MERCURY INSTRUMENTS
ANALYTICAL TECHNOLOGIES

# Mercury Tracker 3000 IP

## Portable Mercury Vapor Analyzer for Air and Other Gases


- Health & Safety
- Occupational Hygiene
- Work Place Monitoring
- Mercury Spills Screening
- Mercury Surveys
- Investigation of Contaminated Sites
- Environmental Monitoring
- Hazardous Waste Inspection

# The Mercury Tracker 3000 IP

- **Direct reading mercury vapor meter**
- **Highly accurate detection method: atomic absorption (AAS)**
- **Continuous operation (no cycles)**
- **Portable and easy to use**
- **Water proof for field operation**
- **Tropicalized and corrosion resistant design**
- **Integrated battery for 6 hours operation**
- **Measuring ranges 0-100 / 0-1000 / 0-2000 µg/m³**
- **High analytical performance: 0.0001 mg/m³ detection limit**
- **Integrated data logger to record measurements**


## Measuring principle

A maintenance-free membrane pump continuously draws the sample gas through the detector. The mercury concentration is measured in an optical cell entirely made of a high purity grade fused silica. Light absorption measurement takes place at a wavelength of 253.7 nm. This so-called "cold vapor" measuring method is outstanding sensitive for mercury determination and has been used successfully for many years.

## Applications

The Mercury Tracker 3000 IP serves for precise and accurate measurement of the mercury vapor concentration in air and other gases. The Mercury Tracker 3000 IP sets the highest standard for portable mercury screening and is used for different applications including:

- **Health & Safety**
- **Occupational Hygiene**
- **Work Place Monitoring**
- **Mercury Spills Screening**
- **Mercury Surveys**
- **Investigation of Contaminated Sites**
- **Environmental Monitoring**
- **Hazardous Waste Inspection**

## Analytical Performance

The Mercury Tracker 3000 IP uses a high-frequency driven electrodeless mercury discharge lamp (EDL) as UV source. It generates emission lines of an extremely narrow bandwidth which are congruent with the absorption lines of the Hg atoms to be measured. Cross-sensitivities are thus minimized.

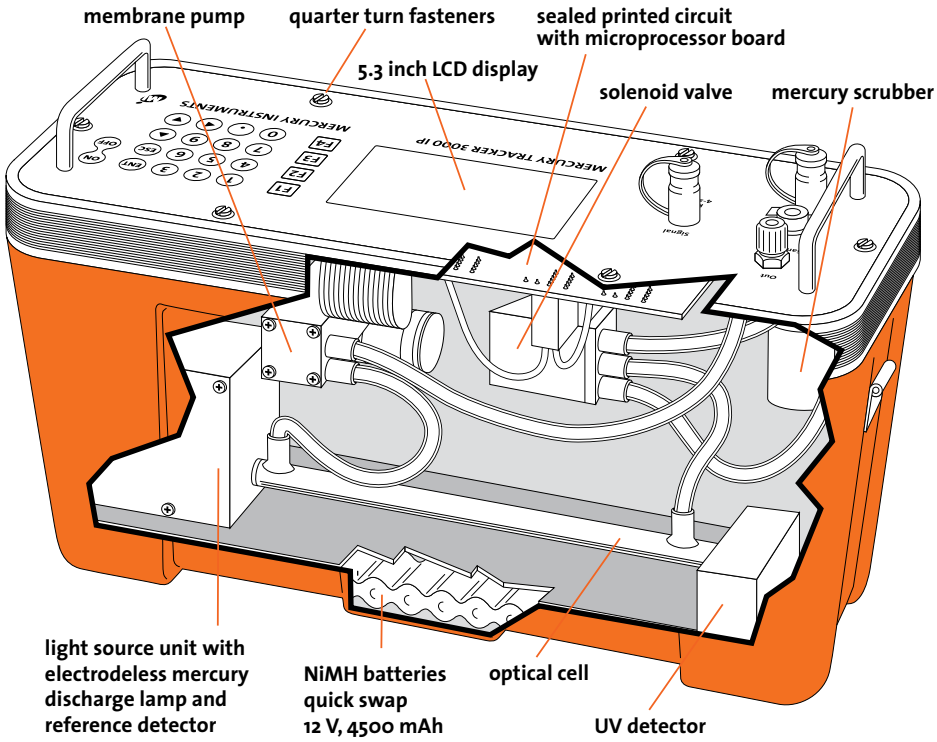
Unlike the gold film based systems measurements are not interfered by hydrogen sulfide (H2S) or water vapor. The extremely high stability of the UV source is a result of the reference detector method which is applied in the Mercury Tracker 3000 IP. Total background noise is less than 0.1 µg/m³. To prevent temperature drift both the lamp unit and the detectors are temperature-stabilized.

The instrument is factory calibrated before delivery and keeps the calibration for a long period of time. For quality control a test screen is included in the delivery allowing the user to check calibration.

## Easy to operate

The user controls the Mercury Tracker 3000 IP by menu-guided inputs via a waterproof membrane keypad. After a short warm-up time, measurement starts automatically, continuously indicating the mercury concentration of the sample. Baseline is automatically adjusted by the Auto Zero function.

Following settings can be entered in the parameters menu: duration and repeat interval of Auto Zero, selection of the concentration unit (µg/m³ or ppb), measuring range (0-100, 0-1000, 0-2000 µg/m³), input of three different alarm levels, calculation of a mean value over three freely selectable time intervals, data logger activation.




## Display and Export of Measurement Data

The readings are displayed in real time on a 5.3" big LCD screen, both numerically and graphically. Measurement data are exported as a 4-20 mA analogue signal and via serial RS232 interface.

A client software for data transfer to a PC is included, data are automatically formatted in EXCEL® format. The Mercury Tracker 3000 IP provides also alarms and messages for the operational status.

## Special Features

- Noncorrosive, rugged and durable ABS case.
- Comfortable shoulder strap.
- Dismountable sampling probe, can be stored in instrument cover.
- Record of readings in non-volatile memory.
- Operates up to six hours on fully charged batteries.
- Quick swap battery for extended usage available.
- Membrane pump with long service life.
- Immediate response to mercury.
- Factory-calibration with long-term stability.

## Data Logger Function

The Mercury Tracker 3000 IP features a built-in data logger. Up to 15000 readings can be stored in the non-volatile memory. The logging interval can be set from 1 to 999 seconds revealing a total recording capacity of 4 hours up to 173 days. The stored data can be read out with a PC using the serial interface of the Mercury Tracker 3000 IP. Data transfer is easy with the serial cable and the client software included.

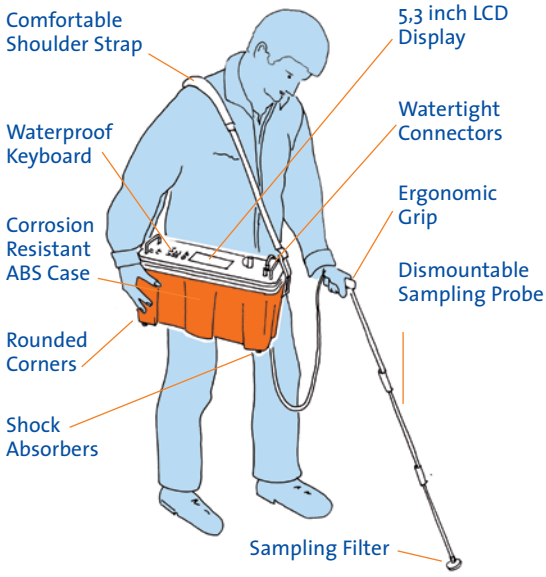
## Self-Diagnosis System

Important components of the Mercury Tracker 3000 IP are permanently monitored. In case of malfunctions the user is warned on the display (blinking messages: clean cell, lamp, low battery, alarm) and via output signals.

## Mobile Use

The Mercury Tracker 3000 IP has built-in rechargeable batteries with a capacity for up to six hours operation. For longer tasks the batteries can quickly be swapped for a fully charged battery pack. An intelligent charger unit which ensures to keep the battery capacity at maximum comes with the instrument. With an optionally available cigarette lighter adapter cable the instrument can be operated by the car battery. The instrument can be carried with an ergonomically shaped shoulder strap. The sampling probe is connected to the sample inlet of the instrument and allows to check spots or to screen areas for mercury concentrations. When not in use it can easily be taken apart and stored in the instrument cover.

A transportation case is available as an accessory.



# MERCURY TRACKER 3000 IP
# TECHNICAL SPECIFICATIONS

| | |
|---|---|
| **Measurement Principle:** | Atomic Absorption Spectrometry (AAS) |
| **Wavelength:** | 253,7 nm |
| **UV source:** | electrodeless low pressure mercury discharge lamp |
| **Stabilization:** | reference detector and thermal control |
| **Optical cell:** | fused silica (Suprasil), 230 mm length |
| **Measuring range:** | 0 ...100µg/m³; 0...1000µg/m³; 0 - 2000µg/m³<br>0-10 ppb; 0-100 ppb; 0-200 ppb |
| **Sensitivity:** | 0.1 µg/m³ (equivalent 0.0001 mg/m³ or 0.01 ppb) |
| **Response time:** | 1 sec (no measuring cycles or regenerations required) |
| **Computation:**<br>**of mean values** | automatically,<br>three freely selectable averaging intervals |
| **Mercury alarm:** | optical and acoustical, 3 thresholds programmable |
| **Status alarm:** | measuring cell soiled, battery state, UV source exhausted |
| **Control pad:** | waterproof membrane keypad |
| **Measurement display:** | 5.3" graphic display with background illumination |
| **Signal outputs:** | 4...20 mA analog; serial RS 232, |
| **Software for**<br>**data transfer to PC:** | included,<br>export into EXCEL® format |
| **Data storage:** | built-in data logger with non-volatile memory,<br>capacity 15000 readings for analysis storage of 4 hours to 173 days<br>at 1 to 999 seconds rate, automatic time and date stamp |
| **Pump:** | membrane pump, approx. 1,5 L / min. |
| **Batteries:** | rechargeable NiMH batteries (6 hours capacity)<br>quick swap battery packs as option |
| **Additional power supply:** | 110 ... 240 V/(50/60 Hz) with included power supply;<br>external 12 V DC sources like car batteries |
| **Dimensions (with cover):** | 450 x 195 x 305 mm (17.7" x 7" x 12" W x H x D) |
| **Weight (with battery):** | approximately 5.5 kg (12 lbs) |
| **Sampling probe:** | 90 cm (35") length, electropolished stainless steel,<br>with ergonomic plastic grip |
| **Sample filter:** | 1 µm porosity, 45 mm (1.8") diameter, disposable |

ISO 9001

MERCURY INSTRUMENTS
ANALYTICAL TECHNOLOGIES

## Health hazards of Mercury

Mercury emits vapors into the air: when liquid mercury spills it separates into droplets releasing more vapors. The vapor is odorless, colorless and very toxic, even small amounts of mercury can release enough vapor to make the air harmful. Therefore all mercury spills should be treated seriously. Mercury readily diffuses across the alveolar membrane of the lungs. It is lipid soluble and therefore quickly attaches to red blood cells and cells of the central nervous system. Mercury that enters the body will be transformed into mercuric chloride. Mercury can enter the bloodstream and stay in the body for months. Absorbed mercury will remain mostly in the kidneys and brain.

## Guidelines for Mercury Exposure:

Numerous environmental and occupational health standards have been set for mercury exposure. The US Occupational Safety and Health Administration (OSHA) sets a legally enforceable ceiling limit for workplace exposure at 100 micrograms per cubic meter (µg/m³). Mercury concentration cannot exceed this level at any time during the work day. The National Institute for Occupational Safety and Health (NIOSH) sets its recommended exposure limit (REL) for mercury vapor at 50 µg/m³ as a time weighted average (TWA). The American Conference of Governmental Industrial Hygienists (ACGIH), recommends a threshold limit value (TLV) of 25 µg/m³ mercury vapor as an average exposure for a normal 8-hour workday. The Agency for Toxic Substances and Disease Registry (ATSDR) recommends an action level of 1.0 µg/m³, which triggers remediation if exceeded in indoor air.

## The Response to an Analytical Challenge: Mercury Instruments.

Quantitative trace analysis of mercury has been a challenging task for the analyst until now. We from Mercury Instruments have made it our job to develop instruments for mercury analysis of the highest technical level. The range of applications for our mercury analyzers is unique world-wide.

**Mercury Instruments GmbH**
**Analytical Technologies**

**Liebigstrasse 5**
**85757 Karlsfeld (Germany)**

**Tel.: +49 (0)8131 - 50 57 20**
**Fax: +49 (0)8131 - 50 57 22**

**mail@mercury-instruments.de**

Distributed by:

**www.mercury-instruments.de**