

## Automated Filter Testing



*Determines penetration vs. particle size of filters and filter media.*

### Features and Benefits

- Determines most penetrating particle size (MPPS)
- Complies with EN 1822 parts 3 and 5
- Simple automated operation
- Highly consistent test results
- Service and support

### CERTITEST® Automated Filter Tester Model 3160

Model 3160 is the most advanced automated tester available for challenging filters and filter media with submicrometer aerosols. It can be used to test both low- and high-efficiency filters and filter media, up to 99.999999% efficient (eight 9's), or penetrations down to 0.000001%.

The 3160 uses a bank of atomizers and the TSI Electrostatic Classifier to challenge a filter or filter media with known-size, monodisperse particles. Two Condensation Particle Counters (CPCs) simultaneously count the upstream and downstream particles and computer software calculates the penetration value. Filters can be sequentially challenged with up to 20 different monodisperse particle sizes in the range from 15 to 800nm. The penetration value for each particle size is calculated. At the end of a test, the 3160 generates a curve of penetration vs. particle size and produces a summary of test results, including the most penetrating particle size (MPPS). Test results can be automatically saved in a Microsoft Access® data base and exported into Microsoft Excel®.

Model 3160 complies with EN 1822 parts 3 and 5 and provides the most complete information on filter penetration available from any filter tester. You'll find it invaluable for product development and quality control.



TRUST. SCIENCE. INNOVATION.

# Automated Filter Testing

## Specifications

### Model 3160 Automated Filter Tester

#### Aerosol generation

**Aerosol types** Salt (NaCl), DOP and other oils (consult TSI)  
**Size range** Selectable from 0.015 to 0.800 µm using electrostatic classifier

**Geometric standard deviation** <1.3

#### Aerosol detection

**Technique** Condensation particle counter (CPC)  
**Dynamic range** <0.01 to 10<sup>6</sup> particles/cm<sup>3</sup>

#### Aerosol flow

**Technique** TSI thermal mass flowmeter  
**Range** Adjustable from 5 to 100 L/min  
**Accuracy** ±2% of reading

#### Pressure measurement

**Technique** Electronic pressure transducer  
**Range** 0 to 150 mm H<sub>2</sub>O (0 to 1470 Pa)  
**Accuracy** 2% of full scale

#### Efficiencies

**Operating range** Measures particle penetrations down to 0.000001% or efficiencies up to 99.999999% (eight 9's)

#### Automation and Data Management

Laptop computer with custom software supplied

#### Outputs

Full report in both graphical and tabular form on laptop that can be printed using the supplied software. Other options, include saving the data to Microsoft Access® or exporting it to Microsoft Excel®

#### Built-in Internal Pump

Included

#### Filter Holder for Flat Sheets Media

Included

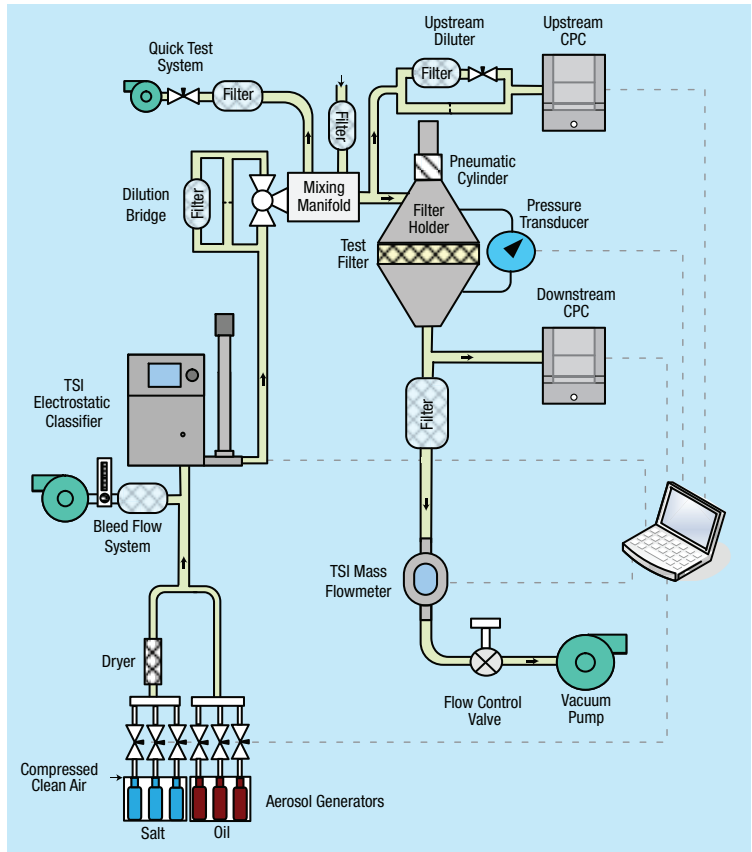
#### Utility Requirements

**Power** 115 VAC, 60 Hz, 10 A or 230 VAC, 50 Hz, 5 A  
**Pneumatics** 7 m<sup>3</sup>/hr at 415 kPa (4 scfm at 60 psi)  
**Dimensions (HWD)** 183 cm × 122 cm × 81 cm  
 (72 in. × 48 in. × 32 in.)

#### Weight

410 kg (900 lbs)

Specifications are subject to change without notice. TSI, the TSI logo, and CertiTest are registered trademarks of TSI Incorporated.



## To Order

### Automated Filter Tester

| Specify | Description                           |
|---------|---------------------------------------|
| 3160    | Automated Filter Tester (115V, 60 Hz) |
| 3160-1  | Automated Filter Tester (230V, 50 Hz) |

### Optional Accessories

| Specify | Description   |
|---------|---|
| 8134-xx | Custom filter holders for Model 3160                                    |
| 813010  | Standard test media, 50 sheets  |
| 8107    | External adapter for filter cartridges with hose type inlet and outlets |

### Service and Support

- Field Installation and Training (subject to location)
  - Service Contracts
  - Field Service
- (contact your TSI representative for more details)

Each model includes a laptop computer, condensation particle counters, built in vacuum pump, pneumatically operated filter holder for flat sheet media, printer, and test media sheets.

**TSI Incorporated** - 500 Cardigan Road, Shoreview, MN 55126-3996 USA

|                |                       |                            |                           |
|----------------|-----------------------|----------------------------|---------------------------|
| <b>USA</b>     | Tel: +1 800 874 2811  | E-mail: info@tsi.com       | Website: www.tsi.com      |
| <b>UK</b>      | Tel: +44 149 4 459200 | E-mail: tsiuk@tsi.com      | Website: www.tsiinc.co.uk |
| <b>France</b>  | Tel: +33 491 95 21 90 | E-mail: tsifrance@tsi.com  | Website: www.tsiinc.fr    |
| <b>Germany</b> | Tel: +49 241 523030   | E-mail: tsigmbh@tsi.com    | Website: www.tsiinc.de    |
| <b>India</b>   | Tel: +91 80 41132470  | E-mail: tsi-india@tsi.com  |                           |
| <b>China</b>   | Tel: +86 10 8260 1595 | E-mail: tsibeijing@tsi.com |                           |



TRUST. SCIENCE. INNOVATION.

Contact your local TSI Distributor or visit our website [www.tsi.com](http://www.tsi.com) for more detailed specifications.