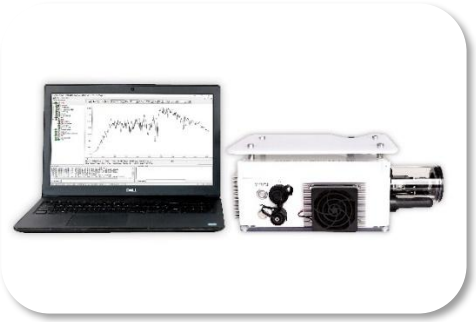
SkySpec Mini Instrument v.260

TELESCOPE-SPECTROMETER SYSTEM FOR MOBILE PASSIVE REMOTE SENSING

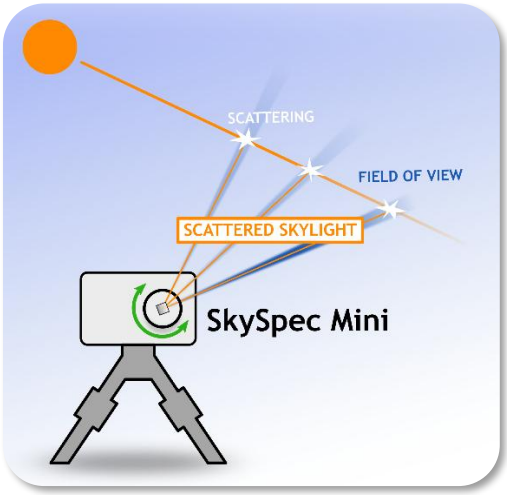
- Combined telescope-spectrometer system for acquisition of scattered skylight spectra
- Compact, light-weight and low power consumption for mobile applications and measurements in remote places with little infrastructure
- Optimized for UV/Vis-aerosol and trace gas remote sensing with the DOAS method
- Detectable gases: NO_2, O_3, SO_2, HCHO, H_2O, HONO, IO, BrO, Glyoxal, O_4, ...
- Customizable to meet your specific requirements
- Software packages for spectral analysis, post-processing and data visualization available



SkySpec Mini in the field with tripod and LiPo battery pack (available accessories)

TELESCOPE:

- Motorized viewing elevation axis, fixed azimuth
- Automatic correction of telescope viewing elevation via integrated inclination sensor
- Rugged and weather-proof design with no outside moving parts
- Integrable wide angle camera for monitoring purposes



SPECTROMETER:

- High quality grating spectrometer
- Characterized and calibrated
- Active temperature stabilization
- Low straylight design
- Sub-nm spectral resolution
- High spectral sampling
- Homogenized slit illumination
- Available with backthinned CCD detector to maximize UV sensitivity

For measurement principle, example applications and data, see SkySpec overview datasheet!

HIGHLIGHTS

Measurement accuracy

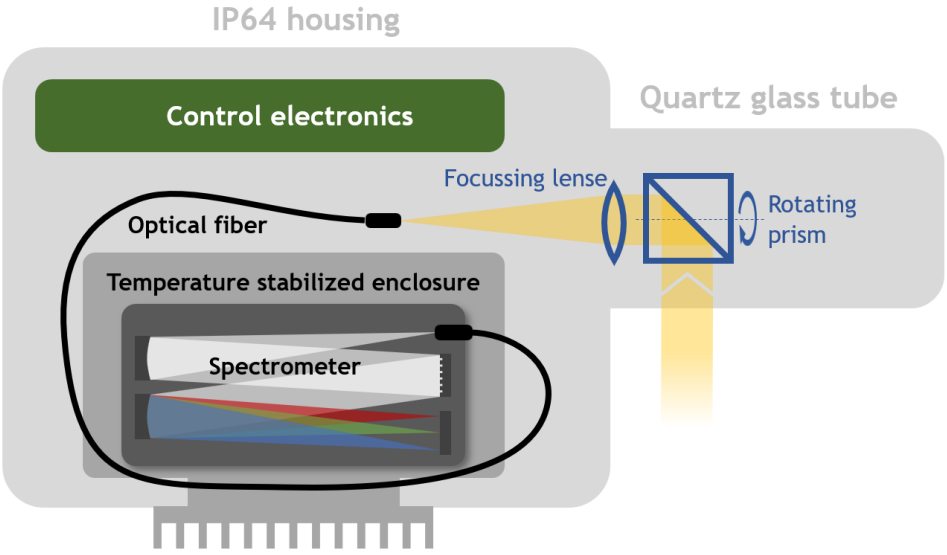
- Individual in-house spectrometer fine adjustment to optimize spectral properties
- Spectrometer characterization included: wavelength calibration, offset and dark current spectra, detector non-linearity function
- Active spectrometer temperature stabilization ensures stable properties
- High spectral sampling prevents quantization errors
- Low noise and high precision in narrow-band optical density
- Color filters and optical bench design minimize spectrometer stray-light
- Optical fiber ensures homogeneous spectrometer illumination
- Real-time correction of telescope elevation via inclination sensor, ideal for measurements on moving platforms (ships, cars) or in changing environments
- Prism deflector and optical fiber setup prevent polarization induced biases
- Small vertical field of view (< 0.3°) optimized for vertical profiling applications

Setup, lifetime & maintenance

- Quartz glass tube design avoids outside moving parts for:
  - ► long lifetime even under harsh environmental conditions
  - ► simple cleaning
- Integrated telescope heating (activates at < 5°C) prevents:
  - ► water condensation, snow and ice on quartz cylinder and other optics
  - ► freezing of mechanical components
- Weather proof and UV resistant IP64 housings
- 12V/DC power supply with low consumption, ideal for mobile operation via battery or car-cigarette-lighter
- Easily adaptable measurement routines
- Fast instrument power-up
- Various mounting options (tripod, rail and mast adapters available)

Customization

- Individual spectrometer configurations to best meet your spectral requirements



TYPICAL SPECIFICATIONS

Wavelength range	400 – 460 nm (standard) *1
Spectral resolution	< 0.7 nm FWHM (standard) *1
Optical filter	Schott BG3 (standard) or BG40 *1
Noise	< $3 \cdot 10^{-4}$ at 10^3 scans (≈60s integration time)
Spectral sampling	> 6 points over slit function FWHM
Quantum efficiency	UV: > 50 % (UV, back-thinned detector)
Spectrometer temp./stability	Temperature: 20°C (adjustable) Stability better than +/-0.03°C
Wavelength calibration	Highly stable in-house calibration (typ. shifts < 0.01 nm), manual re-calibration possible with mercury (HG) lamp
Operation temperature range	-10°C to 40°C *2
Elevation range and accuracy	-10° to 190°, automatic correction with < 0.1° accuracy (1σ)
Field of view FWHM, vertical x horizontal	< 0.3°x1.0°
Telescope heating	Automatic, if temp. below 5°C

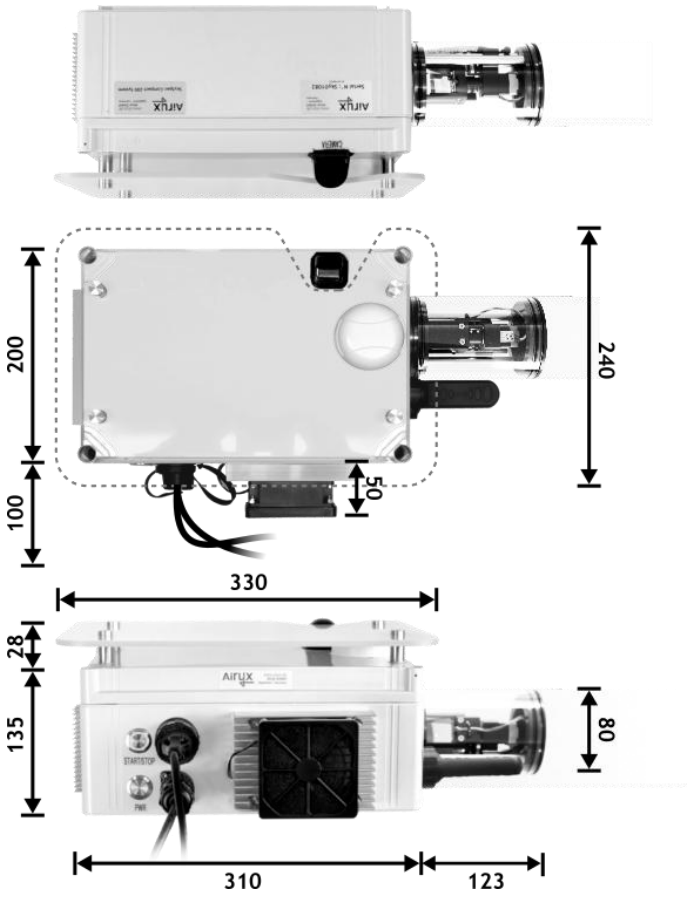
Mechanical stability		Water proof (IP 64), sun roof, robust and simple mounting
Additional Sensors	Temperature:	1°C accuracy, telescope, spectrometer, electronics
	Pressure:	0.5 % accuracy, ambient
	Humidity:	± 3 % accuracy in relative humidity, Sensor inside instrument
Measurement software		Included, customizable measurement routine (angles, time resolution) on embedded PC with Windows 10 Prof.
Start-up time		< 2 min
Data communication		USB
Power consumption		Typ. < 30 W (max. 100 W), 12 V
Weight		≈ 6 kg
Size (WxDxH)		Box: 30 x 20 x 13.2 cm^3 Quartz tube (LxD): 12.3 cm x 8 cm

*1 Custom specifications with different wavelength ranges are possible within certain boundary conditions to guarantee optimum spectroscopic measurements.
*2 Temperature can exceed the operation range in direct sun light.

OPTIONAL COMPONENTS & CONFIGURATIONS

- Custom spectrometer configuration and low-cost spectrometer options
- Tripod and various mounting adapters
- Handheld mercury (HG) wavelength calibration lamp
- Mobile LiPo battery in Peli case (50 Ah, 13.6 V)
- Pre-configured measurement PC (notebook/desktop)
- Integrated, wide FOV camera to monitor measurement conditions
- Spare parts and maintenance set
- Spectral evaluation software packages
- Online installation and support service

DIMENSIONS



All dimensions in mm