SPECIFICATIONS

HAND HELD PARTICLE COUNTER

KC-52

RION CO., LTD.

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

No. 10017E 11-04 Printed in Japan

Outline

The hand held particle counter KC-52 is designed to measure the size and number of airborne particles using the light scattering method, to determine the particle number concentration. This unit conforms to ISO 21501-4:2007 and JIS B 9921-2010.

The unit can display a particle count for five size ranges: ≥0.3 µm, ≥0.5 µm, ≥1.0 µm, ≥2.0 µm, and ≥5.0 µm. The flow rate is automatically adjusted by the unit to 2.83 L / min.

The measurement result can be displayed as cumulative particle count for the measurement time, differential count between particle channels, or particle number concentration (particle count per sample volume). When the particle number concentration is displayed, selectable sample volume are 1 L, 28.3 L or 1000 L. Switching between different display settings during measurement is possible. And the measurement can be repeated up to 99 times of preset time or volume and calculated average of results.

The unit is equipped with a USB connector, allowing communication with a computer via a serial interface implemented as a virtual COM port. An optional USB printer can also be connected.

The unit also incorporates Rion's proprietary multi-point system interface for use in a multi-point system.

The password function is available. This is suitable to prevent unauthorized users from making changes to measurement parameters.

The unit operates on a rechargeable battery and is highly compact, allowing hand-held use in the field.

While the power is off, the measurement parameter settings is memorised automatically. Measurement to be continued with the same settings the next time power is on.

An alarm level can be set to sound a warning buzzer when the particle count exceeds a preset threshold.

The internal memory of the unit stores data for at least 5000 measurements, and data can be exported using an optional SD memory card.

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Specifications

Optical system	90° sideway light scattering method
Light source	Laser diode (wavelength 780 nm, rated output 35 mW)
Laser product class	Class 1, IEC 60825-1 (2007)
	Internal particle detection mechanism uses Class 3B laser
Collecting optics	Spherical mirror
Light detector	Photodiode
Allowable measurement sample types	
	Air
Pump	Rotary carbon vane

Calibration	By polystyrene latex (PSL) particles with refractive index 1.6
Minimum detectable particle size	
	0.3 µm (for spherical particles with refractive index 1.6)
Measurable particle size ranges	
	Five channels (≥0.3 µm, ≥0.5 µm, ≥1.0 µm, ≥2.0 µm, and ≥5.0 µm)
Counting efficiency	50% ± 20% (measuring PSL particles in the range of minimum detectable particle size)
	100% ± 10% (measuring PSL particles in the range with 1.5 to 2 times larger than minimum detectable particle size)
Size resolution	15% or less (in the vicinity of 0.5 µm PSL particles)
Responsivity	0.5% or less
Maximum particle number concentration	
	140,000 particles/L (coincidence loss within 10%)
False count rate	70 particles/m³ or less (95% confidence interval)
Flow rate	2.83 L/min (Pressure sensing automatic control)
Sample pressure range	0 (atmospheric pressure) to -1 kPa
Warm-up time	1 minute
Display	320 × 240 active matrix type LCD, with backlight
Measurement screen	
	Measurement value (99,999,999.9 counts max., single-size display or all-size display), date and time, remaining measurement time, error message, setting and displaying of measurement parameters, etc.
System configuration screen	
	Date, time, auto print, and other system settings
LED	Shows battery status
Display language	English / Japanese
Controls	
Touch panel	Resistance sensitive
Buttons	
START	Starts measurement
STOP	Stops measurement
POWER	Turns the unit on / off
Measurement time (Can also be set in remote mode via serial communication)	
Arbitrary	00:00:01 to 02:00:00, and manual
Sample volume	283 mL (6 sec), 1 L (21 sec), 2.83 L (1 min), 10 L (3 min 32 sec), 28.3 L (10 min)
Measurement modes	
Manual measurement	
	Measurement controlled with “START” and “STOP” buttons

Automatic measurement

Averaging measurement

Repeated measurement up to 99 times of preset time or volume and averaging of results

Periodic measurement

Averaging measurement carried out at each specified time interval (00:00:01 to 24:00:00)

Count display Cumulative, differential, number concentration (unit: 1 L, 28.3 L, 1000 L)

Audio measurement

Total particle count from start of measurement, with beep tone each time count of selected particle size range reaches a multiple of preset alarm level.

Alarm function Buzzer sounds when particle count in specified channel equals or exceeds specified alarm level.

Alarm level setting

1 to 99,999,999 particles, and off

Additional settings in remote mode: 100, 1000, 10000, 100000

Clock Auto calendar for year, month, day, hour, minute, second (adjusts for leap years until 2099)

- Accuracy: ±2 minutes/month or better (at normal temperature)

Internal interface

SERIAL

Communication parameters

Data word length: 7 bits

Parity: Even

Stop bits: 2 bits

Protocol KC-01D compatible

Multi-point system

Protocol RION multi-point system

Inputs/outputs

USB connector For connection of control equipment compatible with internal interface

For use of unit as removable disk by a connected computer

For connection of a USB printer

DATA LINK connector

Connect to multi-point monitoring system

Power connector (DC)

Connect an AC adapter

SD CARD slot	Insert an SD memory card
Memory functions	Measurement data are automatically saved to internal memory in text (TSV) form using rotating deletion
Security	Administrator / User
Power	Internal battery or supplied AC adapter
AC adapter	Rated input: 100 to 240 V AC, 50/60 Hz, 0.9 A Rated output: 12 V DC, Maximum power consumption 12 VA (in case of charge)
Internal battery	Lithium-ion Battery life: Approx. 3.5 hours (at room temperature and continuous measurement; battery life may vary depending on usage environmental conditions, operation status and setting parameters of the unit) Charging time: Approx. 3 hours (when power is off)
Environmental Requirements	
Operation Environments	Indoor Use Only
Altitude	Up to 2000 m
Supply Voltage Fluctuations	100 to 240 V AC ± 10%
Overvoltage Category	Ⅱ
Pollution Degree	2
Protection Class	Ⅰ
Environmental conditions for operation	10˚C to +40˚C, 85% RH or less (no condensation)
Environmental conditions for storage	-10˚C to +50˚C, 90% RH or less (no condensation)
Dimensions	Approx. 304 (H) × 87 (W) × 55 (D) mm Approx. 269 (H) × 87 (W) × 55 (D) mm (without protruding parts)
Weight	Approx. 780 g

Supplied accessories

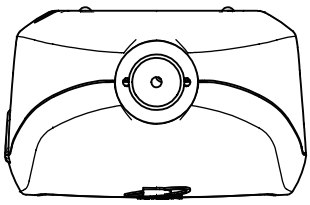
AC adapter KR-12-003 (include power cord)	1
USB cable (A to mini B)	1
Stand	1
Hand strap	1
Zero count filter	1
Silicon tube (ø 9 mm × ø 6 mm, 0.04 m)	1
Carrying case	1
Instruction manual (CD-ROM)	1
Concise manual	1
Inspection certificate	1

Options

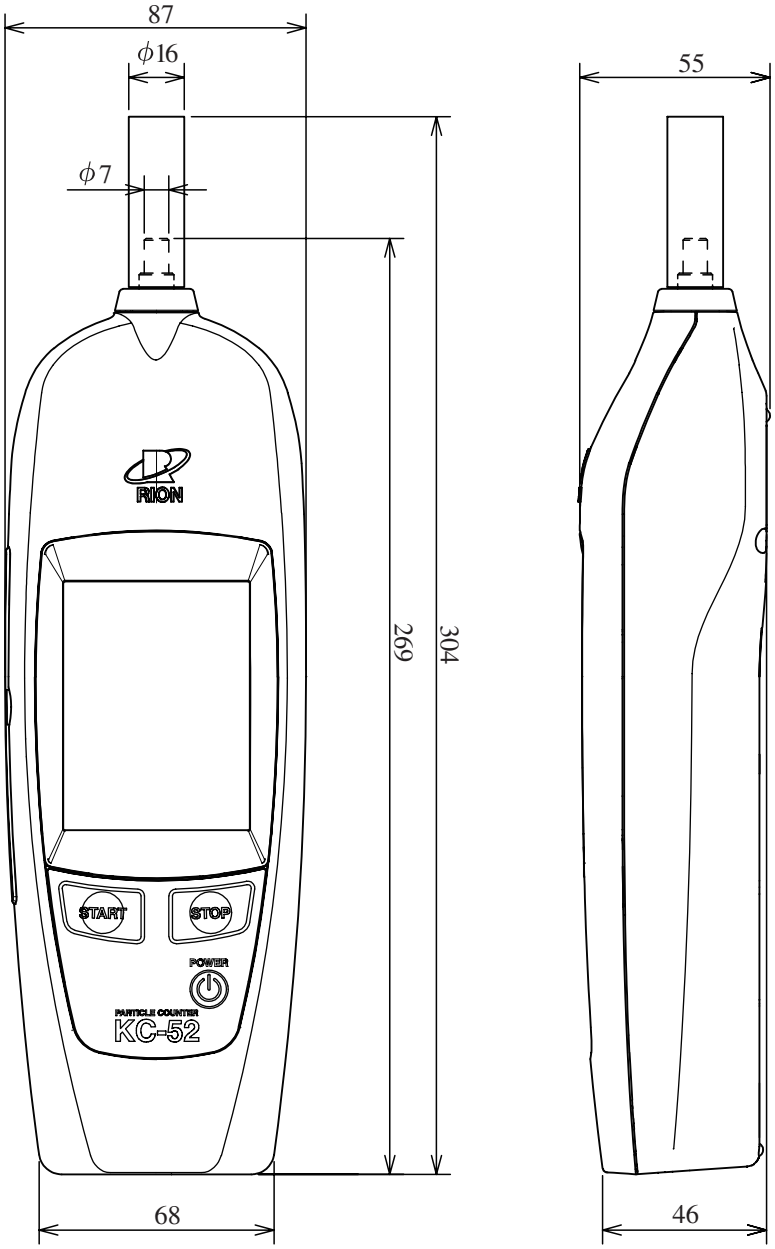
Printer (AC adapter/USB conversion connector)	DPU S245
Thermal printer paper (10 rolls)	TP-34
Lint-free thermal printer paper (6 rolls)	TP-33
SD memory card (512 Mbyte)	SD-512M

Calibration interval

One year



Top view



Front view

Right side view

Unit: mm

Dimensional Drawings

Specifications subject to change without notice