GateKeeper® Gas Purification System HX Series for 400, 500, 600 NM³/HR

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

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 ultrapure hydrogen, nitrogen or argon to today's most critical applications, including semiconductor and LED production.

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 H_2O, O_2, CO, CO_2 and nonmethane hydrocarbons from hydrogen gas.

APPLICATIONS

- Metal Organic Chemical Vapor Deposition (MOCVD)
- Atomic Layer Deposition (ALD)
- Low Temperature Epitaxy (LTE)
- Other applications that require purified hydrogen, nitrogen or argon gas

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 and SEMI® certified
- Start-up service is provided, making it easy to integrate the unit
- Ethernet connection allows for remote monitoring capability
- Designed for easy field maintenance and upgrades
- Available worldwide through Entegris' global infrastructure

SAFETY FEATURES

Feature	Description	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
Rate-of-rise detector	If the detector senses a rapid increase in temperature inside the system enclosure, an EMO alarm will be activated and shut down the system.	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

SPECIFICATIONS

	GPS400HX	GPS500HX	GPS600HX
Gases purified	Hydrogen (H_2), nitrogen (N_2), argon (Ar) or helium (He)		
Media type	Inorganic		
Contaminants removed	Moisture (H_2O) <100 ppt in H_2; <50 ppt in N_2 and Ar		
	Carbon monoxide (CO) <1 ppb		
	Carbon dioxide (CO_2) <100 ppt		
	Oxygen (O_2) <400 ppt		
	Hydrogen (H_2) <1 ppb*		
	Nonmethane hydrocarbons (C5 and higher) <1 ppt		
Operating pressure range	5.51–17.23 bar (80–250 psig)		
Pressure drop	<14.5 psi @ 100 psig and max rated flow		
Maximum flow rate	400 Nm^3/hr (6211 slm)	500 Nm^3/hr (7764 slm)	600 Nm^3/hr (9317 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		

**Not applicable to Hydrogen system.*

FACILITY SPECIFICATIONS

Models GPS400HX, GPS500HX, GPS600HX

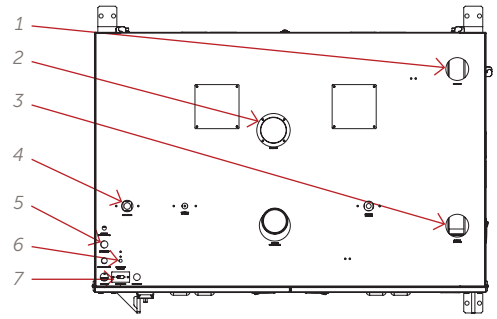
Process gas input	Mechanical connection	2" tube stub
Process gas output	Mechanical connection	2" tube stub
Ventilation	Mechanical connection	4" duct
	Exhaust flow	100 cfm
Power requirements	Mechanical connection	3-pin mechanical disconnect
	Power requirements	380–480 VAC 3 phase
	Power consumption	100W at idle and online 15000W at regen
Regeneration	Regen duration	N_2: <32 hours for each purifier bed H_2: <46 hours for each purifier bed Ar: <40 hours for each purifier bed
Regen gas input	Mechanical connection	N_2: ¾" tube stub H_2: ¼" tube stub
	Gas and pressure	5.51–17.2 bar (80–250 psig)
Regen gas output	Mechanical connection	1" tube stub
Instrument air	Mechanical connection	¼" compression fitting
	Gas and pressure	CDA or N_2 @ 5.51–10.3 bar (80–150 psig)
Physical requirements	Mounting	Floor
	Recommended maintenance space	3 feet in front and back of system
	Operating conditions	15°–40°C (60°–104°F) indoor
	Humidity	10%–90% RH noncondensing
Shipping weight	1361 kg (3000 lb)	

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

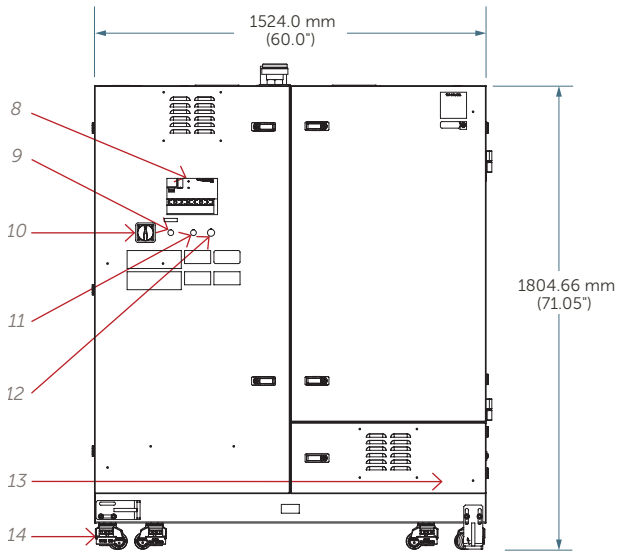
DIMENSIONS

Models GPS400HX, GPS500HX, GPS600HX

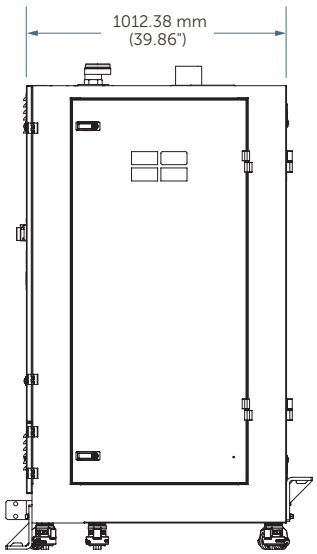
Top View



Front View



Side View



System Features

Features	Description
1. Process gas input	Inlet gas (not purified).
2. Exhaust vent	Allows ventilation.
3. Process gas output	Outlet gas (purified).
4. Regen gas connections	Customer-supplier nitrogen and hydrogen and regen gas vent.
5. Power	System power connection.
6. Instrument air	Supplies gas to the air operated control valves.
7. Communication ports	Ethernet port and remote alarm interface.
8. Touch screen	Provides detailed system status and information.

Features	Description
9. EMO	When activated, power is removed from the cabinet and the system shuts down.
10. Main system switch	Powers the system on and off.
11. Start/Clear button	Used to begin system operations and to clear alarms.
12. USB port	USB connection for data log retrieval and system updates.
13. Sample box	Contains sample and leak check ports.
14. Casters	Casters with integrated leveling feet; includes seismic restraints.

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 doors provide easy access to all service-able components.

ORDERING INFORMATION

Model	Description
GPS400HX	Enclosed model for use with applications requiring a flow rate up to 400 m^3/hr
GPS500HX	Enclosed model for use with applications requiring a flow rate up to 500 m^3/hr
GPS600HX	Enclosed model for use with applications requiring a flow rate up to 600 m^3/hr

Options	GPS Series
Passive backup (online bed stays online during shutdown)	Yes
Automatic bypass valve	Yes
Inlet and outlet pressure transducers	Yes
Moisture indicator	Yes
Process gas mass flowmeter with totalizer	Yes

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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