



# Transpector<sup>®</sup> CPM

Comprehensive Gas Analysis Made Affordable

# An Affordable Gas Analyzer for Monitoring the Latest Processes

INFICON Transpector® CPM provides *in situ* early warnings and lowers costs by:

- measuring gas phase reactions;
- verifying vacuum integrity;
- identifying trace-level contaminants;
- measuring process and background composition; and
- qualifying gas purity.

The INFICON CPM Compact Process Monitor is a full-featured, compact and affordable gas analyzer that's ideally suited for *in situ* monitoring of complex processes. This dry-pumped system uses the proven technology of the INFICON Transpector 2 Gas Analysis System to help achieve new levels of performance.

## CPM FDC FEATURES AT A GLANCE

- Quadrupole-based gas analysis system for monitoring complex processes.
- Allows 24/7 monitoring to maximize yield and throughput, thereby minimizing costs.
- Compact and affordable enough to be installed on every high-pressure vacuum chamber.
- HexBlock™ sampling system maximizes performance.
- Built-in CDG for process pressure monitoring and vacuum interlock.
- Optional calibration reference available for tuning and gas reference.
- Long-life closed ion source permits contaminant detection at sub-ppm levels while resisting most corrosive and reactive gases.
- Lightweight and easily transportable.

## CPM FITS RIGHT IN

Space is expensive, so we gave our CPM a small, flexible footprint. To help it provide fast results over a wide range of pressures with minimal impact on the gases being analyzed, we developed the versatile HexBlock™ inlet. And to

assure the highest levels of performance and reliability, we use a quadrupole sensor that has proven itself in more than 12,000 of our Transpector 2 Gas Analysis Systems.

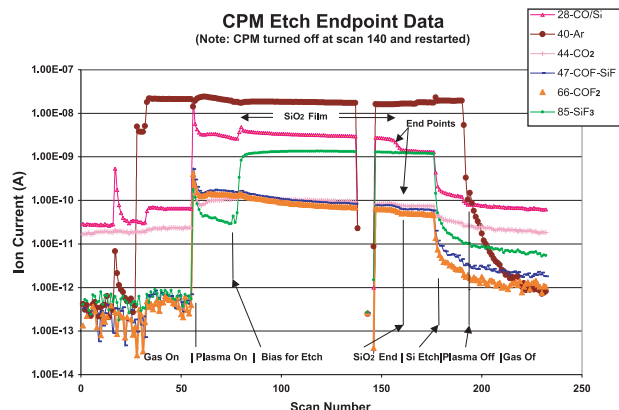
To counter the extremely corrosive gases found in some complex applications, such as etch and CVD, we machined the HexBlock inlet from a single piece of chemically inert 316 stainless steel, and used corrosion-resistant pumps. The detector uses a closed ion source (CIS) for long life in harsh applications, while identifying contaminants at sub-ppm levels.

A built-in capacitance diaphragm gauge (CDG) accurately monitors process pressures and enables the vacuum interlock, while an optional calibration reference is available for tuning and gas reference.

## TOTAL SUPPORT

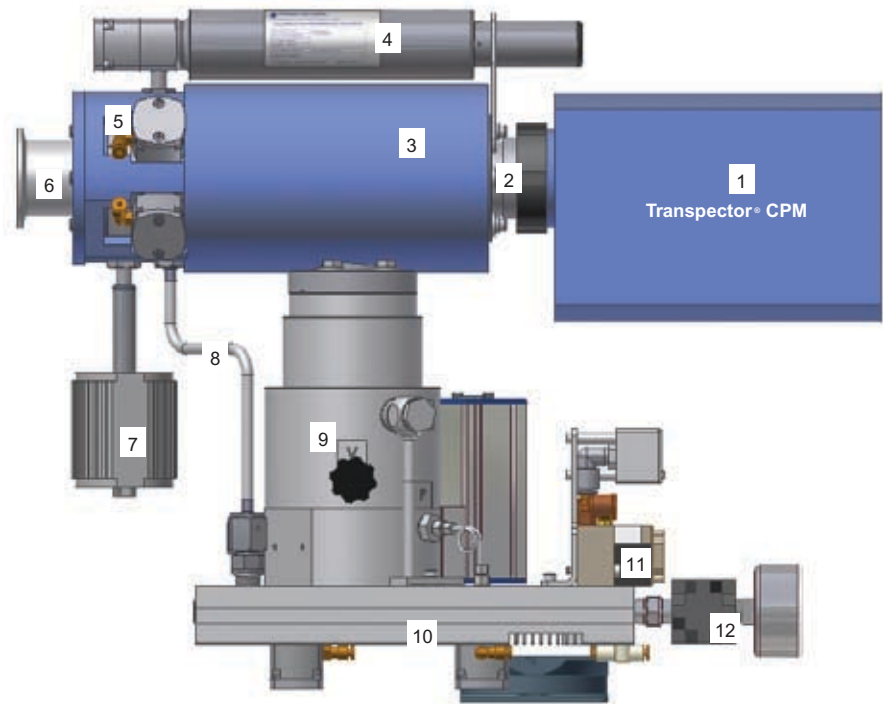
As the world leader in RGAs for the semiconductor market, INFICON has the resources to develop innovative, reliable monitoring systems that enhance yields, plus a global network of applications and support experts to provide assistance wherever and whenever it's needed.

The INFICON CPM Compact Process Monitor delivers the performance, versatility, and value you expect from INFICON, in a reduced-size package that's affordable and robust enough for 24/7 production monitoring or basic laboratory research.



## CPM CONFIGURATION KEY

- 1 CPM electronics
- 2 CPM sensor
- 3 Sensor manifold and heater
- 4 Optional calibration reference
- 5 HexBlock™ inlet
- 6 Process connection (CF40, KF40 or KF25)
- 7 Process gauge (CDG)
- 8 Interstage connection for high-pressure applications
- 9 UHV compound pump
- 10 Integrated foreline block
- 11 Valve solenoids
- 12 Nitrogen regulator (for nitrogen purge and valve operation)



# HexBlock™ Inlet

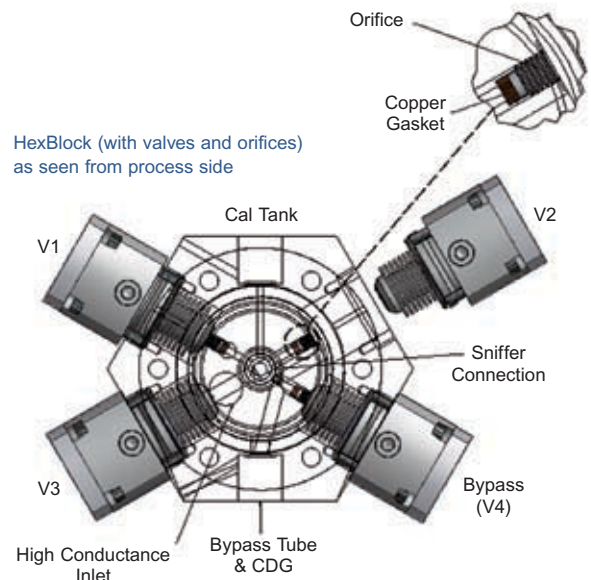
## MAXIMUM PERFORMANCE IN VARIOUS ENVIRONMENTS



Flexible process monitoring puts special demands on gas analyzers. They must be able to handle the wide range of pressures that occur at various stages of the production cycle; they must be able to withstand

corrosive gases; and they must be compact enough to fit onto crowded tools or vacuum chambers. We developed our revolutionary new HexBlock inlet to meet these requirements and deliver optimum performance.

- Four valves allow sampling of high vacuums, two different process pressures, and high-pressure bypass sampling—all without having to change an orifice.
- Interchangeable orifices allow the CPM to monitor various processes.
- Machined from chemically inert 316 stainless steel, which resists harsh gases better than 304.
- Monoblock design has less surface area to minimize surface reactions and speed up response times.
- Surfaces are polished to further minimize surface reactions.



- Reduced size (7.1 cm [2.8"] length vs. 18 cm [7.1"]).
- Gauge port with CDG that monitors process pressures to determine which inlet to use for sampling and to provide vacuum interlock.
- Calibration port allows connection of optional reference gas for tuning and sensitivity reference.
- Sniffer design allows sampling closer to the actual process reactions.
- Various process connections (CF40, KF40, and KF25).

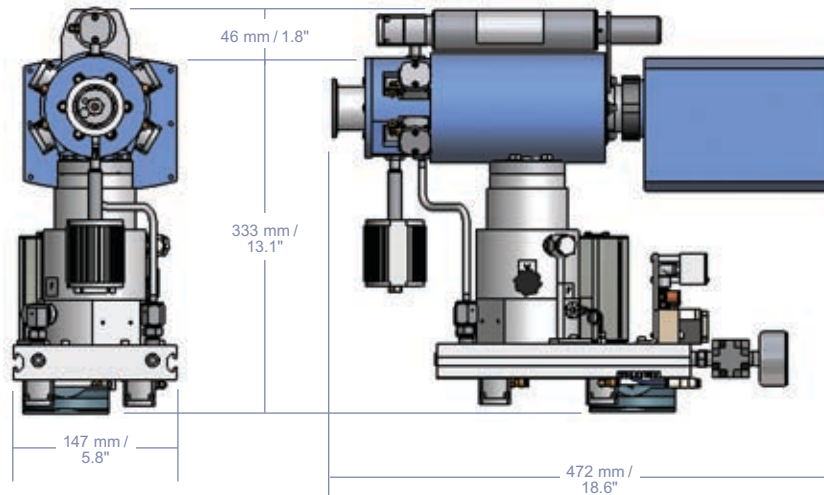
## SPECIFICATIONS

	CPM	CPM	CPM
Mass Range	1 to 100 amu	1 to 200 amu	1 to 300 amu
Peak Width @ 10% Peak Maximum	< 1 amu		
Ion Source Type	Closed Ion Source		
Total Pressure Range <sup>1</sup>	5E-7 to 1E-3 Torr (6.6E-7 to 1.3E-3 mbar)		
Total Pressure Accuracy <sup>2</sup>	±25% 1E-6 to 1E-3 Torr (1.3E-6 to 1.3E-3 mbar)		
Maximum Ion Source Operating Pressure <sup>3</sup>	1E-3 Torr (1.3E-3 mbar)		
Nominal Ion Source Operating Pressure <sup>4</sup>	2E-4 Torr (2.6E-4 mbar)		
System Operating Pressure (w/ orifices/capillary)	1E-8 Torr (1.3E-8 mbar) to 2 atmospheres		
Multiplier Gain @ 1225 Volts <sup>5</sup>	> 10,000		
Sensitivity			
@ Low Emission, FC mode	> 4.0E-6 amps/Torr (> 3E-6 amps/mbar)	> 2.0E-6 amps/Torr (> 1.5E-6 amps/mbar)	> 1.0E-6 amps/Torr (> 7.6E-7 amps/mbar)
@ High Emission, FC mode	> 2.0E-5 amps/Torr (> 1.5E-5 amps/mbar)	> 1.0E-5 amps/Torr (> 7.6E-6 amps/mbar)	> 5.0E-6 amps/Torr (> 3.8E-6 amps/mbar)
Minimum Detectable Partial Pressure <sup>6</sup>	1.0E-13 Torr (1.3E-13 mbar)	2.0E-13 Torr (2.6E-13 mbar)	4.0E-13 Torr (5.3E-13 mbar)
Abundance Sensitivity <sup>7</sup>	< 5 ppm	< 10 ppm	< 100 ppm
Zero Blast <sup>8</sup>	< 2 ppm	< 25 ppm	< 200 ppm
Detection Limit <sup>9</sup>	< 1 ppm	< 2 ppm	< 4 ppm
Linearity <sup>10</sup>	±20%		
Minimum Background Pressure	< 1.0E-8 Torr (< 1.3E-8 mbar)		
Maximum Sensor and Inlet Operating Temperature	150°C		

- 1 Pressure reading at low emission using total pressure lens
- 2 Total pressure accuracy at low emission
- 3 Maximum ion source operating pressure at low emission (filament turn-off threshold)
- 4 2E-4 Torr in the closed ion source will produce about 1E-5 Torr in the quadrupole region
- 5 Minimum EM gain at maximum EM voltage
- 6 MDPP with EM on at 10,000 gain and 1-second dwell time
- 7 Mass 40 contribution onto 41 amu
- 8 Zero blast contribution onto 2 amu
- 9 Minimum detectable concentration with krypton in air at a 1-second dwell
- 10 Linearity at low emission at 0.1 to 2 times the nominal orifice pressure

CE

## DIMENSIONS



 **INFICON** Instruments for Intelligent Control®

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Due to our continuing program of product improvements, specifications are subject to change without notice.

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