



T-I Max

Next-Generation AMC Monitors

GASES & CHEMICALS

CEMS

ENERGY

SEMI & HB LED

ATMOSPHERIC

LAB & LIFE SCIENCE

Based on Tiger Optics' new global platform, the T-I Max series monitors for Airborne Molecular Contaminants (AMCs) deliver unprecedented performance, including:

- 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
- Lowest Cost of Ownership and maintenance

Next-Generation Trace Gas Analyzers for Detection & Continuous Monitoring of Airborne Molecular Contaminants in Semiconductor Cleanrooms

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 Tiger Optics' 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 series, based on Tiger's new analyzer platform, can detect and continuously monitor HF, HCl, and NH₃ with an unprecedented combination of sensitivity, selectivity, and speed of response.

Tiger Optics' GO-cart for AMCs adds additional flexibility by providing a mobile platform that can be moved quickly to different critical monitoring points.

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| Performance | | Dimensions | H x W x D [in (mm)] |
|-------------------------------------|---|----------------------------|--------------------------------------|
| Operating range | See table below | Standard sensor | 8.73 x 8.57 x 23.6 (222 x 218 x 599) |
| Detection limit (LDL, 3σ@100s) | See table below | (w/o ext. particle filter) | |
| Precision (1σ@100s, greater of) | ± 0.5% or 1/3 of LDL | Sensor rack | 8.73 x 19.0 x 23.6 (222 x 483 x 599) |
| Accuracy at span | ± 4% of reading | (fits up to two sensors) | |
| Accuracy at zero | See table below | GO-cart | 50 x 23 x 36 (1270 x 584 x 914) |
| Speed of response @ 20ppb | See table below | | |
| (T10/90 + T90/10) | | Weight | |
| Environmental conditions | 10°C to 40°C | Standard sensor | 33 lbs (15 kg) |
| | 10% to 90% RH (non-condensing) | GO-cart | 260 lbs (118 kg) |
| Sample conditions | 30% to 70% RH at 20°C | (both excl. vacuum pump) | |
| | 20% to 50% RH at 25°C | Electrical and Interfaces | |
| | 15% to 40% RH at 30°C | Platform | Max series analyzer |
| Storage temperature | -10°C to 50°C | Alarm indicators | 2 user programmable |
| | | | 1 system fault |
| Gas Handling System and Conditions* | | | Form C relays |
| Wetted materials | Optimized for ppt-level AMCs and fast speed of response | Power requirements | 90 – 240 VAC, 50/60 Hz |
| Gas connections | 1/4" PFA Swagelok® inlet & outlet | Power consumption | 40 Watts max. |
| Inlet pressure | Atmospheric pressure† | Signal output | Isolated 4–20 mA |
| Outlet pressure | Vacuum (<10 Torr) | User interfaces | 5.7" LCD touchscreen |
| Flow rate | -3 slpm@1 atm pressure (NH ₃) | | 10/100 Base-T Ethernet |
| | -2 slpm@1 atm pressure (HF, HCl) | | USB, RS-232, RS-485 |
| Sample gases | Cleanroom air, CDA or N ₂ | | Modbus TCP (optional) |
| Gas temperature | Up to 60°C | Data storage | Internal or external flash drive |
| | | Certification | CE Mark |

| Performance in cleanroom air: | Range | LDL (3σ@100s) | Accuracy at zero | Speed of Response (T10/90+T90/10) |
|-------------------------------|------------|---------------|------------------|-----------------------------------|
| T-I Max HF | 0 – 1 ppm | 20 ppt | ± 20 ppt | < 3 minutes @ 20 ppb |
| T-I Max HCl | 0 – 4 ppm | 100 ppt | ± 100 ppt | < 30 seconds @ 20 ppb |
| T-I Max NH ₃ | 0 – 40 ppm | 300 ppt | ± 300 ppt | < 3 minutes @ 20 ppb |

*Vacuum source with >2 slpm @ 10 Torr required

†Contact us for details about operating the analyzer at elevated inlet pressure.

Contact us for additional analytes.

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Tiger Optics GO-cart™

Surveying different micro-environments in a fab is now fast and easy with Tiger Optics' mobile **GO-cart**. It can be equipped with any combination of **T-I Max** units to monitor simultaneously for the most critical contaminants in cleanroom air.

The GO-cart is easy to move around the fab and comes with the following features:

- Space for up to three **T-I Max** analyzers with low-power, fanless vacuum pumps
- Top-mounted central control touchscreen
- Integrated back-up power supply (optional)
- Conductive ESD paint (optional)



Annual Performance Verification

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



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