The Model 602 Beta\textsuperscript{PLUS} Particle Measurement System is the first to receive US EPA Federal Equivalent Method (FEM) designations for all three PM parameters in a single, dual-channel instrument.

The instrument combines sequential sampling with automated mass measurements to provide hourly results for two separate channels simultaneously. Following the internal mass measurements, the sample filters can be transported to a laboratory for further chemical speciation analysis if needed.

For regulatory compliance applications, time synchronizing the instrument with the Federal Reference Method (FRM) leads to closely matching results regardless of location and without the need for any corrections or internal adjustment factors. A patented multistep analysis process eliminates common measurement artifacts such as humidity and background radiation.

The Model 602 Beta\textsuperscript{PLUS} Particle Measurement System represents a significant advancement in atmospheric particulate matter air monitoring, satisfying the data quality requirements of both monitoring agencies and public health researchers. The system is backed by Teledyne API’s world renowned customer service and technical support.

- Available in single or dual-channel configurations
- US EPA Federal Equivalent Method (FEM) Certifications for PM\textsubscript{10}, PM\textsubscript{2.5} and PM\textsubscript{10-2.5}\textsuperscript{*}
- One or two independent sampling lines with a single beta attenuation-based mass sensor
- Collect samples onto 47mm Ø filters for preservation and subsequent chemical analysis
- >95% active sampling per measurement cycle
- Accurate hourly results using direct beta attenuation mass measurements
- Automatic flow and mass sensor verifications
- Uses spy filter to counteract humidity interference
- Digital and analog communications
- Remote monitoring, data retrieval, and control
- Two-year warranty

\* US EPA PM10-2.5 certification applies to dual-channel configuration only.
Specifications

Exceeds US EPA PM$_{10}$ FEM and US EPA Class III PM$_{2.5}$ and PM$_{10-2.5}$ FEM performance requirements for additive and multiplicative bias compared to FRM Manual Samplers.

Mass measurement using beta attenuation with 14C radioactive source, <100μCi 3.7MBq activity - US Nuclear Regulatory Commission Sealed Source and Device Registry certificate

Performance
- User-adjustable Flow Rate Range: 0.8 to 2.5 m$^3$/hr per channel
- Flow Rate Accuracy: +/- 1%
- Sample Media: Glass Fiber, Quartz Fiber, or Teflon® membranes
- Filter Capacity: 96 filter cassettes (16 days in hourly mode)
- Measurement Cycles: 1, 8, 12, 24, 48, 72 hours (user-selectable)
- Measurement Ranges*: 0-1,500 μg/m$^3$ (0.95cm$^2$ sample nozzle, 1m$^3$/hr flow rate)
- Lower Detection Limit: 3.0 μg/m$^3$ (1hr); 0.3 μg/m$^3$ (24hr) using 0.95 cm$^2$ sample nozzle, 1m$^3$/hr flow rate
- Precision: +/- 1.0 μg/m$^3$ (24hr)
- Mass Accuracy: Within 5% of internal mass standards (nominal within 1%)
- Measurement and Display Resolution: 0.1 μg/m$^3$

* Other measurement ranges are available, please consult Teledyne API for proper configuration.

Environmental
- Operating Temperature: 0 – 50˚C, non-condensing
- Ambient Temperature: -30 – 60˚C
- Condensation water traps included for each sample line

Interfaces and Data Storage
- Internal Data Storage Capacity: 20,000 records (>1.1 years of hourly data)
- Menu-driven LCD display and dynamic keypad
- Three analog output (0-5 VDC) channels
- Four contact closure relays
- RS232 Serial Communications

Electrical
- Power supply: 100-230VAC, 50/60Hz factory configured
- Power consumption (not to exceed): 1200W, 10A (115V)

Certifications
- US EPA PM10 Federal Equivalent Method (EQPM-0912-205)
- US EPA Class III PM$_{2.5}$ Federal Equivalent Method (EQPM-0912-204)
- US EPA Class III PM$_{10-2.5}$ Federal Equivalent Method (EQPM-0912-206) — dual-channel only
- EN12341 PM10 and EN14907 PM$_{2.5}$ Certified Equivalent Methods (TÜV Certificate 0000028733)

Physical Specifications
- Dimensions (HxWxD): 14.2” x 16.9” x 21.2” (36 x 43 x 54 cm)
- Weight (Instrument/Pump/Compressor): 79 lbs (36 kg)/15 lbs (7 kg) each/17 lbs (8 kg)
- Condensation Water Trap (Length): 5.4” (13.75 cm)
- Sample Line Heater (Length): 10.2” (26 cm)
- Filter Cartridge Magazines (Length): 21.1” (53.5 cm) (above top of instrument cover)

How to Order

Dual-channel Model 602 includes:
- Two year warranty
- Two sample pumps
- Service air supply
- Cartridge filter supply magazine (capacity of 96 filters)
- Cartridge filter return magazine (capacity of 96 filters)
- White/white filter cartridges (pack of 50)
- White/black filter cartridges (pack of 50)
- Glass fiber sample filter discs (pack of 200) - Whatman GF10
- Filter cartridge separator tool
- PM$_{10}$ Pre-impactor, 1m$^3$/hr
- Accessory Kit - Rt/R2 mass reference filters, (3) aluminum cartridges for spy filters, (4) inlet nozzles
- Sample Tubing Installation Kit - 2.1m (line A), 1.7m (line B), Ambient Temp sensor with 5m cable, (2) condensate collectors, internal lines insulating material
- Remote Management Software, PC-based
- Operating Manual on CD

Verification Kits:
- Audit Kit
- Reference Filter Handling Kit
  Note: These verification kits can be shared between multiple 602 instruments.

Inlet Options:
- PM$_{10}$ size-selective inlet, 2.3m$^3$/hr
- PM$_{2.5}$ size-selective inlet, 2.3m$^3$/hr
- PM$_{10}$ inlet, 1m$^3$/hr
- PM$_{2.5}$ inlet, 1m$^3$/hr
- PM$_{1}$ inlet, 1m$^3$/hr
- TSP inlet, 1m$^3$/hr

Installation Hardware:
- Support Quadrapod
- Roof Flange Kit
- Sample Tube Extension Kits

Consumables:
- Sample Pump Maintenance Kit
- Glass fiber sample filter discs (pack of 200)

For more information about the Teledyne API family of monitoring instrumentation products, call us or visit our website at: www.teledyne-api.com