

MonoTorr[®] Phase II, Rare Gas and Nitrogen Purifier, 50 and 75 slpm

PS4-MT3/15-R/N

The Entegris MonoTorr[®] Rare Gas and Nitrogen 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, CH₄, and N₂ (from rare gas only) 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 & BENEFITS

- **Life Status.** Indicates the life status of the purifier. Good is normal, Marginal indicates approaching depletion and Change includes audible alarm to notify the operator that end-point is approaching and replacement will soon be required.

- **Heater.** Indicates status of heater.
- **Temperature.** Display heater mode while maintaining getter material at preset operating temperature.
- **Valves.** Indicate status of purifier as controlled by pneumatic valves.
- **Alarms.** Pneumatic alarm caused by loss of adequate pressure for valves. Power alarm indicates that extended power failure has caused purifier to go into standby condition. Temperature alarm indicates a high or low temperature condition in the purifier cartridge. High impurity levels (air) in the gas stream could cause the high temperature alarm. Alarm causes the purifier to go to bypass mode. Additional error codes provide alarms for exhaust fan, heater or solid state relay failure.
- **Heater On/Off.** Activates heater only when no alarms exist.
- **Valve Control.** Positions valve to purify or bypass mode.
- **LED Check.** Assures proper functioning of all LEDs and alarm buzzer.
- **Acknowledge.** Silence audible alarm and restores operation if certain alarm conditions have been corrected.

PROCESS GAS SPECIFICATIONS – ENTEGRIS STANDARD

| SPECIFICATION | ENTEGRIS STANDARD | |
|---|---------------------------------|----------------------|
| Maximum flow rate | MT3 MT15 | 50 slpm 75 slpm |
| Nominal flow rate | MT3 MT15 | 5 slpm 15 slpm |
| Minimum flow rate (for purity measurement) | MT3 MT15 | 0.5 slpm 1.0 slpm |
| Inlet pressure (min – max) | 3.5 – 10.4 barg (50 – 150 psig) | |

| SPECIFICATION | ENTEGRIS STANDARD |
|---|------------------------|
| Max. pressure drop @ 7 bar inlet pressure and maximum rated flow | < 1 bar (~14.5 psid) |
| Inlet gas temperature range | 0° – 35°C (32° – 95°F) |
| Outlet gas temperature (maximum) | 50°C (122°F) |

* The minimum flow is the lowest flowrate at which Entegris will guarantee that outlet gas purity will be met.

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ANALYTICAL SPECIFICATIONS (BASED ON 99.999% PURE INLET GAS)

Outlet purity: PS4–MT3

| Impurity | 0–20 slpm | 20–50 slpm |
|--------------------------------|-----------|------------|
| O ₂ | <1 ppb | <1 ppb |
| H ₂ O | <1 ppb | <1 ppb |
| CO | <1 ppb | <1 ppb |
| CO ₂ | <1 ppb | <1 ppb |
| H ₂ | <1 ppb | <10 ppb |
| N ₂ (rare gas only) | <1 ppb | <10 ppb |
| CH ₄ | <1 ppb | <10 ppb |
| Max number of particles | 1 ppcf | |
| Particle size | @ 0.1 µm | |

Outlet purity: PS4–MT15

| Impurity | 0–30 slpm | 30–75 slpm |
|--------------------------------|-----------|------------|
| O ₂ | <1 ppb | <1 ppb |
| H ₂ O | <1 ppb | <1 ppb |
| CO | <1 ppb | <1 ppb |
| CO ₂ | <1 ppb | <1 ppb |
| H ₂ | <1 ppb | <10 ppb |
| N ₂ (rare gas only) | <1 ppb | <10 ppb |
| CH ₄ | <1 ppb | <10 ppb |
| Max number of particles | 1 ppcf | |
| Particle size | @ 0.1 µm | |

FACILITIES REQUIREMENTS – ELECTRICAL

| | |
|---|--|
| Installed power (customer to specify voltage at time of order) | 120 VAC – MT3: 260W, MT15: 450W 230 VAC – MT3: 260W, MT15: 600W |
|---|--|

FACILITIES REQUIREMENTS – GENERAL

| | |
|--|---|
| Instrument air pressure (clean dry air or nitrogen filtered to 10 µm) | 5.5 barg (~80 psig) minimum 6.9 barg (~100 psig) maximum |
| Ambient temperature range (min. – max.) | 5° – 35°C (41° – 95°F) |

GENERAL PURIFIER SPECIFICATIONS

| | |
|--|--|
| Purifier height (envelope) | 890 mm (~35") |
| Purifier width (envelope) | 205 mm (~8") |
| Purifier depth (envelope) | 215 mm (~8.5") |
| Purifier weight | MT3: <23 kg (<50 lbs) MT15: <28 kg (<61 lbs) |
| Feed gas inlet | ¼" VCR® female |
| Purified gas outlet | ¼" VCR male |
| Getter bed operating temperature (nominal) | Rare gas: 400°C (752°F) Nitrogen: 300°C (572°F) |
| Heater power consumption watts (nominal/maximum) | MT3: <125 / <260 MT15: <200 / <600 |
| Outlet particle filter | 0.003 µm absolute all metal filter media |
| Instrument air inlet | ¼" FNPT |
| Clearance around purifier | 1 meter (39.4") minimum front 150 mm (6") minimum right side |
| Gas wetted surface finish | Up- and downstream of getter vessel = 316L SST, electropolished, 12 Ra maximum, 10 Ra average for tubing and tube fittings |
| Control system | Discrete analog temperature controller with alarm and shutdown features |
| Accessories | 1EA: Power cord (2m) ~8" 2EA: ¼" VCR gaskets MT3: 1EA: 3A fuse (120 V), 1EA: 2A fuse (230 V) MT15: 1EA: 5A fuse (120 V), 1EA: 4A fuse (230 V) |
| Applicable codes and standards | ASME pressure vessel code section VIII US national electric code |

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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