

## Thermo Scientific Model ADR-1200S<sup>TM</sup>

Weather-proof ambient particulate monitoring system



### Real-Time Ambient Dust Monitor

The Thermo Scientific 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 Scientific'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 Scientific is known worldwide. Long-term, precise and driftless measurements of airborne particulate matter concentrations down to 0.001 mg/m<sup>3</sup> 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

### Applications

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

<b>Concentration measurement range</b>	(Referred to gravimetric calibration with SAE Fine test dust) (mmd = 2 to 3 $\mu\text{m}$ , 8g = 2.5, as aerosolized) 0.001 to 400 $\text{mg}/\text{m}^3$
<b>Scattered coefficient range</b>	$1.1 \times 10^{-6}$ to $0.6\text{m}^{-1}$ (approximately) @ $\lambda = 880 \text{ nm}$
<b>Precision/ repeatability</b>	(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
<b>Accuracy</b>	Referred to gravimetric calibration with SAE Fine test dust (mmd = 2 to 3 $\mu\text{m}$ , 8g = 2.5, as aerosolized) +/- 5% of reading +/- precision
<b>Resolution</b>	0.1% of reading or 0.001 $\text{mg}/\text{m}^3$ , whichever is larger
<b>Particle size range of maximum response</b>	0.1 to 10 $\mu\text{m}$
<b>Concentration display updating interval</b>	1 sec. to 60 seconds
<b>Alarm level adjustment range</b>	(user selectable)selectable over entire measurement range
<b>Alarm averaging time</b>	(user selectable) Instantaneous or STEL (15 min.)
<b>Data logging averaging periods</b>	(user selectable) 1 sec. to 4 hrs.
<b>Total number of data points in memory</b>	13,000
<b>Readout display</b>	LCD 16 characters (4 mm height) x 2 lines)
<b>Serial interface</b>	RS232, 4800 baud
<b>Analog signal output</b>	0 to 5V and 4 to 20mA, with selectable full scale ranges between 0.1 and 400 $\text{mg}/\text{m}^3$
<b>Computer requirements</b>	IBM-compatible, PC, 286 or higher; Windows™ "95 or greater; 2 MB memory or more; hard drive; CD/DVD; VGA or higher resolution monitor
<b>Power</b>	@ 115 VAC. 50 to 300 mA @ 9VDC, depending on flow rate, flow load, and analog output current (if used)
<b>Operating environment</b>	14°F to 122°F (-10°C to 50°C), 10 to 95% RH, non-condensing
<b>Storage environment</b>	-4°F to 158°F (-20°C to 70°C)
<b>Dimensions</b>	6.9 in. (175 mm) D x 12 in. (305 mm) w x 16 in. (405 mm) H
<b>Weight</b>	22 lbs. (10 kg) (without mounting brackets)
<b>Enclosure rating</b>	NEMA 4
<b>Electromagnetic / static certification</b>	CE
<b>Alternate mounting &amp; support</b>	Tripod supported Pole mounted Bench-top
<b>Output signals</b>	<b>Digital:</b> RS-232 either continuous, real-time (every second), or downloading of internally logged data on manual command (software included) <b>Analog:</b> 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.
<b>Specifications for the pDR-PU attachable pump module</b>	Flow rate (user adjustable): 1 to 5 liters/min. (4 nominal) Maximum pressure drop: 10 in $\text{H}_2\text{O}$ (25 mbar) @ 2 liters/min. Precision of constant flow rate control: +/- 2%
<b>Specifications for the pDR-BP rechargeable battery pack</b>	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)



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