

# ES-642

## Particulate Monitoring Solutions

### Remote Dust Monitor Model ES-642

#### INDUSTRIAL OUTPUTS

MODBUS

Serial ASCII Text

RS-232 and RS-485

0-10 Volts Analog Signal

4-20 mA Analog Signal

#### FEATURES

Automatic zero calibration

Controlled input heater

Easily removable filters

Contact closure alarm output

Front panel LCD Display

Sealed environmental enclosure

#### APPLICATIONS

Building Automation

Military Applications

Environmental Cleanup Sites

Air Pollution Level Monitoring

Dust Level Warning Systems



- Designed to provide accurate information on particle concentration and operate continuously in adverse environments.
- Special features such as the purge air system and automatic zero calibration enable the monitor to operate 24/7.
- A sheath air system isolates the aerosol in the chamber to keep the optics clean for long term reliability and low maintenance.
- LCD Display provided information on operation including: power, heater power, flow operation, status and particulate concentration.

The ES-642 Remote Dust Monitor is an industrial air-quality sensor designed to provide accurate measurements of particle concentration in both indoor and outdoor environments. The unit is supplied in a rugged weatherproof enclosure. It includes an LCD display to provide information about particulate concentration, flow rate, instrument status and power. The electronics and optical system are protected from moisture by a built in intake heater that is humidity level controlled. The heater power is regulated to maintain a minimum humidity level. Additional features include a purge air system and an automatic zero calibration routine. The sensor can be wall mounted or installed on a vertical mast up to 3 inch in diameter.

The ES-642 is supplied with a 10 ft cable and connector for power (15 to 40 VDC) and signal output. The ES-642 measures particulate concentration using a highly sensitive forward scatter laser nephelometer, having a measurement range of 0 to 100 mg/cubic meter or 0 to 100,000 ug/cubic meter. Optional sharp-cut cyclones are used to set the measurement level of the ES-642. As supplied it provides particulate monitoring for TSP, with the addition of the sharp-cut cyclone it can be set for particulate smaller than PM10 or smaller than PM2.5, or PM1. The accuracy of the instrument is +/-5% based on a traceable PSL 0.6 micron reference standard.

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PARAMETER	SPECIFICATION
<b>Measurement Principles:</b>	Particulate concentration by forward light scatter laser Nephelometer.
<b>Available Cut Points:</b>	TSP Inlet Standard. PM <sub>10</sub> , PM <sub>2.5</sub> , and PM <sub>1</sub> sharp-cut cyclone inlets available.
<b>Measurement Range:</b>	0 to 100 mg/m <sup>3</sup> (0 to 100,000 μg/m <sup>3</sup> )
<b>Measurement Sensitivity:</b>	.001 mg/m <sup>3</sup> .
<b>Nephelometer Accuracy:</b>	± 5% traceable standard with 0.6um PSL.
<b>Particle Size Sensitivity:</b>	0.1 to 100 micron. Optimal sensitivity 0.5 to 10 micron particles.
<b>Display:</b>	2 X 16 backlit LCD. Provides information on operation including: Power, Flow Operation, Status and Concentration.
<b>Zero Calibration:</b>	Automatic Zero Calibration every hour or as programmed from 1 to 999 minutes.
<b>Flow Rate:</b>	2.0 liters/minute ± 0.1 lpm.
<b>Power:</b>	15 – 40 VDC @ 1.5 A maximum.
<b>Power Consumption:</b>	350 mA (no heater) 1.1 A (with heater) @ 15 VDC.
<b>Analog Output:</b>	4-20 mA and 0 – 10 VDC.
<b>Digital I/O:</b>	RS-485 full and half duplex, RS-232.
<b>Serial Communication:</b>	ASCII Text data format and MODBUS RTU.
<b>Alarm Output:</b>	Normally open and normally closed relay 30 VDC @ 1A maximum.
<b>Operating Temperature:</b>	0 to +50°C . (Ambient Temperature Sensor Range -30 to +50°C).
<b>Barometric Pressure:</b>	600 to 1040 mbar pressure sensor range.
<b>Ambient Humidity Range:</b>	0 to 90% RH, non-condensing.
<b>Intake Moisture Control:</b>	Automatic 10 Watt inlet heater module controlled to sample RH set point.
<b>Factory Service Interval:</b>	24 Months typical, under continuous use in normal ambient air.
<b>Mounting Options:</b>	Wall mount bracket standard. Optional EX-905 tripod.
<b>Unit Weight:</b>	2.27 kg ( 6.0 lbs)
<b>Unit Dimensions:</b>	22.9cm high, 17.8cm wide, 10.8cm deep. (9.0" x 7.0" x 4.25"). w/out inlet assy. 48.3cm high, 17.8cm wide, 10.8cm deep. (19.0" x 7.0" x 4.25"). w/ inlet assy.

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