TechTIPs

The latest from Photovac

Volume 8, Number 1

2020PRO Photoionization Monitor Operational Reference Guide

INTRODUCTION

The 2020PRO measures the concentration of airborne gases and vapors that can be ionized by a photoionization detector. The 2020PRO automatically displays and can record these concentrations. The 2020PRO can detect thousands of different types of airborne gases and vapors and its response depends on the characteristics as well as the concentration of each compound.

Please Note: The 2020PRO does not distinguish one type of compound from another, but displays a number indicating the total concentration of all photoionizable compounds in the sample.

This TechTIP is a reference guide for set up and operation of the 2020PRO Photoionization Air Monitor. For more detailed information, please refer to the 2020PRO User's Manual.

OPERATIONAL CHECK LIST

Before beginning field work, set up and calibrate the 2020PRO for your particular application. To ensure the instrument is in working order before heading into the field:

1. Ensure the battery pack is fully charged. If you are unsure about the status of the battery, replace the battery pack with one that is fully charged. Refer to the User's Manual for detailed instructions for charging the battery.
2. Select the correct operating mode: Logging Off, Tag, or Interval mode. The current mode is indicated in the upper right-hand corner of the 2020PRO display. Refer to Technical Tip Volume 8 Number 3 for an in-depth discussion of the three modes of operation.
3. Calibrate the 2020PRO as outlined in the section below.
4. After calibration is complete, sample the calibration gas and the bag of zero air to ensure the 2020PRO has been calibrated correctly.

CALIBRATION

The recommended calibration interval for the 2020PRO is the start of each workday and after eight hours of operation. Calibration is required to compensate for the 2020PRO output changes due to inlet filter restriction, ionization chamber contamination, lamp cleanliness, pump wear and other factors.

In situations where only a single pure compound is present in air, the 2020PRO should be calibrated with a standard of that specific compound as span gas. The 2020PRO's 15 memory slots can be used to store calibration information for 15 different span gases.

It is often impractical to carry a range of different standards into the field. Approximate results can be obtained by calibrating the 2020PRO with the recommended span gas and entering the appropriate response factor. The response factor is based on the ratio of the response of the specific compound to the response of the span gas. The response factor multiplies the 2020PRO's reading, then displays and records it. Please refer to Technical Tip Volume 8 Number 5 for a complete list of response factors.

The 2020PRO readings are always relative to the calibration gas. After calibration with isobutylene, the 2020PRO will respond directly in units equivalent to isobutylene. Most volatile organic compounds will be detected by the 2020PRO. It cannot distinguish between isobutylene and other ionizable compounds. A reading of 10 ppm indicates all ionizable compounds that are present have generated an ion current proportional to 10 ppm of isobutylene. The reading is actually 10 ppm isobutylene equivalent units. The 2020PRO readings give an indication of the total ionizables present and their concentration relative to the calibration gas.

Please Note: The 2020PRO will always detect all ionizable compounds present in a sample regardless of the response factor (RF) selected.

The 2020PRO must be calibrated in order to display concentration in ppm units equivalent to the calibration gas. First, a supply of zero air, which contains no ionizable gases or vapors, is used to set the 2020PRO's zero point. Then, a calibration gas, containing a known concentration of a photoionizable gas or vapor, is used to set the sensitivity.

Clean indoor ambient air may be substituted for a cylinder of zero air. Due to the 2020PRO's sensitivity, outdoor air is usually unsuitable for calibration. For best accuracy, use a commercial source of zero grade air and a second regulator. Zero air should have not more than 0.1 ppm total hydrocarbons (THC).

Please Note: Disconnect the 2020PRO from the AC adapter before beginning calibration.

Calibrating the 2020PRO with the Flow-Match Regulator

1. Ensure that the short sample probe is connected to the 2020PRO inlet. If you are using the long probe for sampling, then ensure the long probe is connected to the 2020PRO.

Please Note: Ensure the sample probe is free of any contamination as this will affect the calibration.

2. Press the CAL key.

3. Follow the instructions on the display and connect the 2020PRO to zero air or leave the instrument unconnected so it can sample clean ambient air. Then press the

"Next" key. The 2020PRO will take 60-90 seconds to set the zero point for calibration.

4. The 2020PRO display will show "Zero air calibrated. Continue calibration?" Press the "Next" key.

5. Enter the span gas concentration if the concentration displayed on the 2020PRO is different than the concentration of the span gas cylinder. Press the "New" key and follow the display prompts. If the span concentration matches the span gas cylinder concentration, press the "Next" key. To exit calibration, press the "Cancel" key.

6. Ensure the calibration gas cylinder is upright and open the regulator by turning the valve counter clockwise. Open the regulator until the ball is 1/8" (3mm) from its rest position.

Please Note: If you are not using the Photovac Flow-Match Regulator, ensure that the inlet pressure is less than 5 psi when calibrating.

7. The 2020PRO will take 60-90 seconds to set the span set point. When finished with the calibration, the 2020PRO will display "Calibration complete".

Calibrating the 2020PRO with a Gas Bag

1. Ensure the short sample probe is connected to the 2020PRO inlet. If you are using the long probe for sampling, then ensure the long probe is connected to the 2020PRO.

Please Note: *Ensure the sample probe is free of any contamination as this will affect the calibration*

2. Press the CAL key.

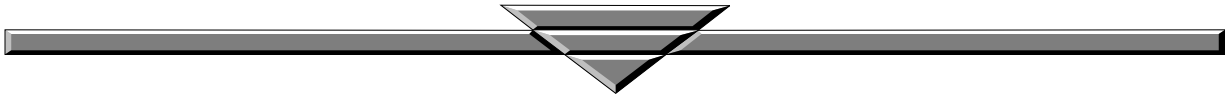
3. Follow the instructions on the display and connect the 2020PRO to zero air sample bag or leave the instrument unconnected so it can sample clean ambient air. Then press the "Next" key. The 2020PRO will take 60-90 seconds to set the zero point for calibration.

4. The 2020PRO display will show "Zero air calibrated. Continue calibration?" Press the "Next" key.

5. Enter the span gas concentration if the concentration displayed on the 2020PRO is different than the concentration of the span gas cylinder. Press the "New" key and follow the display prompts. If the span concentration matches the span gas cylinder concentration, press the "Next" key.

6. Connect the 2020PRO to the sample bag containing the span gas. The 2020PRO will take 60-90 seconds to set the span set point. When finished with the calibration, the 2020PRO will display "Calibration complete".

For further information contact your area representative or Photovac:



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