西诺光学
XINUO PHOTONICS

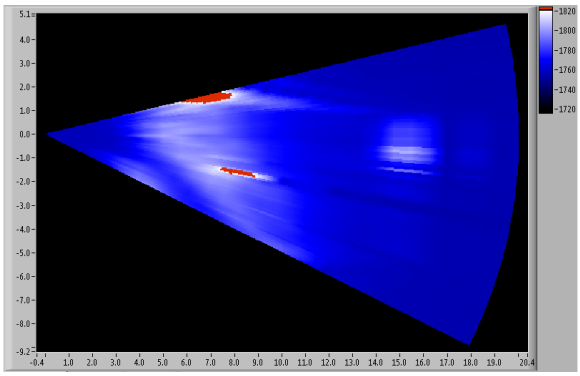
AEROMAP

NIR FULL WAVEFORM LIDAR FOR AEROSOL MONITORING

AeroMap identifies and measures relative concentration of dust and aerosol over a range of 150 m. It delivers 2D and 3D maps of relative concentration in near real-time for a better understanding of dust generating processes. Being eye-safe, AeroMap can be easily deployed on industrial sites or cities.

用于气溶胶监测的近红外全波形激光雷达

AeroMap可识别和测量距离**150**米范围内的粉尘和气溶胶的相对浓度。它可近似实时地呈现相对浓度的二维和三维测绘图，以便更好地了解粉尘的产生过程。因为对人眼安全，**AeroMap**可以简单部署在工业现场或城市中。



TECHNICAL SPECIFICATIONS

技术参数

Platform use	Dust and aerosols relative concentration and mapping in air
Laser source	Laser diode wavelength: 905 nm Pulse energy: 3 uJ Pulse duration: 20 ns Maximum repetition rate: 25 kHz (for eye safety); up to 100 kHz available Average power: 75 mW (for eye safety); 300 mW available
Collection	Field Of View (FOV) : 12 mrad Aperture: 50 mm
Ranging	Range : 0 m to 7644 m Waveform length: 6144 m max. Resolution: 4.7 cm to 1.5 m
Detection	Detector: SiAPD ADC characteristics: 12 bits @ 100 MS/s sampling rate On-board averaging: 1 to 2^{16} pulses Dynamic range: 78 dB Max frame-rate: 20 Hz Sensitivity: tens of µg/m^3 @ a range of 150 m; particles properties dependent
Scanning head	Pan angles: ±180° Tilt angles: [-31°, +83°] Scanning speed: 25°/s max.
Footprint (excluding PTU, tripod and cables)	Weight: 4.5 kg Dimensions: 218 (W) x 208 (H) x 249 (D) mm Power requirement: 24 V-DC @ 24 W, Operating between -20 to +40 Celsius
Communication	GigE - Remote controllable with VNC client

COMM-15002

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APPLICATIONS

Mining
- Feedback to VOD systems
- Dust mapping and monitoring
- Dust cloud tracking
- Optimization of dust suppression techniques

Bulk material handling
- Identification of dust generating processes
- Fence line monitoring
- Cloud mapping and tracking

Construction and transportation
- Fugitive dust emission monitoring
- Dust control on unpaved roads

Features	Advantages	Benefits
Measures relative concentration of aerosols over a range of 150 m with resolution up to 20 cm (typically 75 cm)	Spatially resolved aerosol concentration along line-of-sight	Equivalent to hundreds of point sensors located along line-of-sight
Typical limit of detection of 50 µg/m^3	Close to required sensitivities of air quality standards for total suspended particulates	Can be used to monitor several types of dust and aerosol generating processes
Eye safe	Harmless to workers	Can be installed on industrial sites or in cities
Context camera	Helps define the monitoring area. Provides pictures of “events”	Easy deployment. Better understanding of aerosol generating processes
Pan & Tilt Unit with mapping speed-up to 20°/s	Delivers 2D and 3D maps in near real-time	Better understanding of aerosol transport processes and source localization
On-board processing	Real-time display of aerosol concentration.	Can be used to trigger alarms

应用

矿业
- 反馈给按需供风系统
- 粉尘测绘和监测
- 尘云跟踪
- 优化粉尘抑制技术

散装物料输送
- 识别粉尘产生过程
- 围栏处粉尘在线监测
- 云测绘和跟踪

建筑和交通
- 扬尘监测
- 未铺设路面扬尘控制

产品特点	优势	优点
能够测量150米范围内的气溶胶相对浓度，分辨率达到20厘米（典型值75厘米）	测量沿视线方向分布的气溶胶浓度	作用相当于沿视线方向放置数百个传感器
检出限典型值为50微克/立方米	灵敏度与空气质量标准所允许的悬浮颗粒物总数处于同一数量级	可用于监测多种粉尘和气溶胶产生过程
人眼安全	对工作人员无害	可安装在工业现场或城市中
背景相机	帮助定义监控区域。提供“事件”照片	易于部署。有助提升对气溶胶产生过程的理解
能以高达20°/秒的速度进行旋转及俯仰摆动	能够近似实时地进行二维和三维测绘	有助提升对气溶胶运动过程的理解和源头定位
板载数据处理	实时显示气溶胶浓度	可以用来触发警报

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