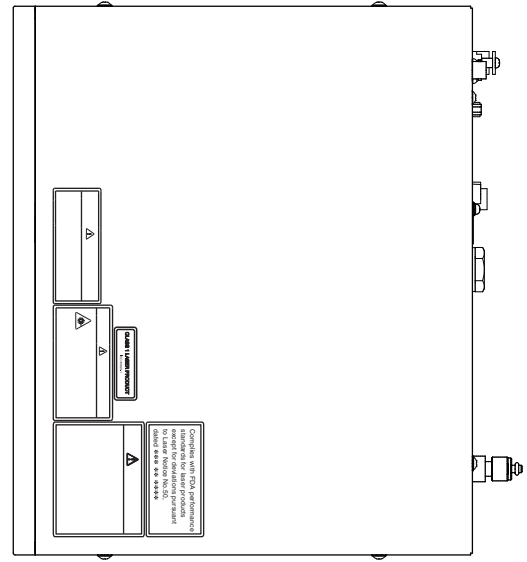
Power supply unit (KZ-50):
130 mm (H) × 71 mm (W) × 200 mm (D) (maximum)
112 mm (H) × 71 mm (W) × 185 mm (D) (excluding protruding parts)
Approx. 0.8 kg

Supplied Accessories

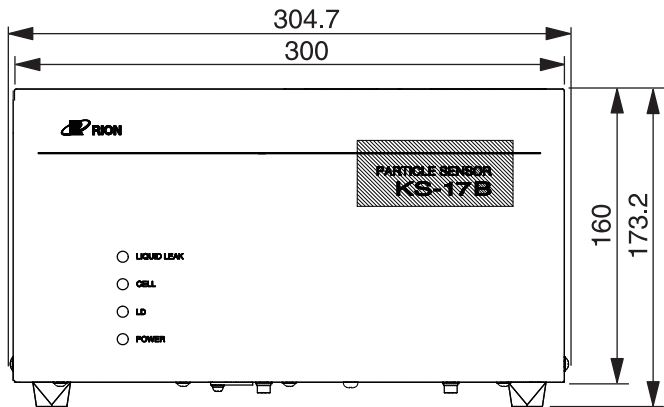
Tube A vacuum pack	1
Power cord (only for use in Japan, 100 V AC)	1
DC cable	1
Power supply unit KZ-50	1
Instruction manual	1
Instruction sheet for “Transport and installation”	1
Liquid-borne particle counter usage precautions	1
Inspection certificate	1



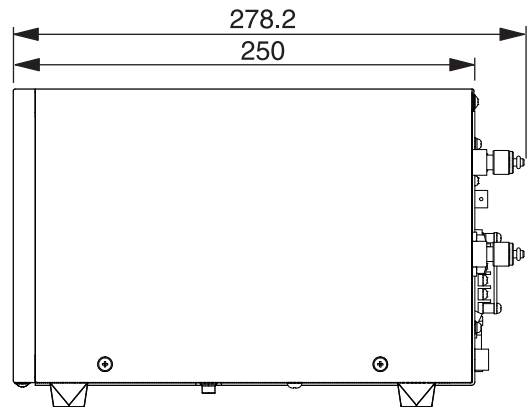
Rear view



Top view



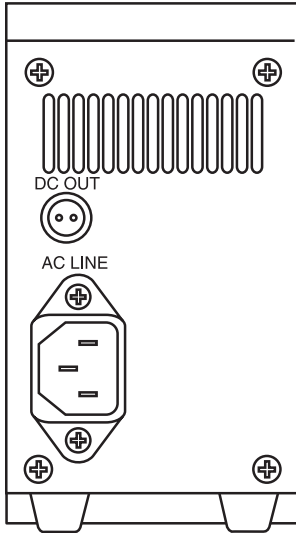
Front view



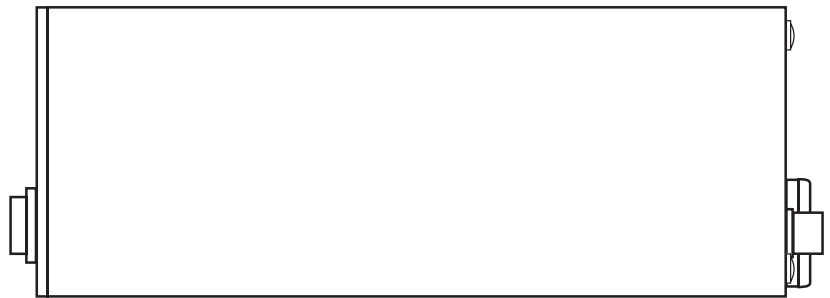
Side view

Unit: mm

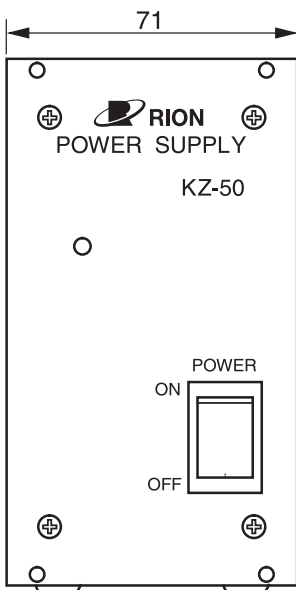
Dimensional Drawings



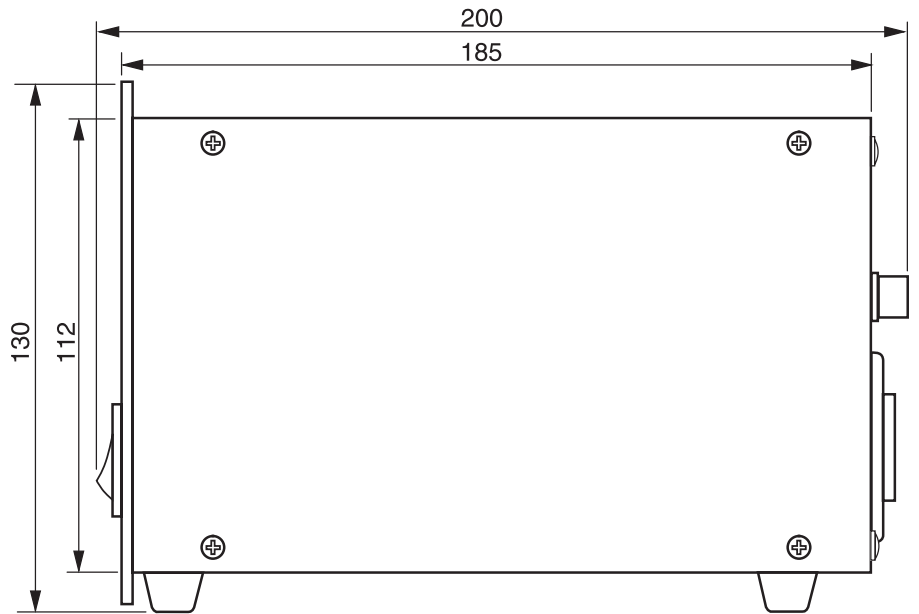
Rear view



Top view



Front view



Side view

Unit: mm

Dimensional Drawings

Specifications subject to change without notice