Entegris

GATEKEEPER® GAS PURIFICATION SYSTEM Z2 SERIES FOR 20, 30, 50 AND 60 NM³/HR

Continuous flow, point-of-use XCDA® purge gas at a low cost of ownership

continuous flow, point-of-use XCDA purge gas

Overview

The GateKeeper® Gas Purification System (GPS) Z2 series is a state-of-the-art continuous service gas purification system from Entegris that brings advanced technology to gas purification. GateKeeper provides semiconductor manufacturers with an innovative solution for higher wafer yields and lower cost of ownership.

Based on the in-situ regeneration technology, GateKeeper purifiers automatically self-regenerate, guaranteeing a continuous flow of purified process gas. This eliminates the need to send a purifier back for regeneration or install a replacement purifier. As a result, this improves system safety and eliminates environmental concerns.

The GPS Z2 Series delivers XCDA® (Extreme Clean Dry Air) purified purge gases to the most up-to-date scanner platforms, including dry and immersion-based lithography tools as well as wafer and reticle stockers. XCDA is proven to be an effective and safer alternative to other purge gases for lithography application. The ultra small footprint and compact design require minimal fab floor space and allow easy access to serviceable components. Its media provides outlet purity in the part-per-trillion (ppt) levels. The system uses ambient temperature purification where heating is not required, thereby ensuring resource conservation and lower energy costs. The GPS removes contaminants such as SO_2, SOX, NOX, H_2S, H_2O, CO_2, siloxanes, ammonia, amines, acid gasses, alcohols and non-methane hydrocarbons from CDA (air) gas.

Applications

- Photolithography
- FOUP cleaning and purging
- Stocker cleaning and purging
- Applications that require XCDA purge gas

Features and Benefits

Features	Benefits
Removal efficiency	High wafer yields
	• Contaminant removal efficiency ensures a cleaner process in parts-per-trillion levels
	• Low pressure drop means the system does not require any changes to the inlet pressure
	System reliability and low cost of ownership
	• Power failures will not harm the system
	• Use of ambient temperatures, where heating is not required, lowers energy costs and conserves resources
	• Startup service facilitates integration, field maintenance and upgrades
Optimized in-situ regeneration technology	GateKeeper purifiers automatically self-regenerate, guaranteeing a continuous flow of pure gas
	• This eliminates the need to send a purifier back for regeneration or install a replacement purifier
	• Improves system safety and eliminates environmental concerns
	• Reduces interruptions to process gas flows
Ultra small footprint	Compact design
	• Uses minimal fab floor space to ensure facility cost savings
	• Allows customers to effectively utilize shadow footprint of process tools
	Easy access to components
	• Speeds up installation
	• Facilitates system hookups to facility
CE and SEMI® certified Z2 series gas purification system	• Delivers XCDA purified purge gases to the most up-to-date scanner platforms, including dry and immersion-based lithography tools as well as wafer and reticle stockers
	• Effectively removes contaminants such as SO_2, SOX, NOX, H_2S, H_2O, CO_2, siloxanes, ammonia, amines, acid gasses, alcohols and non-methane hydrocarbons from CDA (air) gas

Product Specifications

Model	GPS20Z2	GPS30Z2	GPS50Z2	GPS60Z2
Gases purified:	CDA (air)			
Media type:	Inorganic			
Contaminants removed:	Volatile acids (measured as SO_2)			1 ppt
	Volatile bases (measured as NH_3)			10 ppt
	Refractory compounds (measured as HMDSO)			1 ppt
	Condensable organics (measured as Toluene)			1 ppt
	Moisture (H_2O)			100 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°C–40°C (60°F–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			

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
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

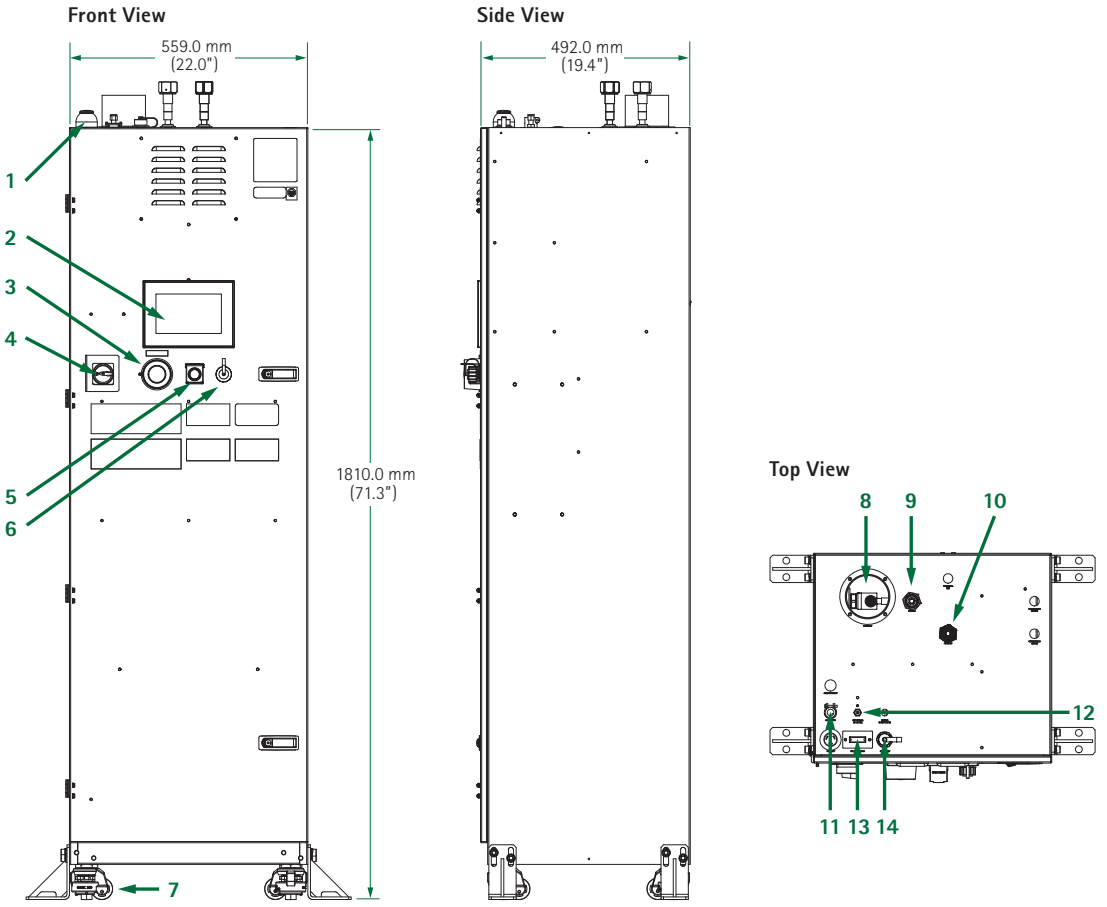
Facility Specifications

		GPS 20/30Z2	GPS 50/60Z2
Process gas input:	Mechanical connection	1/2" VCRF	3/4" VCRF
Process gas output:	Mechanical connection	1/2" VCRF	3/4" VCRF
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	
		700W at regen	
Regeneration:	Regen duration	<24 hours for each purifier bed	
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°C–40°C (60°F–104°F) indoor	
	Humidity	10%–90% RH noncondensing	
Shipping weight:		181 kg (400 lb)	205 kg (450 lb)

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

Dimensions

Models GPS20Z2, GPS30Z2, GPS50Z2, GPS60Z2



System Features

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

Enclosure Information

The GateKeeper Z2 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	Description
GPS20Z2	Enclosed model for use with applications requiring a flow rate up to 20 m^3/hr
GPS30Z2	Enclosed model for use with applications requiring a flow rate up to 30 m^3/hr
GPS50Z2	Enclosed model for use with applications requiring a flow rate up to 50 m^3/hr
GPS60Z2	Enclosed model for use with applications requiring a flow rate up to 60 m^3/hr

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

For More Information

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit *www.entegris.com* and select the Customer Service link for the center nearest you.

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