

Project

Personal Ozone Monitor™ (POM)™ and Application to GO3 Treks

John Birks 2B Technologies, Inc. GO3 Foundation 100



Personal Ozone Monitor[™] (POM[™])





Size Comparison: 2B Tech POM Model 202 Thermo Fisher Model 49i Introduced in 2012
FEM: EQOA-0815-277
> 140 sold

2B Technologies



Ozone Monitors



Model 211 Scrubberless Ozone Monitor

Model 211



Models 202 & 205

Personal Ozone Monitor™ POM™



Models 106-L, -M, -MH, -H for industrial ozone applications Range: 1 ppb to 20 wt%



UV Absorbance Based on Beer-Lambert Law



UV Absorbance Based on Beer-Lambert Law



POM Specifications

Measurement Principle	UV Absorption
Precision (1 σ , rms noise)	1.5 ppb or 2% of reading
Accuracy	1.5 ppb or 2% of reading
Linear Dynamic Range	0-10,000 ppb (10 ppm)
Measurement Intervals	2 s, 10 s
Response Time	4 s or 20 s (to 100% of signal)
Flow Rate	~0.8 L/min (0.5 L/min required)
Averaging Time Choices	2 s, 10 s, 1 min, 5 min, 1 hr
Data Storage	8, 192 lines (~1 day for 10 s avg)
Power	7-24 V dc, 3.0 watt
Battery Life	12 hr
Size	4 x 3 x 1.5 inches
Weight	0.75 lb (0.34 kg)

POM vs. AQ-SPEC FEM



South Coast Air Quality Management District, Air Quality Sensor Performance Evaluation Center (AQ-SPEC) http://www.aqmd.gov/docs/default-source/aq-spec/field-evaluations/2b-technologies-pom---field-evaluation.pdf?sfvrsn=2

Ambient Air Applications







NFS/NPS

NOAA "Suitcase" Flights, Pieter Tans Group





Cloud Lab Dirigible

NASA Global Hawk RPV



O-Buoy: Network of Arctic Ocean Chemical Sensors







TRJ Environmental: Profiling Using a POM on a Quadcopter



NASA Ames Dassault/Dornier Alpha Jet



Jack Fishman: "Ozone Gardens"

EPA Village Green Project: Solar-Powered Air Pollution Monitors on a Park Bench

... and many more applications, especially in remote locations where there are size, weight and power limitations.



What is the GO3 Project?

A STEM project for middle and high schools where students measure air pollutants at their schools and share and discuss their data with other students around the world.



Global Ozone Project







Participating Schools





Global Ozone Project Package



- > UV Ozone Monitor
- Davis Weather Station
- Davis Data Logger
- Computer
- 12-h Battery
- 50 ft. Inlet Tubing
- Accessories
- Software
- Care Package



Pinedale High School, WY March 2011





Comparison of Pinedale GO3 Station with nearby State Monitoring Station





- Loan ozone and BC personal monitors to schools for 3-4 weeks each
- Students design and conduct their own monitoring experiments
- Data are uploaded to the GO3 Database and displayed on Google Earth within a blog









Data are displayed on Google Earth within a blog where students, teachers and scientists discuss the results.

4 comments

Jessica Hatz likes this



Jessica Hatz Wow! It looks like the boat traffic really increased black carbon concentrations at certain points. This is only the third time anyone has measured black carbon concentrations near boat traffic-- great job ;)

Mon at 11:54 AM



Will Enterline This is interesting because when you think of BC pollution you don't think of it coming from boats as well, COOL! Mon at 4:22 PM

beau sivy Its amazing that the black carbon spiked to 24125 ng/m3. do you think its from the boats or was there an error? 1 hour ago

i nour ug



Cristofer R. Badillo Olguin I find it very interesting how the black carbon is very low by the river but when it gets by the basketball court and track is very high! Its really high! Especially the little part right beside the boat. At some points the ozone became higher than the black carbon and i wonder why.

1 hour ago





The Future of GO3 Treks Personal Air Monitoring Module (PAMM)





Personal Air Monitoring Module (PAMM) Standard Sensors



Alphasense CO & NO₂

Plantower PMS1300 Particle Count & PM2.5

ELT S-300 CO₂



Thank You 😳



