SPECIFICATIONS

HAND HELD PARTICLE COUNTER

KC-52A

RION CO., LTD.

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No. 22223E 23-10 Printed in Japan

Overview

The KC-52A handheld particle counter is designed to determine particle concentration by measuring the size and number of airborne particles by the light scattering method. The product complies with JIS B 9921:2010 and ISO 21501-4:2018/Amd 1:2023 (factory option).

The KC-52A detects particles in six size ranges: 0.3 µm or more, 0.5 µm or more, 1.0 µm or more, 2.0 µm or more, 5.0 µm or more, and 10.0 µm or more. The flow rate rating is 2.83 L/min. The unit controls the flow rate automatically.

The KC-52A displays cumulative counts during measurement time, differences in counts between particle sizes, and particle number concentrations (counts per unit volume). The unit volume is selected from 1 L, 28.3 L and 1,000 L. This can be changed during measurement. The unit can also repeat measurement for the selected measurement time or unit volume up to 99 times and calculate the average.

The KC-52A is provided with a USB connector. By means of the serial interface using the USB virtual COM port, the unit can communicate with a computer. The unit can also output data to a USB printer via its USB connector or the optional communication dock. In addition, the unit can be connected to a multipoint monitoring system via the communication dock.

If the password function is enabled, guests other than the administrator and users are not allowed to edit the parameters for measurement.

The unit is a palmtop device running on a battery and therefore suitable for mobile use.

When turned off, the unit automatically saves the measurement conditions. When turned on next, the unit starts with the saved measurement conditions. The unit sounds the buzzer when the count reaches a predetermined alarm level.

The unit saves up to 10,000 sets of data in the internal memory. The data can be copied to a USB flash drive.

Major operations related to electronic records, such as start/stop of measurement, changes in the measurement conditions and deletion of measurement data, can be kept as audit trails. Audit trails can be output to an external device or printed.

Specifications

Optical system	90-degree sideways light scattering method
Light source	Laser diode (wavelength: 780 nm; rated output: 35 mW)
Laser product class	Class 1, IEC 60825-1:2014, EN 60825-1:2014+A11:2021 Internal particle detection mechanism incorporating Class 3B laser
Light collection system	Spherical mirror
Light detector	Photodiode
Measurable samples	Air
Pump	Rotary carbon vane pump
Calibration	Polystyrene latex (PSL) particles with refractive index of 1.6
Minimum detectable particle size	
	0.3 μm (with spherical particles of refractive index of 1.6)
Size range	Six channels: 0.3 μm or more, 0.5 μm or more, 1.0 μm or more, 2.0 μm or more, 5.0 μm or more, and 10.0 μm or more
Counting efficiency	50% ±20% (PSL particles around the minimum detectable particle size) 100% ±10% (PSL particles of 1.5 to 2 times the minimum detectable particle size)
Particle size resolution	15% or less (PSL particles of about 0.5 μm)
Response	0.5% or less
Maximum particle number concentration	
	140,000,000 particles/m^3 (coincidence loss is 10% or less)
False count rate	70 particles/m^3 or less (95% confidence interval)
Flow rate	2.83 L/min (automatic control by pressure detection)
Sample pressure	0 kPa (atmospheric pressure) to −1 kPa
Warm-up time	1 minute
Display	
LCD	480 × 800 active matrix LCD with backlight
Measurement screen	Setting and display of counts (up to 99,999,999.9, 1-channel graph display or 6-channel simultaneous display), date, time, remaining measurement time, error information, measurement conditions, etc.
System settings screen	
	Date, time, automatic printing, and other system settings
LED	Displays the charging state.
Language	Japanese/English

Controls	
Touchscreen	Pressure sensitive
Button	
Power	Turns power on/off.
Measurement time (can be set via communication even in remote mode)	
Any time	1 second to 2 hours, and manual
Measurement volume	283 mL (6 seconds), 1 L (21 seconds), 2.83 L (1 minute), 10 L (3 minutes 32 seconds), 28.3 L (10 minutes)
Measurement mode	
Manual measurement	Measurement is started with [START] button and ended with [STOP] button.
Automatic measurement	
Average measurement	Measurement for freely set time or measurement volume is repeated up to 99 times. The average is then calculated.
Periodic measurement	Average measurement is performed in cycles of the specified duration (1 second to 24 hours).
Count display	Cumulative counts, differences, and number concentrations (unit: 1 L, 28.3 L, and 1000 L)
Audio measurement	The total count from the start of measurement is displayed. A beep sounds each time the count for particles in the specified size range reaches a multiple of the alarm level setting.
Alarm	A buzzer sounds when the count for the selected range of sizes equals or surpasses the set alarm level.
Alarm level	1 to 99,999,999 particles, no alarm
Calendar	Year, month, day, hour, minute, and second by automatic calendar (up to 2099 with automatic adjustments for leap years) Accuracy of ±2 minutes/month (normal temperature)
Input/output connectors	
USB connector	Connects to a control device supporting the built-in interface. Connects to the communication dock. Connects to the optional AC adapter.
Memory	Data is automatically saved in the TSV format to the internal memory using the rotating system.
Security	Three levels: Administrator, user, and guest

Power supply	Built-in battery or optional AC adapter	
AC adapter	Input rating: 100 V to 240 V AC, 50/60 Hz Output rating: 9 V DC, maximum consumption of 14 VA (when charging)	
Battery	Lithium-ion Runtime: Approx. 7.0 hours (Conditions: Continuous measurement at normal temperature. This may vary depending on operating conditions, such as operating environment, frequency of use, and parameter settings.) Charging time: Approx. 4.0 hours (when the unit is off)	
Ambient operating conditions	10°C to 40°C 85% RH or less (no condensation)	
Ambient storage conditions	−10°C to 50°C 90% RH or less (no condensation)	
Dimensions	307 mm (H) × 93 mm (W) × 54 mm (D)	
Weight	680 g	
Environmental Requirements		
Operation Environments	Indoor Use Only	
Altitude	Up to 2000 m	
Supply Voltage Fluctuations	100 V to 240 V AC ±10%	
Overvoltage Category	I	
Pollution Degree	2	
Protection Class	Ⅲ	
Accessories	Zero count filter	1
	Silicon tube (9 mm × 6 mm dia., 0.04 m)	1
	Hand strap	1
	USB cap	1
	Quick Start Guide	1
	Inspection certificate	1

Factory options

Modification for 1 µm size
(not conforming to JIS B 9921:2010 and ISO 21501-4:2018/Amd 1:2023)

KC-52-S54

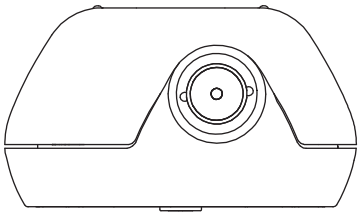
Light source	Laser diode (wavelength: 780 nm; rated output: 10 mW)
Calibration	Polystyrene latex (PSL) particles with refractive index of 1.6 for 1 µm or more, 2 µm or more, and 5 µm Glass beads with refractive index of 1.56 for 10 µm or more, 20 µm or more, and 30 µm
Minimum detectable particle size	1 µm (with spherical particles of refractive index of 1.6)
Size range	Six channels: 1 µm or more, 2 µm or more, 5 µm or more, 10 µm or more, 20 µm or more, and 30 µm or more
Counting efficiency	50% ±20% (calibration particles around the minimum detectable particle size) 90% to 120% (calibration particles of 1.5 to 2 times the minimum detectable particle size)
Particle size resolution	15% or less (PSL particles of about 1 µm)
Maximum particle number concentration	45,000,000 particles/m^3 (coincidence loss is 10% or less)

Conforming to ISO 21501-4:2018/Amd 1:2023 KC-52-S55

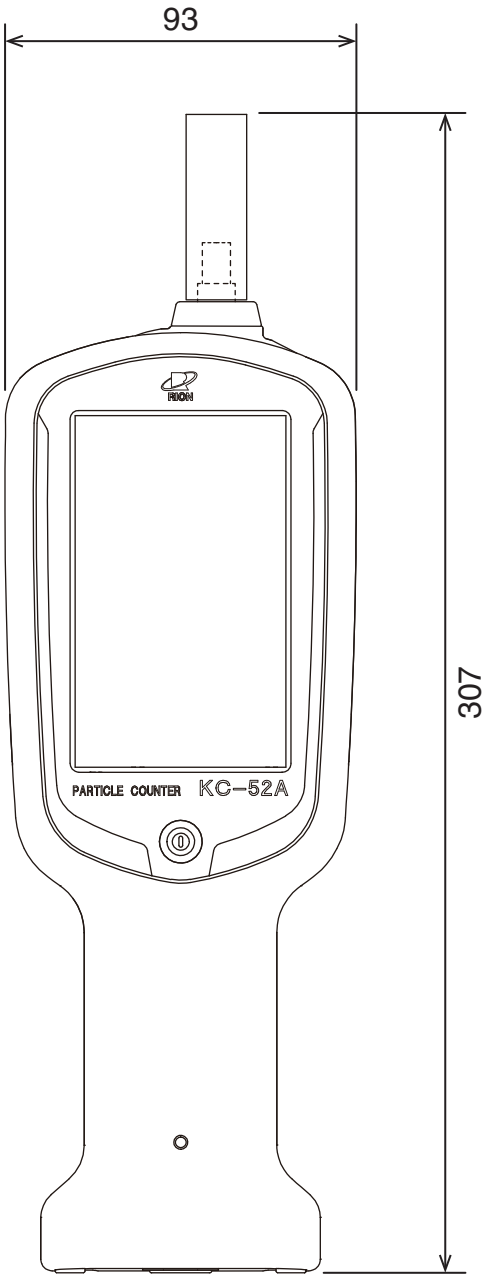
Options

AC adapter (CE certified, 60 W, including power cord)		KC-52-351
Charging stand		KC-52-S52
Communication dock		KC-52-S47
USB cable (A-B)	2.0 m	
USB cable (A-miniB)	1.8 m	
USB cable (C-miniB)	1.0 m	
USB cable (C-C)	1.0 m	
RP monitor Evo10 Ver.2		K1701
RP monitor Evo10 Ver.3		K1701
Tube size conversion adapter		KC-52-S19
Vinyl tube		
Printer (with AC adapter and conversion connector)		DPU-S245
Thermal paper (set of 10 rolls)		TP-34
Lint-free thermal paper (set of 6 rolls)		TP-33
USB flash drive (8 GB)		
Carrying case		KC-52-353

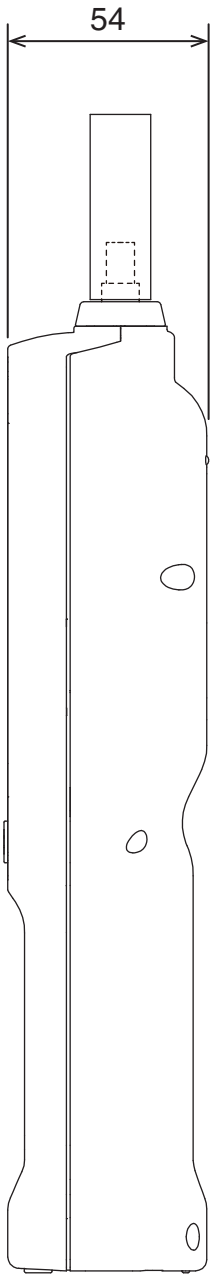
Calibration interval One year



Top view



Front view



Right side view

Unit: mm

Dimensional Drawings