# Novascan PSD-UV, PSDP-UV and PSDP-UVT UV/Ozone Systems

Novascan's PSD and PSDP series UV Ozone systems are proven instruments that work. Contact Novascan today for help in selecting the proper system for your application.

- atomic cleaning of surfaces
- polymer bonding
- organic molecule stripping
- release of trapped inorganic molecules
- microfluidic fabrication
- micro and nano-patterning
- UV curing
- chemical surface modification
- surface sterilization
- surface oxidation
- metal bonding prep... and more


## Sample Applications

In addition to the above uses, Novascan's PSD series instruments are often used for scanning probe microscopy applications. Our instruments can be used to clean common oily films and trapped inorganic materials from AFM tips, SPM standards and surfaces. Treatment can also be used to alter surface hydrophobicity, assist in tip and surface chemical modifications, oxidize and harden tips helping to maintain tip geometry while scanning, and sharpen tips for improved lateral resolution.

Novascan instruments are used in nanotechnology, chemistry, biology, optics, electronics, semiconductor, and other scientific laboratories around the world. The PSD Series publication list continues to grow.

*Instruments that Work*
*Easy-to-use, high quality, reliable and affordable*

**Sample Substrates**

| | | | |
|---|---|---|---|
| Silicon | Silcon dioxide | Metals | Gallium Arsenide |
| Silicon Nitride | Mica | Ceramics | Polymers such as PDSM |
| Borosilicate Glass | Quartz | Sapphire | Other Materials |

# Instrument Specifications

The PSD and PSDP systems are similar in performance and dimensions, but vary in controller capability, upgradability and heated stage options.

## The PSD Series

The PSD series instruments are digitally controlled benchtop systems that are available in sizes ranging from 3" to 12X16". These systems feature a powerful UV grid system with reflector and adjustable height stage for optimal sample positioning and performance. In/Out Gas Ports are available on the 4" and larger systems. The system is controlled by a convenient preset controller that makes operation a breeze.

Features:
- Preset Digital Controller
- Convenient 2 button operation is convenient and simple.
- Automated 15, 30, 45, 60, 90, 120 minute process time
- Process cycle can be manually interrupted at any time
- System cannot be easily upgraded with a temperature stage

- *Cost saving yet functional design makes this system a popular choice*
- *Very simple setup and use*


## The PSD Pro Series

The PSDP series instruments are research grade UV/ozone cleaning systems that offer maximum versatility for molecular organic stripping and numerous other applications. Operate in ambient air or flow oxygen through one of two standard gas ports for increased ozone production. A programmable digital controller handles the system processing ensuring accurate timing regimes and optimum scouring parameters.

Features:
- Programmable Digital Controller for more operation control
- Digital Count down display.
- Easily upgradeable to the temperature controlled system
- Function "pause" and "interrupt" capability
- Internal Memory for previous settings

- *A powerful system that offers enhanced process control*


## The PSD Pro Heated Series

The PSDP-UVT takes the power of the PSDP-UV to a new level with the addition of a temperature controlled stage designed to maximize the destruction of molecular organic materials. A digital controller with PID feedback loop accurately maintains stable temperatures of up to 150 degrees Celsius.

Features:
- Identical to the PSDP, but factory installed with the temperature stage.

- *Offers maximum potential and fexibility*
- *Ideal for multiple user environment*


## Common System Features and Information

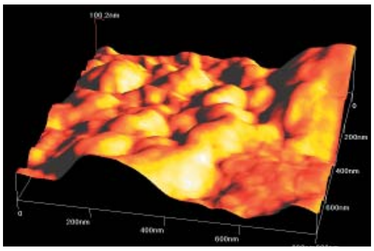
| | |
|---|---|
| Power: | 100, 120, 220, 240 VAC, 50-60 cycle |
| Sample Height: | All systems have an adjustable height stage with an external stage lock for proper sample spacing from the lamp. Standard stages are the UV grid size or larger. |
| UV Grid: | Ozone producing Mercury vapor grid lamp with reflector. Half life approximately 5000 hours. |
| UV Reflector: | The UV Reflector is generally 1" larger than the grid size. For example for a 4x4" grid the reflector is 5x5". |
| Sample loading: | Chamber hinges up and away from the sample staging area allowing ~360 degree access for loading. |

| | |
|---|---|
| Safety: | Safety interlock turns off UV lamps when chamber is opened. |
| Gas Ports: | Two ports standard, more ports optional (PSD-UV3 ports are optional). |
| Vacuum Chamber: | Optional by special order - Aluminum and Quartz fabrication. |
| Heated Stage: | Supports temperatures up to 150C (Standard for the PSDP-UVT or optional upgrade for PSDP). |
| Ozone Neutralizer: | Neutralizer and Pump optional for PSD and PSDP systems. |

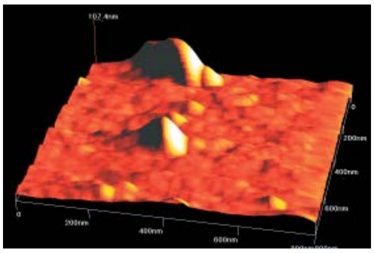
# How the PSD and PSDP Series Work

The PSD and PSDP Series Instruments destroy organic molecules (contaminants) by producing the proper ratio of high energy ultraviolet light at wavelengths of 185 nm and 254 nm. The 185 nm line drives molecular oxygen O2 to form the energized O3 Ozone radical. The 254 nm line simultaneously excites the organic molecules on the surface making them highly susceptible to destruction by the Ozone radical. Since Ozone has a short half life and is also destroyed by the 254 nm line, an adjustable sample stage is used to properly position the sample relative to the lamp for optimal performance. The PSD and PSDP destroyed contaminants are then released in the form of CO2 and H2O vapor, and remaining Ozone returns to the state of molecular Oxygen O2.

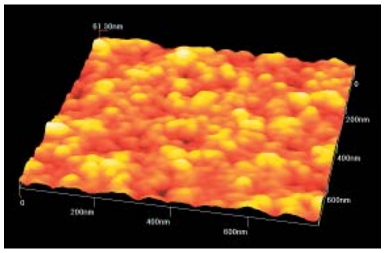
*Contaminated glass laboratory slide*



*Contaminated glass laboratory slide after 10 minutes of PSD treatment*



*Glass laboratory slide, decontaminated after 20 minutes of PSD treatment*

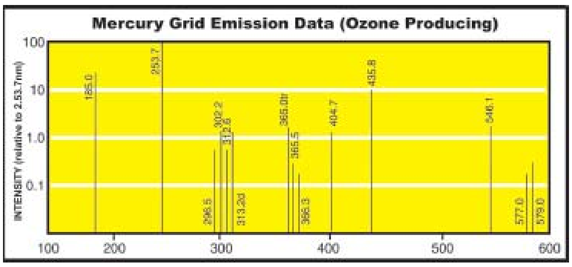


## PSD and PSDP Model Dimensions

| System | Grid Size** | Sample Height | Footprint* |
|---|---|---|---|
| PSD-UV3 | 3″x3″ | ~1″ | 7L x 5.5W x 5H″ |
| PSD-UV4, PSDP-UV4, PSD-UV4T | 4″x4″ | ~4″ | 15L x 15W x 10.5H″ |
| PSD-UV6, PSDP-UV6, PSD-UV6T | 6″x6″ | ~4″ | 15L x 15W x 10.5H |
| PSD-UV8, PSDP-UV8, PSD-UV8T | 8″x8″ | ~4″ | 15L x 15W x 10.5H″ |
| PSD-UV10, PSDP-UV10, PSD-UV10T | 10″x10″ | ~4″ | 15L x 17W x 10.5H″ |
| PSD-UV12, PSDP-UV12, PSD-UV12T | 12″x12″ | ~4″ | 15L x 17W x 10.5H″ |
| PSD-UV816, PSDP-UV816, PSD-UV816T | 8″x16″ | ~4″ | 15L x 17W x 10.5H″ |
| PSD-UV1016, PSDP-UV1016, PSD-UV1016T | 10″x16″ | ~3″ | 15L x 17W x 10.5H″ |
| PSD-UV1216, PSDP-UV1216, PSD-UV1216T | 12″x16″ | ~2.5″ | 15L x 17W x 10.5H″ |

**Dimensions: All dimensions listed are in inches.*
*For conversions use 1 inch = 25.4mm*
*Reflector is generally 1″ larger than the Grid size.*
*Custom systems may be possible - please inquire.*

## Supplemental Information:

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Sampling of Publications:

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