Anodyne Water Engineering Co. Pvt. Ltd

Head Office:
Plot No 340, HSIIDC Industrial Estate Rai,
District Sonipat, Haryana - 131029

+91-8959430340 | 8950431340

Customer Support: +91 91 7496969760

www.anodyne.in

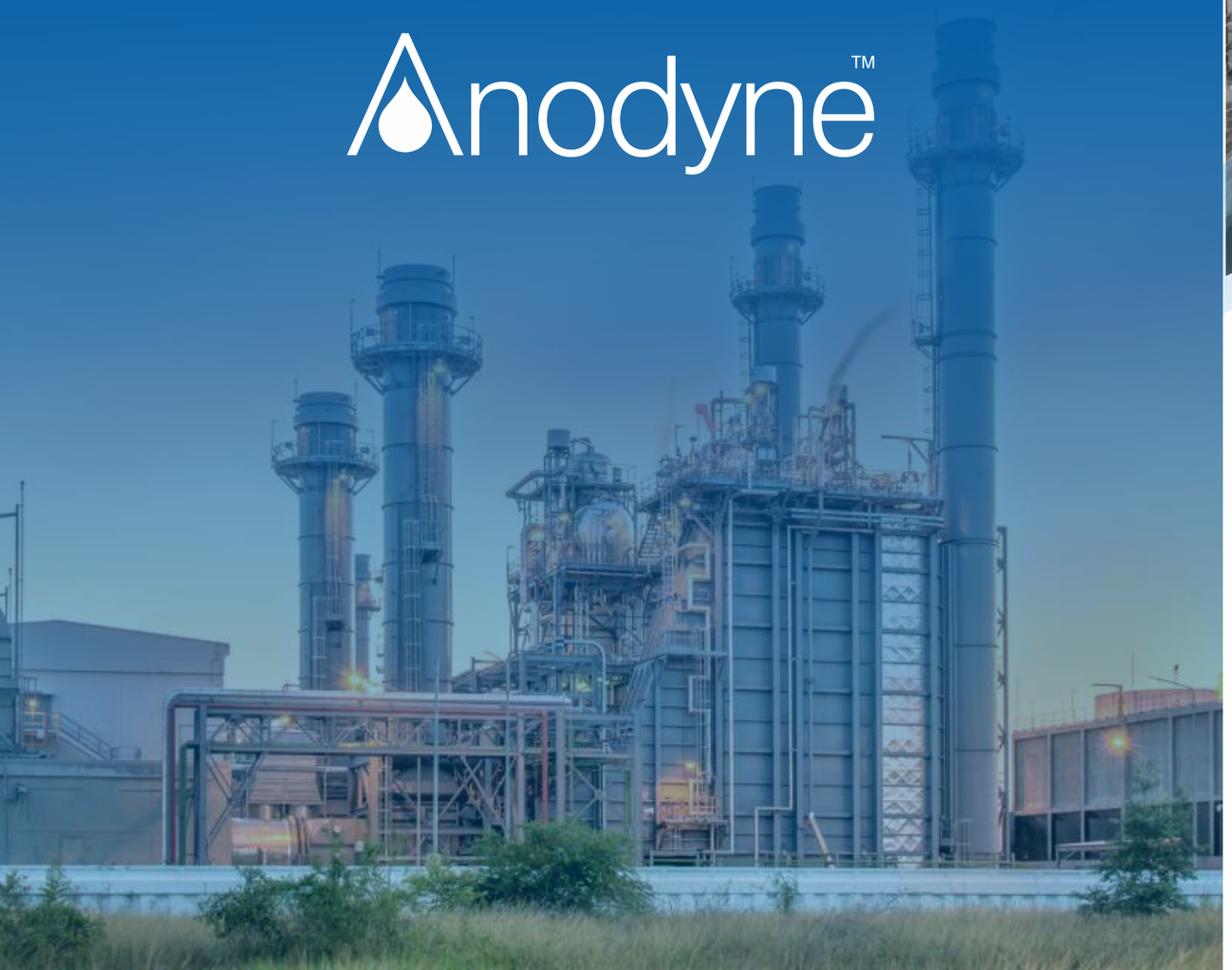
info@anodyne.in | sales@anodyne.in
csales@anodyne.in | support@anodyne.in

Anodyne™

One Stop Efficient & Viable Solutions In Environment

Particulate Matter(PM) Analysis Solutions

Anodyne™



Innovation Applied to Dust Monitoring

About Us

Anodyne is a team of experienced engineers developing innovative solutions around in Online Stack Emission Monitoring Systems & Solutions. The team has multi disciplinary skills in optics, air quality monitoring, electro – mechanical and software to cover all fields necessary to develop and produce cutting edge online analyzers.

With years of research and development, and successful and long partnerships with various Principals, Anodyne offers a complete spectrum of analyzers. Anodyne supporting make in India concept, proudly announces its range of Series of Gas analyzers. In addition to this Anodyne's years old partnership with Gas Sensor specialist Uniphos Envirotronic Pvt. Ltd. offers compact, efficient, innovative gas analyzers with state of the art design and excellent quality.

Particulate Matter Continuous Emission Monitoring Systems (PM CEMS) measure a parameter (e.g. scattered light), which can be correlated to dust concentration, by comparison to a gravimetric sample taken under isokinetic conditions rather than the mass concentration directly. The performance and suitability of any particulate monitor is application dependent.

ADMS 1000 Series

In-Situ Systems

In-Situ Systems (Point or Cross-duct) for application in flue gas stream with temperature above dew point (>95 °C).
In – situ PM CEMS are more favorable due to cost efficiency and accurate results in Industrial Stack Emissions. The available technologies are:

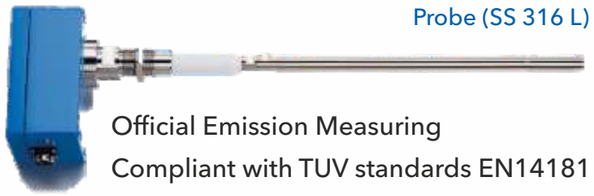
- Tribo Flow / Probe Electrification (Non – Optical)
  Light Scattering (Optical) (Backward and Forward Scatter)
- Cross Duct: - Transistometry / Opacity (Based on Double pass Dynamic Detection Measurement)

Extractive Systems

Extractive Systems for applications with entrained water droplets in the gas stream. These systems are best suited for high moisture content applications and for detection of dust particles in parts per billion (ppb) levels.

- Beta – ray Attenuation Principle (Non Optical Gravimetric method)
- Light Scattering (Optical Analysis)

Probe Electrification - ADMS 1000



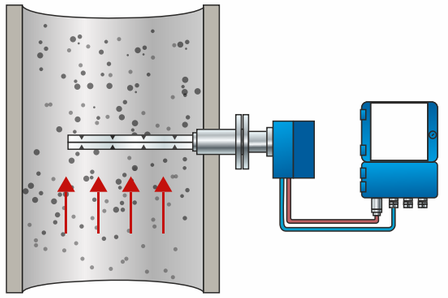
Probe (SS 316 L)

Official Emission Measuring
Compliant with TUV standards EN14181

- Automatic range setup
- No manual adjustment required
- Automatic drift compensation
- No optical windows to be cleaned

Technology

Mounting of Probe at Stack with Remote Controller



Features

2 independent alarm relays (user selectable limits, NO or NC)	●
4 – 20 mA signal output	●
Remote setup & Configuration	●
Self Zero Check	●
Span Check	●
Particulate Emission Monitoring in mg/m^3	●
Serial Communication	●
ATEX Approved Model	●
Teflon Insulator (For High Moisture applications)	Optional

The Tribo-flow principle is an impact principle where a Sensor is placed in the path of the emissions, which are to be monitored. This principle works only for Solid particles. Since this principle is not affected by Liquid or Gas particles, it is particularly suitable for emission or stack monitoring. This analysis technique has been internationally and universally approved by several Environment agencies including USEPA, TUV & Mcerts.

The Sensor of the Dust Monitor is mounted on the stack / duct and the existing S.P.M. level is determined using Thimble / Iso-Kinetic Process. The Dust Monitor continuously displays the S.P.M. or Emission level in terms of mg/nm3 in an on-line manner. A 4 to 20 mA DC Analog Output is also provided for recording or control purposes & integration with the Central Control Room. It is ideal for thick-walled or double-walled ducts because of the one-sided installation.

Applications

- Boilers (with Teflon insulator)
- Cement
- Chemical processing
- Metallurgical
- Foundries
- Pharmaceutical
- Fertilizers
- Wood processing
- Food
- Tobacco
- Animal feed processing
- Power plants
- Waste incinerators
- Pulp and paper

Split Architecture (Remote) Models

ADMS 1000 Series includes the following remote models. The remote models are used when the sensor has to be installed with the control unit up to 200 meters away. In these models, the sensor is connected to an enclosure housing the preamplifier (PA) and the amplified signal is transmitted with a 4-wire shielded cable using one of the recommended cables.

Measurement Objects	Solid particles in a gas flow
Stack Diameter	> 0.2 m
Particle Size	0.3 µm or larger
Measurement Range	0 – 1000 mg/m^3 (Available for higher range)
Measurement principle	Probe Electrification / Tribo Flow
Protection Category	IP 67
Probe Length	500mm, 440mm, 750mm, 1000mm/Others on request
Power Supply	24V DC
Process Connections	Socket, Quick clamp (optional), flange (optional)
Analog Output	Isolated 4 – 20 mA; 750 ohms load impedance
Communication Interface	Serial Communication (RS – 485/232)
Range Set-Up	▸ Normal measuring range: Automatic, based on average measured dust flow during setup procedure ▸ Extended measuring range: User selectable
Signal Damping Time(s)	0 – 300 s
Relay Delay Time	0 – 180 s
Temperature	Max 400 °C, Max 700 °C (optional)
Ambient Temperature	- 15 to 50 °C
Humidity	Max 95 % RH (Non Condensing)
Ambient Humidity	Max 95 % RH (Non Condensing)
Gas Velocity	Min 3 m/s ; Min 13.1 ft/s
Probe (wetted part)	Stainless Steel (SS 316, SS 316 L)
Probe Coating	PTFE Teflon (Optional)
Probe Insulation	PEEK
Probe Sealing	FPM Viton
Enclosure	Aluminium Alloy
Weight	3.1 kg | 6.4 lbs

Laser Scattering (Backscatter) ADMS 2000

Official Emission Measuring Compliant with TUV standards EN15259

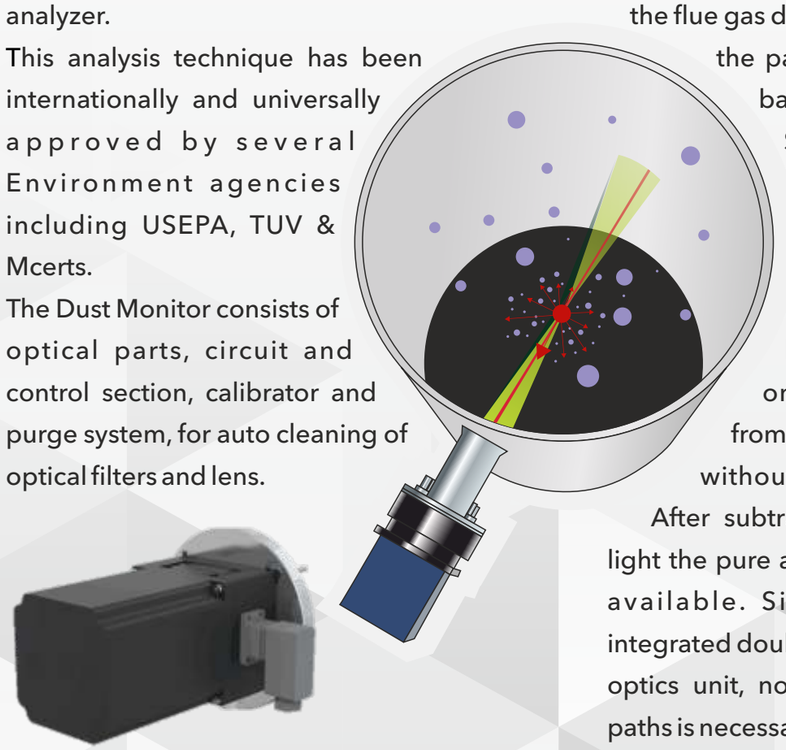
- Non Contact and In-situ measurement
- One sided installation
- Suitable for Small Stack Diameters

Technology

This SPM monitor is used for continuous monitoring of various sources. It can either be equipped with CEMS, or connected as a standalone analyzer.

This analysis technique has been internationally and universally approved by several Environment agencies including USEPA, TUV & Mcerts.

The Dust Monitor consists of optical parts, circuit and control section, calibrator and purge system, for auto cleaning of optical filters and lens.



A laser beam at a wavelength of 650 nm comes in contact with dust. The light of a red laser diode (eye safe) illuminates the dust particles in the measuring volume of the flue gas duct. The light is scattered by the particles and also generates background light in the stack.

Scattered light plus background light are received in one half of the integrated dual detector. At the same time the other half of the detector receives only the background light from the same area of the stack, without the stray light portion. After subtraction of the background light the pure amount of scattered light is available. Since both parts of the integrated double detector share the same optics unit, no adjustment of the beam paths is necessary.

Features

Continuous Measurement	●
Easy installation on Standard Flanges	●
Easy Start Up without adjustment	●
Automatic Background light compensation	●
Automatic Control	●
Integrated Air purging unit	●
Long Service Intervals	●
Integrated fail safe shutter as an option	●
In-situ Zeroing	●
Span Check	●
Automatic Temperature Compensation	●
Automatic gain control function	●

Applications

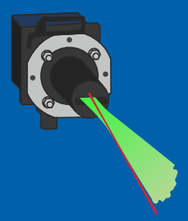
- Boilers
- Cement
- Chemical processing
- Metallurgical
- Foundries
- Pharmaceutical
- Wood processing
- Food
- Tobacco
- Animal feed processing
- Power plants
- Waste incinerators
- Pulp and paper
- Fertilizers

Split Architecture Models / Components

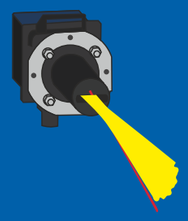
The ADMS 2000 allows for the connection of Dust measuring heads and enables the combination of dust and purge system. The controller offered ensures convenient operation and parameterization of the connected devices. The display provides an immediate overview of the current measurements and the status of the devices. Modular design, many extension modules are available.

- Weather protection covers
- Fully integrated failsafe shutter as protection for the measuring device in case of a purge air failure.

- Mounting Head
- Mounting Flange
- Digital display remote unit
- Supply unit with air purge system



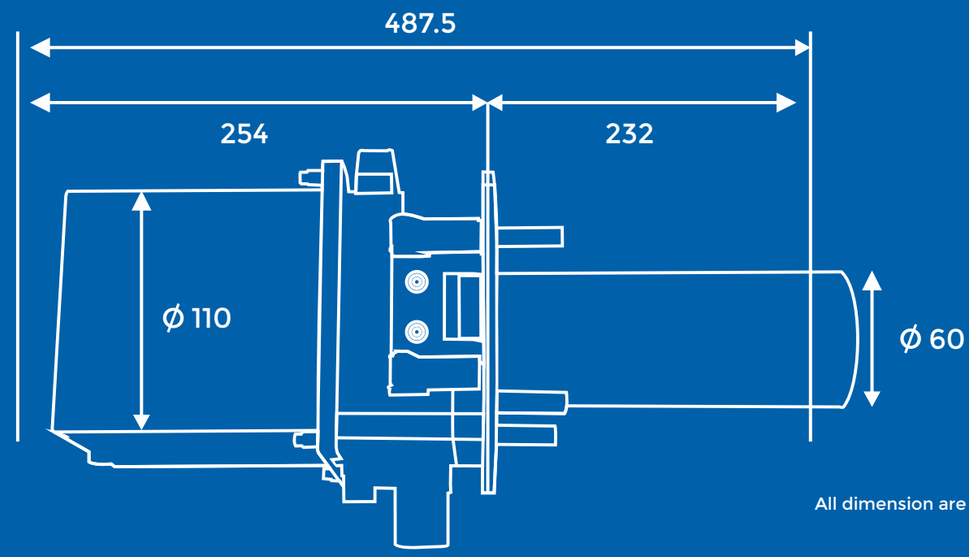
Viewing Range Of Measuring Channel



ViewingRange Of Background Channel

Measurement Objects	Solid particles in a gas flow
Measurement principle	Backscattering
Stack Diameter	> 0.7 m (Available for Small diameter also)
Measurement Range	0 – 200 mg/m³ (Available for higher range)
Analog Output	Isolated 4 – 20 mA; 800 ohms load impedance
Temperature	Max 600 °C (Available for higher temperature)

Ambient Temperature	20 to 60 °C
Humidity	Max 95 % RH (Non Condensing)
Ambient Humidity	Max 95 % RH (Non Condensing)
Weight	2 kg| 6.4 lbs



All dimension are in mm.

Supply Unit

Purge Air Supply	Integrated Blower
Supply Unit	115 / 230 V AC, 50/ 60 Hz, 0.37/0.43 kW

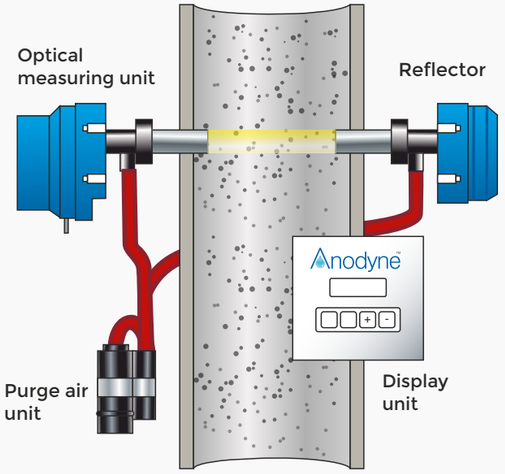
Normal Measurement

Reference Point Check

Linearity Check with Optical Filters

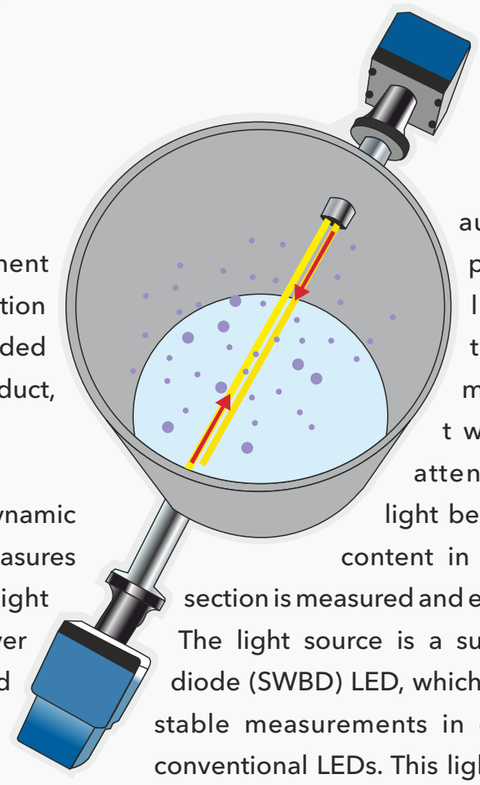
ADMS 3000 / DSL340
Optical Opacity / Dust Monitor

Official Emission Measuring Compliant with TUV standards EN15267 - 3 | USEPA PS-11



- Non contact and in-situ measurement
- One sided installation
- Suitable for small and large stack diameter
- Dynamic detection principle measurement technique increasing immunity to drift

Technology



The DSL-340 is an optical instrument designed to measure the concentration of dust or particulate matter suspended in the exhaust gas passing through a duct, stack, or flue.

The DSL-340 uses the innovative Dynamic Detection Principle (DDP) which measures fluctuations in the intensity of a light beam, using a folded beam Transceiver /Reflector arrangement. Increased particulate density in the stack causes the amplitude of these fluctuations to increase.

The double-pass method according to the auto-collimation principle. The light beam traverses the measuring path twice. The attenuation of the light beam by the dust content in the measuring section is measured and evaluated.

The light source is a super-wide band diode (SWBD) LED, which provides more stable measurements in comparison to conventional LEDs. This light source in the Transceiver offers long life and stable intensity.

Features

Continuous and Contactless Measurement	●
Easy installation on Standard Flanges	●
Easy Start Up without adjustment	●
Automatic Contamination Compensation	●
Rugged SS 316 construction	●
Integrated Air purging unit	●
Long Service Intervals	●
Integrated fail safe shutter as an option	●
In-situ Zeroing	●
Span Check	●
On Board Temperature Measurement	●
Automatic gain control function	●

- Weather protection covers
- Automatic fail-safe shutters to protect the device in the event of a purge air failure
- Explosion proof design

Split Architecture Models / Components

The ADMS 3000 allows for the connection of Dust measuring heads and enables the combination of dust and purge system. This model is available with or without an Operator Interface (control unit) so for the most cost effective monitoring solution.

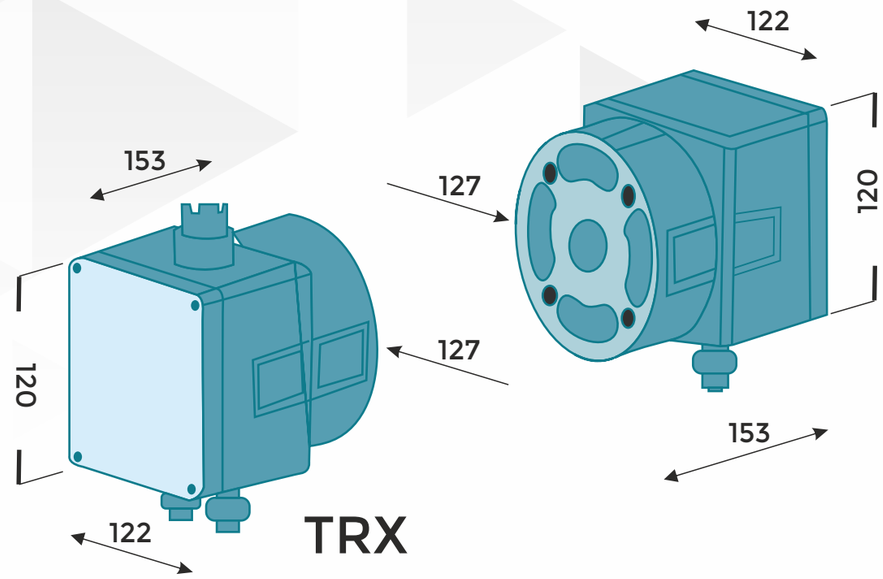
This model can also operate as a “stand-alone” instrument consisting of the Transceiver head (TRX) and Reflector head, with all electrical connections (including outputs such as the alarm relays, 4- 20mA and Modbus) being made inside the TRX head

Stack Diameter	> 0.2 m
Path Length	0.5 – 10 m (flange to flange)
Measurement Range	0 – 1000 mg/m^3 (Available for higher range) (User selectable)
Accuracy	± 2 %
Resolution	0.1 mg/m^3
Signal Damping Time(s)	0 – 300 s
Drift with Temperature	± 0.5 %
Operating Wavelength	510 – 540 nm
Voltage	24V DC (± 10 % tolerance)
Air Supply Volume	50 200 L/min (To each purge air body)
Analog Output	Isolated 4 – 20 mA
Communication Interface	Serial Communication (RS – 485/232)
Protection Rating	IP 65
Relay Delay Time	0 – 180 s
Temperature	+ 600 °C Heat insulating gaskets included. (Higher temperatures on request)
Ambient Temperature	- 20 to 55 °C
Operating Humidity	0 – 100 % RH (Non Condensing)
Ambient Humidity	Max 95 % RH (Non Condensing)
Materials - Head	SS 316 (powder coated)
Materials – Air purge body	Powder coated cast aluminium or stainless steel for demanding installations
Materials (Operation Interface)	UL rated polycarbonate enclosure; aluminium front panel with PU laminate overlay and with nylon cable glands
Weight	2.5 kg| 5.5 lbs TX or Reflector head plus Aluminium Air-Purge body

Opacity meter - Dust Monitor

Double Pass Dust Monitor Measures 0-1000mg/m^3 using DDP

Reflector



All dimension are in mm.

Ideal for monitoring dust levels in the exhaust gas of industrial combustion or air filtration processes.

- Dynamic detection principle (DDP) measurement technique results in increased immunity to drift
- Measurement reading as mg/m^3 (when calibrated against standard reference measurement)
- Internal electronic calibration check facility
- Rugged 316 stainless steel construction
- Choice of interface options enabling easy integration
- Free utility software for pc based setup, control, and data logging
- Optional operator interface with different mounting configurations