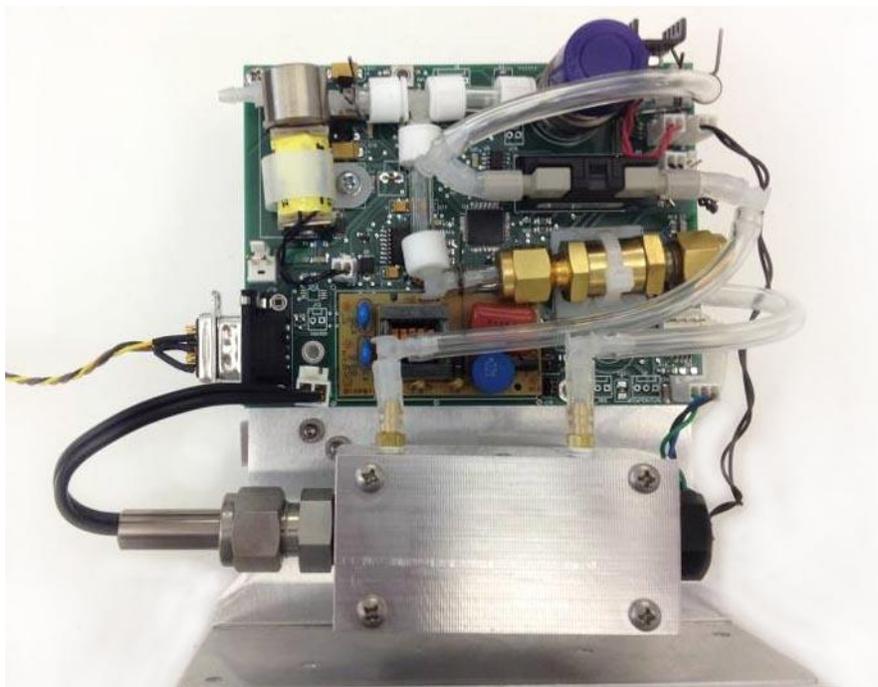


GPT Scrubberless Module™

Convert Your Teledyne-API or Thermo-Fisher Ozone Monitor to Eliminate Interferences from Mercury and Aromatic VOCs



The GPT Scrubberless Module™ allows you to convert conventional ozone monitors such as the Teledyne-API Model 400 series (and Thermo-Fisher Model 49 series in the near future), to our new gas phase titration (GPT) technology ([US Patent # 8,395,776 B2](#)). This "scrubberless" module replaces the traditional solid-phase scrubber and removes interferences from mercury, aromatic VOCs and other UV-absorbing compounds. On high ozone days in highly polluted cities, such interferences can contribute up to a few ppb of false ozone reading. In many cases, a region can be out of compliance with the ozone standard due to measurement errors.

This interference-free technology is incorporated into our Model 211 Ozone Monitor, but with the GPT Module you can convert your traditional ozone monitor to be interference free as well. For example data demonstrating the advantages of this technology, which include

high selectivity against potential indoor and outdoor interferences and excellent agreement with the EPA Federal Reference Method, see: [Model 211 Ozone Monitor](#).

Theory

Conventional ozone monitors based on UV absorbance measure ozone by comparing the transmission of light through a detection cell. Light intensity measurements are made with ozone present (I) and with ozone removed (I_0), and the ozone concentration is calculated using the Beer-Lambert Law. Conventional ozone monitors remove ozone for the I_0 measurement by passing the sample air flow through a solid scrubber (e.g., hopcalite or a series of metal oxide screens). Ideally, the solid-phase scrubber would destroy ozone but pass mercury and other UV-absorbing compounds. In that case, the values of I and I_0 would be reduced by the same amount, and the interfering compounds would not affect the ozone measurement. In practice, however, mercury and aromatic compounds such as benzene, toluene, xylenes, phenols, etc. either adsorb or react at the solid-phase scrubber surface. As a result, conventional ozone monitors may report erroneously high ozone values by up to a few ppb on highly polluted days and possibly cause a region to be out of compliance with the EPA's ozone standard. The 2B Tech Model 211 Ozone Monitor removes interferences from all UV absorbing compounds and mercury by using nitric oxide (NO) as a GPT (gas phase titration) reaction in place of a solid-phase scrubber according to the well known reaction:



Nitric oxide can be added directly from a compressed cylinder or by photolysis of nitrous oxide (N_2O) provided from a lecture bottle or N_2O cartridge. The N_2O cartridge method eliminates the need for maintaining cylinders of toxic NO gas. Nitrous oxide is a relatively non toxic (used as an anesthetic at very high concentrations) gas sold as a consumer product as "Whippit" cartridges for making whipped cream. The same method for producing NO from N_2O is used in our [Model 408 Nitric Oxide Calibration Source](#). Nitric oxide may also be supplied from an external NO gas cylinder.

Features

- Converts your conventional ozone monitor to new scrubberless technology
- Removes interferences from Hg and UV-absorbing compounds such as aromatic VOCs
- A more accurate ozone measurement could bring your region into compliance
- Includes [DewLine™](#) for elimination of any water vapor interference, a unique feature of 2B Tech instruments
- Especially useful for indoor air measurements where UV-absorbing interferences are more abundant

- No change in your ozone monitor operational characteristics
- Our custom installation includes fresh calibration to a NIST-traceable standard

System Includes

- Custom Installation of GPT Scrubberless Module
- NIST-traceable calibration and certificate