



For Simultaneous PM Fraction Dust Monitoring

SMART DUST MONITORING SOLUTIONS

The Industry Standard in Real-Time Dust Monitoring

TSI'S TRIPOD BASED SYSTEMS ARE SIMPLY THE SMARTEST AND MOST COST EFFECTIVE SOLUTION FOR COMPANIES WANTING TO UNDERTAKE REAL-TIME LASER BASED DUST MONITORING. UNLIKE OLDER STYLE GRAVIMETRIC DUST MEASURING INSTRUMENTS (HIGH VOLUME SAMPLERS, TEOM, DEPOSITION GAUGES), TSI SYSTEMS PROVIDE TRUE REAL-TIME PARTICLE BY PARTICLE MEASUREMENTS ENABLING COMPANIES TO MONITOR EXACTLY WHAT'S HAPPENING IN THE AIR ON ANY SITE AT ANY TIME.

There is no need to collect filter samples and take them off to labs for analysis. There is no need to rely on costly air monitoring stations that are insensitive to potentially dangerous ultra-fine dust and only give 5 to 15 minute averages at best. Proper real-time monitoring using professional TSI systems give companies the ability to take control and make changes to processes if necessary.

Collecting dust in primitive deposition gauges using older style power hungry and bulky high volume samplers (which still only collect filter samples) or using expensive mains powered TEOM style instruments which require air conditioned enclosures, is a thing of the past. None of these methods can provide the true real-time and dynamic data that TSI DustTrak based systems provide.

Collecting filter samples alone can't possibly help companies understand what is truly happening on their site day to day. If companies can't properly measure what is going on, how can they hope to control potentially dangerous dust and other aerosols on their sites?

These smart, efficient, compact TSI systems even allow the end user to collect a 37mm filter sample for later chemical or gravimetric analysis. They require very little maintenance when compared to many other sampling methods, can operate off batteries, mains or solar panels. They can be tripod based or fixed in position almost anywhere. The monitor may also be removed and used as a portable survey tool, which is an added bonus for many companies.

There are countless options and accessories to choose from. These include solar panels, SMS messaging on high dust alarms and system faults, telemetry back to base using the 3G / NEXTG network, RF or satellite and web based data collection from as little as \$20 per month using Kenelec Scientific automated web servers.

With over 30 popular systems to choose from and thousands of DustTrak systems and instruments now sold in Australia, TSI is the first choice for quality conscious companies wanting smart and reliable dust monitoring solutions. TSI's tripod based systems can operate off batteries, solar panels or mains providing maximum flexibility for companies on any site.

TSI 8533 STANDARD TRIPOD BASED SYSTEM

WITH SMS MESSAGING & FULL 3G & WEB REMOTE ACCESS

Standard Features Included

- 0.1um to 15um wide particle size range
- 0.1um to 500um particle size sensitivity range
- 0.001 to 150mg/m3 particle dust concentration range
- Measures PM1, PM2.5, PM4 & PM10 and Total PM size fractions (simultaneously)
- Uses combined photometry and optical particle counting
- 0.001 mg/m3 high resolution results
- 3 lpm flow rate (variable from 1.4 to 3 lpm)
- Built-in 60,000 point data logger (once a minute for 45 days)
- Built-in pump designed for both portable & continuous use
- 3.5 inch VGA colour touch screen display
- Fully menu driven real-time graphical display
- 37mm filter sample collection for later analysis
- Patented sheath air system & recessed optics
- 15 minute average STEL alarms

Enhanced Features Included

- Built-in water trap with optional larger water trap available
- Optional heated inlet available
- CSIRO designed heat shield for cooler field operation
- Full auto zeroing to prevent drift due to temperature
- Operates for up to 50 hours off internal enclosure batteries
- Includes 4 batteries, 2 for operation and 2 spare for charging
- Easily upgradeable to operate off solar panels
- Easily upgradeable for SMS messaging & remote data access
- Enclosure may be removed from tripod and fixed in position
- Fully NIOSH 5040 compliant sampling
- Upgradeable to incorporate weather & gas sensors
- Can be calibrated to detect any aerosol or dust
- Drop down menu to switch between dust calibration sets

Service, Support & Calibration

- Fully serviced and supported in Australia by Kenelec Scientific
- Fully calibrated both optically and electronically to ISO12103-1 international standards by Kenelec Scientific
- Kenelec Scientific is Australia's leading NATA accredited and fully ISO21501 compliant NATA calibration laboratory
- Lifetime FREE technical support



Smart Modular Design

Unlike any other dust system on the market, TSI systems are highly modular. They can be expanded, upgraded and modified to suit the changing needs of our clients very efficiently and at minimal cost. Clients can even remove the primary measuring instrument and use it as a battery powered portable device to do survey work around any site, collecting both real-time data and a 37mm filter sample.

Dust Specific Calibrations

Another unique and popular feature is the ability to calibrate TSI systems for any specific aerosol / dust. This gives end users the ability to hone in on specific types of problem dusts on any site. This combined with manual or auto zeroing enables highly accurate results, within 1ug/m3.

Weather & Environmental

All systems can easily be supplied with, or upgraded to, accept weather sensor data or data from any water, gas or environmental monitoring instruments.

SPECIFICATIONS

Environmental Enclosure

Physical

Enclosure style	TSI 8535 standard
Dimensions	21 x 43 x 52 cm
Weight with batteries	17kg

Internal Battery System

4 x 12 volt, 21 Ah lead acid batteries. 2 batteries in use and 2 being charged. 2 batteries provide around 50 hours of field use.

Optimal Sampling Conditions

0 to 36 kph wind speed
0 to 50 degree C temperature
-20 to 60 degree C storage

Standard Inclusions

TSI 8535 environmental enclosure with tripod mount, heat shield, 360 degree sampling inlet, water trap bottle, internal mounts, tubing, O-rings, external AC power cord and general accessories.

Transportable Tripod

6.3 kg weight
Heavy duty hardwood construction
Flat head with screw clamps
Extendable height from 1.1m to 1.7m



Measurement Device

Primary Sensing Device

TSI Model 8533 DustTrak. Swappable with other TSI models for single or simultaneous PM fraction monitoring

Sensor Type

Photometer & optical particle counter

Particle Size Range

0.1um to 15 µm

Particle Size Sensitivity

0.1um to 500um

Flow Rate

3.0 L/min set at factory, 1.40 to 3.0 L/min, user adjustable

Flow Accuracy

±5% of factory set point, fully internal flow controlled

Dust Concentration Range

0.001 to 150 mg/m3

Measurement Resolution

±0.1% of reading or 0.001 mg/m3, whichever is greater

Zero Stability

±0.002 mg/m3 per 24 hours at 10 sec time constant

Temperature Coefficient

+0.001 mg/m3 per °C

Internal Display

5.7 inch VGA touch screen

Communications

- USB 2 interface for PC connection and manual data download
- Data dump straight to any USB flash drive
- Field programmable firmware updates (all models)
- Ethernet port for remote control and access to data

Outputs & Alarms

- Internal audible & visual alarms to warn users
- 0 to 5 VDC or 4-20mA (user selectable)
- Fully user selectable scaling range
- Relay contact closure for local alarms, lights, buzzers etc
- Local warning lights and sirens available (optional)
- SMS messaging on alarms on SMS & remote capable systems

Telemetry & Data Access Options

- Manual download using any USB flash drive
- 3G / NEXTG mobile network data access capabilities
- RF telemetry of data back to base
- Satellite telemetry of data back to base
- Full data access using internet & web browser
- Internet data collection plans available from only \$20 per month

Primary Data Storage

5MB of onboard memory (60,000 data points) providing logging once a minute for 45 days.

Secondary Data Storage

Up to 64GB data storage for systems fitted with companion data loggers for SMS and remote data access

Logging Interval

1 second to 1 hour, user adjustable

Time Constant

1 second to 60 seconds

Operational Conditions

0 to 95% RH, non condensing
0 to 50 degree C temperature range
-20 to 60 deg C storage temperature

Gravimetric Sampling

Capable of collecting a 37mm filter sample using the removable 37 mm cartridge (user supplied)

NIOSH 5040 Capable Sampling

Yes, with user adjustable flow rate

Sheath Air System

Patented sheath air system and recessed optics to keep the optics clean during sampling

Power Requirements

Operates internal enclosure batteries for up to 50 hours, 240 VAC or solar panels (if fitted). The internal monitor also operates off its own internal batteries if used as a portable survey tool.

CE Rating

Immunity EN61236-1:2006
Emissions EN61236-1:2006

Included System Components

TSI 8533 DustTrak Monitor
TSI 801690 Auto Zero Module
TSI 8535 Environmental Enclosure
TSI 801810 Heat Shield
4 x 21Ah Batteries & Charger
Enhanced Data Logger & Software
3G / NEXTG Modem
Heavy Duty Tripod

Optional Accessories

Solar power system
SMS messaging on alarms module
3G / NEXTG mobile access module
RF telemetry data access upgrade
Satellite telemetry data access upgrade
Heated inlets
Diffusion Dryers
Weather stations and sensors
Filter cassettes and media

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