MonoJet

Monodisperse Droplet/Aerosol Generator

Portable, battery-powered instrument for field calibration of cloud probes, precipitation and aerosol analyzers

Field deployable
Maintain the calibration of the instruments in your field campaign

Portable
Bring the calibration to the fielded instrument no matter where it is

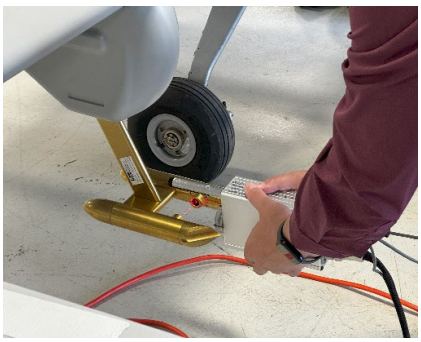
3-in-1 ready
Generate a broad range of droplet and aerosol sizes

Flexible
Detachable hand-held nozzle unit for hard-to-reach sampling zones

Three MonoJet Configurations:

Large Droplet Generator MonoJet-LDG	Small Droplet Generator MonoJet-SDG	Coarse Mode Aerosol Generator MonoJet-CMAG
Ideal for calibrating precipitation measurement instruments	Ideal for calibrating cloud probes	Ideal for calibrating coarse mode aerosol analyzers
Droplet diameter range: ~100–1000 µm	Droplet diameter range: ~30–100 µm	Particle size range: ~1–10 µm
Stroboscopic illuminator validates droplet size	Imaging module validates droplet size	Imaging module and OPC validate aerosol particle size

MonoJet-LDG being used to field calibrate a Joanneum 2DVD disdrometer at College of Charleston (SC)



MonoJet-SDG being used to validate calibration of a cloud probe deployed on the DOE ARM ArcticShark UAS

MonoJet-CMAG being used to validate calibration of an aerosol probe deployed on the DOE ARM ArcticShark UAS

In field trials, our system has identified instruments that were completely out of calibration emphasizing the **importance of field calibration of the atmospheric measurement instruments during field campaigns**. With MonoJet, you can have complete confidence in your field data.

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MonoJet

Principle of operation

Generation of monodisperse droplets is based on disintegration of a cylindrical liquid jet caused by periodic perturbation applied to the jet. This effect is commonly referred to as Savart–Plateau–Rayleigh instability of a liquid column. When solutions are used instead of pure water (with subsequent drying), the instrument generates monodisperse aerosols of the solute.

Preliminary Specifications - subject to change

MonoJet	-LDG	-SDG	-CMAG
	Large Droplet Generator	Small Droplet Generator	Coarse Mode Aerosol Generator
Configuration (standard)	- Main unit - 4 nozzle units - Stroboscopic illuminator	- Main unit - 4 nozzle units - Imaging module	- Main unit - 4 nozzle units - Imaging module - Diffusion dryer
Accessories (optional)	- Additional nozzle units - Imaging module	- Additional nozzle units - Stroboscopic illuminator	- Additional nozzle units - Stroboscopic illuminator - Optical particle counter
Droplet diameter range, typical	100–1000 µm	30–100 µm	30–40 µm
Aerosol size range, typical	-	-	1–10 µm
Droplet size accuracy, typical	1-3%	1-3%	-
Droplet size distribution width, typ	2-5%	2-5%	-
Droplet size coarse control	Interchangeable nozzles	Interchangeable nozzles	-
Droplet size fine control	Nozzle vibration frequency	Nozzle vibration frequency	Nozzle vibration frequency
Aerosol particle size control	-	-	- Solute concentration
Droplet/aerosol size validation	- Stroboscopic illuminator - Imaging module (optional)	- Imaging module	- Imaging module (precursor droplets) - Optical particle counter (optional)
Droplet jet velocity, typical	2 - 12 m/s	-	-
Droplet jet velocity validation	- Imaging module (optional)	-	-
Droplet emerging frequency	From 100's of Hz to several kHz	From several kHz to ~100 kHz	-
User interface	Touch screen computer display		
Dimensions and weight:			
Main unit	24" x 20" x 14" 43 lb		
Nozzle unit	8" x 4" x 2.5" 1.3 lb		
Stroboscopic illuminator	15" x 0.6" x 0.6" 0.4 lb		
Imaging module	10" x 7" x 4" 4 lb		
Power draw	< 30 W		
Powering options	- Rechargeable Li-ion battery. Battery operation time: 2.5 hours (typical) - AC/DC plug-in power supply		

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