

GateKeeper® Gas Purification System, 20-60 HX Series

Continuous high-flow, point-of-use, purified hydrogen, nitrogen, or argon gas at a low cost of ownership

Advanced Technology in Gas Purification

The GateKeeper® Gas Purification System (GPS), HX series, is the latest continuous service gas purification system from Entegris. The system brings advanced technology to gas purification providing semiconductor manufacturers with an innovative, efficient and cost-effective solution. It delivers purified hydrogen, nitrogen, or argon gas to the most critical applications, including semiconductor and LED production. The ultra-small footprint and compact design requires minimal fab floor space and allows easy access to serviceable components.

The new "HX" media represents the latest advancement in purification technology from Entegris, providing for outlet purity in the parts-per-trillion (ppt) levels. The system uses ambient temperature purification, so heating is not required for purification. This means resource conservation and lower energy costs. The GPS effectively and efficiently removes contaminants such as moisture, oxygen, carbon monoxide, carbon dioxide and non-methane hydrocarbons from nitrogen, hydrogen, and argon gas.

APPLICATIONS

- Metal organic chemical vapor deposition (MOCVD)
- Atomic layer deposition (ALD)
- Applications that require ultra-pure hydrogen, nitrogen, or argon gas
- Low temperature epitaxy (LTE)



FEATURES & BENEFITS

- Power failure will not damage the purification system
- Purifies to parts-per-trillion (ppt) levels
- Low pressure drop means no changes to inlet pressure are required
- Self-regenerating purifiers provide the lowest cost of ownership
- Ambient temperature purification means lower energy costs and resource conservation
- CE, CSEI (China), and SEMI® certified
- Ethernet connection allows for remote monitoring capability
- Designed for easy field maintenance and upgrades
- Available worldwide through Entegris' global infrastructure

PRODUCT SPECIFICATIONS

Model ¹	GPS20HX	GPS30HX	GPS50HX	GPS60HX
Gases purified	Hydrogen (H ₂), Nitrogen (N ₂), Argon (Ar), Helium (He)			
Media type	Inorganic			
Contaminants removed	Moisture (H ₂ O)		<100 ppt (in H ₂) <50 ppt (in Ar, N ₂)	
	Carbon monoxide (CO)		<1 ppb	
	Carbon dioxide (CO ₂)		<100 ppt	
	Oxygen (O ₂)		<400 ppt	
	Hydrogen (H ₂)*		<1000 ppt	
	CxHy (45–100 amu)		<5 ppt	
	CxHy (>100 amu)		<1 ppt	
	Non-methane hydrocarbon (C ₅ and higher)		<1 ppt	
Operating pressure range	5.51–17.23 bar (80–250 psig)			
Pressure drop	<15 psi @ 100 psig and max rated flow			
Maximum flow rate	20 Nm ³ /hr (311 slm)	30 Nm ³ /hr (466 slm)	50 Nm ³ /hr (776 slm)	60 Nm ³ /hr (932 slm)
Gas operating temperature	15°–40°C (60°–104°F)			
Outlet filtration (ISO Class 1)	<10 particles per m ³ @ 0.1 μm, <2 particles per m ³ @ 0.2 μm			
Leak rating	1 × 10 ⁻⁹ atm cc/sec			

¹For N₂ and Ar only.

SAFETY FEATURES

Features	Descriptions	GPS series
Earth leakage circuit breaker	Provides additional electrical protection to the system.	Yes
Over temperature rise condition	Monitored via thermocouple. Heaters sized to prevent runaway conditions. As a secondary precautionary device, a high-temperature hardware interlock is included on all systems.	Yes
EMO button	When activated, power is removed from the main enclosure. The front panel and controller remain powered. Process gas flow is shut off.	Yes
Remote EMO	Provides input for remote EMO activation. In the event of an EMO shutdown, the system will send an output signal to an external sensing device that alerts the facility of the alarm.	Yes
Remote alarm	In the event of a minor alarm in the system not requiring an EMO shutdown, the system will send an output signal to an external sensing device that alerts the facility of the alarm.	Yes
Visual alarm	Alarm conditions will result in a visual alarm on the top of the system.	Yes
Audible alarm	Alarm conditions will result in an audible alarm.	Yes

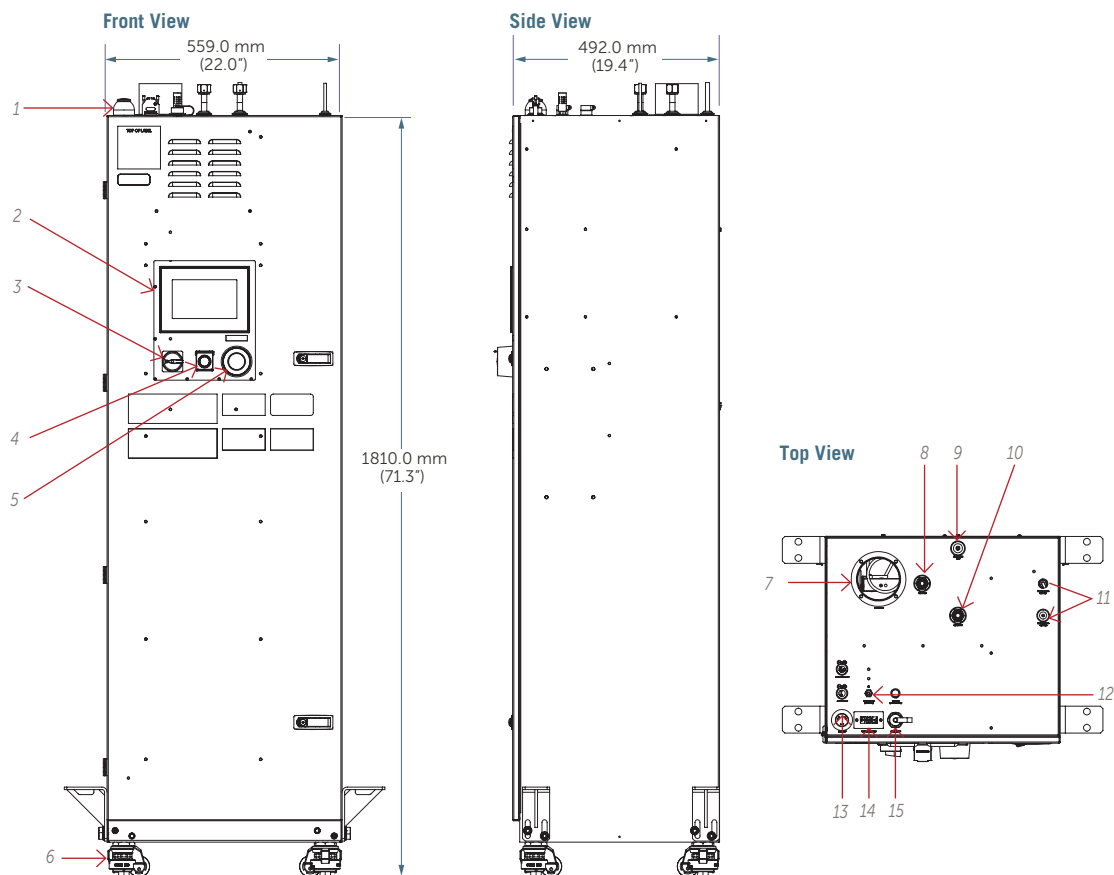
FACILITY SPECIFICATIONS

Model ¹		GPS 20/30HX	GPS 50/60HX
Process gas input	Mechanical connection	1/2" tube stub	3/4" tube stub
Process gas output	Mechanical connection	1/2" tube stub	3/4" tube stub
Ventilation	Mechanical connection	4" duct	
	Exhaust flow	50 cfm	
Power requirements	Mechanical connection	3-pin mechanical disconnect	
	Power requirements	200–240 VAC single phase	
	Power consumption	100W at idle and online	
		500W at regen	
Regeneration	Regen duration	<24 hours for each purifier bed	
Regen gas input	Mechanical connection	3/8" tube stub	
	Gas	Hydrogen system – N ₂	
		Nitrogen system – H ₂	
		Argon system – H ₂	
		Helium system – N ₂ and H ₂	
	Pressure	N ₂ : 4.00 – 4.27 bar (58 – 62 psig) H ₂ : 4.55 – 4.83 bar (66 – 77 psig)	
Regen gas output	Mechanical connection	1/4" tube stub	
Instrument air	Mechanical connection	1/4" compression fitting	
	Gas and pressure	CDA or N ₂ @ 6.21–10.34 bar (90–150 psig)	
Physical requirements	Mounting	Floor	
	Recommended maintenance space	3 feet in front of system	
	Operating conditions	15°–40°C (60°–104°F) indoor	
	Humidity	10%–90% RH noncondensing	
Shipping weight		20/30 240 kg (530 lbs)	
		50/60 274 kg (605 lbs)	

Note: It is the customer's responsibility to ensure that the equipment is installed according to local building code requirements.

DIMENSIONS

Models GPS20HX, GPS30HX, GPS50HX, GPS60HX¹



System features

System features	Descriptions	System features	Descriptions
1. Indicator light	Glows green, yellow, or red to provide visual indication of system status; includes audible alarm.	8. Process gas input	Inlet gas (not purified).
2. Touch screen	Provides detailed system status and information.	9. Regen gas vent	Exhausts regen gas.
3. EMO	When activated, power is removed from the cabinet. The system shuts down. The front panel and controller remain powered.	10. Process gas output	Outlet gas (purified).
4. Main system switch	Powers the system on and off.	11. Regen gas inputs	Customer-supplied regeneration gas line for nitrogen and hydrogen.
5. Start	Used to begin system operations and to clear alarms.	12. Instrument air	Supplies gas to the air-operated control valves.
6. Casters	Casters with integrated leveling feet; includes seismic restraints.	13. Power	System power connection.
7. Exhaust vent	Allows ventilation.	14. Remote alarm interface	Allows for remote alarm input and output with female 15-pin DB connector.
		15. Ethernet port	RJ-45 connector for Modbus [®] TCP/IP and remote browser-based web access.

ENCLOSURE INFORMATION

The GateKeeper HX series enclosure is designed for indoor applications only. The enclosure includes leveling feet with integrated casters and seismic restraint brackets to secure the system to the floor. The front door provides easy access to all serviceable components. The backup purifier is accessible from the front door.

ORDERING INFORMATION

Model ¹	Descriptions
GPS20HX	Enclosed model for use with applications requiring a flow rate up to 20 m ³ /hr
GPS30HX	Enclosed model for use with applications requiring a flow rate up to 30 m ³ /hr
GPS50HX	Enclosed model for use with applications requiring a flow rate up to 50 m ³ /hr
GPS60HX	Enclosed model for use with applications requiring a flow rate up to 60 m ³ /hr

SYSTEM OPTIONS

Options	GPS series
Automatic bypass valve	Yes
Automatic bypass valve with integrated GateKeeper backup purifier in parallel configuration	Yes
Inlet and outlet pressure transducers	Default
Moisture indicator	Yes
Process gas mass flow meter with totalizer	Yes
400V input power	Yes

REFERENCE

¹ The media reference "HX" shown here will be represented by Gas name in the product nomenclature, like N2 (Nitrogen), H2 (Hydrogen), He (Helium), Ar (Argon)
e.g., Product P/N will reflect GPS90N2 (for Nitrogen Purification System)

FOR MORE INFORMATION

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit entegris.com and select the [Contact Us](#) link to find the customer service center nearest you.

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Corporate Headquarters
129 Concord Road
Billerica, MA 01821
USA

Customer Service
Tel +1 952 556 4181
Fax +1 952 556 8022
Toll Free 800 394 4083

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