

SPECIFICATIONS
PARTICLE COUNTER
KC-20A



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Outline

The light-scattering type airborne particle counter KC-20A is designed to measure the size and number of airborne coarse particles using the light-scattering method, to determine the particle number concentration.

In a single measurement, the KC-20A can determine the particle count in five size ranges ($\geq 10 \mu\text{m}$, $\geq 20 \mu\text{m}$, $\geq 30 \mu\text{m}$, $\geq 50 \mu\text{m}$, and $\geq 100 \mu\text{m}$). The sample flow rate is 30 L/min.

The measurement result can be displayed as cumulative particle count for the measurement time, differential count between particle channels, or a volume converted count for 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.

Printout of measurement results on an internal thermal printer is also possible.

A serial interface allows for communication with a computer.

A backup function automatically maintains measurement parameter settings also while the power is off. This enables measurement to be continued with the same settings the next time power is switched on.

An alarm level can be set to sound a warning tone and control external equipment such as a fan when the particle count exceeds a preset threshold.

The KC-20A can output the measurement results converted into the analog signal with a range of 4 to 20 mA using an optional D/A converter interface, so it can be connected directly to a instrumentation system.

- * All company names and product names mentioned in this specifications are trademarks or registered trademarks of their respective owners.

Specifications

Sensor

Optical system	70° sideway light-scattering method
Light source	Laser-diode (wavelength 780 nm, rated output 3 mW)
Laser product classification	Class 1, IEC 60825-1 (2001) Internal particle detection mechanism uses Class 3B laser
Light collector	Spherical lens (condensing half-angle 40 degrees)
Light detector	PIN type photodiode

Main unit

Air flow method	Purge-air keeps sample air clean
Sample flow rate	30 L/min
Pump	Rotary carbon vane type (DC brushless motor)
Flow control	Pressure sensing automatic control
Calibration	Glass microsphere particles in clean air (refractive index 1.5)
Minimum particle size	10 µm (for particles with refractive index 1.5)
Particle size ranges	Five channels (≥10 µm, ≥20 µm, ≥30 µm, ≥50 µm, and ≥100 µm)
Maximum particle number concentration	2,000 particles/L (coincidence loss within 5%)
Measurement time	
Arbitrary:	00:00:10 to 02:00:00, and manual
Sample volume:	10 L (20 sec), 28.3 L (57 sec), 100 L (3 min 20 sec), 283 L (9 min 26 sec)

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 (00:00:10 to 24:00:00)
Count display modes	Cumulative, differential, volume-converted (1 L, 28.3 L, 1000 L)

Display	320 × 240 dot matrix type LCD, with backlight
Measurement screen	Measurement value (8 digits, 9999999.9 counts max., single-size display or all-size display), date, remaining measurement time, error message, setting and displaying of measurement parameters, etc.
System configuration screen	Date, time, communication parameters, auto print, flow rate and other system settings
LED indicators	
COUNT	Shows measurement status <ul style="list-style-type: none"> • Lit green when counting is in progress • Flashes green when sample air particle number concentration exceeds maximum rating • Off when measurement is stopped
FLOW	Shows sample air flow status <ul style="list-style-type: none"> • Lit green when sample air flow is within rated range • Flashes green when sample air flow is between -3 to -5% or +3 to +5% outside of rated range • Flashes red when sample air flow is more than ±5% outside of rated range • Off when pump is stopped
LASER	Shows light source (laser-diode) status <ul style="list-style-type: none"> • Lit green when light source is operating normally • Flashes red when light source output is not normal • Off when light source is off
Alarm function	Buzzer sounds and ALARM terminals are closed by relay when particle count in specified channel equals or exceeds specified alarm level.
Alarm level setting	1 to 9,999,999 particles (in 1-particle steps), and off In remote mode, 10, 100, 1000, 10000 particles are selectable except above
Maximum load	30 V DC, 1 A

Controls

START button	Starts measurement
STOP button	Stops measurement
PARTICLE SIZE button	Switches particle sizes for display.
△, ▽ buttons	Control the cursor movement
FUNCTION buttons F1 to F4	Perform various functions as indicated on display
CONTRAST volume	Adjusts display contrast

Input/output connectors

ALARM	Terminals are closed by relay when the alarm occurs
EXT START/STOP (factory option)	For external measurement start/stop control

Internal interface

SERIAL	For communication with computer
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Communication parameters

Electrical characteristics:

Conforming to JIS X 5101⁻¹⁹⁸²

(JIS X 5101⁻¹⁹⁸² corresponds to TIA/EIA-232.)

Transmission configuration:

Full-duplex, asynchronous

Baud rate: 4800 or 9600 bps

Data word length:

7 bits or 8 bits

Parity: Even, odd, or none

Stop bits: 2 or 1

Terminator: [CR LF] or [CR]

Connector type: 9-pin male D-sub connector

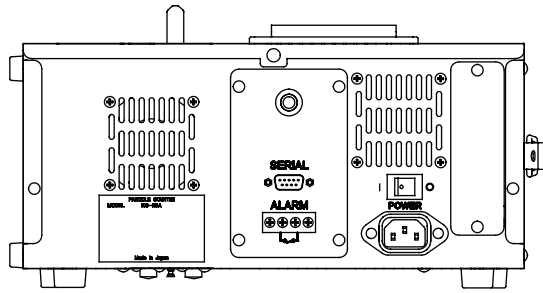
Internal printer

Method of printing	Line thermal recording
Print width	48 mm

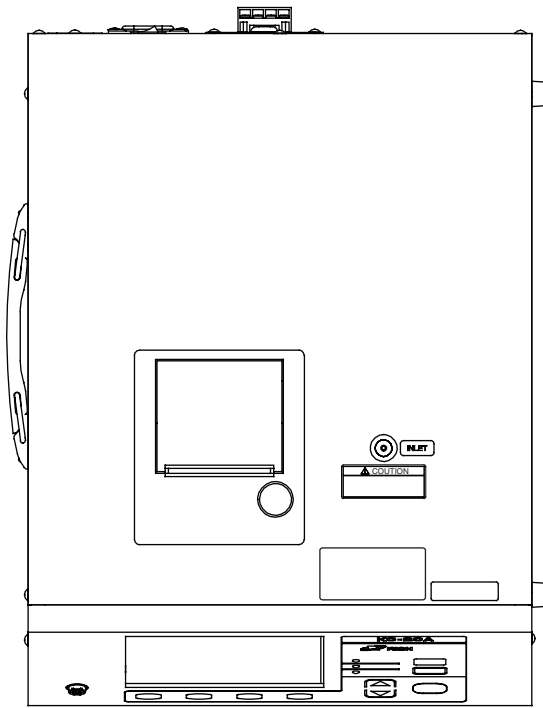
Inlet For sample air input

Outlet (factory option) For sample air output

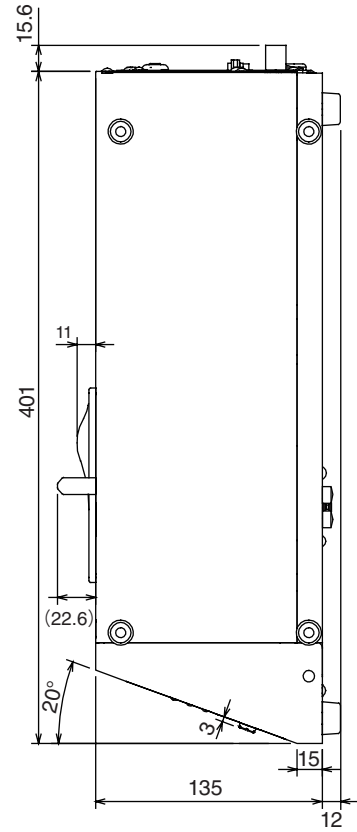
Ambient conditions for operation	0°C to +35°C, 20% to 85% RH (no condensation, no sudden temperature and humidity change)	
	Using internal printer, however, 30% to 80% RH	
Sample air temperature and humidity range	0°C to +35°C, 20% to 85% RH (no condensation)	
Ambient conditions for storage	-10°C to +50°C, 90% RH or less (no condensation)	
Power requirements	100 to 240 V AC, 50/60 Hz	
	Approx. 160 VA	
Dimensions	Approx. 158 (H) × 321 (W) × 417 (D) mm (max.)	
	Approx. 135 (H) × 300 (W) × 401 (D) mm (without protruding parts)	
Weight	Approx. 11.6 kg	
Supplied accessories	Sampling pipe	1
	Sampling tube	1
	(Plastic tube with 11 × 7 dia., 1 m)	
	Tube joint	1
	Power cord	1
	(For use in Japan, 2.5 m)	
	Thermosensitive paper	TP-08 2
	Mesh filter	2
	Instruction manual	1
	Inspection certificate	1
Factory options	EXT START/STOP	
	Outlet	
	D/A converter interface	
Options	Interface cable	CC-61
	(For connection to DTE with 25-pin female D-sub connector)	
	Interface cable	CC-61A
	(For connection to DTE with 9-pin male D-sub connector)	
	Carrying case	
	Air filter	
	Mesh filter	
	Thermosensitive paper	TP-08 (6 rolls set)
	Lint-free thermosensitive paper	TP-10 (6 rolls set)



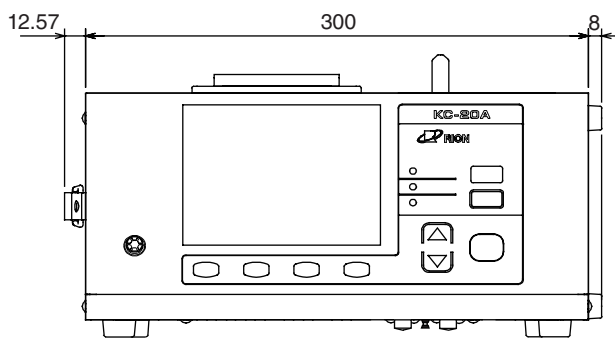
Rear view



Top view



Right side view



Front view

Unit: mm

Dimensional Drawings

Specifications subject to change without notice