

# SkySpec 2D Telescope unit v.260

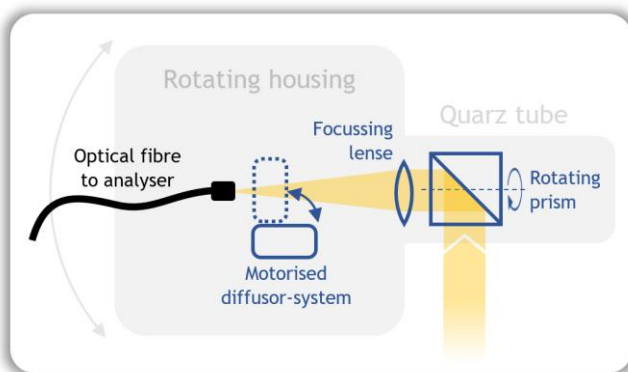
FAST AND ACCURATE POINTING FOR UV/VIS/IR REMOTE SENSING

## GENERAL

- Two-axes motorised telescope
- Gathers light from arbitrary directions in the sky hemisphere and below the horizon
- Integrated inclination sensor for real-time elevation correction
- Acceptance angles down to tenths of degrees
- Optional motorised diffuser/attenuator option to switch between direct Sun and scattered skylight within seconds.
- Optional integrated spectrometer calibration lamp
- Highly customizable to meet your specific requirements and interfaces



Field application with optional tripod and mounting plate.



Schematic of opto-mechanics

## EXAMPLE APPLICATIONS

- Passive remote detection of atmospheric trace gases (e.g. NO<sub>2</sub>, O<sub>3</sub>, SO<sub>2</sub>, HCHO, H<sub>2</sub>O, HONO, IO, BrO, Glyoxal) and aerosols under scattered light as well as direct Sun geometries.
- Measurements of surface reflection properties
- Solar induced plant fluorescence measurements

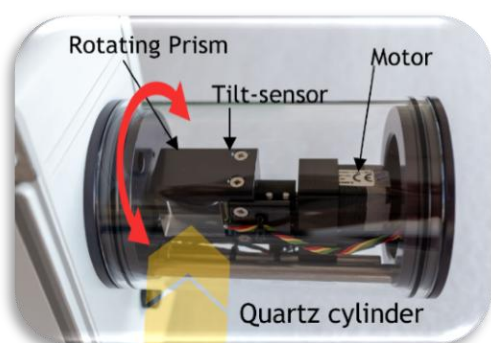
## HIGHLIGHTS

BENEFITS	INNOVATION
High measurement accuracy	<ul style="list-style-type: none"> <li>• Fused silica optical components enable large spectral range</li> <li>• Narrow vertical field of views possible, optimized for MAX-DOAS applications</li> <li>• Viewing elevation is monitored and real-time corrected by means of an integrated inclination sensor → Ideal for applications on ships or other moving platforms</li> <li>• Diffuser system ensures high spectral quality during direct Sun observations</li> </ul>
Simple setup & operation	<ul style="list-style-type: none"> <li>• Simple instrument setup and start up</li> <li>• Sun search routine for automatic azimuthal calibration</li> <li>• Low maintenance, easy cleaning of optics</li> <li>• Connection via optical fiber or fiber bundles for high flexibility</li> <li>• Monitoring of measurement conditions with optional camera systems and various internal sensors</li> </ul>
Long lifetime	<ul style="list-style-type: none"> <li>• Quartz cylinder construction around light entrance optics minimizes outside moving parts</li> <li>• Water proof with IP64, snow resistant</li> <li>• Designed for long term operation</li> <li>• Internal humidity monitoring to avoid water condensation</li> </ul>

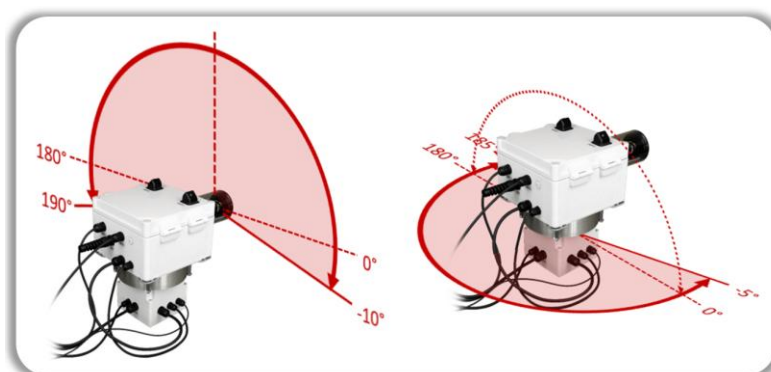
## TYPICAL SPECIFICATIONS

<b>Spectral range</b>	200 nm to 2 µm wavelength (fused silica optical components) <sup>1</sup>	<b>Mechanical stability</b>	Robust for harsh environmental conditions, water proof (IP 64), automatic heater prevents freezing and water condensation on optics.
<b>Operation temperature range</b>	-30 °C to 50 °C	<b>Additional Sensors</b>	Temperature: 1 °C accuracy, ambient, telescope
<b>Elevation range and accuracy</b>	-10° to 190°, 0.1° resolution, automatic correction with < 0.2° accuracy (1σ)	Pressure:	0.5% accuracy, ambient
<b>Azimuth range and precision</b>	-5° to 185°, ± 0.2° (360° virtually available due to > 180° elevation range)	Humidity:	± 3% accuracy in relative humidity
<b>Field of view FWHM, height x width<sup>1</sup></b>	Scattered light: < 0.3° x 1° Direct Sun <sup>2</sup> : ≈ 10° x 10°	<b>Power consumption</b>	Typ. < 2 W (max 20 W with heating) 12 V
<b>Optical fibre connection<sup>1</sup></b>	Various configurations available, (e.g. SMA, 7 x 100 µm fibre bundle, cross-sectional converter)	<b>Weight</b>	≈ 7 kg
<b>Telescope optic<sup>1</sup></b>	focal length (internal): 75 mm; (external): infinite at 400 nm wavelength clear aperture: 22.5 mm	<b>Size (WxDxH)</b>	Box only: 20 x 20 x 29 cm <sup>3</sup> Tube length: 12.3 cm
<b>F-Number<sup>1</sup></b>	f/4	<b>Start-up time</b>	< 10 s
<b>Camera FOV<sup>1</sup></b>	120° x 90°	<b>Mounting options</b>	Tripod, wall mount, tripod, mast, rail
		<b>Data communication<sup>1</sup></b>	Telescope control: RS232 protocol (SUB-D 9) USB adapter included Camera Signals: Analogue (chinch), External Analogue-to-USB Video grabber included

<sup>1</sup> Custom configuration possible, <sup>2</sup>FOV widened due to diffusor system



Close-up of telescope entrance optics



Elevation and azimuth motor ranges

## OPTIONAL COMPONENTS & CONFIGURATIONS

- Custom optical fibre configuration for best compatibility with your spectrometer/analysing unit.
- Integrated, wide FOV camera (2 cameras cover the full sky) to monitor measurement conditions
- Integrated mercury (HG) wavelength calibration lamp system
- Integrated diffusor system, which enables direct-sun observations by homogenizing and attenuating the incoming radiation.
- Fibre and cable length extensions up to 20 m
- Heated Azimuth 2D motor (for low temperature operation)
- Frames, tripods and adapters for simple mounting
- Spare parts and maintenance set
- Online installation and support service

## DIMENSIONS

