

Microbial Air Sampler ZR-2053



Introduction

The ZR-2053 is a GMP-oriented microbial air sampler for cleanrooms, isolators, biosafety cabinets and compressed gas monitoring. It combines selectable 28.3/100/200 L/min flow rates, HEPA-filtered exhaust, 316L stainless steel construction, validated D_{50} performance and data-integrity functions for reliable viable air monitoring.

Features

- Fully compliant with 21 CFR Part 11.
- 316L stainless steel housing and sampling head, compatible with routine VHP decontamination and common cleanroom disinfectants.
- Three selectable flow rates: 28.3, 100 and 200 L/min for different cleanroom and compressed-gas monitoring scenarios.
- Built-in HEPA-filtered exhaust, efficiency >99.999% at 0.3 μm , helps prevent secondary contamination in critical cleanroom areas.
- D_{50} compliance, D_{50} is the particle size at which 50% of particles are collected; smaller D_{50} indicates better capture of small bioaerosol particles.

D_{50} (28.3 L/min)	D_{50} (100 L/min)	D_{50} (200 L/min)
0.78 μm	1.04 μm	1.14 μm

- Remote sampling and exhaust up to 10 m.
- Compressed gas microbial sampling with optional with a variety of optional compressed gas sampling kits.
- Wi-Fi, Bluetooth, USB, RS485, RS232, RJ45 and analog signal interface for printer, barcode scanner, data export and other communications methods.
- Dual removable rechargeable hot-swappable batteries.
- Optional cleanroom tripod for flexible positioning at fixed sampling points.

Applications

- Pharmaceutical & Biopharmaceutical
- Aseptic manufacturing areas
- Cleanrooms Grade A/B/C/D
- Isolators/RABS
- Biosafety cabinets
- Compressed air and process gas monitoring
- Food & beverage clean areas
- Hospitals and CDC laboratories

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Reference Standards

- 21 CFR Part 11
- ISO 14698-1 2003
- BS EN 17141: 2020
- GMP / cGMP / EU GMP
- USP <1116>
- JJF1826-2020

Benefits

Cleanroom-Friendly Design

- 316L stainless steel housing and sampling head are easy to clean and compatible with routine VHP and common cleanroom disinfectants.



- Anti-fingerprint, easy-clean finish for simplified maintenance.
- Built-in, tool-free replaceable HEPA exhaust filter; filter runtime can be recorded for preventive maintenance.



Sampling Flexibility

- D₅₀ values are specified for each flow rate to support ISO 14698-1 and EN 17141 evaluation requirements.

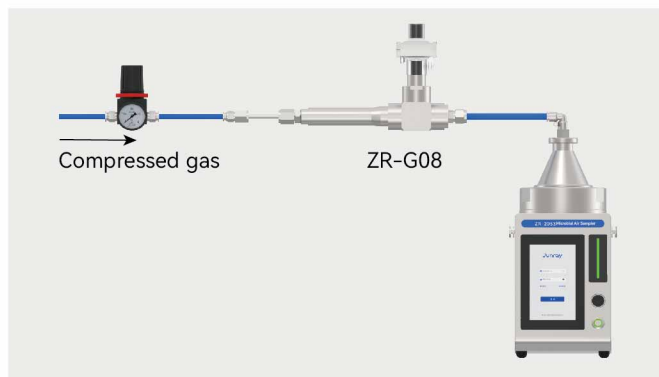
Flow rate	Sampling head	D ₅₀
28.3 L/min	φ0.32 mm x 282 holes	0.78 μm
100 L/min	φ0.55 mm x 348 holes	1.04 μm
200 L/min	φ0.70 mm x 400 holes	1.14 μm

- Remote sampling and exhaust up to 10 m for isolators and hard-to-reach locations.



Compressed Gas Sampling

- Compressed gas is decompressed by the ZR-G08 / ZR-G01B kit and then sampled at controlled flow.



- Compatible with ZR-2052/2053 Microbial Air Samplers.
- Designed for collection of microbial content in compressed air.

Parameters	ZR-G08A	ZR-G08B	ZR-G01B
Pressure range	0.54-0.70MPa	0.64-0.70MPa	(0-10)MPa
Output flow	100L/min	28.3L/min	28.3/100/200 L/min

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- Supports standard $\phi 90$ mm and $\phi 100$ mm Petri dishes without adapters, reducing plate preparation complexity.

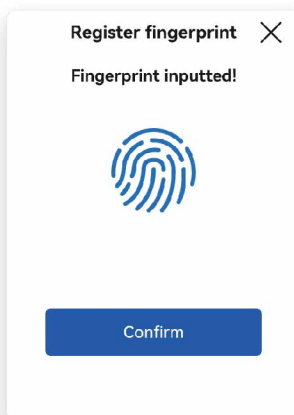


- Optional tripod for flexible positioning.

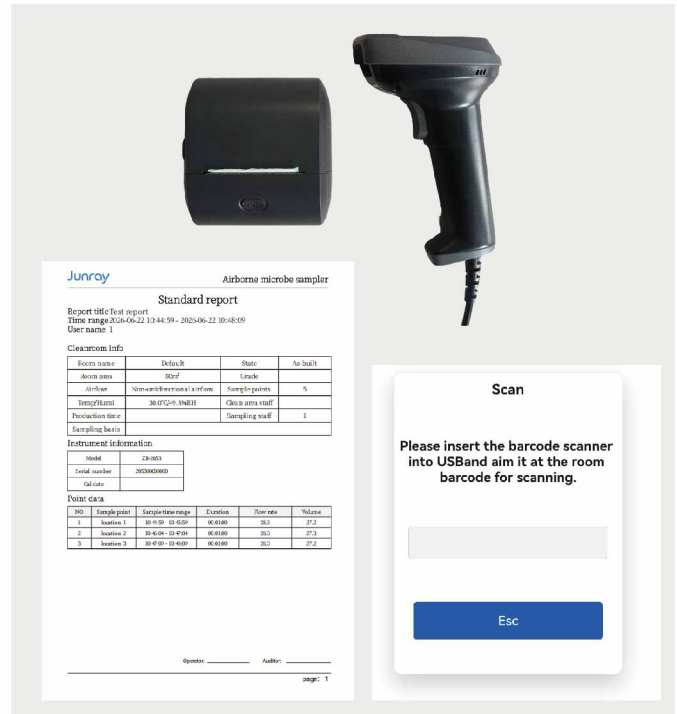


Data Integrity

- Three-level user management, audit trail, electronic signature and PDF report generation support data integrity and full traceability in regulated pharmaceutical workflows.
- Preset groups, rooms, locations and recipes standardize sampling plans and reduce operator error.
- Calibration due dates are clearly displayed, helping you schedule recalibration proactively and avoid unexpected downtime.
- Fingerprint login for operator identification and full traceability.



- Barcode scanner (optional) input for plate/room/location information, USB export, bluetooth printer (optional), PDF report and audit trail query.



- Remote firmware upgrades-rapid new features, lower maintenance cost.
- Blower runtime can be viewed at any time, allowing you to track usage and anticipate instrument service life.
- Audible, LED and screen alarms for flow blockage, low battery and system errors.

Unattended Operation

- Supports unattended sampling with delay, interval and cycle settings.
- Removable battery with extended runtimes: ≥ 15 h (28.3 L/min), ≥ 8 h (100 L/min), ≥ 1.5 h (200 L/min).



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Packing List



Optional accessories



28.3L/min Sampling head



200L/min Sampling head



ZR-G01B Compressed gas sampling kit



Bluetooth Printer



Remote sampling assembly



Barcode printer & Scanner



Tripod



ZR-G08 High pressure diffuser

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Specifications

Parameters	Range	Resolution	Accuracy
Sampling Flow Rates	28.3, 100, 200 L/min (selectable)	0.1 L/min	±2.5%
Sampling Volume	1-9,999 L	1 L	
Sampling Time	1s to 23h 59min 59s	1s	
Sampling Delay	0s to 23h 59min 59s	1s	
Sampling Interval	0s to 23h 59min 59s	1s	
Sampling Cycles	1-999 cycles		
Sampling Modes	Preset, custom, high-pressure gas		
Program Capacity	Groups: 50,000 Rooms: 100,000 Locations per room: 10,000 Recipes: 100,000		
User Capacity	50,000 users		
Petri Dish Compatibility	Φ90 mm, Φ100 mm; dishes held centered and secure		
Housing/Sampling Head Material	316L stainless steel		
Remote Capability	Supports remote sampling and remote exhaust (up to 10 m)		
Exhaust HEPA Filter	Efficiency >99.999% @ 0.3 μm Built-in, tool-free replacement		
Display	5-inch LCD capacitive touchscreen		
Languages	Chinese, English		
Alarms	Flow blockage, low battery LED flashing + audible buzzer		
Battery Runtime	≥15 h @ 28.3 L/min ≥8.0 h @ 100 L/min ≥1.5 h @ 200 L/min		
Battery	2 × lithium battery, 14.4 V / 6600 mAh (removable)		
Power Adapter	DC 15 V		
Data Storage	100,000 records		
Communication interfaces	Wi-Fi, Bluetooth, USB, RS485, RS232, RJ45, analog signal.		
Data functions	USB export, PDF report generation, Bluetooth printing, audit trail, electronic signature, barcode scanner input.		
Noise Level	<60 dB(A)		
Dimensions	(L146×W223×H241) mm		
Weight	4.8 kg (without batteries) 5.7 kg (with dual batteries)		
Operating Conditions	Temperature: 5-35°C Humidity: 5-90% RH, non-condensing		

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Calibration

Junray provides a traceable flow calibration solution for microbial air samplers. ZR-5031 can be used to verify flow indication error, flow repeatability and flow stability.

One placement, immediate measurement.



ZR-5031
Microbial air sampler calibrator (Flowrate)

- High precision, MPE 1%
- Ultra-low airflow resistance
- Wide test range 0~200 LPM
- Fast response, simple operation

Test items

- Flowrate indication error
- Flowrate repeatability
- Flowrate stability



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