

HAZ-DUST

VDM-7500 Portable Video Dust Monitoring System

Automatic Synchronization of Exposure Video and Concentration Data

- ◆ Immediate and simultaneous real-time workplace video and display of dust measurement
- ◆ All-in-one video dust monitoring system
 - Wireless video camera, customized portable PC with radio receiver, wireless particulate monitor, software, and hardware all packaged in a rolling carry case with handle
- ◆ Digital and wireless for unattended monitoring
- ◆ Concurrent collection of filter samples for gravimetric and chemical analysis
 - Built-in pump provides an adjustable 1.2 to 4 L/min flow
 - Uses in-line 37-mm cassette
- ◆ > 8 hours operation on one battery charge
- ◆ True breathing zone measurements of inhalable, thoracic, or respirable particles
 - Easily interchange sampling heads
- ◆ Record-to-disk feature
 - Visual proof of exposure, concrete documentation of data



Introducing the HAZ-DUST VDM-7500, a portable, turnkey personal dust monitoring system that automatically overlays exposure video onto real-time dust concentration data. Only the VDM-7500 combines this feature with a wireless system that is portable, affordable, and easy to use. With the VDM-7500, easily characterize worker exposure for effective implementation of controls or combine worker activity data with real-time exposure data for a comprehensive review and analysis by health and safety professionals.

HAZ-DUST VDM-7500 — How to Use It

The calibrated particulate monitor is worn attached at a worker's waist. The sensor is clipped in the worker's breathing zone. The wireless video camera is set up in the worker's area. The case containing the PC is set in a location where AC power is available. Monitor worker exposure over the entire workshift or during specific tasks for which data is required. The VDM-7500 automatically records and synchronizes real-time exposure concentrations and video. Using DustComm Pro Software on the system's PC, view real-time measurements and video during monitoring and easily produce management-ready reports after monitoring.



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Principle of Operation

The particulate monitor component of the VDM-7500 system operates on the principle of near-forward light scattering of infrared radiation. This measurement technique uses an infrared light source positioned at a 90-degree angle from a photodetector. As the airborne particles enter the infrared beam, they scatter the light. The amount of light received by the photodetector is directly proportional to the aerosol concentration. Unique signal processing internally compensates for noise and drift.

NIOSH Requirements for a Video Exposure Monitoring System

NIOSH reported that a Video Exposure Monitoring (VEM) technique can be used to "associate events and exposures and to promote more effective and focused recommendations for controlling the air contaminant exposures."¹ System requirements included the following:

- A direct-reading instrument that provides a voltage output proportional to concentration
- Response time that is less than that of the events of interest
- Specificity for the contaminant of interest
- Portability

The HAZ-DUST VDM-7500 advanced technology meets these requirements and provides ease of mixing data and video and wireless communication at a much lower cost than earlier telemetry-based VEM systems.

VDM-7500 Applications

- ♦ Identifying tasks/elements that produce high exposure levels or contribute most to worker exposures
- ♦ Performing time/motion studies that correlate worker activity with resulting exposure
- ♦ Identifying sources of worker exposure and contaminant generation rate
- ♦ Determining effectiveness of ventilation systems
- ♦ Comparing worker-to-worker activity and exposure
- ♦ Performing qualitative and quantitative studies with a duration too short for integrated air sampling methods
- ♦ Demonstrating controls effectiveness
- ♦ Monitoring exposure
- ♦ Selecting respiratory protection
- ♦ Training workers
- ♦ Performing safety audits
- ♦ Reviewing compliance programs
- ♦ Supplying documentation for worker compensation issues
- ♦ Performing insurance investigations

References

¹ *Analyzing Workplace Exposures Using Direct Reading Instruments and Video Exposure Monitoring Techniques*, NIOSH, No. 92-104, 1992.

Performance Profile

Personal Monitor

Accuracy:	±10% to filter gravimetric SAE fine test dust
Sensing Range:	.01 to 200 mg/m ³
Particulate Size Range:	0.1 to 100 µm
Precision:	± 0.02 mg/m ³
Calibration:	NIOSH 0600 gravimetric reference - NIST-traceable SAE fine test dust
Sample Flow Rate:	1.2 to 4 L/min
Power:	Rechargeable NiMH battery
Operating Time:	≥ 8 hours
Charging Time:	10 to 12 hours
Data Storage:	21,500 data points
Digital Output:	RS-232 for data download, RS-232 wireless for real-time data transmission
Dimensions:	Case: 5.4 x 3.3 x 2.75 in (13.7 x 8.4 x 6.8 cm) Sensor: 1.75 x 1.5 in (4.4 x 3.8 cm)
Weight:	1.5 lbs (0.7 kg)


VDM-7500 PC and Video Components

Video Camera:	Color, 2.4 GHz, NTSC to video board (8-hr battery or AC operation)
Portable PC:	Pentium 4, 2.6 GHz, 14.1-in TFT display (110/220 AC operation)

Total System

Weight (with case):	15 lbs (6.8 kg)
Approvals:	CE marked

Ordering Information

Description		Cat. No.
VDM-7500 Wireless Video Dust Monitoring System includes wireless particulate monitor, wireless video camera, customized portable PC with radio receiver, and software and hardware setup packaged in a rolling carry case with handle 	110 V	770-7500
	220 V	770-7500B
Sampling Heads for Personal Monitor		
Inhalable Sampling Head and Adapter , IOM Sampler, mounts on monitor sensor		770-115A
Thoracic Sampling Head , mounts on inlet or monitor sensor		770-4107
Respirable Sampling Head , GS-3 Cyclone, mounts on monitor sensor		225-103
Adapter for GS-3 Cyclone Respirable Sampling Head , required when using GS-3 Cyclone		770-313
Accessories for Personal Monitor		
Calibration Standard		770-140
Replacement Battery Pack for Personal Monitor , NiMH		770-4105
Chargers for Personal Monitor	110 V	770-4104
	220 V	770-4104B

 Requires calibration with equipment sold separately

