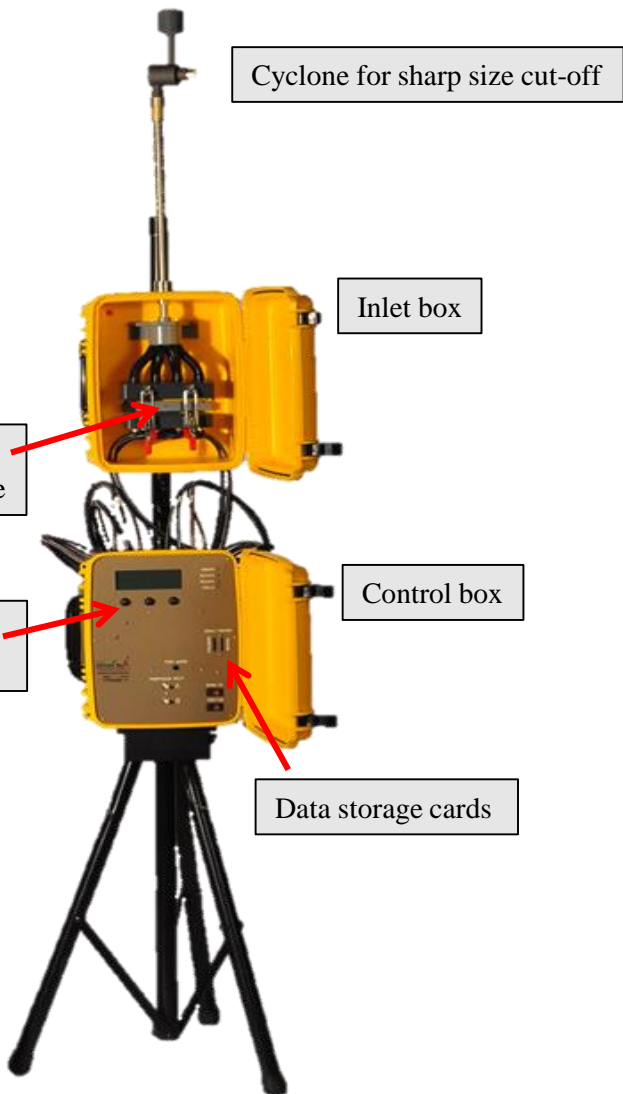




Innovative Technology for Earth & Space

# AirPhoton AeroExplorer Sampling Station Robust Autonomous Particle Sampling

Deployed globally by the SPARTAN Network  
[www.spartan-network.org](http://www.spartan-network.org)



Will be used for ground support of the NASA JPL MAIA satellite mission

- Inlet Box Specifications (SS5i-PMx)
- Box dimensions: 12.5" x 15" x 9"
  - Weight: 6 kg
  - Installed height: 40" but varies per configuration
  - Control box option: SS5e, SS5e7-1
  - Holds FC10, 8-slot filter cartridge
  - Flow rate: 1.5-7 lpm, set to control particle size
  - Inlet size cut-off options: PM10, PM4, P2.5, or PM1

- Control Box Specifications (SS5e)
- Box dimensions: 12.5" x 18" x 9"
  - Weight: 5.3 kg
  - Compatible options: SS5i, SS5i-PMx
  - Max flow rate: around 7 lpm standard
  - Power inputs: 110/220 VAC 50/60Hz
  - Auxiliary power input: nominal 12VDC.
  - Solar power compatible.
  - User sets sampling protocols with intuitive button commands
  - Controls on/off pump and advance to next filter slot as function of minutes, hours or days
  - Data stored on removable memory cards with automatic backups

- Communications Module Accessory
- Remote upload of new sampling protocols
  - Remote monitoring of instrument operation and performance
  - Cell or wifi network compatible

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## AeroExplorer Sampling Station

The AirPhoton AeroExplorer Automated Filter Sampling Station is a fully programmable system that collects particulate matter on filters for subsequent analysis. Consisting of an Inlet/Filter unit and a Control box, the station is designed for compatibility with the AirPhoton 8-slot filter cartridge model FC10. The programmable capability allows flexibility when designing sampling cycles, moving collection from filter slot to filter slot or turning collection on and off at specified times. A total of 8-slots are available before the filter cartridge must be changed. Filter cartridges are portable and can be prepared in the lab and mailed to the sampling station site.

The Inlet/Filter unit basic configuration (SS5i) employs a PM10 inlet. The unit can also be configured to run with a sharp cutoff cyclone inlet in sizes ranging from PM1 to PM10, denoted as PMx. Pump flow rate is adjustable in the range of 1.5 to 7 lpm to facilitate accurate particle cut-off size for the selected cyclone. The most common configuration is the SS5i-PM2.5, achieved with a sharp cyclone cutoff and a flow rate of 5 lpm. The pump can be programmed to automatically toggle between two flow rates, sending different size particles to different designated tubes, or the flow rate can be adjusted by a manual valve in the front panel of the instrument. Particles can be collected on single stage filters or with no change in hardware or software can be further separated into two stage filter collection to fine and coarse fractions.

The Control box (SS5e) offers 3 analog inputs for external devices and 1 digital port for communication with other AirPhoton devices, such as the AeroExplorer nephelometer. Thus, filter measurements and forward/back scattering of the particles can be automatically linked in the same data base. Data is stored in removable memory cards, and automatically backed-up internally.

The Inlet/Filter unit (SS5i) and the Control box (SS5e) are both enclosed in environmentally isolated cases, ready for outdoor deployment in rugged conditions. Power input options include: 110/220 VAC 50/60Hz and nominal 12VDC. The design is also compatible with power supplied by solar panels.

### Autonomous particle sampling.

Pump turns on/off and sampling advances to next filter slot, automatically, as function of minutes, hours or days. All directed by operator-initiated programs, input with intuitive button controls or script command uploads.

Time series of flow rates stored, backed-up and linked to filter slot and can be synced to AeroExplorer nephelometer data.



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