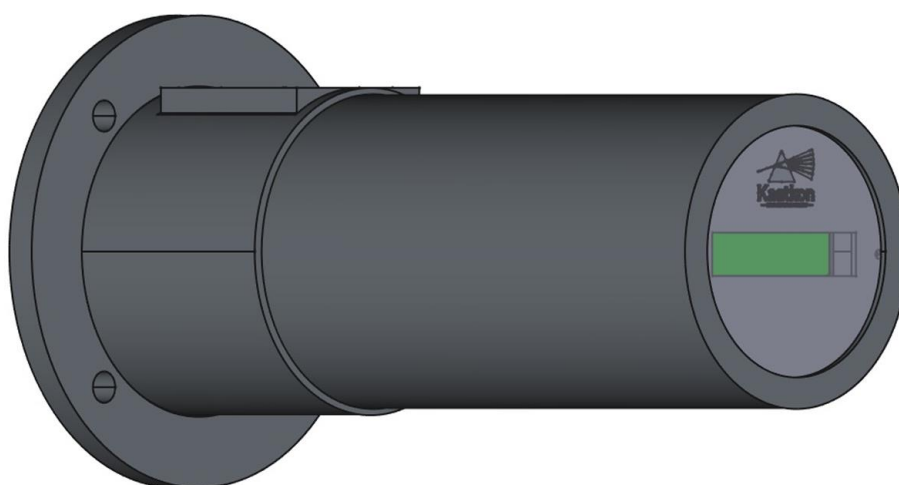


Laser Scattering Dust Analyzer

Model: Anveṣaka-3



Overview

The Anveṣaka -3 is a unique optical particle monitoring instrument that measures (Dust) particulate matter using the Laser Scattering principle. It is designed for stack emission monitoring, ambient air quality assessment, and industrial process control, providing real-time particle concentration readings in both mg/m^3 and Nm^3 , as well as mass flow rate in kg/h .

Principle of Operation

A narrow-beam 650 nm laser projects light into the monitored air stream. Suspended dust particles scatter light in all directions. The backscattered light is collected and converted into an electrical signal proportional to particle concentration.

Technical Specifications

Measurement Principle	Optical backscattering using 650 nm laser
Measurement Range	0 – 1000 mg/m^3 (configurable)
Resolution	1 mg/m^3 (also available in Nm^3 option)
Accuracy	$\pm 5\%$ of reading or $\pm 1 \text{ mg}/\text{m}^3$ (whichever is greater)
Response Time	1 s (typical)
Particle Size Sensitivity	$\geq 0.3 \mu\text{m}$
Laser Power	$\leq 5 \text{ mW}$ (Class 3R or Class 1M with safety optics)
Output Signals	4–20 mA, RS-485 (Modbus RTU)
Display	Local LCD / remote software interface
Mass Flow Output	Direct reading in kg/h
Operating Temperature	$-20 \text{ }^\circ\text{C}$ to $+70 \text{ }^\circ\text{C}$
Protection Class	IP65 Compatible

Power Supply	24 V DC, <10 W
Dimensions	~270 mm(L) × 100 mm (D)(tube length × diameter)
Weight	~3 kg
Mounting	2" Flange mount with 4 bolt holes (ANSI 150B)

Features

- Unique capability to measure both concentration (mg/m^3 , Nm^3) and mass flow (kg/h)
- Non-contact optical sensing — no moving parts, minimal maintenance
- Real-time continuous monitoring for particulate emissions
- Rugged industrial design for harsh environments
- drift compensation
- Multiple output options for integration into SCADA/DCS systems
- Laser safety compliant per IEC 60825-1 standards
- Validation Feature in software

Typical Applications

- Stack emission monitoring (PM concentration)
- Industrial dust control and filtration efficiency checks
- Ambient air particulate monitoring
- Cement plants, steel mills, power plants

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Schematic

