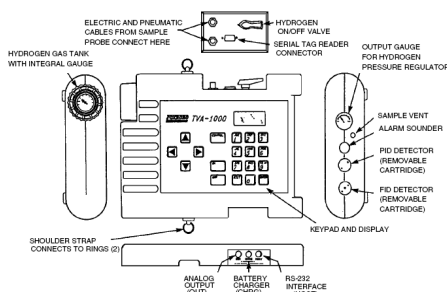


TVA-1000B Toxic Vapor Analyzer (PID/FID)

GENERAL INFORMATION

Equipment Name:	TVA-1000 Toxic Vapor Analyzer
Model:	1000B
Manufacturer:	Thermo Fisher Scientific, Inc.
National Manufacturer Contact:	Telephone: 888-643-4968 E-mail: lori.gorski@thermofisher.com Website: http://www.thermofisher.com



NOTE: Guides are to be used by trained personnel only and DO NOT replace the manufacturer's operations or technical manuals. These guides were developed by field personnel for utilization by EPA and their contractors and are helpful in quick start-up and operations. Various limitations have been identified through the experience of the development group. Different makes, models, and updates to this equipment may change the limitations. It is recommended that calibration, maintenance, and use be recorded in a logbook. Additional product information may be found in the accompanying Equipment Operating Guide.

SPECIFICATIONS

Uses:	The TVA-1000 Toxic Vapor Analyzer, shown above, is an organic / inorganic vapor monitor for the gas survey industry. This analyzer uses either a flame ionization detector (FID), a photo-ionization detector (PID), or both. The vapor concentration may be read immediately on either of two displays — one mounted directly on the hand-held sample probe and the other on the instrument sidepack itself. Vapor concentration can be displayed on both displays in either parts per million (ppm), parts per billion (ppb), or percent concentration (%).
Limitations:	<ol style="list-style-type: none"> 1. The FID requires >16% oxygen to maintain the hydrogen flame. If there is not sufficient amount of oxygen, the flame will go out. 2. Neither detector is compound specific. PID is calibrated to isobutylene. The FID is calibrated to methane. Other compounds have different response factors for each detector. 3. Low oxygen can also effect the characteristics of the flame, causing false elevated readings. 4. If the ionization potential of a compound is higher than the lamp energy, the compound may not be detected. 5. PID has a smaller dynamic range, and is not the best choice for measuring high concentrations of vapors. 6. PID is susceptible to interference from water vapor more so than the FID. 7. As the unit ages, the PID lamp energy may decrease, so compounds with ionization energy near the lamp energy may not be detected. 8. PID lamp requires periodic cleaning depending on operating conditions. 9. Detection of chemical warfare agent vapors is unreliable, even if instrument is calibrated. 10. Must follow proper shipping instructions due to the hydrogen tank. The hydrogen storage tank needs to be shipped as dangerous goods. Air Cargo Only 1049 "Hydrogen, Compressed".
Response Range:	PID Instrument: 0.5 - 2,000 ppm isobutylene, accurate to 500 ppm isobutylene, Min.: 100 ppb benzene FID Instrument: 1.0 - 50,000 ppm methane, accurate to 10,000 ppm methane, Min: 300 ppb hexane

Alarm Level:	Set by user: High, Low, STEL.
Product Safety:	FM: Intrinsically safe for Class 1, Division 1, Groups A, B, C and D. Hydrogen cylinders require special shipping as dangerous goods, UN 1049.
Battery:	The TVA-1000B operates on a rechargeable nickel cadmium battery. When the battery is fully charged, it will last a minimum of eight hours of continuous use at 20°C. Extreme temperatures, hot or cold, and use of the backlight will shorten the run time. The battery does not need to be removed from the instrument to be charged. A fully discharged battery will take approximately 16 hours to recharge completely.
Calibration:	Annual Manufacturer Calibration, check calibration date on a tag or sticker. Capable of multipoint and multiple response factors/curves calibrations. Instrument alerts user if calibration is bad.

QUICK START GUIDE

Prior to Starting:	1.	Charge battery. Connect sample probe. Fill/install hydrogen tank.
	2.	Open the red hydrogen valve located on the side of the unit by turning the handle to the “ON” position. Let unit sit for approximately 5 minutes, so hydrogen can stabilize in unit.
Start-up	1.	Press “ON” button until unit beeps and “MAIN MENU” appears on screen.
	2.	Press “CONTROL”.
	3.	Press “3” to ignite FID. (unit should pause and two audible pops may be heard, indicating flame is lit) If ignition fails, wait 5 minutes, and then press “3” to ignite FID.
	4.	Press “1” to initiate run. Press and hold “EXIT” to stop run and return to the “MAIN MENU”.
Calibration:	<i>NOTE: Prior to performing calibration, the instrument must be on and warmed up for approximately 30 minutes. The pump must be ON, the PID lamp must be ON, and the FID must be ignited throughout the warm-up period.</i>	
	1.	Press “2” to enter Setup.
	2.	Press “1” to Calibrate.
	3.	Press “2” to enter span concentration. Enter the concentration of the span gas being used. (1=Both, 2=PID, 3=FID) Use the “▲ ▼” keys to select units of measurement. (ppm, ppb, %) and key in numbers using number keypad on unit. “”Press “ENTER” to accept.
	4.	Press “3” to zero the unit. (1=Both, 2=PID, 3=FID)
	5.	Press “1” to zero both the PID and the FID. Connect Zero Gas to probe or use ambient air. Press “ENTER” to start. Wait for readings to stabilize and press “ENTER” to accept, and follow the instructions on screen to save values.
	6.	Press “4” = Span.
	7.	Press “2” = PID, apply the appropriate span gas, 100 ppm Isobutylene to probe (using a clean and labeled Tedlar bag) and then press “ENTER”, wait for reading to stabilize and press “ENTER” to accept. Follow the instructions on screen to save values.
	8.	Repeat step 6 & 7 choosing “3”=FID and using 100ppm Methane span gas instead of Isobutylene.
	9.	Press “EXIT” 2 times to return to the “MAIN MENU”.
	10.	Press “1” = RUN, You are now in the “SURVEY MODE”.
	11.	Press and hold “EXIT” to stop run and return to the “MAIN MENU”.
Turn Off:	1.	Press and hold the “OFF” key until unit turns off.
	2.	With FID versions you must also shut off the hydrogen valve so the tank does not deplete. Removing hydrogen tank also reduces chances of hydrogen leaking from tank.