

Specification

PS4-MT50-R

PS4-MT Series Rare Gas Purifier, 100 slpm

General Description

The MonoTorr Rare Gas Purifier is a getter-based purifier designed specifically to provide ultra-high purity (UHP) gas for semiconductor applications. Outlet impurity levels for O₂, H₂O CO, CO₂, H₂, N₂ and CH₄ are reduced to low parts per billion (ppb) levels or below.

The patented getter alloy operated at elevated temperatures, removes impurities by forming irreversible chemical bonds. Impurities will not be released under any circumstances when the purifier is operated within specification.

The purifier will continuously supply ultra pure gas at rated flows provided that inlet impurities are within specified levels, until getter cartridge replacement is necessary.

Features

- Fully Automated Microprocessor Controller continually monitors system operation providing fault detection, temperature control and valve sequencing ensuring purifier reliability while minimizing operator involvement.
- *HMI (Human Machine Interface)* displays valve operation, purifying sequences, warning & alarm status, system temperature, heater power levels, and purification time.
- **System Alarms** detect potential hazards to ensure system integrity. Alarm and warning conditions are indicated on the HMI and accompanied by an alarm beeper
- High Temperature Hardware Interlock for the getter column
- **Electric Gas Preheater** decrease temperature gradients in the getter bed allowing maximum purification efficiency and uniform expenditure of getter material.
- Closed-Loop Temperature Controls provide accurate control of the getter column to maximize heater lifetime and energy efficiency.
- All Metal Enclosure with Doors allowing access to internal components.
- Instrument Air Pressure Switch detects and warns of low instrument air pressure.
- Metal 0.003 micron particle filter included standard
- Standard Customer Interface Connections:

 Alarm Relay Fail safe relay contacts allow remote detection of alarms and warning conditions

 Remote Contact Shutdown allows remote shutdown of the purifier



Optional Equipment

- MODBUS Data communication port provides operational data output
- Emergency Manual Off (EMO) allows instantaneous emergency shutdown

Process Gas Specifications		
Specification	SPG Standard	
Flow Rate: (maximum purified gas delivered)	100.0 slpm	
Flow Rate: (minimum)*	5.0 slpm	
Minimum Inlet Pressure	2.8 bar (~40 psig)	
Maximum Inlet Pressure	10.3 bar (~150 psig)	
Max. Allowable Pressure Drop @ 2.8 bar (40 psig) inlet pressure and maximum rated flow	< 0.69 bar (~10.0 psid)	
Inlet Gas Temperature Range	0° - 35°C (32° - 95°F)	
Outlet Gas Temperature (maximum)	55°C (131°F)	

^{*} The minimum flow is the lowest flowrate at which SAES will guarantee that outlet gas purity will be met.

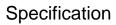
Facilities Requirements – Electrical		
Specification	SPG Standard	
Main Power (Customer to specify voltage at time of order.)	208 VAC, 1 Phase, 50/60 Hz 240 VAC, 1 Phase, 50/60 Hz	

Facilities Requirements – General		
Specification	SPG Standard	
Instrument Air Pressure: (clean dry air or nitrogen filtered to 10 µm)	4.1 bar (~60 psig) minimum 7.6bar (~110 psig) maximum	
Ambient Temperature Range	5° / 35°C (41° / 95°F)	



ytical Specifications (based on 99.9995% pure inlet gas)		
Impurity	SPG Standard Outlets	
O_2	< 1.0 ppb	
СО	< 1.0 ppb	
CO ₂	< 1.0 ppb	
H₂O	< 1.0 ppb	
H ₂	< 1.0 ppb	
N ₂	< 1.0 ppb	
CH₄	< 1.0 ppb	
Max # of Particles	1 ppcf	
Particle Size	@ 0.1 μm	

General Purifier Specifications		
Purifier Height (envelope)	113 cm (~44.5 inches)	
Purifier Width (envelope)	53 cm (~21 inches)	
Purifier Length (envelope)	30 cm (~12 inches)	
Purifier Weight	< 70 kg (<154 pounds)	
Feed Gas Inlet	0.5 inch VCR Male	
Purified Gas Outlet	0.5 inch VCR Male	
Getter Bed Operating Temperature	400°C (nominal)	
Outlet Particle Filter	0.003 µm absolute all metal filter media	
Instrument Air Inlet	3/8 inch FNPT	
Pressure Relief Vent	1/4 VCR Male	
Clearance Around Purifier	1 meter (39.4 inches) Minimum Front	
Installed Power @ 240v	2.4 KW	
Average Power & Heat Load	1.1 KW	
Gas Wetted Surface Finish	Up and Downstream of Getter Vessels = 316L SST, Electropolished, 12 Ra Maximum, 10 Ra Average for tubing and tube fittings	





Control System	Microprocessor Based with Digital Inputs & Outputs plus Thermocouple (TC) Inputs. Control & Display Interface, Automatic Alarm Response & Display. Includes Valve Operation, System Temperatures, Heater Power Levels, Warning and Alarm Status and Total Purify Time Readouts.
Applicable Codes & Standards	ASME Pressure Vessel Code Section VIII US National Electric Code CE Marking