

NANOCHEM® MiniSentry™ In-Line Purifier

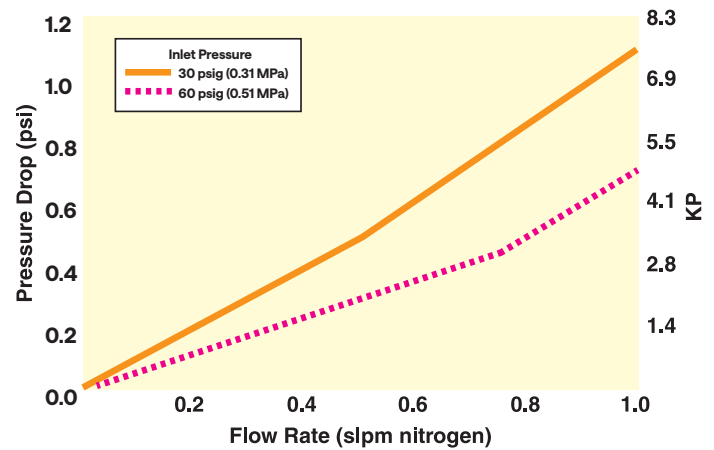
Features and Benefits

- Purification for point-of-use applications
- **Highest Lifetimes**
- **Best Impurity Removal Efficiencies**
 - Removes critical contaminants to sub parts-per-billion level (<0.1 ppb in inert gases)
- Diffusion barrier at purifier inlet and outlet
 - Reduces media exposure to atmospheric air during purifier installation
- Enhances manufacturing process economy and improves equipment performance
- Provides consistently high purity gas under fluctuating inlet
- impurity conditions
- Improves component lifetime and reduces particle generation by removing moisture and volatile metals from corrosive gases
- Compact size for ease of installation
- No moving parts or power requirements
- Does not require heating or cooling
- Low overall cost of ownership



Specifications

- Flow rates up to 1.0 slpm (0.06 NM³/hr)
- All metal parts, Type 316L stainless steel
- 0.003 μm PALL Ultramet-L® stainless steel particle filter with 99.9999999% retention
- Outer diameter of 0.84 inches (21.5 mm) and total length of 3.31 inches (84.07 mm)
- Internal surface finish < 15 μin R_a
- Maximum allowable working pressure of 3000 psig (21 MPa)
- Maximum operating temperature of 70°C



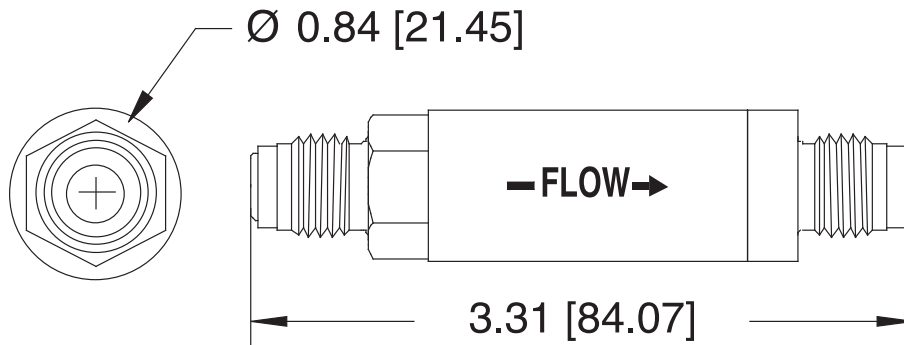
Connections

- Male inlet and outlet connections 1/4 inch, VCR®-compatible face seal fittings

Overview

The NANOCHEM® MiniSentry™ Purifier is a compact purifier designed for placement internal to the process tool, delivering the gas purity required in a sub-micron fabrication environment.

This product is an in-line purifier for low-flow point-of-use applications, combining gas purification and particulate filtration in a footprint of only 3.31 inches (84 mm). NANOCHEM® purifiers provide insurance against virtually all process variables that cause contamination, including gas impurities introduced through the gas jungle. A typical location for this product would be directly before the process chamber or mass flow controller. The MiniSentry™ filter/purifier is a direct replacement for in-line particle filters.



All dimensions are in inches (mm)

Gas Type	Impurities Removed
Nitrogen (N ₂), Argon (Ar), other inerts	< 0.1 ppb H ₂ O, O ₂ , CO ₂ LDL < 1 ppb CO* < 0.1 ppb NMHC LDL NO _x , SO _x , H ₂ S
Ammonia (NH ₃)	< 0.1 ppb H ₂ O, O ₂ , CO ₂ in inert gas LDL < 45 ppb H ₂ O in ammonia LDL
Silane (SiH ₄)	< 0.1 ppb H ₂ O, O ₂ , CO ₂ LDL < 1 ppb CO* Chlo- rosilanes, disilane, siloxanes, arsine, phosphine
Hydrogen (H ₂), Methane CH ₄ , Ethane (C ₂ H ₆), other HC	< 0.1 ppb H ₂ O, O ₂ , CO ₂ LDL < 1 ppb CO*NO _x , SO _x , H ₂ S
Sulfur Hexafluoride (SF ₆), Carbon Tetrafluoride (CF ₄), other fluorocarbons	< 0.1 ppb H ₂ O, O ₂ , CO ₂ in inert gas LDL < 10 ppb O ₂ , H ₂ O in sulfur hexafluoride LDL
Oxygen (O ₂), Carbon Dioxide (CO ₂), Nitrous Oxide (N ₂ O)	< 10 ppb H ₂ O
Carbon Monoxide (CO)	Metal Carbonyls: Fe, Ni

LDL – Lower Detection Limit by State-of-the-Art Analytical Instrumentation

NMHC – Non-methane Hydrocarbons

*NOTE: CO is removed efficiently by OMX & OMX-Plus™ media at low flow rates (recommend 1/10 of normal flow rate)

For a detailed list of purification media and impurities removed, refer to the Purification Media Table in NANO-CHEM® Purification Solutions Brochure.

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