

# CE376

## Compact Automatic Aerosol LiDAR

The CE376 is the latest compact, eyesafe backscatter LiDAR, featuring outstanding performances for the automated, continuous monitoring of aerosols.

It operates in the visible (green) and/or in the near infrared (NIR) with options for depolarization channels for enhanced aerosol characterization.

The rugged, fully integrated system operates without shutdown, human attendance, authorization, nor maintenance. With its thermal enclosure, the LiDAR can withstand extreme environmental conditions.

The CE376 is particularly easy to install (indoor or outdoor), to transport and even to use onboard a vehicle or a plane.

It is therefore, the perfect solution to monitor industrial dust emissions, urban pollution, volcanic ashes, and all type of aerosol particles.

### Features

- Aerosol measurements up to 18 km by night time (9 km by day time)
- Very short blind zone (< 100 m) with a full overlap from 1 km altitude
- Real time «quicklook» visualization
- Automatic backscatter profiles (extinction with AOD or LiDAR ratio)
- High stability and low maintenance
- Aerosol characterization for each layer and stratification analysis
- Eye safety compliance with EN-60825/ANSI Z136
- Planet Boundary Layer (PBL) and cloud detection
- Easy transportation → Outdoor / indoor / mobile operation

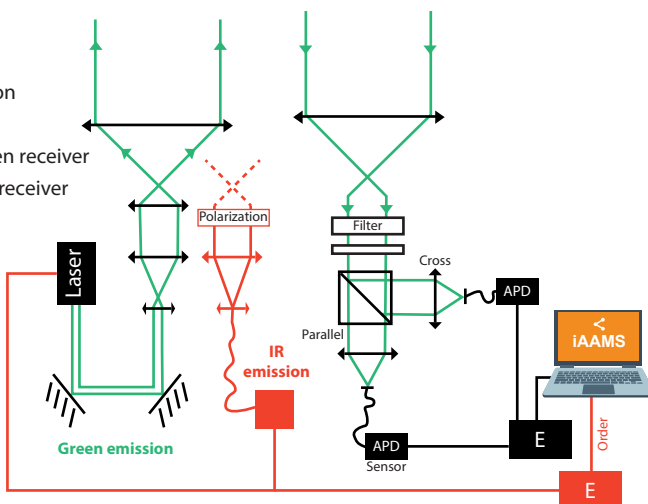


### Applications

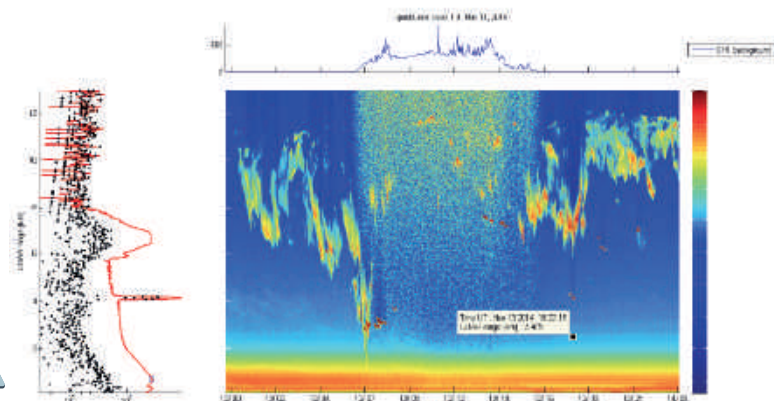
- Air quality monitoring
- Climate change
- Airport / Aviation
- Atmospheric sciences
- Aerosol and cloud modeling
- Numerical Weather Prediction (NWP)

### Technology

- 4 channels**
- 1 Green emission
  - 1 NIR emission
  - 2 channels green receiver
  - 2 channels NIR receiver



Measurement principle of the CE376 LiDAR.  $\lambda_1 = 532 \text{ nm}$ ,  $\lambda_2 = 808 \text{ nm}$ .  
E = Electronic card ; APD = Avalanche Photo Diode.



Vertical profile of  $\text{Ln}(\text{PR}2)$  data with indication of Signal to Noise Ratio (dots). Quicklook of range corrected data and time graph of background noise.

## Technical specifications

### Source

Laser type	Green laser: frequency doubled Nd:YAG NIR laser: pulsed laser diode
Wavelengths	Green: 532 nm NIR 808 nm
Pulse energy	Green laser: 5-10 $\mu$ J NIR laser: 3-5 $\mu$ J
Repetition rate	4.7 kHz
Pulse width	< 15 ns For IR ~200 ns

### Optics

Telescope type	Galilean
Telescope diameter	100 mm for both emission and reception
Effective focal length	200 mm
Total beam divergence	Emission: 100 $\mu$ rad, Reception: 200 $\mu$ rad
Instrument configuration	Biaxial
Eye-safety	Yes
Detector type	APD QE 55% / 70%
Filter bandwidths (3)	0.2 - OD 12

### Data

Data acquisition mode	Photon counting
Continuous acquisition	Yes
Data counting rate	25 Mc/s
Electronic range resolution	15 m gates
Electronic range	From 100 m up to 30 km (2048 gates)
Data transfer to PC	USB or Ethernet

### CE376 Models

Reference	Description	Available bands
CE376-G	Green	532 nm
CE376-GP	Green with depolarization	+ information on the presence of aspherical particles (ash, sand, cirrus) in each layer
CE376-N	NIR	808 nm
CE376-GN	Green + NIR	Information on the particle size in each layer
CE376-GPN	Green with depolarization + NIR	+ information on the presence of aspherical particles (ash, sand, cirrus) in each layer

### Environmental conditions

Temperature range	+15°C to +25°C without thermal enclosure -20°C to +45°C with thermal enclosure
Humidity range	0-80% without thermal enclosure 0-100% with thermal enclosure

### Power

Power supply	110/230V AC and 28 V DC, < 300 W Automatic switching
Autonomy	10 min with uninterruptible power supply option

### Mechanical Specifications

Transportability	Yes
Dimensions (H x W x D)	710 x 450 x 650 mm
Weight	35 kg (might change depending on the option)

### Thermal Enclosure (in option)

Temperature range (external)	-20°C to +45°C
Power supply	200 W
Size (H x W x D)	1270 x 860 x 760 mm
Weight	90 kg

