

# Portable Ozone Monitoring with the Model 430

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## Ozone as a Harmful Pollutant

Air pollution and the quality of the air we breathe is an important public health topic today. Several gas species (criteria pollutants and toxics) along with dust particles (PM<sub>10</sub> and PM<sub>2.5</sub>) are monitored on a continuous basis and the results are published by state and local air quality agencies.

One of the gases regularly monitored is 'bad' ozone, or ground-level ozone. Unlike 'good' ozone which resides in the upper atmosphere and protects us from dangerous ultraviolet (UV) rays, ground-level ozone is harmful and created when Volatile Organic Compounds (VOCs) and Nitrogen Oxides (NO<sub>x</sub>) emitted from motor vehicle exhaust, industrial facilities, solvent vapors and other man-based processes, react in the presence of sunlight. This type of ozone can cause a variety of health-related problems in people, animals, plants and sensitive ecosystems.

## Ozone Measurement Methods

Increased knowledge of the effects of ozone on human health and our environment has created a demand for low cost ambient ozone *sensors* that can be easily installed in neighborhoods and communities across the world. These low cost sensors typically use electrochemical or heated metal oxide measurement technologies, which are simple, portable, very low cost, and consume little power.

However, these low cost sensors are also prone to common interferences such as variations in ambient temperature, relative humidity, and the presence of other gases which can lead to errors in the assessment of ambient ozone concentrations. Thus, when ambient levels of ozone measured by these sensors are compared to the data collected by local regulatory agencies, there can be noticeable differences. The discrepancy in measurements can incite a call to the air quality agency in the form of a complaint. The agency is then forced to deploy certified ozone *monitors* to verify the agency readings are correct. These certified instruments utilize more accurate UV-absorption technology; however, they are large and require infrastructure to be set up and operated properly.

A quick, simple and more cost-effective solution is needed.



Figure 1: Teledyne API Model 430 Compact Ozone Monitor

### Accurate and Portable Ozone Monitor

Teledyne API developed an accurate, portable, and easy to deploy ozone instrument: the [Model 430 Compact Ozone Monitor](#). The Model 430 uses the traditional UV-absorption principle to produce accurate and stable measurements of ozone in ambient air. This proven technology and performance has allowed the Model 430 to become officially designated as the US EPA-approved automated equivalent method [EQOA-1015-229](#) for ozone measurement as defined in 40 CFR Part 53.

### Flexible and Easy to Set Up

In addition to measurement accuracy, the lightweight and compact design make the Model 430 completely portable. Low power requirements and a 12V dc input allow the 430 to be powered by solar panels, batteries or even a car adapter. An optional external battery pack will keep the 430 operating for up to 14 hours.

After applying power, the 430 just needs a few minutes to warm up and it's ready to go. Record the results on an SD card by using

the rear SD slot, or output to a simple digital (RS-232) or analog data acquisition system. The instrument handle easily converts to a stand for simple transport and set up from location to location.

Within minutes, the 430 can be set up and collecting regulatory-approved ozone measurements without the cost and time required to deploy a complete mobile ambient monitoring station. Combining portability with accuracy, the 430 ozone monitor can be used to help validate measurements from low cost sensors quickly and easily, providing a 'ground truth' reference point for ambient ozone measurement data.

The Teledyne API Model 430 is a great solution to prove ambient air quality reports are accurate when using the lower cost neighborhood sensors. If needed, TAPI technical support is available anytime during normal business hours by phone or email and is FREE for the life of the instrument. TAPI's expert technical support engineers can assist you with anything from basic troubleshooting to service notes that will enhance your experience and keep your instrument operating. They also offer factory and on-site training that can be tailored to the user's experience level.

To discover all the benefits of the Model 430 and other instruments, please contact Teledyne API Sales at: [api-sales@teledyne.com](mailto:api-sales@teledyne.com) or visit our website at [www.teledyne-api.com](http://www.teledyne-api.com).