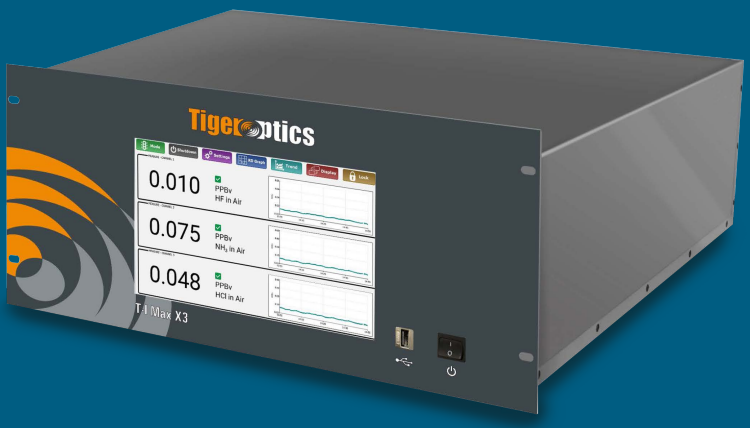
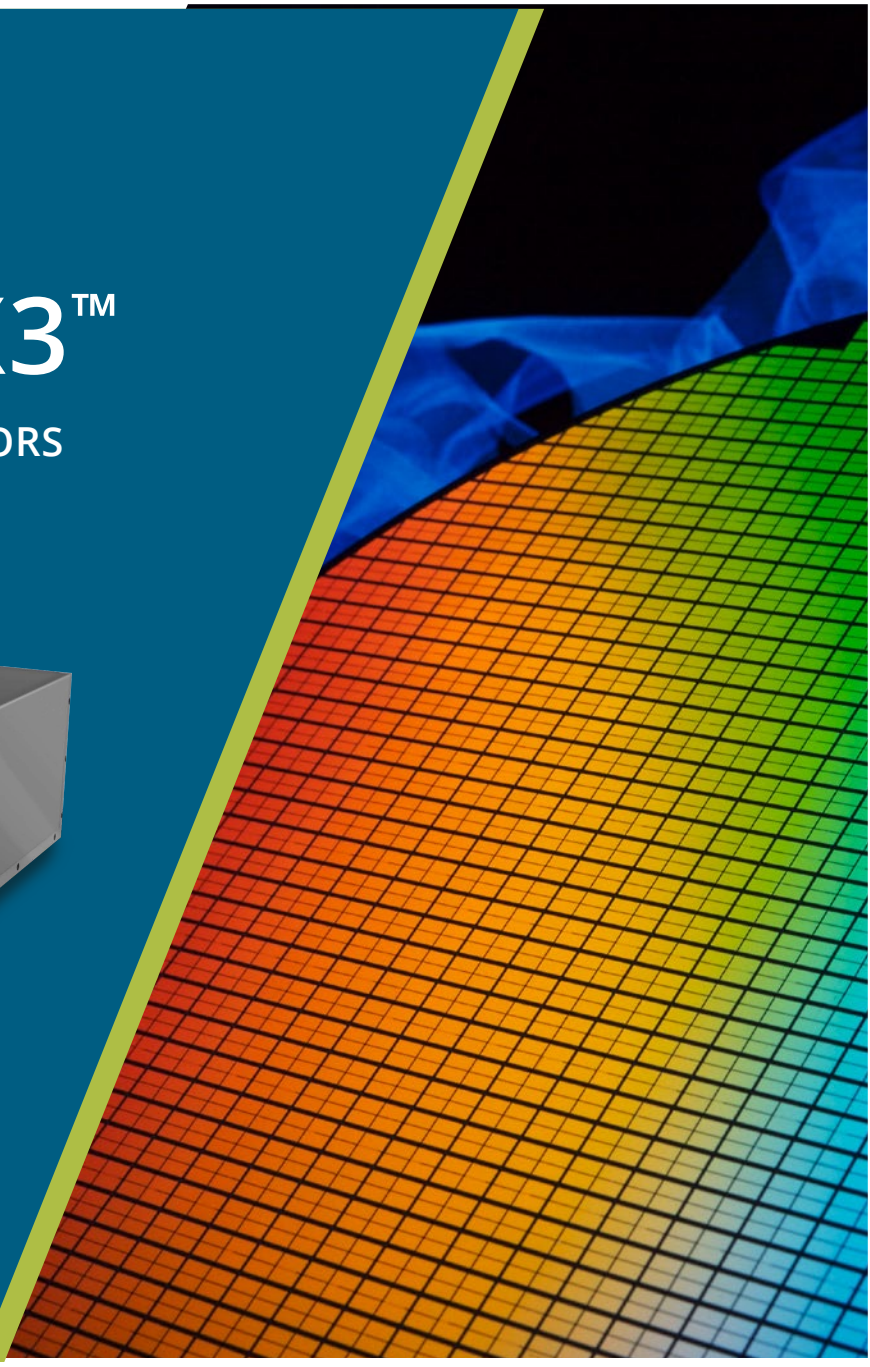
Process Insights™
Premium Insights Into Process

PRODUCT DATASHEET

T-I Max X2/X3™

NEXT-GENERATION AMC MONITORS





Based on Tiger Optics' new multi-spectral platform, the T-I Max X2/X3 monitors for HF, NH_3 and HCl Airborne Molecular Contaminants (AMCs) continuous and simultaneously in real-time in a more compact design.

- Sensitive, absolute measurement technique, using Cavity Ring-Down Spectroscopy (CRDS)
- Dramatically improved speed of response
- Parts-per-trillion detection limits
- Drift-free, with calibration traceable to the world's leading reference labs
- No consumables + no calibration gases = Low COO
- Resistant to contamination by particles or VOCs

Next-Generation Trace Gas Analyzers for Detection & Continuous Monitoring of Airborne Molecular Contaminants in Semiconductor Cleanrooms, FOUP Cleaning Tools, Reticle Nests and Sub Fab Environments.

You can spend a long time "looking" for Airborne Molecular Contaminants (AMCs) when the catastrophic product performance or yield loss is discovered at your device final test stage; or you can deploy our T-I Max™ series analyzers to locate and to monitor these invisible defect generators, commonly found lurking in and around equipment, personnel, wafer carriers and cleanroom bays.

In today's advanced semiconductor processing, the residual gases, vapors and chemicals emanating from the various materials, accelerated processing operations, and substrate storage and transport have become a critical concern. So much so that the International Technology Roadmap for Semiconductors (ITRS) now highlights AMC contamination as a key technical challenge in achieving & sustaining low defect rates on devices.

With a particular focus on the major contributors to the "chemical contamination" element of AMCs, the T-I Max X2/X3 series, based on Tiger's new multi-spectral platform, can simultaneously detect and continuously monitor with unprecedented combination of sensitivity, selectivity, and speed of response. Our new X2/X3 measures two (X2) or all three (X3) critical AMC molecules, HF, NH_3 and HCl, in one integrated, rack-mountable package to save space and cost.

Specifications

Performance

Operating range:	See table below
Detection limit (LDL, 3σ@100s):	See table below
Precision (1σ, greater of):	± 0.75% or 1/3 of LDL
Accuracy at span:	± 4% of reading
Accuracy at zero:	See table below
Speed of response @ 20ppb: (T10/90 + T90/10)	See table below
Environmental conditions:	10°C to 40°C, 10% to 90% RH (non-condensing)
Sample conditions:	30% to 70% RH at 20°C, 20% to 50% RH at 25°C, 15% to 40% RH at 30°C
Storage temperature:	–10°C to 50°C

Gas Handling System and Conditions*

Wetted materials:	Optimized for ppt-level AMCs and fast speed of response
Gas connections:	1/4" PFA Swagelok® inlet & outlet
Inlet pressure:	Atmospheric pressure†
Outlet pressure:	Vacuum (<10 Torr)
Flow rate:	~3 slpm@1 atm pressure
Sample gases:	Cleanroom air, CDA or N_2

Dimensions & Weight

Standard unit (w/o ext. particle filter)**:** H × W × D: 8.73 x 19 x 26.2 in (221.7 x 482.6 x 665.5 mm)

Standard unit weight: 61lbs. (28 kg)
(excl. vacuum pump)

Electrical and Interfaces

Platform:	Max X series analyzer
Alarm indicators (per channel):	2 user programmable, 1 system fault, Form C relays
Power requirements:	100 − 240 VAC, 50/60 Hz
Power consumption:	50 Watts max.
Signal output:	Isolated 4−20 mA per sensor
User interfaces:	10.4" LCD touchscreen, 10/100 Base-T Ethernet USB, RS-232, RS-485 Modbus TCP (optional)
Data storage:	Internal or external lash drive
Certification:	CE Mark (pending)

Performance in cleanroom air:	Range	LDL (3σ @ 100 sec.)	Accuracy at zero	Speed of Response (T10/90+T90/10)
T-I Max HF:	0 − 1 ppm	40 ppt	± 40 ppt	< 3 minutes @ 20 ppb
T-I Max HCl:	0 − 4 ppm	100 ppt	± 100 ppt	< 3 minutes @ 20 ppb
T-I Max NH_3:	0 − 40 ppm	300 ppt	± 300 ppt	< 3 minutes @ 20 ppb

*Vacuum source with >3 slpm @ 10 Torr required
†Contact us for details about operating the analyzer at elevated inlet pressure.

Contact us for additional analytes, matrices and ranges.
U.S. Patent # 7,277,177

Annual Performance Verification

- Low-cost and easy remote verification process, with no need to return the analyzer to the factory
- Annual verification ensures that your analyzer continues to meet its original specifications
- Up-to-date Verification Certificate to comply with your QA/QC standards

ProcessInsights™
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GAIN REAL-TIME INSIGHT INTO YOUR PROCESS

Process Insights delivers premium analytical sensors, analyzers, instrumentation, software and solutions that are mission-critical to keep your operations, personnel, and the environment safe. Our commitment to customer satisfaction is evident through our diverse range of products, programs, and services, designed to accommodate various budgets and application needs.

CENTERS OF EXCELLENCE | PROVIDING PROVEN SOLUTIONS

Process Insights – The Americas
14400 Hollister Street, Suite 800B, Houston, TX 77066, USA +1 713 947 9591

Process Insights – EMEA
ATRICOM, Lyoner Strasse 15, 60528 Frankfurt, Germany +49 69 20436910

Process Insights – APAC
Wujiang Economic and Technology, Development Zone, No. 258 Yi He Road, 215200 Suzhou, Jiangsu Province, China +86 400 086 0106

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info@process-insights.com

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