

Reducing the risks, today and everyday.

Thermo Scientific
PDM3600 Personal
Dust Monitor



Coal mining is one of the most historically risky professions in the world. It's also one of the most necessary. While there have been notable improvements in the overall level of miner's health thanks to modern science and technology, there is still a key element that has been left in the dust.

Thermo Scientific PDM3600

The Thermo Scientific PDM3600 Personal Dust Monitor provides real-time, respirable dust monitoring designed specifically for U.S. based mining applications. Providing mine workers and management with the tools to personally monitor and reduce their exposure, the PDM3600 is the first line of defense in preventing long-term health effects.

Unhealthy exposure to dust can cause inflammatory lung diseases such as silicosis, asbestosis and pneumoconiosis. Coal Worker Pneumoconiosis, or Black Lung Disease, is a chronic illness responsible for the death of nearly 1,000 miners annually (and increasing). The PDM3600 provides the miners with the capability to assess their own exposure in real time, as opposed to the manual method, which could take 2-3 weeks for test results. This permits miners to take actions to minimize exposure during the work shift.

The PDM3600 may also be used as a valuable engineering tool to quickly assess the impact of changes in engineering controls. Using the shortened average period, the effectiveness of these ventilation changes can be quickly evaluated. This is critical to overall dust control as the equipment is repositioned.

Collaborative Efforts

The PDM3600 was designed under contract with Centers for Disease Control and Prevention, and the National Institute for Occupational Safety and Health (Pittsburgh Research Laboratory) to empower miners and mine operators with the information to protect personnel from elevated dust concentrations. The development project was the result of a unique partnership involving government, worker representatives, and industry, including NIOSH, the Mine Safety and Health Administration, United Mine Workers of America, National Mining Association, Bituminous Coal Operator's Association and Thermo Fisher Scientific.

The performance of the PDM3600 has been evaluated by NIOSH in laboratory and underground mine tests. The results indicate that the automated PDM3600 is equal to or better than the current manual dust collection and analysis method used since 1972. The PDM3600 shift based data is available immediately after the conclusion of a miner's working hours, and shorter term dust exposure data is available continuously.

Regulatory Compliance

The PDM3600 is approved for use in the United States only and meets MSHA intrinsic safety approval for use in underground mines (certified for coal mine dust sample collection) and NIOSH guidelines for Air Sampling and Analytical Method Development and Evaluation.

Measurement Using the PDM3600

Continuous monitoring throughout a shift allows for an accurate overall exposure rate measurement. The PDM3600 provides three primary real-time and two secondary user initiated measurements. PC-based software is used to program, save and review results as well as to support the calibration and audit of other environmental data.

The PDM3600 primarily measures exposure in three ways, primary current mass concentration (30 MIN CONC), primary cumulative mass concentration (CUM1) and percent of limit (PERCENT OF LIMIT).

This second set of user initiated measurements may be taken without interfering with the primary sample. Both provide the miner with faster results to assist in making those critical decisions to avoid high-exposure.

A rugged microbalance with microgram mass sensitivity generates results that are equivalent with the regulatory reference method for full shift sampling. Through miniaturization and the use of the latest battery technology in an intrinsically-safe package, the PDM3600 provides the coal dust monitoring capability without any impact on the size and weight of the equipment.

How it Works

The PDM3600 replaces the miner's cap lamp, sample pump and filter holder with a single belt worn unit. The battery operated PDM3600 starts by drawing a continuous sample of air from a miner's breathing zone, it then removes the particles that are larger than respirable in size, and measures the mass of the dust collected on an exchangeable filter. Dust exposure information computed by the monitor is stored internally and is updated every five seconds on the display. The result is immediate and accurate end-of-shift dust exposure levels that are equivalent to filter based methods.



MSHA Approval: 19-A040002-0
Commonwealth of Pennsylvania Approval No. BFE 105-09



The PDM3600, shown here with the charging module, also takes the place of the miner's cap lamp system.



Key Features:

- Bright, low power consuming LED primary work light with dual low power secondary LED lights
- Waterproof cap light battery protection
- Durable housing made of static-dissipating plastic that satisfies MSHA drop tests and includes integral belt clips
- Mine-proven power take-off connector
- PC-based software for downloading and review of status flags
- Intergal charger with download station for PC interface

Measurements:

Three Real Time Measurements:

- "30 MIN CONC" = Primary current mass concentration (mg/m³) Represents the latest 30-minute running average of dust exposure
- "CUM1" = Primary cumulative mass concentration (mg/m³) Equals the total dust loading since the beginning of the working shift
- "PERCNT OF LIMIT" = Indicates percent of exposure limit for primary sample run
- Two Secondary User-Initiated Measurements:
- "15 MIN CONC" = Secondary current concentration (mg/m³) Represents the last 15-minute running average of dust exposure since user initiated activation
- "CUM2" = Secondary mass concentration (mg/m³) Represents the dust loading since user initiated activation

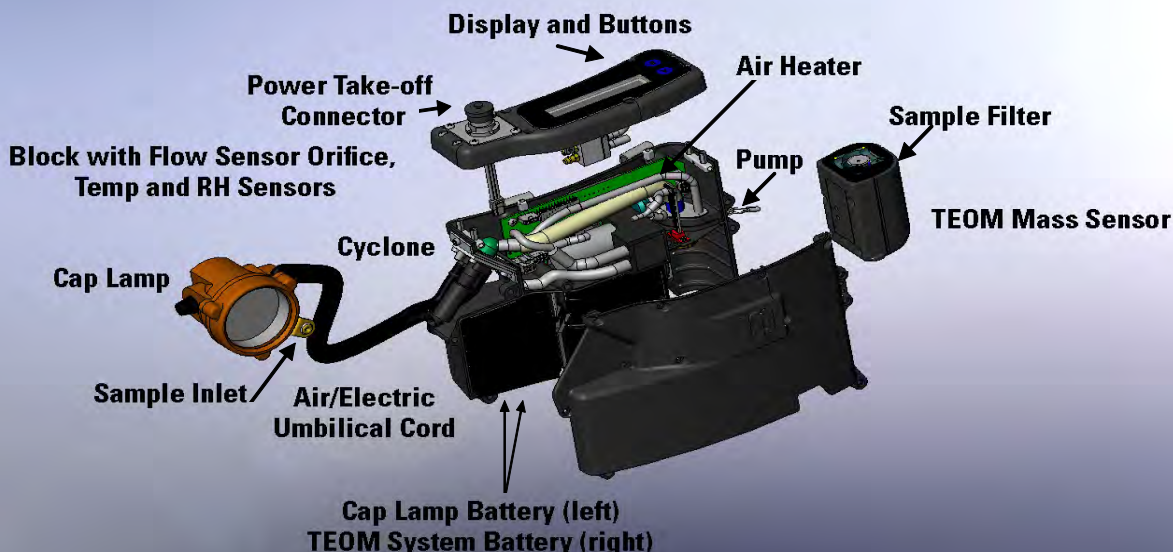
* Items in quotation marks represent actual screen display

System Configuration

The PDM3600 was designed to be virtually invisible to the miner as it also provides power for the included cap lamp, minimizing the amount of gear a miner needs to wear. The PDM3600 includes:

- Cap lamp with secondary LED light source and sample inlet
- Umbilical line containing conductive tubing for sample transport and electrical connections
- PDM3600 case containing batteries and sample handling system
- Charging/communication module
- PC-based software for data management

An optional, high-impact carrying case is additionally available.





EXPANDED TECHNICAL SUPPORT COVERAGE

Our highly trained and experienced technical support team is ready to provide application expertise and work with you to determine the product and configuration that best meets your needs. The team is also there to troubleshoot instruments.

CUSTOMER SERVICE

Our customer service team processes orders, provides status of current orders as well as pricing and availability of product. Our international customer service team is export-compliant trained and extremely experienced in shipping to all regions of the world.

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Our team can be reached between 8:00 AM and 8:00 PM, Monday through Friday, Eastern Standard Time by calling 866-282-0430 or 508-520-0430. Or fax us at 508-520-2800.

For more information about the Thermo Scientific Industrial Hygiene and Safety Instruments, or any of our other monitoring solutions, please visit www.thermo.com/aqi

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