



# SAES Pure Gas

*The Technology of Pure Gas*



## MonoTorr: Heated Getter Purifiers

### Applications

- Vapor Deposition Processes
  - MOCVD
  - PVD
  - CVD
  - Epitaxy
- Photolithography
- Metrology
- R&D laboratory experiments
- LED
- Crystal pulling
- Implant
- Etching
- Diffusion and Oxidation processes
- Annealing
- Fiber Optics
- Analytical
- Solar and Photovoltaics

### MonoTorr Heated Getter Gas Purifiers

Are ideal solutions for point-of-use purification where  $\text{CH}_4$  or  $\text{N}_2$  impurity removal is required. Gases purified include He, Ar, Xe,  $\text{H}_2$ , and  $\text{N}_2$ .

The Heated Getter technology forms an irreversible bond with the impurities and removes them to sub-ppb levels. Unlike ambient purification technologies that rely on surface sorption only, heated getter technology utilizes the entire volume of material resulting in superior impurity capacity and longer purifier lifetime.



## PS2-GC50: Typical Flow Rate 0 - 0.2 slpm

### Product Specifications:

- 200 sccm maximum flow rate (Nitrogen, Helium, Argon)
- Outlet gas temperature < 50° C
- Average power consumption < 50 W
- 20 µm metal particle filter

### Dimensions:

- Height 23 cm (9 inches)
- Width 10 cm (4 inches)
- Weight 1.8 kg (4 lbs)

### Optional equipment:

- 1/4" VCR fittings
- 110-120 VAC or 220-240 VAC



Impurities Removed	Nitrogen Outlet Purity (ppb)	Rare Gas Outlet Purity (ppb)
H <sub>2</sub> O	<10	<10
O <sub>2</sub>	<10	<10
CO	<10	<10
CO <sub>2</sub>	<10	<10
CH <sub>4</sub>	<50	<10
Other Hydrocarbons	<10	<10
H <sub>2</sub>	<10	<10
N <sub>2</sub>	N/A	<10

## PS3-MT3: Typical Flow Rate 0.2 - 3 slpm

### Product Specifications:

- 5 slpm maximum flow rate (Nitrogen, Helium, Argon)
- 3 slpm maximum flow rate (Xenon)
- High temperature alarm
- Outlet gas temperature < 50° C
- Average power consumption < 50 W
- 0.003µm metal particle filter

### Dimensions:

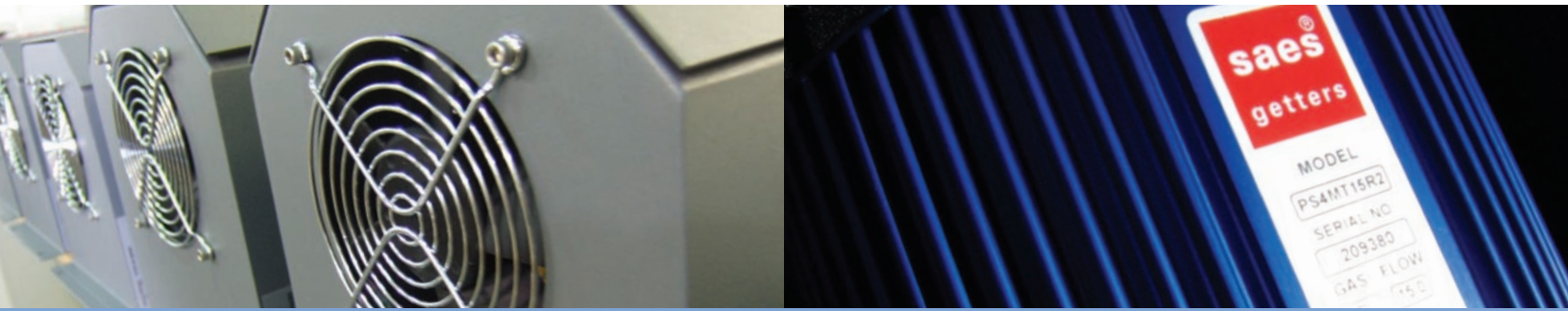
- Height 60 cm (24 inches)
- Width 25 cm (10 inches)
- Depth 10 cm (4 inches)
- Weight 6 kg (13 lbs)

### Optional equipment:

- Bypass assembly
- 110-120 VAC or 220-240 VAC



Impurities Removed	Nitrogen Outlet Purity (ppb)	Rare Gas Outlet Purity (ppb)
H <sub>2</sub> O	<1	<1
O <sub>2</sub>	<1	<1
CO	<1	<1
CO <sub>2</sub>	<1	<1
CH <sub>4</sub>	<1	<1
Other Hydrocarbons	<1	<1
H <sub>2</sub>	<1	<1
N <sub>2</sub>	N/A	<1



## PS4-MT3 and PS4-MT15: Typical Flow Rate 3 - 30 slpm



Impurities Removed	Gases Purified		
	Rare Gases	Nitrogen	Hydrogen
H <sub>2</sub> O	<1 ppb	<1 ppb	<1 ppb
O <sub>2</sub>	<1 ppb	<1 ppb	<1 ppb
CO	<1 ppb	<1 ppb	<1 ppb
CO <sub>2</sub>	<1 ppb	<1 ppb	<1 ppb
Total Hydrocarbons	<1 ppb	<1 ppb	N/A
H <sub>2</sub>	<1 ppb	<1 ppb	N/A
N <sub>2</sub>	<1 ppb	N/A	<1 ppb

### Product specifications:

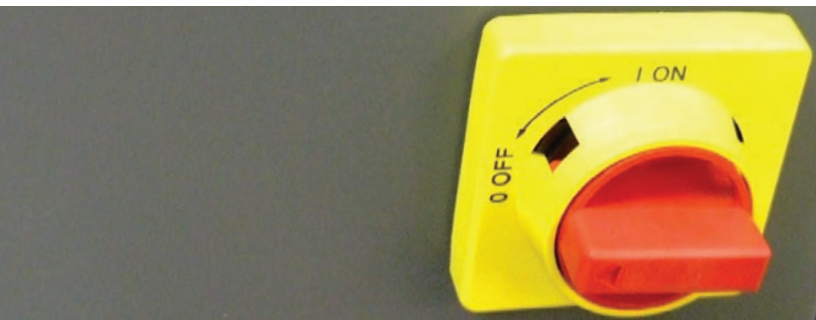
- MT3 (5 slpm Average Flow)
  - 50 slpm maximum flow rate (Nitrogen, Helium, Argon)
  - 30 slpm maximum flow rate (Hydrogen)
  - 3 slpm maximum flow rate (Xenon)
- MT15 (15 slpm Average Flow)
  - 75 slpm maximum flow rate (Nitrogen, Helium, Argon)
  - 50 slpm maximum flow rate (Hydrogen)
  - 9 slpm maximum flow rate (Xenon)
- High temperature alarm
- Outlet gas temperature < 50° C
- Average power consumption 125 W (MT3), 187 W (MT15)
- 0.003µm metal particle filter
- Life Status Sensor (Rare Gas and Nitrogen only)
- Bypass assembly
- Surface mountable enclosure with cooling fan

### Dimensions:

- Height 86.4 cm (34 inches)
- Width 20.3 cm (8 inches)
- Depth 20.9-22.7 cm (8.25-8.94 inches)
- Weight 23-28 kg (50-61 lbs)

### Optional equipment:

- 110-120 VAC or 220-240 VAC



## PS4-MT50: Typical Flow Rate 30 - 100/150 slpm

Impurities Removed	Gases Purified		
	Rare Gases	Nitrogen	Hydrogen
H <sub>2</sub> O	<1 ppb	<1 ppb	<1 ppb
O <sub>2</sub>	<1 ppb	<1 ppb	<1 ppb
CO	<1 ppb	<1 ppb	<1 ppb
CO <sub>2</sub>	<1 ppb	<1 ppb	<1 ppb
Total Hydrocarbons	<1 ppb	<1 ppb	N/A
H <sub>2</sub>	<1 ppb	<1 ppb	N/A
N <sub>2</sub>	<1 ppb	N/A	<1 ppb

### Product Specifications

- 150 slpm maximum flow rate (Hydrogen)
- 100 slpm maximum flow rate (Nitrogen, Helium, Argon)
- 30 slpm maximum flow rate (Xenon)
- High temperature alarm
- Outlet gas temperature < 50° C
- Average power consumption 1.1 kW
- 0.003µm metal particle filter
- PLC controlled operation
- Exhausted enclosure with separate electronics bay
- Life status indicator

### Dimensions:

- Height 113 cm (44.5 inches)
- Width 53 cm (21 inches)
- Depth 30 cm (12 inches)
- Weight 70 kg (154 lbs)

### Optional equipment:

- N<sub>2</sub> purge system (Hydrogen model only)
- Hydrogen leak detector (Hydrogen model only)
- Uninterruptible power supply
- Emergency off button
- Manual bypass
- 110-120 VAC or 220-240 VAC



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SAES Pure Gas is ISO9001 certified



ISO 9001:2008