

Model ADR-1200S™

Weather-proof ambient particulate monitoring system



Applications

- ◆ Hazardous remediation monitoring
- ◆ Fenceline monitoring
- ◆ Ambient monitoring
- ◆ Roadside monitoring
- ◆ Construction/demolition monitoring
- ◆ Steel structure/bridge painting

Real-Time Ambient Dust Monitor

The Model ADR-1200S is a particulate monitoring system designed for outdoor operation. Its weatherproof enclosure ensures safe and effective operation under a wide range of ambient environmental conditions. The ADR-1200S is designed for continuous unattended monitoring providing, real-time data transmission to a central location and/or internal data logging. Data logging is incorporated in the system or real-time data transmission can be achieved via Thermo Electron's pDR-COM software or a third party modem, or telemetry equipment. Real-time STEL values can be displayed on the ADR-1200S.

The ADR-1200S incorporates the proven and highly successful light scattering photometry sensing technology for which Thermo Electron is known worldwide. Long-term, precise and driftless measurements of airborne particulate matter concentrations down to 0.001 mg/m³ are assured by a unique state-of-the-art combination of optical sensing and electronic signal processing techniques. This method has been refined over the last 25 years.

Particle Size - Selective Monitoring

The ADR-1200S can be used for particle size-selective measurements using the metal cyclone (included). The cyclone is the preferred method for measuring respirable particulates or to obtain information on particle size distribution (by varying the sampling flow rate).

In addition to the real-time/continuous measurements by light scattering, the system enables the user to collect the sampled particles on a membrane filter for gravimetric and/or chemical analysis.

The ADR-1200S consists of the following modules housed within the enclosure:

- ◆ Model pDR-1200 monitoring unit
- ◆ Model pDR-PU pump module
- ◆ Model pDR-BP rechargeable battery module
- ◆ Model pDR-AC power supply/charger
- ◆ Model pDR-RA alarm unit
- ◆ Model DR-OSI omnidirectional sampling unit

Specifications for the pDR-1200

Concentration measurement range (auto-ranging):

Referred to gravimetric calibration with SAE Fine test dust
(mmd = 2 to 3 μm , $\sigma_g = 2.5$, as aerosolized)
0.001 to 400 mg/m^3

Scattering coefficient range:

1.1×10^{-6} to 0.6 m^{-1} (approximately) @ $\lambda = 880 \text{ nm}$

Precision/repeatability (2-sigma - at constant temperature):

+/- 5 $\mu\text{g}/\text{m}^3$ for 1-sec. averaging
+/- 1.5 $\mu\text{g}/\text{m}^3$ for 10-sec. averaging

Accuracy:

Referred to gravimetric calibration with SAE Fine test dust
(mmd = 2 to 3 μm , $\sigma_g = 2.5$, as aerosolized)
+/- 5% of reading +/- precision

Resolution:

0.1% of reading or 0.001 mg/m^3 , whichever is larger

Particle size range of maximum response:

0.1 to 10 μm

Concentration display updating interval:

1 sec. to 60 seconds

Alarm level adjustment range (user selectable):

selectable over entire measurement range

Alarm averaging time (user selectable):

Instantaneous or STEL (15 min.)

Data logging averaging periods (user selectable):

1 sec. to 4 hrs.

Total number of data points in memory:

13,000

Readout display:

LCD 16 characters (4 mm height) x 2 lines)

Serial interface:

RS232, 4800 baud

Analog signal output:

0 to 5V and 4 to 20mA, with selectable full scale ranges
between 0.1 and 400 mg/m^3

Computer requirements:

IBM-compatible, PC, 286 or higher; Windows™ "95 or
greater; 2 MB memory or more; hard drive; CD/DVD; VGA or
higher resolution monitor

Power:

@ 115 VAC. 50 to 300 mA @ 9VDC, depending on flow
rate, flow load, and analog output current (if used)

Operating environment:

14°F to 122°F (-10°C to 50°C), 10 to 95% RH,
non-condensing

Storage environment:

-4°F to 158°F (-20°C to 70°C)

Dimensions:

6.9 in. (175 mm) D x 12 in. (305 mm) w x 16 in. (405 mm) H

Weight:

22 lbs. (10 kg) (without mounting brackets)

Enclosure rating:

NEMA 4

Electromagnetic / static certification:

CE

Alternate mounting & support for the ADR-1200S:

Tripod supported
Pole mounted
Bench-top

Output signals:

Digital: RS-232 either continuous, real-time (every second),
or downloading of internally logged data on manual
command (software included)
Analog: real-time, both current (4-20mA) and voltage
(0-5V), updated every second, with selectable full-scale
range
Switched alarm output, up to A load.

Specifications for the pDR-PU Attachable Pump Module

Flow rate (user adjustable): 1 to 5 liters/min. (4 nominal)
Maximum pressure drop: 10 in H_2O (25 mbar) @ 2 liters/min.
Precision of constant flow rate control: +/- 2%

Specifications for the pDR-BP Rechargeable Battery Pack

Rated capacity @ 68°F (20°C): 1.9 ampere-hrs.
Full charging time: 2 hrs.
Operating time to power the pDR-1200 & pDR-PU@ 68°F
(20°C) @ 1.5 Lpm: 36 hrs. (typical)



Lit_ADR1200EID_01/05

This specification sheet is for informational purposes only and is subject to change without notice. Thermo makes no warranties, expressed or implied, in this product summary. © 2004 Thermo Electron Corporation. All rights reserved. Thermo Electron Corporation, Analyze. Detect. Measure. Control are trademarks of Thermo Electron Corporation

Thermo
ELECTRON CORPORATION

Environmental Instruments
First Responder /
Industrial Hygiene Instruments

27 Forge Parkway

Franklin, MA
02038

(866) 282-0430
(508) 520-0430
(508) 520-1460 fax

www.thermo.com/ih