

BRECHTEL

**Solutions for your
research challenges**

PILS Particle into Liquid Sampler

Model 4001



Perform real-time PM1 and PM2.5 particle composition measurements using the analytical method of your choice or by collecting directly into sample vials

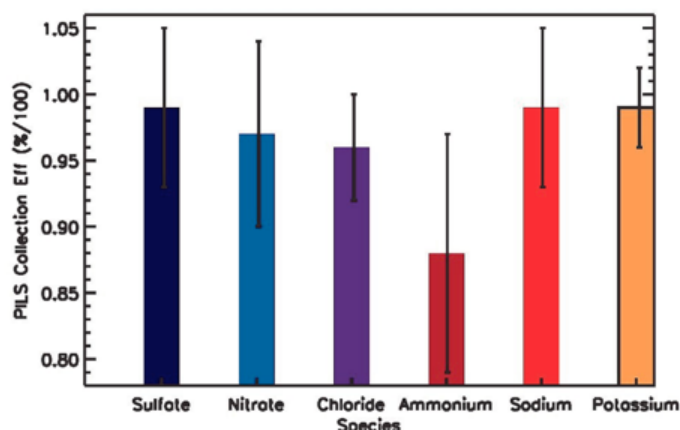
Features:

- PM1 or PM2.5 bulk aerosol sampling
- Fully characterized & field tested
- Low maintenance
- Easy to operate and install with compact size
- Continuous unattended long-term operation
- Multiple analytical techniques possible
- Vial collection with multiple vial sizes using optional Auto-collector
- Rack mount chassis fits standard 19 inch racks
- Software to record PILS temperatures and control optional auto-collector

**www.brechtel.com
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Providing Aerosol Measurement Solutions

Collection Efficiency



Specifications

Parameter	Value
PILS inlet sample flow	11-15 lpm
Washflow and sample liquid flow rates	0.03-2.0 ml/min
Chemical Species Detected	
SO ₄ , NO ₃ , NO ₂ , Cl, NH ₄ , K, Na, Ca, Mg detection limits	100 ng/m ³
Acetate, formate and oxalate organic acids detection limit	50 ng/m ³
Water soluble organic carbon detection limit	10 ppb
Electrical	
Supply voltage	110 OR 230 VAC
Supply current	5 amps @ 110 VAC
Operating temperature range	15-35 °C
Physical	
Dimensions	17.2 x 6.9 x 16 in/43.25 x 17.5 x 4.75 cm
PILS system total weight	20 lbs/9 kg
Auto-collector total weight	20 lbs/9 kg

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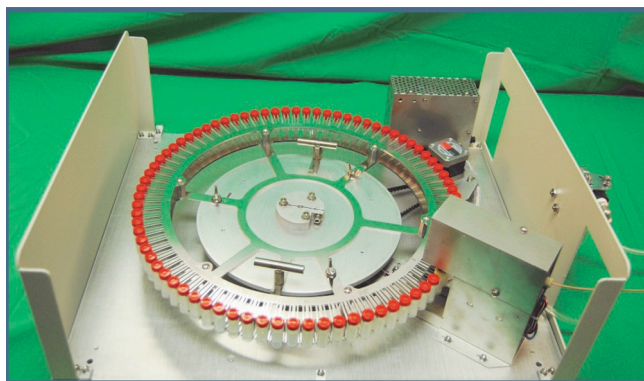
*Some products may be shown with optional accessories, which are sold separately. Items shown may not be to scale.

Publication:

R. J. Weber, D. Orsini, Z. Yhuang, Y. N. Lee, P. J. Klotz, and F. J. Brechtel (2001). A Particle-into-Liquid Collector for Rapid Measurement of Aerosol Bulk Chemical Composition. *Aerosol Science and Technology*, 35, 718-727.

A. Sorooshian, F. J. Brechtel, Y. Ma, R. J. Weber, A. Corless, R. C. Flagan, and J. H. Seinfeld (2006). Modeling and Characterization of a Modified Particle-into-liquid-Sampler (PILS) Optimized for Aircraft Sampling. *Aerosol Science and Technology*, 40: 396-409.

Auto-collector with 80-vial holding carousel



Applications

- Continuous monitoring of ambient aerosol composition
- Laboratory smog chamber studies
- Cloud condensation nucleus studies
- Visibility reduction studies
- Aerosol health impacts
- Long-term climate and air quality monitoring

How to Order

Part No.	Description
4001	Particle-Into-Liquid-Sampler with control software
PILS-AC	Auto-collector with either 80 or 38 vial holding carousel and control software
CA80	Additional 80 vial-holding carousel for Auto-Collector and 1.2 or 2.0 ml vials
CA38	Additional 38 vial-holding carousel for Auto-Collector and 10 or 12 ml vials
VS1.2	Pack of 1000, 1.2 ml poly vials and caps with septa
VS2.0	Pack of 1000, 2.0 ml glass vials and caps with septa
VM10	Pack of 1000, 10 ml glass vials and caps with septa
VM12	Pack of 1000, 12 ml poly vials and caps with septa
CR	Crimping tool for 10 ml glass vial aluminum caps (required with VM10)
DE	Denuder package with three denuders for organic, acidic and basic gases
8003	Round Jet Impactor with 1.0 micrometer cut size, 15 lpm flow
8005	Round Jet Impactor with 2.5 micrometer cut size, 15 lpm flow
8006	Round Jet Impactor with 10 micrometer cut size, 15 lpm flow
PILS-P115	External vacuum pump, 115 V
PILS-P230	External vacuum pump, 230 V
PILS-PC	Computer with 4001 PILS software
PILS-Kit	Maintenance Kit for 4001 PILS