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PRINCIPAL DIFFERENCES BETWEEN MODEL pDR-1000 AND MODEL PDM-3

1. Functional And Performance Differences

• The standard internal battery of the pDR-1000 is a non-rechargeable 9-volt alkaline battery. The PDM-3 uses a nickel-cadmium rechargeable battery. Both models, however, can be operated with an external power source. An optional rechargeable battery attachment is available for the pDR-1000 capable of providing 72 hours of continuous operation between successive charges.

• The *p*DR-1000 has CE and US FCC approvals whereas the PDM-3 does not.

• The enclosure of the pDR-1000 is entirely made of metal, whereas the PDM-3 has a plastic enclosure.

• The *p*DR-1000 weighs 567 grams as compared to 471 grams for the PDM-3.

• The *p*DR-1000 has an actual volume of 580 cm^3 compared to 540 cm^3 for the PDM-3.

• The light scattering parameters of the two monitors are the same (i.e. same scattering angle and wavelength).

• The *p*DR-1000 has a concentration measurement range of 0.001 to 400 mg/m³ as compared to 0.01 to 100 mg/m³ for the PDM-3, i.e. the new instrument is 10 times more sensitive and has an overall range 40 times greater than the old one.

• The pDR-1000 has a built-in data logger whereas the PDM-3 has essentially no data logging capabilities (only 7 time-weighted averages as compared to 13,000 with 99 tags for the new instrument).

• The *p*DR-1000 has built-in sound alarm whereas the PDM-3 does not.

• The *p*DR-1000 has selectable measurement/display averaging time (1 to 60 seconds) whereas the PDM-3 has a fixed one of 10 seconds.

• The *p*DR-1000 has a real-time/date clock whereas the PDM-3 does not.

• The pDR-1000 provides maximum and STEL (short term excursion level) values with time/date stamps whereas the PDM-3 does not provide such data.

• The pDR-1000 includes a software package for direct data transfer to a personal computer, providing both graphic and tabular data presentation. The PDM-3 does not include such a package.

• The readout display of the pDR-1000 is updated every second (regardless of display averaging time selected), whereas the PDM-3 readout is updated only every 10 seconds.

• A source output reference detection system on the pDR-1000 insures both short- and long-term calibration stability. Zeroing checks that this system is operational. The PDM-3 has no such system.

• The pDR-1000 has an internal self-calibration check whereby an automatic comparison is

performed routinely of its optical background against its factory determined level. The PDM-3 has no such capability.

• The *p*DR-1000 design has been highly ruggedized. In addition to its metallic case, it also has elastic end bumpers that completely protect it from shock and impact. The PDM-3 has no such protection.

• The advanced electro-optical design of the pDR-1000 provides enhanced immunity (as compared to the PDM-3) against interference from high levels of external light, such as sunlight.

2. Applications Differences

The model *p*DR-1000, *personal*DataRAM can be advantageously applied to essentially all cases for which the model PDM-3, MINIRAM was used. However, there are several applications for the *p*DR-1000 for which the PDM-3 is unsuited:

• Indoor Air Quality Monitoring. The particulate concentrations in non-industrial indoor environments (e.g. offices, public buildings, homes, etc.) is typically in the range of 5 to 50 μ g/m³, except for more contaminated cases. The readout resolution of the PDM-3 is 20 μ g/m³ making it, at best, marginally compatible with this application. The *p*DR-1000, with its 1 μ g/m³ resolution and sensitivity is well suited for IAQ monitoring.

• Time-Resolved Monitoring. The *p*DR-1000 incorporates large scale data logging capabilities (99 tags with data points dynamically allocated) such that detailed time histories can be registered for subsequent data retrieval. The PDM-3 can only retain the overall average for an entire run. Alternatively, a separate data logger must be used with the PDM-3 (e.g. PDL-20).

• Audible Alarm. The PDM-3 only has provisions for an alarm output signal which requires the use of a separate external transducer (e.g. buzzer, beeper, etc.). The pDR- 1000 incorporates an audible alarm, in addition to providing an alarm output signal.

• Maximum and STEL Monitoring. The pDR-1000 provides both maximum instantaneous concentration and 15-minute Short Term Excursion Level values both during a run and at its completion. No such provisions are available on the PDM-3.

• High Concentration Dust Monitoring. The PDM-3 is limited to 100 mg/m^3 (with some degree of overranging), whereas the *p*DR-1000 is designed to measure up to 400 mg/m^3 .

• Monitoring Under Adverse Conditions. The pDR-1000 is designed to operate under far more adverse and hostile conditions than the PDM-3. The pDR-1000, due to its all- metal construction and other design features, is capable of operating in the presence of high intensity electromagnetic fields, is immune to static discharge effects, and in addition can be subjected to significantly higher mechanical stresses (e.g. shock and vibration) than the PDM-3.