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# SAES Pure Gas

*The Technology of Pure Gas*

## Palladium Hydrogen Purifiers: PD1, PD2


PD2 Purifier PD1 Purifier

SAES Pure Gas palladium purifiers produce the purest hydrogen on the planet. The patented micro-channel palladium membrane technology removes all impurities to part-per-billion levels. All palladium purifiers provide a durable purifier for any flow and any inlet gas source. Two different sizes are available to match your needs:

• **PS7-PD1** uses a compact enclosure for point-of-use purification or bulk gas supply for large LED and semiconductor fabs. A single Palladium cell purifies the entire flow rate.

• **PS7-PD2** full size enclosure includes two Palladium cells in parallel flow for higher flow rates. Either Pd cell can be removed for maintenance as required, and the remaining Pd cell can continue to provide 50% of rated flow.

### Applications

- LED device manufacturing
- Silicon Carbide (SiC) epitaxy
- Crystal growth
- Photovoltaic production
- III/V and II/VI MOCVD processes
- Polysilicon manufacturing
- Silicon & compound semi
- Fuel cells

### Key Features

- Ultra-pure hydrogen from any source
- High flow capacity up to 2,170 slpm (140 $Nm^3/hr$)
- <1 ppb $O_2$, $H_2O$, $CO_2$, CO, $N_2$, $CH_4$, NMHC, He, Ar
- Lowest power consumption
- Smallest footprint - minimal side/back clearance
- >25 different sizes to match your flow rate

### Palladium Advantages

- Only Hydrogen passes through to the pure side - the purest gas
- Every impurity is removed - no exceptions
- Unlimited lifetime - no regeneration or vessel replacement
- Separates pure $H_2$ from source gas with ppm or % level impurities
- Easy to verify performance with in-situ helium leak test

# Palladium Hydrogen Purifiers: PD1, PD2

## Standard Features

- PLC with HMI color touchscreen
- Inlet 0.5µ particle filter
- CE compliant
- Automatic $N_2$ purge
- $H_2$ sensor with alarm
- Inlet and outlet pressure sensor
- Alarm history and data storage
- Helium leak test port

## Optional Features

- Deoxo catalyst pre-purifier
- Inlet mass flow meter
- MODBUS communication port
- Z-Purge of electrical bay
- Auto or manual bypass
- Separate control power
- Larger 5.7" HMI color touchscreen
- Purifier hold down brackets

| Feature | Specification |
|---|---|
| Flow Rate | 17 - 2,170 slpm<br>(1 - 140 Nm³/hr.) |
| Maximum Inlet Pressure | 300 psig (20.7 Barg) |
| Inlet Purity | 99.99% |
| Outlet Purity | 99.9999999%<br>$O_2$, $H_2O$, CO, $CO_2$, $N_2$, $CH_4$, NMHC, He, Ar<br>All removed to <1 ppb |
| $N_2$ Purge & Z-Purge | 72 - 98 psig (5 - 6.8 Barg) |
| Instrument Air or $N_2$ | 95 - 140 psig (6.6 - 9.7 Barg) |
| Cabinet Ventilation | 260 Nm³/hr (150 scfm)<br>at 0.2" $H_2O$ vacuum |
| Installed Power | 200 - 240 VAC 50/60 Hz<br>PD1: 1.6 - 4.8 kW<br>PD2: 6.4 - 9.6 kW |
| Dimensions | PD1: 30"W x 19"D x 36"H<br>(762 x 483 x 922 mm)<br>PD2: 34"W x 22"D x 74.3"H<br>(864 x 559 x 1888 mm) |
| Weight | PD1: < 440 lb (< 200 kg)<br>PD2: < 770 lb (< 350 kg) |

| Model Number | Maximum Flow Rate (slpm) | Maximum Flow Rate (Nm³/hr.) |
|---|---|---|
| PS7-PD1-05 | 77 | 5 |
| PS7-PD1-10 | 155 | 10 |
| PS7-PD1-15 | 233 | 15 |
| PS7-PD1-20 | 311 | 20 |
| PS7-PD1-25 | 389 | 25 |
| PS7-PD1-30 | 466 | 30 |
| PS7-PD1-40<br>PS7-PD2-40 | 621<br>1,242 | 40<br>80 |
| PS7-PD1-50<br>PS7-PD2-50 | 776<br>1,552 | 50<br>100 |
| PS7-PD1-55<br>PS7-PD2-55 | 854<br>1,708 | 55<br>110 |
| PS7-PD1-60<br>PS7-PD2-60 | 932<br>1,864 | 60<br>120 |
| PS7-PD1-65<br>PS7-PD2-65 | 1,010<br>2,020 | 65<br>130 |
| PS7-PD1-70<br>PS7-PD2-70 | 1,085<br>2,170 | 70<br>140 |

Selected sizes shown above, other models available to closely match required flow rate

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