



## MS-712 Spectroradiometer

### Technical Specifications

Continuous outdoor measurements

Instant measurement of spectrum 900 nm - 1700 nm

Excellent Long term stability of detector array

Low temperature dependency of detector

Fully controllable by PC and datalogger

The MS-712 can be used stand-alone but is commonly used in combination with the MS-711 to cover the spectral range from 300nm to 1700nm. MS-711 measures in the range from 300nm and 1100nm and MS-712 covers the near-infrared (NIR) range between 900nm and 1700nm. Both spectroradiometers are accurately calibrated with traceability to the International Standards and issued with a calibration uncertainty budget.

The MS-711 and MS-712 spectroradiometer are unique all-weather concept spectroradiometers with no moving parts and temperature controlled spectrometers.

Temperature changes of the detector inside the spectrometer have a strong effect on the measurement uncertainty. Therefore the sensor unit inside the MS-711 and MS-712 main body is accurately controlled at a stable temperature in order to provide

the best performance in a wide operating temperature range. The rugged optical design of the diffuser and input optics make the MS spectroradiometer series concept superior to any fiber optic spectroradiometer which will be susceptible to mechanical vibration and handling. The MS spectroradiometer series are designed for permanent installation but are perfectly suited as a traveling reference.

Both spectroradiometers have a separate power supply and can be controlled through RS232 / 422 by a PC or data logger. The PC software provides different functions for operating, data management and visualization. Software can also be customized to the individual users purpose by making use of the existing system control functions through the open command protocol.

Measuring spectral irradiance is a must to understand the effect of the non-uniform energy distribution of the sun. Since the solar spectrum varies as a function of

air-mass and composition of the atmosphere, the MS-711 and MS-712 reveal those details. While thermopile pyrheliometer and pyranometer are most suitable to quantify the total DNI or global radiation ( $W/m^2$ ), spectroradiometers give detail about the energy distribution ( $W/m^2/nm$ ), which is most important for PV or CPV cell research and performance analysis.

For solar spectral research, we believe only one measurement concept can be the best. The combination of MS-711 and MS-712, called WISER is the reference in the market and designed to provide the most accurate solar spectral data outdoors.

	<b>MS-712</b>
<b>Wavelength range</b>	900 - 1700 nm
<b>Optical resolution FWHM</b>	< 7 nm
<b>Wavelength accuracy</b>	+/- 0.2 nm
<b>Directional response at 1000W/m<sup>2</sup></b>	< 7 %
<b>Temperature response -10°C to 50°C</b>	< 5 %
<b>Temp. control</b>	-5 °C
<b>Operating temperature range</b>	-10 - 40 °C
<b>Exposure time</b>	10 - 5000 msec
<b>Dome material</b>	BK7
<b>Communication</b>	RS-422 / 232C
<b>Power supply</b>	12VDC, 50VA
<b>Dimensions mm</b>	300 (D) x 200 (H)
<b>Weight</b>	7.5 kg
<b>Ingress protection IP</b>	65
<b>Power supply (Power Adapter)</b>	100-240VAC, 50/60Hz
<b>Power consumption</b>	65 W
<b>Power supply operating conditions</b>	-10 to 40°C / 0 to 90 %RH
<b>Power supply dimensions (mm)</b>	320 (W) x 240 (D) x 180 (H)
<b>Power supply weight</b>	1 kg
<b>Program</b>	Analysis software WSDAc
<b>OS</b>	Microsoft Windows 7/8/9/10
<b>Functions</b>	Display and analyze data
<b>Cable length</b>	10 m

<b>Field of View FOV</b>	180 °
<b>Options</b>	<b>MS-712</b>
<b>Cable length</b>	20 / 30 m

Specifications are subject to change without further notice.