



Product Catalog

2025



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Please see our website for more detail on our products: 2btech.io

For current pricing please contact us at

sales@2btech.io or 303-273-0559

OR

submit a Product Inquiry form at

<https://2btech.io/contact-us/>

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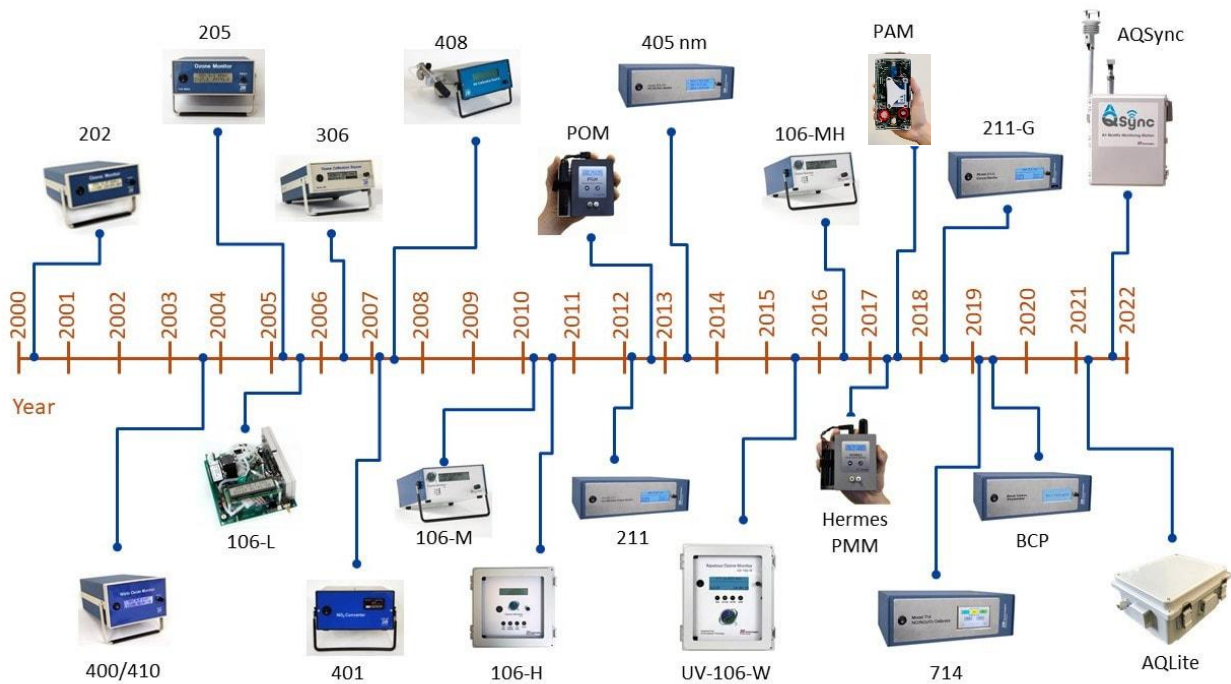
About 2B Technologies

2B Technologies has been making high-precision/high-accuracy air pollution monitors since 1998. Our lightweight and low-power instruments have been used by researchers, educators, and citizen-scientists around the world, including NOAA, Environment Canada, numerous universities, and in industry. The unique portability of our instruments has allowed for remote field measurements in Antarctica, Death Valley, on buoys in the North Atlantic Ocean, and beyond. Many of our instruments have been approved by the US Environmental Protection Agency as Federal Equivalent Methods (FEM), and our products are manufactured in our ISO 9001-compliant facility with NIST-traceable calibrations.

2B Technologies operates out of its home facility in Broomfield, Colorado, USA, where a staff of 21 employees designs, innovates, and manufactures the 2B Tech lineup of over 20 instruments. Our network of 30+ distributors extends our reach all across the globe.

In 2023, we modernized our logo: **2B Technologies** is now **2B**TECH

From the launch of our first instrument in 2000 (the Model 202 Ozone Monitor) to the newest member of the lineup (the multipollutant AQSync Air Quality Monitoring Station), 2B Tech's goal has always been to use sound science and innovative technology to provide our customers with cutting-edge instrumentation.



Quick Look (Overview)

Names in column 1 are hyperlinked to more detailed information in this catalog.

Instruments are US EPA Federal Equivalent Methods (FEM) where noted.

Access more detailed information about our instruments at <https://2btech.io/products/> and <https://2btech.io/downloads/>

AQSync Air Quality Monitoring Station (Multiple Pollutants)		
AQSync	Touchscreen outdoor air monitoring station with choice of modules for multiple pollutant and weather measurements, and with data transmission to the Cloud	Customizable module choices: FEM O ₃ , FEM NO ₂ , NO, NO _x , CO ₂ , CO, TVOCs, PM ₁ , PM _{2.5} , PM ₁₀ , CH ₄ , BTEX, T, P, RH
AQSync Solar Trailer		
AQSync Solar Trailer	AQSync paired with a custom Wanco® solar trailer	Customizable module choices: FEM O ₃ , FEM NO ₂ , NO, NO _x , CO ₂ , CO, TVOCs, PM ₁ , PM _{2.5} , PM ₁₀ , CH ₄ , BTEX, T, P, RH
AQLite Air Monitoring Package (Multiple Pollutants)		
AQLite Air Monitoring Package	FEM Ozone and sensor package in rugged outdoor enclosure, with data to the Cloud	AQLite Standard: FEM Ozone, CO ₂ , CO, TVOCs, PM ₁ , PM _{2.5} , P, instrument T & RH AQLite Basic: FEM Ozone only
Ozone Monitoring– Ambient Applications		
Model 106-L	FEM, 254 nm UV absorption single-beam Robust and easy to service	0-20 ppm with 1.5 ppb precision Bench, OEM, & Industrial/multichannel
Model 108-L	FEM, 254 nm UV absorption single-beam for incorporation in user systems	Same performance specs as 106-L, but smaller for integration into user systems. Offered with or w/o pump & enclosure.
Model 202	FEM, 254 nm UV absorption single-beam Benchtop	0-20 ppm with 1.5 ppb precision Bench (rack-mount option)
Model 205	FEM, 254 nm UV absorption dual beam for higher precision and faster measurements	0-20 ppb with 1.0 ppb precision Bench (rack-mount option)
POM - Personal Ozone Monitor	FEM, 254 nm UV absorption single beam, “world’s smallest ozone monitor”	0-500 ppb with 1.5 ppb precision Handheld with battery and GPS
Model 211	FEM, 254 nm UV absorption dual beam, longer path length for highest precision	0-2 ppm with 0.5 ppb precision “Scrubberless” to reduce interferences
Model 211-G	FEM, 254 nm UV absorption dual beam, longer path length for highest precision	0-500 ppb, 0.5 ppb precision. Graphite scrubber reduces interferences

Ozone Monitoring – Industrial / Workplace Applications

Model 106-L	FEM, 254 nm UV absorption single beam Robust and easy to service	0-20 ppm with 1.5 ppb precision Bench, OEM, & Industrial/multichannel
Model 106-M	254 nm UV absorption single beam Robust and easy to service	0-1000 ppm with 0.01 ppm precision Bench, OEM, & Industrial/multichannel
Model 106-MH	254 nm UV absorption single beam Robust and easy to service	0-10,000 ppm with 0.05 ppm precision Bench, OEM, & Industrial
Model 106-H	254 nm UV absorption single beam Robust and easy to service	0-20 wt% with 0.01 wt% precision Bench, OEM, and Industrial choices
Model 108 series	254 nm UV absorption single-beam, without pump for incorporation in user systems	Options for -L (FEM), -M, -MH, and -H concentration ranges

NO / NO₂ / NO_x Monitoring

Model 405nm	Measure NO ₂ (by direct absorption at 405 nm) NO, and NO _x in one instrument	Folded path length of ~2 m results in high sensitivity. FEM for NO ₂ .
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Calibrators

Model 306	Calibrated ozone outputs up to 1000 ppb at 2 ppb precision and accuracy	Scheduler function for autocalibrations up to 10 steps.
Model 714	Calibrate for NO ₂ , NO, and O ₃ in one convenient instrument	Can use a portable N ₂ O source, eliminating the need for a tank of NO

Mercury

HERMES	254 nm UV absorption single beam Handheld and battery operable	Measure 0-2000 µg/m ³ Hg in air with 0.1 µg/m ³ precision
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2B Tech’s Published Papers on Our Instruments

FEM Designations



Patents

Citations of 2B Tech Instruments



Warranty

Click on the Model name to visit the product page on our website.

AQSync Air Quality Monitoring Station (Multiple Pollutants) and AQSync Solar Trailer

Model	Description	Specifications	Options
<p>AQSync Air Quality Monitoring Station</p> 	<p>The AQSync combines the “Best of the Best” for monitoring multiple pollutants in one package. Customizable module choices include</p> <ul style="list-style-type: none"> • 2B Tech’s high-precision devices for O₃, NO₂, and NO • cutting-edge instruments for CO₂, TVOCs and PM (1, 2.5, 10) • stable, reliable measurements of CO • CH₄ by laser gas detection • Speciated BTEX by micro gas chromatograph • weather data via sonic anemometry <p>Data access and instrument control are via Touchscreen and the Cloud.</p> <p>Power-stingy requirements enable solar and battery options.</p> <p>Rugged NEMA 4X IP67 enclosure for outdoor installation</p>	<ul style="list-style-type: none"> • UV absorbance 0–1000 ppb O₃ @ 1.5 ppb/2% of reading precision (FEM for 0–500 ppb) • UV absorbance 0–10,000 ppb NO₂ @ 0.5 ppb precision (FEM for 0-500 ppb, 0-40°C) • UV absorbance 0–2,000 ppb NO @0.5 ppb precision • Optical particle counter with sheath flow and heated inlet, 320,000 particles per liter @ 10% accuracy • NDIR 0–1000 ppm CO₂ @ 1 ppm precision • Amperometry 0–50 ppm CO @ 0.02 ppm precision • PID for VOCs, 0–3 ppm • Power Requirement: 35 watt (53 watt max during warmup) • ~54.5 lb (24.8 kg) depending on modules • 25 H × 25 W × 10.3 D in (63.5 × 63.5 × 26.1 cm) [weather station adds 24”/61 cm height] 	<ul style="list-style-type: none"> • Battery + solar configuration • Custom hard plastic transport case • Customizable module choices
<p>AQSync Solar Trailer</p> 	<p>The AQSync paired with a custom Wanco® solar trailer allows you to make FEM-quality measurements anywhere. With no need for expensive infrastructure, you can deploy quickly and easily.</p>	<ul style="list-style-type: none"> • AQSync with specifications as above <p>Trailer includes:</p> <ul style="list-style-type: none"> • Telescoping tower with manual winch • Integrated AQSync support bracket • Locking hitch pins allow easy attachment and removal of the AQSync • 730 W solar array, 400 Ah battery bank in high-security battery box • Smart MPPT solar charge controller for outstanding power efficiency 	<ul style="list-style-type: none"> • Customizable module choices for the AQSync



AQLite Air Monitoring Packages (Multiple Pollutants)



Model	Description	Specifications	Options
<p><u>AQLite-Standard Air Monitoring Package</u></p> 	<p>USEPA approved Federal Equivalent Method (FEM) 108-L Ozone Monitor and proven sensor technology for CO₂, PM₁, and PM_{2.5}, along with choices of CO and/or total VOCs sensors, in a customizable package that can be deployed for a variety of air monitoring applications. Ventilated NEMA 4X IP66 enclosure for outdoor installation. Solar or battery capable.</p>	<ul style="list-style-type: none"> • Power Requirement: 12 watts, AC or DC operation • 10.1 H × 8.1 W × 4.4 D in (25.7 × 20.6 × 11.2 cm) • 7 lb (3.2 kg) • UV absorbance 0–1000 ppb O₃ @ 1.5 ppb/2% of reading precision (FEM for 0–500 ppb) • Operating Temperature Range: 0 to 50°C for O₃ • Measurement Interval: 2 s • Data Outputs: RS232, microSD card, WiFi, Cellular Upload to Cloud & 2B Tech Data Portal 	<ul style="list-style-type: none"> • Options for these sensors: CO, total VOCs
<p><u>AQLite-Basic Air Monitoring Package</u></p> 	<p>FEM 108-L Ozone Monitor in an actively ventilated, mountable NEMA 4X IP66 enclosure for outdoor installation. Solar or battery capable.</p>	<ul style="list-style-type: none"> • Power Requirement: < 7 watts, AC or DC operation • 10.1 H × 8.1 W × 4.4 D in (25.7 × 20.6 × 11.2 cm) • ~6 lb (2.7 kg) • UV absorbance 0–1000 ppb O₃ @ 1.5 ppb/2% of reading precision (FEM for 0–500 ppb) • Operating Temperature Range: 0 to 50°C • Measurement Interval: 2 s • Data Outputs: RS232 	<p>[no options available for this model]</p>







Ozone Monitoring and Calibration

Ambient Applications



Model	Description	Specifications	Options
<p><u>106-L</u> <u>Ozone Monitor</u></p> 	<p>FEM single beam UV absorption at 254 nm. Designed as an "ozone monitor on a board" in which nearly all components are mounted directly to the printed circuit board with very few wire connections, making these instruments highly robust and very easy to service. Two 2-level relays for control purposes (four on Industrial model). Long-life pump and wide dynamic range suitable for ambient monitoring as well as workplace health and safety monitoring.</p>	<ul style="list-style-type: none"> • Range 0–20 ppm • FEM 0–500 ppb for 0-40°C • Resolution 0.1 ppb • Precision 1.5 ppb or 2% • Measurement interval 2s • Selectable averaging, units • Low power req. (6 watt) • Operating ranges 0–50°C (0–40°C FEM); 0–13.5 km • Outputs: USB, RS232, LCD display, analog (V/mA) • DewLine™ humidity control • 4.2 lb (1.9 kg) [standard] 2.8 lb (1.3 kg) [OEM] • 3.6 H × 7.9 W × 9.4 L in (9 × 20 × 24 cm) [standard] 	<ul style="list-style-type: none"> • Standard enclosure • Industrial enclosure • OEM • Flow-through configuration • Multichannel (3 or 6) • Particle filter • Exhaust port
<p><u>108-L</u> <u>Ozone Monitor</u></p> 	<p>FEM ozone monitor that offers the same high-quality ozone measurements as the 106-L but is slimmed down and can come with or without a sample pump and enclosure, ready for integration in the user's ozone system. Relay with two setpoints. Lightweight and low power suitable for a variety of research and industrial applications.</p>	<ul style="list-style-type: none"> • Range 0–20 ppm • FEM 0–500 ppb for 0-40°C • Resolution 0.1 ppb • Precision 1.5 ppb or 2% • Measurement interval 2s • Selectable averaging, units • Low power req. (2 watt) • Operating range 0–50°C • Outputs: RS232, analog (V/mA) • DewLine™ humidity control • 2 lb (0.89 kg) • 8.7 L × 4 W × 3 H in (22 × 10 × 7.6 cm) 	<ul style="list-style-type: none"> • Lab bench enclosure w/ miniature air pump • Outdoor enclosure (see AQLite)




Model	Description	Specifications	Options
<p>202 <u>Ozone Monitor</u></p> 	<p>FEM single beam UV absorption at 254 nm for accurate and precise ozone measurements. Lightweight with low power consumption and a quiet, long-life internal air pump. Applications include ambient monitoring in remote locations where power is limited; vertical atmospheric profiling; urban arrays of ground-based ozone monitors; personal exposure monitoring; laboratory studies.</p>	<ul style="list-style-type: none"> • Range 0–20 ppm • FEM 0–500 ppb for 10-40°C • Resolution 0.1 ppb • Precision 1.5 ppb or 2% • Measurement interval 10s • Selectable averaging, units • Low power req. (7.2 watt) • Operating ranges 0–50°C, 0–13.5 km altitude • Outputs: LCD, RS232, analog (V), SD card • DewLine™ humidity control • 5.5 lb (2.5 kg) • 11.8 L × 8.5 W × 3.7 H in (30 × 21.5 × 9.5 cm) 	<ul style="list-style-type: none"> • Cold-weather package (-20 to 50°C) • High-altitude upgrade (25km) • Serial-to-USB converter • Rack-mount
<p>205 <u>Dual-Beam Ozone Monitor</u></p> 	<p>FEM dual beam UV absorption at 254 nm with two detection cells to improve precision, baseline stability, and response time. Fastest ozone monitor on the market, with 2s measurement cycle. Lightweight with low power consumption and a quiet, long-life internal air pump. For research and monitoring applications where high precision and/or fast response are required.</p>	<ul style="list-style-type: none"> • Range 0–20 ppm • FEM 0–500 ppb for 10-40°C • Resolution 0.1 ppb • Precision 1 ppb or 2% • Measurement interval 2s • Selectable averaging, units • Low power req. (8 watt) • Operating ranges 0–50°C, 0–13.5 km altitude • Outputs: LCD, RS232, analog (V), SD card • DewLine™ humidity control • 5.8 lb (2.6 kg) • 11.8 L × 8.5 W × 3.7 H in (30 × 21.5 × 9.5 cm) 	<ul style="list-style-type: none"> • Cold-weather package (-20 to 50°C) • High-altitude upgrade (25km) • Serial-to-USB converter • Rack-mount



Model	Description	Specifications	Options
<p>POM Personal Ozone Monitor</p> 	<p>Handheld FEM single-beam UV absorption at 254 nm, battery operated, “the world’s smallest ozone monitor.” 15-cm folded path length as in our Models 106-L, 202, and 205, achieving similar accuracy and precision. Ideal for personal exposure monitoring, mobile measurements, and applications with strict power/weight/size limitations, such as deployments on balloons and drones/UAVs.</p>	<ul style="list-style-type: none"> • Range 0–500 ppb • FEM 0–500 ppb for 20-30°C • Resolution 0.1 ppb • Precision 1.5 ppb or 2% of reading for 10s cycle • Measurement interval 2s • Selectable averaging • Low power req. (3 watt) • Lithium-ion battery, 5–8 hr • GPS • Operating ranges 10–50°C, 0–13.5 km altitude • Outputs: LCD, RS232, USB • DewLine™ humidity control • Adapters for AC, 12V batt. operation • 1 lb (450 g) • 5 H × 3 W × 1.5 D in (12.7 × 7.6 × 3.8 cm) 	<ul style="list-style-type: none"> • Wall-mount bracket
<p>211 Ozone Monitor 211-G Ozone Monitor</p> 	<p>FEM monitor, high-precision dual-beam UV absorption at 254 nm with gas-phase “scrubberless” technology (211) or our patented graphite scrubber (211-G) for virtually interference-free measurements of ozone. Our highest-precision ozone monitor. ideally suited for measurements of ozone in heavily polluted air where interference is likely from particulates, mercury, or VOCs.</p> <p>The 211-G enables measurements without the use of a nitrous oxide source required for the 211.</p>	<ul style="list-style-type: none"> • Range 0–2 ppm (211) • Range 0–500 ppb (211-G) • FEM 0–500 ppb for 20-30°C • Resolution 0.1 ppb • Precision 0.5 ppb or 1% of reading for 10s cycle • Measurement interval 2s • Selectable averaging, units • Power req.: 12 watt (211), 22 watt (211-G) • Operating ranges 10–50°C, ~0–13.5 km altitude • Outputs: LCD, RS232, analog (V), SD card • DewLine™ humidity control • 14.7 lb/6.7 kg (211); 13.4 lb/6.1 kg (211-G) • 5.5 H × 17 W × 14.5 D in (14 × 43 × 37 cm) 	<ul style="list-style-type: none"> • High-altitude upgrade (0–25 km) • Serial to USB adapter

Model	Description	Specifications	Options
<p>306 <u>Ozone Calibration Source</u></p> 	<p>A portable source of ozone produced by photolysis of O₂ in air at 185 nm, for calibrating any ozone monitor or supplying calibrated ozone for research studies. Use as a transfer standard for your network of ozone monitors. Scheduler function for auto-calibrations up to 10 steps.</p>	<ul style="list-style-type: none"> • Ozone output: 0 ppb and 30–1000 ppb • Precision and accuracy: 2 ppb or 2% of ozone conc. • Response time: <30 s to reach 95% of set output • Flow rate: 3–3.2 LPM • Power req.: 18 watt • 5.6 lb (2.6 kg) • 11 L × 8.5 W × 3.5 H in 	<p>[no options available for this model]</p>
<p>714 <u>NO₂/NO/O₃ Calibration Source</u></p> 	<p>A highly portable transfer standard for three pollutant gases (NO₂, NO, O₃) without the need for a compressed gas cylinder of nitric oxide. Uses UV photolysis at 185 nm to produce NO (from disposable, food-grade N₂O cartridges) and O₃ (from O₂ in air); gas-phase titration of O₃ with excess NO produces NO₂. Programmable, repeatable calibrated gas output for up to 99 customized sequences of the 3 gases, each sequence with up to 15 steps. Economical and convenient as a replacement for multiple other calibrators.</p>	<ul style="list-style-type: none"> • NO₂, O₃: 0–500 ppb • NO: 0–1000 ppb • O₃: 0–500 ppb • Flow rate: ~2.0–2.7 LPM • Precision and accuracy: 2 ppb, or 2% of [NO] or [O₃] • Response time: <30 s to reach 95% of set output • Power req.: 41 watt max during warmup; 11-38 watt operating (dependent on output settings) • Capability for remote operation • Touchscreen interface • 16.6 lb (7.53 kg) • 5.5 H × 17 W × 14.5 D in (14 × 43 × 37 cm) 	<p>[no options available for this model]</p>



Industrial / Workplace Applications

Model	Description	Specifications	Options
<p>106-L Ozone Monitor</p> 	<p>FEM single beam UV absorption at 254 nm. Designed as an "ozone monitor on a board" in which nearly all components are mounted directly to the printed circuit board with very few wire connections, making these instruments highly robust and very easy to service. Two 2-level relays for control purposes (four on Industrial model). Long-life pump and wide dynamic range suitable for ambient monitoring as well as workplace health and safety monitoring.</p>	<ul style="list-style-type: none"> • Range 0–20 ppm • FEM 0–500 ppb for 0–40°C • Resolution 0.1 ppb • Precision 1.5 ppb or 2% • Measurement interval 2s • Selectable averaging, units • Low power req. (6 watt) • Operating ranges 0–50°C (0–40°C FEM); 0–13.5 km • Outputs: USB, RS232, LCD display, analog (V/mA) • DewLine™ humidity control • 4.2 lb (1.9 kg) [standard] • 2.8 lb (1.3 kg) [OEM] • 3.6 H × 7.9 W × 9.4 L in (9 × 20 × 24 cm) [standard] 	<ul style="list-style-type: none"> • Standard enclosure • Industrial enclosure • OEM • Flow-through configuration • Multichannel (3 or 6) • Particle filter • Exhaust port
<p>106-M Ozone Monitor</p> 	<p>As for the 106-L but a shorter optical bench for measurement of higher concentrations. Two 2-level relays for control purposes (four on Industrial model). A common application is off-gas analysis in water treatment plants, before and after ozone destruction.</p>	<ul style="list-style-type: none"> • Range 0–1000 ppm • Resolution 0.01 ppm • Precision 0.01 ppm or 2% of reading • Measurement interval 2s • Selectable averaging, units • Low power req. (6 watt) • Operating range: 0–50°C • Outputs: USB, RS232, LCD display, analog (V/mA) • DewLine™ humidity control • 3.9 lb/1.8 kg [standard] • 2.5 lb/1.1 kg [OEM] • 3.6 H × 7.9 W × 9.4 L in (9 × 20 × 24 cm) [standard] 	<ul style="list-style-type: none"> • Standard enclosure • Industrial enclosure • OEM • Flow-through configuration • Multichannel (3 or 6) • Particle filter • Exhaust port • Corrosion resistant option

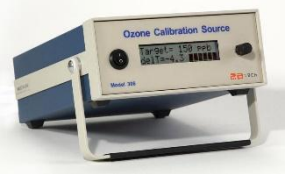

Model	Description	Specifications	Options
<p>106-MH Ozone Monitor</p> 	<p>As for the 106-L but a shorter optical bench for measurement of higher concentrations. Two 2-level relays for control purposes (four on Industrial model). Exhaust port is standard on the 106-MH. Applications include water treatment plants.</p>	<ul style="list-style-type: none"> • Range 0–10,000 ppm • Resolution 0.1 ppm • Precision 0.05 ppm or 2% • Measurement interval 2s • Selectable averaging, units • Low power req. (6 watt) • Operating range: 0–50°C • Outputs: USB, RS232, LCD display, analog (V/mA) • DewLine™ humidity control • Exhaust port • 3.9 lb/1.8 kg [standard] 2.5 lb/1.1 kg [OEM] • 3.6 H × 7.9 W × 9.4 L in (9 × 20 × 24 cm) [standard] 	<ul style="list-style-type: none"> • Standard enclosure • Industrial enclosure • OEM • Flow-through configuration • Particle filter
<p>106-H Ozone Monitor</p> 	<p>Designed specifically for measuring the output of high concentration ozone generators. This model differs from other 106-series ozone monitors in that it is flow through with no air pump and the plumbing is designed for high pressure (up to 50 psig) and partial vacuum. Two relays on standard model, four on Industrial model.</p>	<ul style="list-style-type: none"> • Range 0–20 wt% • Resolution 0.01 wt% • Precision 0.01 wt% or 2% • Measurement interval 2s • Selectable averaging, units • Low power req. (3 watt) • Operating range: 0–50°C • Outputs: USB, RS232, LCD display, analog (V/mA) • Flow rate up to 20 LPM nominal; 55 LPM max • 4.8 lb/2.2 kg [standard] 3.0 lb/1.5 kg [OEM] • 3.6 H × 7.9 W × 9.4 L in (9 × 20 × 24 cm) [standard] 	<ul style="list-style-type: none"> • Standard enclosure • Industrial enclosure • OEM
<p>108 Series Ozone Monitor</p> 	<p>The same high-quality ozone measurements as the 106-series (108-L, -M, -MH, or -H) but slimmed down and available without a sample pump and enclosure, ready for integration in the user's ozone system. Relay with two setpoints. Lightweight and low power.</p>	<ul style="list-style-type: none"> • Measurement specs analogous to the 106 series ozone monitors • Outputs: RS232, analog • DewLine™ humidity control • 2 lb (0.89 kg) [108-L] • 8.7 L × 4 W × 3 H in (22 × 10 × 7.6 cm) • Power req.: 2 watt • FEM for 108-L 	<ul style="list-style-type: none"> • <u>L, M, MH</u>: Lab bench enclosure with miniature air pump • <u>L</u>: Outdoor enclosure (see AQLite)

<p>306 <u>Ozone Calibration Source</u></p> 	<p>A portable source of ozone produced by photolysis of O₂ in air at 185 nm, for calibrating any ozone monitor or supplying calibrated ozone for research studies. Use as a transfer standard for your network of ozone monitors. Scheduler function for autocalibrations up to 10 steps.</p>	<ul style="list-style-type: none"> • Ozone output: 0 ppb and 30–1000 ppb • Precision and accuracy: 2 ppb or 2% of ozone conc. • Response time: <30 s to reach 95% of set output • Flow rate: 3–3.2 LPM • Power req.: 18 watt • 5.6 lb (2.6 kg) • 11 L × 8.5 W × 3.5 H in (29 × 21 × 9 cm) 	<p>[no options available for this model]</p>
<p>714 <u>NO₂/NO/O₃ Calibration Source</u></p> 	<p>A highly portable transfer standard for three pollutant gases (NO₂, NO, O₃) without the need for a compressed gas cylinder of nitric oxide. Uses UV photolysis at 185 nm to produce NO (from N₂O disposable, food-grade cartridges) and O₃ (from O₂ in air); gas-phase titration of O₃ with excess NO produces NO₂. Programmable, repeatable calibrated gas output for up to 99 customized sequences of the 3 gases, each sequence with up to 15 steps. Economical and convenient as a replacement for multiple other calibrators.</p>	<ul style="list-style-type: none"> • NO₂, O₃: 0–500 ppb • NO: 0–1000 ppb • O₃: 0–500 ppb • Flow rate: ~2.0–2.7 LPM • Precision and accuracy: 2 ppb, or 2% of [NO] or [O₃] • Response time: <30 s to reach 95% of set output • Power req.: 41 watt max during warmup; 11-38 watt operating (dependent on output settings) • Remote operation capability • Touchscreen interface • 16.6 lb (7.53 kg) • 5.5 H × 17 W × 14.5 D in (14 × 43 × 37 cm) 	<p>[no options available for this model]</p>


NO / NO₂/ NO_x Monitoring and Calibration

Model	Description	Specifications	Options
<p>405 nm NO₂/NO/NO_x Monitor</p> 	<p>Highly selective direct measurement of NO₂ by absorbance at 405 nm (FEM for a specific range, see specs). Measurement of NO by conversion to O₃. Folded cell achieves a path length of ~2 m. Ideal for applications that require precise and accurate measurement of NO and NO₂, such as air quality monitoring both outdoors and indoors. Its portability and relatively low power consumption make it particularly well suited for field deployments.</p>	<ul style="list-style-type: none"> • Range 0–10,000 ppb (NO₂), 0–2,000 ppb (NO) • FEM for NO₂ (0-500 ppb, 0-40°C) • Resolution 0.1 ppb • Precision <0.5 ppb or 0.5% of reading • Measurement interval 5s • Selectable averaging, units • Power req: 17 watt (max 35 watt during warmup) • Operating ranges 10-50°C • Outputs: LCD, RS232, analog (V), SD card • DewLine™ humidity control • 17 W × 14.5 D × 5.5 H in (43 × 37 × 14 cm) • 18.6 lb (8.4 kg) 	<p>[no options available for this model]</p>
<p>714 NO₂/NO/O₃ Calibration Source</p> 	<p>A highly portable transfer standard for three pollutant gases (NO₂, NO, O₃) without the need for a compressed gas cylinder of nitric oxide. Uses UV photolysis at 185 nm to produce NO (from N₂O disposable, food-grade cartridges) and O₃ (from O₂ in air); gas-phase titration of O₃ with excess NO produces NO₂. Programmable, repeatable calibrated gas output for up to 99 customized sequences of the 3 gases, each sequence with up to 15 steps. Economical and convenient as a replacement for multiple other calibrators.</p>	<ul style="list-style-type: none"> • NO₂, O₃: 0–500 ppb • NO: 0–1000 ppb • O₃: 0–500 ppb • Flow rate: ~2.0–2.7 LPM • Precision and accuracy: 2 ppb, or 2% of [NO] or [O₃] • Response time: <30 s to reach 95% of set output • Power req.: 41 watt max during warmup; 11-38 watt operating (dependent on output settings) • Capability for remote operation • Touchscreen interface • 16.6 lb (7.53 kg) • 5.5 H × 17 W × 14.5 D in (14 × 43 × 37 cm) 	<p>[no options available for this model]</p>

Calibrators

Model	Description	Specifications	Options
<p>306 <u>Ozone Calibration Source</u></p> 	<p>A portable source of ozone produced by photolysis of O₂ in air at 185 nm, for calibrating any ozone monitor or supplying calibrated ozone for research studies. Use as a transfer standard for your network of ozone monitors. Scheduler function for autocalibrations up to 10 steps.</p>	<ul style="list-style-type: none"> • Ozone output: 0 ppb and 30–1000 ppb • Precision and accuracy: 2 ppb or 2% of ozone conc. • Response time: <30 s to reach 95% of set output • Flow rate: 3–3.2 LPM • Power req.: 18 watt • 5.6 lb (2.6 kg) • 11 L × 8.5 W × 3.5 H in (29 × 21 × 9 cm) 	<p>[no options available for this model]</p>
<p>714 <u>NO₂/NO/O₃ Calibration Source</u></p> 	<p>A highly portable transfer standard for three pollutant gases (NO₂, NO, O₃) without the need for a compressed gas cylinder of nitric oxide. Uses UV photolysis at 185 nm to produce NO (from N₂O disposable, food-grade cartridges) and O₃ (from O₂ in air); gas-phase titration of O₃ with excess NO produces NO₂. Programmable, repeatable calibrated gas output for up to 99 customized sequences of the 3 gases, each sequence with up to 15 steps. Economical and convenient as a replacement for multiple other calibrators.</p>	<ul style="list-style-type: none"> • NO₂, O₃: 0–500 ppb • NO: 0–1000 ppb • O₃: 0–500 ppb • Flow rate: ~2.0–2.7 LPM • Precision and accuracy: 2 ppb, or 2% of [NO] or [O₃] • Response time: <30 s to reach 95% of set output • Power req.: 41 watt max during warmup; 11–38 watt operating (dependent on output settings) • Capability for remote operation • Touchscreen interface • 16.6 lb (7.53 kg) • 5.5 H × 17 W × 14.5 D in (14 × 43 × 37 cm) 	<p>[no options available for this model]</p>

Mercury

Model	Description	Specifications	Options
<p><u>HERMES Personal Mercury Monitor</u></p> 	<p>Handheld battery-operated monitor for gas-phase mercury, based on UV absorption at 254 nm. 15-cm folded path length for highly sensitive measurements. Ideal for personal exposure monitoring in the workplace and industrial settings, mobile measurements, and applications with strict power/weight/size limitations, such as deployments on balloons and drones/UAVs.</p>	<ul style="list-style-type: none"> • Range: 0–2000 $\mu\text{g}/\text{m}^3$ • Resolution 0.1 $\mu\text{g}/\text{m}^3$ • Precision: 0.1 $\mu\text{g}/\text{m}^3$ or 2% of reading • Measurement interval: 2 s • Selectable averaging, units • Power req.: 3 watt • Lithium-ion battery, 5–8 hr • GPS • Operating ranges 0–50°C, 0–13.5 km altitude • 0.75 lb (340 g) w/o battery (1.0 lb/450 g with battery) • 4 H × 3 W × 1.5 D in (10.2 × 7.6 × 3.9 cm) 	<ul style="list-style-type: none"> • Wall-mount bracket

2B Tech's Published Papers on Our Instruments

[Portable Calibrator for NO Based on the Photolysis of N₂O and a Combined NO₂/NO/O₃ Source for Field Calibrations of Air Pollution Monitors](#), J.W. Birks, A.A. Turnipseed, P.C. Andersen, C.J. Williford, S. Strunk, B. Carpenter and C.A. Ennis, *Atmospheric Measurement Techniques* **13**, 1001-1008 (2020). [Model 714 NO₂/NO/O₃ Calibration Source]

[Global Ozone \(GO3\) Project and AQTreks: Use of Evolving Technologies by Students and Citizen Scientists to Monitor Air Pollutants](#), J.A. Ellenburg, C.J. Williford, S.L. Rodriguez, P.C. Andersen, A.A. Turnipseed, C.A. Ennis, K.A. Basman, J.M. Hatz, J.C. Prince, D.H. Meyers, D.J. Kopala, M.J. Samon, K.J. Jaspers, B.J. Lanham, B.J. Carpenter and J.W. Birks, *Atmospheric Environment X* **4**, 100048 (2019). [Personal Ozone Monitor, Personal Air Monitor, Model 106-L Ozone Monitor]

[Folded Tubular Photometer for Atmospheric Measurements of NO₂ and NO](#), J.W. Birks, P.C. Andersen, C.J. Williford, A.A. Turnipseed, S.E. Strunk, C.A. Ennis and E. Mattson, *Atmospheric Measurement Techniques* **11**, 2821-2835 (2018). [Model 405 nm NO₂/NO/NO_x Monitor]

[Portable Ozone Calibration Source Independent of Changes in Temperature, Pressure, and Humidity for Research and Regulatory Applications](#), J.W. Birks, C.J. Williford, P.C. Andersen, A.A. Turnipseed, S. Strunk and C.A. Ennis, *Atmospheric Measurement Techniques* **11**, 4797-4807 (2018). [Model 306 Ozone Calibration Source]

[Use of a Heated Graphite Scrubber as a Means of Reducing Interferences in UV-Absorbance Measurements of Atmospheric Ozone](#), A.A. Turnipseed, P.C. Andersen, C.J. Williford, C.A. Ennis and J.W. Birks, *Atmospheric Measurement Techniques* **10**, 2253-2269 (2017). [Model 211-G Ozone Monitor]

[Miniature Personal Ozone Monitor Based on UV Absorbance](#), P.C. Andersen, C.J. Williford and J.W. Birks, *Analytical Chemistry* **82**, 7924-7928 (2010). [Personal Ozone Monitor (POM)]

[Mechanism and Elimination of a Water Vapor Interference in the Measurement of Ozone by UV Absorbance](#), K.L. Wilson and J.W. Birks, *Environmental Science and Technology* **40** (20), 6361-6367 (2006). [DewLine™ used in several of our monitors]

FEM Designations

Model 106-L Ozone Monitor, EQOA-0914-218

Model 108-L Ozone Monitor, EQOA-0914-218

Model 202 Ozone Monitor, EQOA-0410-190

Model 205 Ozone Monitor, EQOA-0410-190

Personal Ozone Monitor, EQOA-0815-227

Model 211 Ozone Monitor, EQOA-0514-215

Model 211-G Ozone Monitor, EQOA-0514-215

Model 405 nm NO₂/NO/NO_x Monitor, EQNA-0217-243

The FEM descriptions may be found on pages 32 and 47 of the EPA's list of designated Reference and Equivalent Methods, linked [here](#).

Patents on 2B Tech's Instruments and Techniques

M. J. Bollinger, J. W. Birks and J. K. Gregory, "Nitric Oxide Detector," [U.S. Patent No. 6,100,096](#), issued August 8, 2000.

M. J. Bollinger, J. W. Birks and J. K. Robinson, "Nitric Oxide Gas Detector," [U.S. Patent No. 6,635,415](#), issued October 21, 2003.

J. W. Birks and M. J. Bollinger, "Method and Apparatus to Detect a Gas by Measuring Ozone Depletion," [U.S. Patent No. 7,045,359](#), issued May 16, 2006.

J. W. Birks, B. Xiong, C. M. Ford, P. C. Andersen and C. J. Williford, "Aqueous Ozone Monitor Utilizing Gas Stripping," [U.S. Patent No. 9,423,340 B2](#), issued August 23, 2016.

P. C. Andersen, C. J. Williford, and J. W. Birks, "Method to Produce a Calibration, Reagent or Therapeutic Gas by Exposing a Precursor Gas to Ultraviolet Light," [U.S. Patent No. 10,207,927](#), issued February 19, 2019.

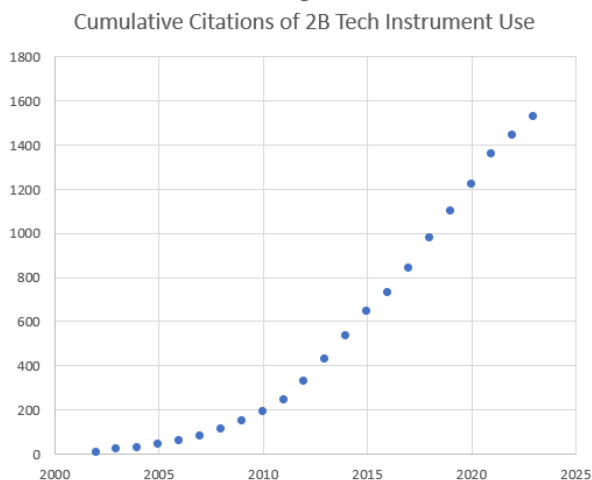
J. W. Birks, A. A. Turnipseed, P. C. Andersen and C. J. Williford, "Heated Graphite Scrubber to Reduce Interferences in Ozone Monitors," [U.S. Patent No. 10,295,519](#), issued May 21, 2019.

J. W. Birks, P. C. Andersen, A. A. Turnipseed, and C. J. Williford, "Method for Measuring Air Pollutants Using a Folded Tubular Photometer," [U.S. Patent No. 10,684,215 B2](#), issued July 16, 2020.

J. W. Birks, P. C. Andersen, C. J. Williford, and A. A. Turnipseed, "Enclosure for Mobile Monitoring of the Composition and Properties of Ambient Air," [U.S. Patent No. 11,614,384 B2](#), issued March 28, 2023.

Citations of 2B Tech Instruments

More than 1500 papers, Ph.D. and Masters theses, presentations and posters have cited the use of instruments made by 2B Technologies. Our instruments are used in a wide variety of applications, such as atmospheric research, air monitoring, industrial research and process monitoring, chemistry and medical research, food preservation processes, water treatment process monitoring, education, community projects, and many more. Our website lists and gives links to all these papers. Visit our website to get ideas on how our instruments could be used for your application: <https://2btech.io/citations/>



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