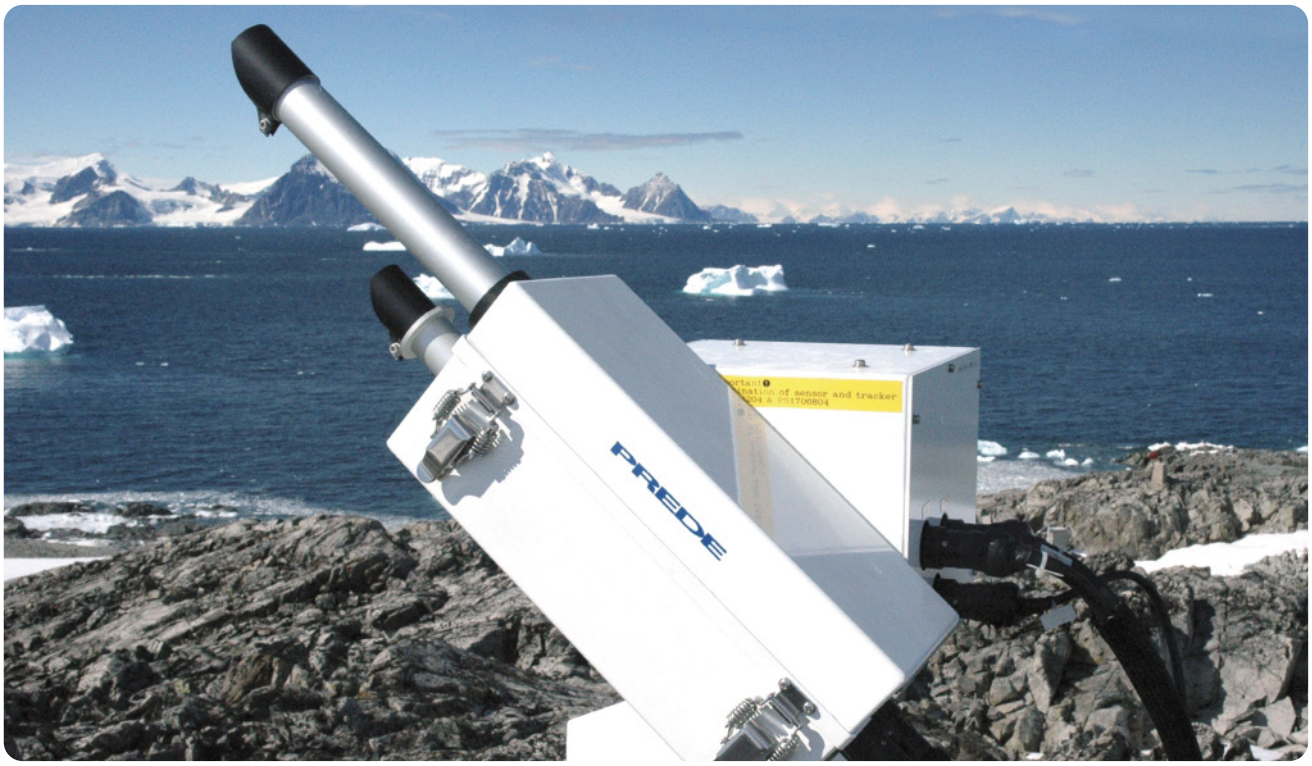

Sky Radiometers

FOR STUDYING THE EFFECTS OF STRATOSPHERIC AEROSOLS

With the increasing interest in climate change and global warming research, the effects of stratospheric aerosols are being studied in greater detail. Primarily, this refers to water vapour and suspended particles such as smoke, dust, sand and ash. These absorb and scatter solar radiation, act as nuclei for the formation of clouds and promote atmospheric chemical reactions.

Understanding atmospheric aerosols is one of the most important ways that scientists can improve models for weather and air quality forecasting and for climate change prediction. In order to gather information on the size and shape of particles it is necessary to measure the characteristics of light directly from the sun and also light scattered and absorbed by the aerosols, at angles up to 90 ° away from the sun.

A radiometer with a narrow field of view makes measurements in several narrow wavebands in the ultraviolet, visible and near-infrared parts of the spectrum. It is mounted on a dedicated sun tracker that can follow the sun and also make scans across the sky at defined angles away from the sun.

One of the most widely used instruments for this purpose is the POM Sky Radiometer, manufactured by Prede Co. Ltd. in Tokyo and distributed by Kipp & Zonen. POM is used in the Asia-Pacific SKYNET network, the European SkyRad users network (ESR) and for aerosol monitoring and satellite ground-truthing around the world.

POM-01

POM-01 is a sky radiometer mounted on a dedicated sun tracker. It uses a single detector and rotating filter wheel to measure radiation in seven narrow wavebands, either directly from the sun or at user-defined angles away from the sun. The instrument has a base with levelling feet and a sun sensor for active tracking. Installation is quick and simple and a precipitation sensor is included so that the radiometer is pointed downwards during rain to keep the optics clean.

POM-01 must be connected to a PC running the operating software in order to make measurements and store data. The supplied software allows comprehensive user selection of the scanning modes. The data can be post-processed to provide parameters including aerosol optical depth, scattering coefficients, aerosol distribution and energy distribution.

Article	Part number
POM-01 Sky Radiometer • 115/230 VAC 7 wavelengths with sun & rain sensors	**3307001**
POM-01 Sky Radiometer • 24 VDC 7 wavelengths with sun & rain sensors	**3307002**
Options for POM-01	
POM-01 Low Temperature Option for operation up to -30 °C (insulating covers)	**3307011**
POM-01 High Temperature Option for operation up to +60 °C (cooling system - AC power only)	**3307012**
POM-01 Dust Protection System for optical windows (filtered air blower - AC power only)	**3307013**

Distribution

POM is designed and produced by **Prede Co. Ltd** of Tokyo and is distributed exclusively by Kipp & Zonen worldwide (with the exception of Japan, Korea and India)

Specifications

Measurement principle	Multiple band filter spectrometer
Detector	Silicon photo-diode
Sun tracker	Integrated, with sun and rain sensors
Supply voltage	115/230 VAC, 50/60 Hz (standard), 24 VDC (option)
Operating temperature range	-10 °C to +45 °C -30 °C to +45 °C with low temperature option -10 °C to +60 °C with high temperature option
Wavelengths	315, 400, 500, 675, 870, 940 and 1020 nm
Wavelength accuracy	2 nm
Half-power bandwidth	3 nm for 315 nm filter, 10 nm for other filters
Full opening view angle	1 °
Communication	RS 232 to PC (not included) running operating software
Software, Windows™	Configuration, operation, data storage

POM-02

POM-02 has all the features of the POM-01, but with extended waveband ranges. There is growing interest in monitoring aerosols of larger size and this requires measurement at longer wavelengths. In addition to the optical system with silicon photo-diode detector of the POM-01, the POM-02 has a second optical system with an Indium Gallium Arsenide infrared detector.

The filter wheel has 11 wavebands, providing measurements to 2200 nm, and also has additional UV channels. POM-02 must be connected to a PC running the operating software in order to make measurements and store data. Like the POM-01, maintenance is minimal; consisting of regular cleaning of the optical windows and checking the desiccant in the radiometer.

Article	Part number
POM-02 Sky Radiometer • 115/230 VAC 11 wavelengths with sun & rain sensors	**3307010**
POM-02 Sky Radiometer • 24 VDC 11 wavelengths with sun & rain sensors	**3307020**
Options for POM-02	
POM-02 Low Temperature Option for operation up to -50 °C (insulating covers)	**3307018**
POM-02 High Temperature Option for operation up to + 50 °C (cooling system - AC power only)	**3307012**
POM-02 Dust Protection System for optical windows (filtered air blower - AC power only)	**3307013**

Distribution

POM is designed and produced by **Prede Co. Ltd** of Tokyo and is distributed exclusively by Kipp & Zonen worldwide (with the exception of Japan, Korea and India)

Specifications

Measurement principle	Multiple band filter spectrometer
Detector	Silicon photo-diode and InGaAs photo-diode
Sun tracker	Integrated, with sun and rain sensors
Supply voltage	115/230 VAC, 50/60 Hz (standard), 24 VDC (option)
Operating temperature range	-30 °C to +35 °C -50 °C to +35 °C with low temperature option -35 °C to +50 °C with high temperature option
Wavelengths	315, 340, 380, 400, 500, 675, 870, 940, 1020, 1627 and 2200 nm
Wavelength accuracy	2 nm
Half-power bandwidth	3 nm for 315 nm filter, 10 nm for other filters
Full opening view angle	1 °
Communication	RS 232 to PC (not included) running operating software
Software, Windows™	Configuration, operation, data storage