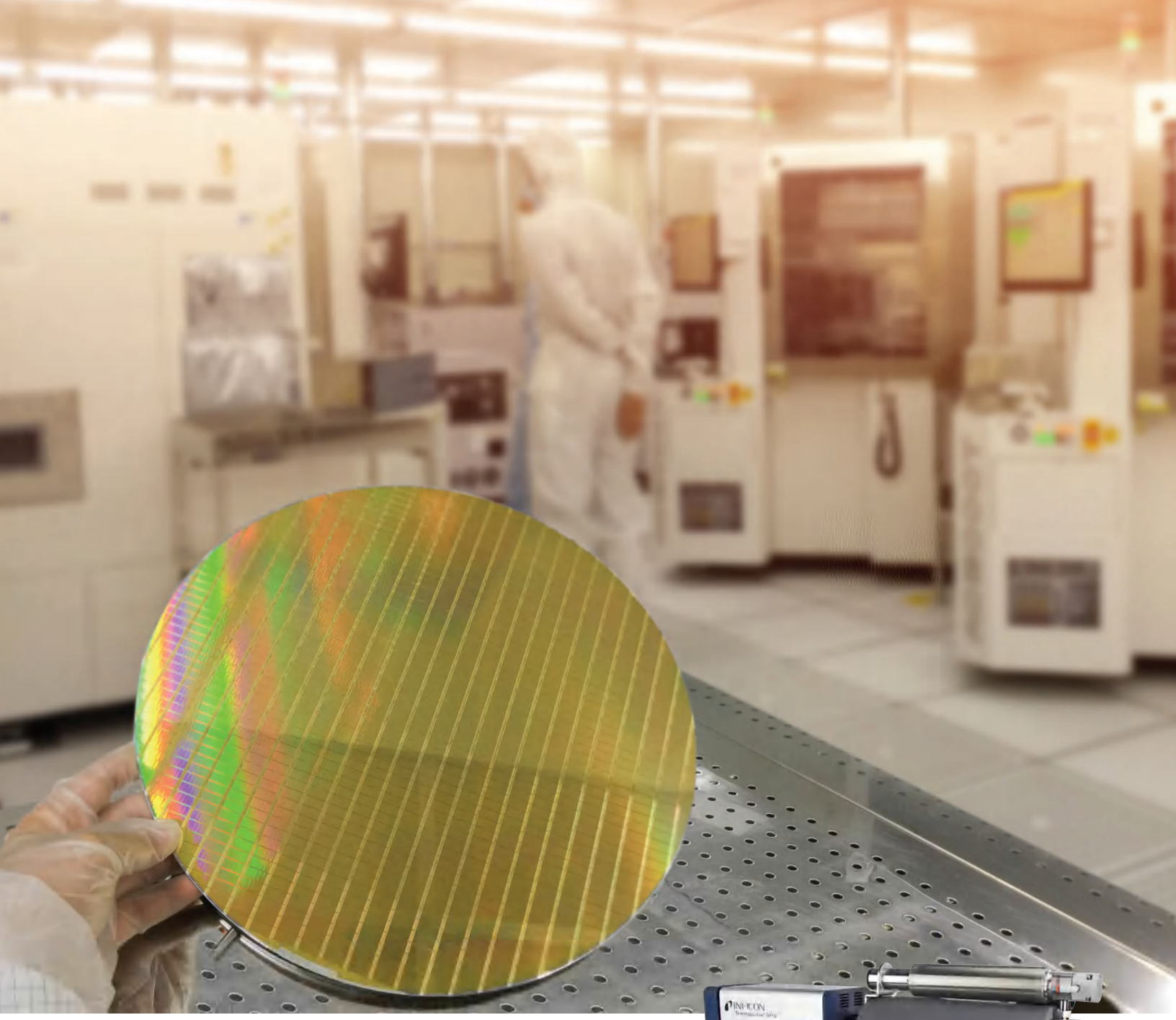


# Transpector® SPS Residual Gas Analyzer

The Best Wafer and Panel Protection for Targeted High Pressure Applications

INFICON

# Innovation by Sensorization

**Today's competitive semiconductor (semi) and display manufacturing landscapes drive a constant need for maximizing throughput and yield. Semiconductor device and process evolution increases manufacturing complexity resulting in higher cost per wafer. To minimize product loss and maximize uptime, improved contamination detection, increased process gas monitoring, and rapid tool qualification is essential. Transpector Single Pressure Sampling (SPS) optimizes throughput and yield by providing the fastest and most accurate gas analysis for constant pressure applications in semi and display.**

## SUPERIOR PROCESS CHARACTERIZATION AND MONITORING

Transpector SPS residual gas analyzer provides the best wafer and display panel protection for targeted high pressure applications. It minimizes wafer and panel scrap with the most sensitive air leak and process contamination detection for single pressure applications. Transpector SPS delivers both industry-leading detection limits and measurement speeds to ensure both the quality and number of wafer and panel outs. Transpector SPS maximizes process throughput and yield by providing the most reliable process monitoring for stable, high pressure processes.

## COST EFFECTIVE PROCESS OPTIMIZATION

Transpector SPS combines a simple and cost effective inlet system, with a field proven ion source and pumping package to provide a low risk and high reward gas analysis solution. Transpector SPS can be tailored to specific applications and budgets. Standard orifice, capillary, and bypass line combinations may be selected for sampling process pressures from 1E-4 Torr to atmosphere. Each inlet version is suitable for one decade of pressure range. Transpector SPS combines flexibility with serviceability. To reduce the time and resources required, installation is easy and efficient due to the variety of standard process connections available. In addition, the long lifetime filament, ion source, and electron multiplier are all field replaceable to reduce maintenance costs. Transpector SPS provides the lowest total cost of ownership for gas monitoring at high pressure processes, making it the ideal in situ air leak and contamination detection solution for epitaxy, rapid thermal processing, and diffusion applications.

### APPLICATIONS

- PVD processes
- Diffusion and epitaxy processes
- Etch processes including: metal, dielectric, silicon etch, HDP-etch
- CVD process including: high k dielectrics, HDP-CVD, LP-CVD, SA-CVD, CVD Low k, PE-CVD

## MINIMIZE PROCESS VARIATION AND MAXIMIZE TOOL UPTIME

Transpector SPS is compatible with the increasingly harsh process environments in modern semi and display manufacturing. The corrosive resistant inlet, ion source, and pumping package are designed for survivability in etch, CVD, ALD, and other aggressive gas processes. The high performance sensor provides real time detection of trace contaminants and chamber air leaks during critical process steps. Process variation detection and classification are made easy with INFICON FabGuard® integration software. Engineers may automate calibration routines, alarms and interdiction to protect their processes. In addition, Transpector SPS enables faster tool recovery after preventive maintenance intervals with rapid chamber qualification to maximize tool uptime and chamber utilization.

## POWERFUL INTEGRATION

INFICON is the total solution gas analysis provider for semiconductor and display markets. Transpector SPS combined with INFICON FabGuard software provides seamless fab integration and reliable interdiction through powerful data acquisition and synchronization.

## INNOVATION BY SENSORIZATION

INFICON Transpector product portfolio offers a complete spectrum of gas analysis solutions to maximize equipment throughput and yield. From atmosphere to high vacuum, Transpector gas analyzers are configurable to optimize your unique business needs.

### ADDITIONAL PROCESS CONTROL

Seamless integration capabilities with increased analog and digital inputs/ outputs

### AUTOMATED CALIBRATON

Minimize process variation with ease by utilizing the automated calibration option with FabGuard

### MINIMIZE MAINTENANCE COSTS AND TIME

Field proven sensor combines long life ion source, and low noise, high-gain electron multiplier to minimize total cost of ownership


### INDUSTRY-LEADING MEASUREMENT SPEED

Modern electronics with fast settling times enables measurement speeds as low as 1.8 ms per point

### FABGUARD DATA COLLECTION AND ANALYSIS

When integrated with the INFICON FabGuard software suite, Transpector SPS becomes a powerful process monitoring and diagnostics tool which can be used for:

- Advanced process control (endpoint detection)
- Statistical process control (SPC)
- Run-by-run and real-time fault detection and classification

### COST EFFECTIVE PROCESS MONITORING

Simplified inlet options available for high pressure processes. CF, KF, and VCR process connections available to make installation fast and easy

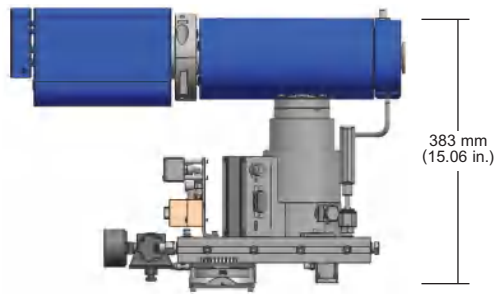
## SPECIFICATIONS

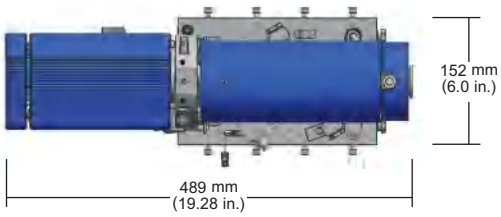
| | | | |
|---|---|---|---|
| Mass range | 1 to 100 amu | 1 to 200 amu | 1 to 300 amu |
| Peak width @ 10% peak maximum | <1 amu | | |
| Ion source type | Closed Ion Source | | |
| Total pressure range[1] | 5E-7 to 1E-3 Torr (6.6E-7 to 1.3E-3 mbar) | | |
| Total pressure accuracy[2] | ±25% 1E-6 to 1E-3 Torr (1.3E-6 to 1.3E-3 mbar) | | |
| Maximum ion source operating pressure[3] | 1E-3 Torr (1.3E-3 mbar) | | |
| Nominal ion source operating pressure[4] | 2E-4 Torr (2.6E-4 mbar) | | |
| System operating pressure (with orifices/capillary) | 1E-4 Torr to 1.2 atmospheres | | |
| Sensitivity @ low emission, FC mode | >4.0E-6 amps/Torr | >2.0E-6 amps/Torr | >1.0E-6 amps/Torr |
| | (>3E-6 amps/mbar) | (>1.5E-6 amps/mbar) | (>7.6E-7 amps/mbar) |
| @ high emission, FC mode | >2.0E-5 amps/Torr | >1.0E-5 amps/Torr | >5.0E-6 amps/Torr |
| | (>1.5E-5 amps/mbar) | (>7.6E-6 amps/mbar) | (>3.8E-6 amps/mbar) |
| Minimum detectable partial pressure[5] | 1.0E-13 Torr (1.3E-13 mbar) | 2.0E-13 Torr (2.6E-13 mbar) | 4.0E-13 Torr (5.3E-13 mbar) |
| Maximum data rate (analog scans or selected peaks) | 1.8 ms per point (555 data points per second) | | |
| Abundance sensitivity[6] | <5 ppm | <10 ppm | <100 ppm |
| Zero blast[7] | <2 ppm | <25 ppm | <200 ppm |
| Detection limit[8] | <1 ppm | <2 ppm | <4 ppm |
| 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 MDPP with EM on at 10,000 gain and 1-second dwell time
6 Mass 40 contribution onto 41 amu
7 Zero blast contribution onto 2 amu
8 Minimum detectable concentration with krypton in air at a 1-second dwell

CE

## DIMENSIONS




INFICON Instruments for Intelligent Control®

www.inficon.com reachus@inficon.com