PFS-ONE
Particulate Filter Management System

Several new legislative regulations as well as the demand for more flexibility and accuracy have led to the development of HORIBA’s Particulate Weighing Solution - PFS-ONE. The system comprises weighing processes and the entire filter handling complying with up-to-date regulations. PFS-ONE consists of a HORIBA application software running on a standard PC and completes the solution with a METTLER TOLEDO filter robot and a clean work bench by Pure Engineering.

PFS-ONE COMPONENTS, ADDITIONAL HARDWARE AND INTERFACES

The definitions of the device interfaces are stored in separate software modules. Other devices can be integrated without touching the main application. The particulate filter weighing can be perfectly adjusted to customer requirements with METTLER TOLEDO’s wide product scope ranging from the stand-alone manual Filter Balance to fully-automated Filter Weighing being integrated as PFS-ONE-robot.
DEFINE YOUR SOLUTION

PFS-ONE is designed as a flexible solution which can be tailored to your needs.

PFS-ONE-CONTROL
The basic component PFS-ONE-control can be combined in different ways and also adapted in a running hardware environment for example with an existing balance or clean work bench.

PFS-ONE-CLIENT
PFS-ONE-client as flexible embedded software solution integrates your complete filter workflow inside bigger laboratories and documents the process steps at the test cell.

GET THE HIGHEST ACCURACY

With the combination of PFS-ONE-robot and PFS-ONE-cham the repeatability of filter weighing reaches a maximum of quality. Reference filter weighings show that deviations to previous weighings fall far below any regulation limit. This guarantees reliable weighings of filters with very low loads.

FEATURES
- Handling of sample, reference filters and check masses
- Documentation of filter lifecycle, progress, time control and limit violations
- Upload of results to external storage systems in various file formats
- Applicable as stand-alone installation or as integrated laboratory module

BENEFITS
- Compliance with current legislations (emission or environmental)
- Process profiles adjustable to different applications and use cases (Certification, COP, Environmental, ...)
- Ready-to-print reports of weighing results and process data
- Handling of different weighing methods - direct and substitution weighing
PFS-ONE-CHAM
PARTICULATE FILTER MANAGEMENT SYSTEM
Technical Data Sheet - Weighing Chamber
The PFS-ONE particulate weighing management system set a new benchmark for automated filter solutions. This solution is completed with additional components - beside METTLER TOLEDO weighing technologies, we also offer a climate controlled cleanroom work bench from purengineering for high-sensitive weighing processes.

**PFS-ONE-CONTROL**

**HARDWARE**
- Standard desktop PC
  - 2 network cards
  - Min. 8 GB memory
  - Quad core CPU or more (Intel i7 or comparable)
- TFT monitor 22"
- Barcode reader and printer (optional)

**SOFTWARE**
- Application software PFS-ONE-control
- Windows 10
- .NET Framework 4.6

**PFS-ONE-CHAM**

High accurate temperature and humidity controlled system with integrated chiller unit and HEPA filter. PLC / HMI controller with touch panel and network interface for communication and data exchange. Optional with Dew-Point mirror and reverse-osmosis kit for tap water.

**VERSION**
- Manual with path-through or automated prepared for PFS-ONE-robot
- Upgradable from manual to automatic

**LEGISLATION COMPLIANCE**
- ECE-R83, ECE-R49, EPA1065, CARB, WLTP

**CLEANROOM CLASSIFICATION**
- ISO 4 (ISO 14644-1), equiv. class 10 (FED STD 209E)

**TEMPERATURE CONTROL**
- 22 °C +/- 1 K

**HUMIDITY CONTROL**
- 9.5 °C +/- 1 K

**INTERFACE**
- TCP/IP network protocol (climatic data from integrated weather station and health status), USB (for data storage)

**BALANCE ISOLATION**
- Integrated vibration isolated granite

**MAX. FOOTPRINT**
- W 1370 x H 1995 x D 960 (mm)

**WORKING DIMENSIONS**
- W 930 x H 660 x 650 (mm)

**POWER SUPPLY**
- 200-240 VAC (L1/N/PE), 50 - 60 Hz
  - max. power consumption 5.5 kW

**WEIGHT**
- approx. 500 kg
The PFS-ONE particulate weighing systems set a new benchmark for automated filter solutions. Based on world-renowned METTLER TOLEDO weighing technology and HORIBA’s vast knowledge of automotive emission measurement, the systems stand for high precision and compliance of particulate emission standards.

**TECHNICAL SPECIFICATION**

The PFS-ONE particulate weighing systems set a new benchmark for automated filter solutions. Based on world-renowned METTLER TOLEDO weighing technology and HORIBA’s vast knowledge of automotive emission measurement, the systems stand for high precision and compliance of particulate emission standards.

**PFS-ONE-CONTROL**

**HARDWARE**

- Standard desktop PC
- 2 network cards
- min. 8 GB memory
- Quad core CPU or more (Intel i7 or comparable)
- TFT monitor 22"
- Weather station
  - Temperature
  - Barometric pressure
  - Humidity
- Barcode reader and printer (optionally)

**SOFTWARE**

- Application software PFS-ONE-control
- Windows 10
- .NET Framework 4.6
# PFS-ONE-ROBOT

<table>
<thead>
<tr>
<th><strong>FILTER DIAMETER STANDARD</strong></th>
<th>47 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REFERENCE FILTER POSITION</strong></td>
<td>User-defined</td>
</tr>
<tr>
<td><strong>FOOTPRINT</strong></td>
<td>≤ W 780 x H 680 x D 650 (mm)</td>
</tr>
<tr>
<td><strong>THROUGHPUT</strong></td>
<td>Up to 900 weighings a day</td>
</tr>
<tr>
<td><strong>FILTER HOLDER INCLUDED</strong></td>
<td>153 pieces</td>
</tr>
<tr>
<td><strong>EXTERNAL CALIBRATION WEIGHT</strong></td>
<td>50, 100 or 200 mg</td>
</tr>
<tr>
<td><strong>TECHNOLOGY</strong></td>
<td>XYZ rack with stepper motor</td>
</tr>
<tr>
<td><strong>POWER</strong></td>
<td>100-230 V / 50-60 Hz</td>
</tr>
</tbody>
</table>

# BALANCE

<table>
<thead>
<tr>
<th><strong>BALANCE READABILITY</strong></th>
<th>0.1 μg</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REPEATABILITY WITH FILTER (SD)</strong></td>
<td>0.25 μg</td>
</tr>
<tr>
<td><strong>REPEATABILITY WITH FILTER TYPICAL (SD)</strong></td>
<td>0.15 μg</td>
</tr>
<tr>
<td><strong>REPEATABILITY STAINLESS STEEL TEST WEIGHT</strong></td>
<td>≤ 0.2 μg</td>
</tr>
<tr>
<td><strong>BUILT-IN BALANCE ADJUSTMENT</strong></td>
<td>Automatic</td>
</tr>
<tr>
<td><strong>MAXIMUM LOAD</strong></td>
<td>2.1 g</td>
</tr>
<tr>
<td><strong>ELECTRICAL WEIGHING RANGE</strong></td>
<td>0 - 2.1 g</td>
</tr>
<tr>
<td><strong>LINEARITY</strong></td>
<td>1 μg</td>
</tr>
<tr>
<td><strong>MISCELLANEOUS</strong></td>
<td>Ultra-micro filter balance Anti-static kit</td>
</tr>
</tbody>
</table>

*sd = standard deviation, with conductive filter media such as Pall TX40 without ionizer.