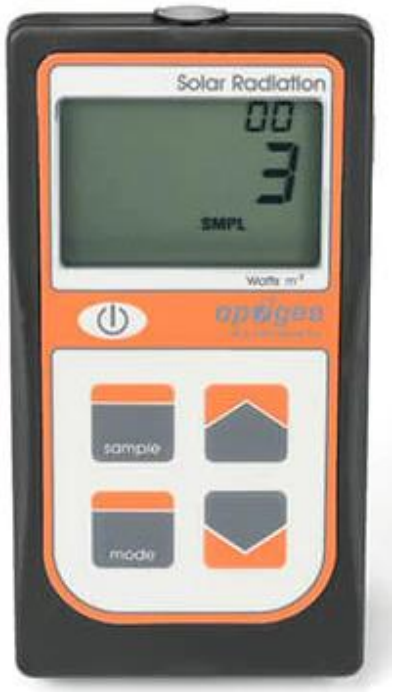
MP-100 & MP-200

DESCRIPTION

The MP-100 has a sensor integrated into the top of the hand-held meter that displays and stores measurements in $W.m^{-2}$. Typical applications include shortwave radiation measurement in agricultural, ecological, and hydrological weather networks and solar panel arrays.

The meter has a sample and log mode, and will record an integrated daily total in $MJ.m^{-2}d^{-1}$. Sample mode will record up to 99 manual measurements. Log mode will power the meter on/off to make a measurement every 30 seconds. Every 30 minutes the meter will average the sixty 30 second measurements and record the averaged value to memory. The meter can store up to 99 averages, once full it will start to overwrite the oldest measurement with new ones. An integrated daily total will be recorded from the 48 averaged measurements (making a 24 hr period). Sample and log measurements can be reviewed on the LCD display or by downloading the data to a computer, however, the integrated daily total can only be viewed by downloading the data to a computer. Downloading data to a computer requires the AC-100 communication cable (a standard USB cable will not work) and ApogeeAMS software.



Features:

Output Options:

- Attached hand-held meter
- Separate sensor attached via cable

Stable Measurements
Long-term non-stability determined from multiple replicate pyranometers in accelerated aging tests and field conditions is less than 2 % per year.

Unique Design
A patented dome-shaped sensor head keeps the sensor clean and minimizes errors by shedding water. Sensors are housed in a rugged anodized aluminum body and electronics are fully-potted.

Typical Measurement Applications
• Solar panel arrays
• Agricultural, ecological, and hydrological weather networks

Calibration Traceability
Apogee SP sensors are calibrated through side-by-side comparison to the mean of (4) Apogee SP-110 transfer standard sensors under high intensity discharge metal halide lamps.

The transfer standard sensors are calibrated through side-by-side comparison to the mean of at least (2) ISO-classified reference pyranometers under sunlight in Logan, UT.
Each of (4) ISO-classified reference sensors are recalibrated on an alternating year schedule at the National Renewable Energy Laboratory (NREL) in Golden, Colorado.
NREL reference standards are calibrated to the World Radiometric Reference (WRR) in Davos, Switzerland.

Cosine Response
Mean cosine response of eleven Apogee silicon-cell pyranometers (error bars represent two standard deviations above and below mean). Cosine response measurements were made during broadband outdoor radiometer calibration (BORCAL) performed during two different years at the National Renewable Energy Laboratory (NREL) in Golden, Colorado. Cosine response was calculated as the relative difference of pyranometer sensitivity at each solar zenith angle to sensitivity at 45° solar zenith angle. The blue symbols are AM measurements; the red symbols are PM measurements.

Spectral Response
Spectral response estimate of Apogee silicon-cell pyranometers. Spectral response was estimated by multiplying the spectral response of the photodiode, diffuser, and adhesive. Spectral response measurements of diffuser and adhesive were made with a spectrometer, and spectral response data for the photodiode were obtained from the manufacturer.

Temperature Response
Mean temperature response of ten Apogee silicon-cell pyranometers (error bars represent two standard deviations above and below mean). Temperature response measurements were made at 10 C intervals across a temperature range of approximately -10 to 40 C in a temperature controlled chamber under a fixed, broad spectrum, electric lamp. At each temperature set point, a spectroradiometer was used to measure light intensity from the lamp and all pyranometers were compared to the spectroradiometer. The spectroradiometer was mounted external to the temperature control chamber and remained atroom temperature during the experiment.

SP-400 Digital Output Series

	MP-100	MP-200
Calibration Uncertainty	± 5 %	
Measurement Repeatability	Less than 1 %	
Long-term Drift	Less than 2 % per year	
Non-linearity	Less than 1 % up to 1750 W m^{-2}	
Response Time	Less than 1 ms	
Field of View	180°	
Spectral Range	360 to 1120 nm	
Directional (Cosine) Response	± 5 % at 75° zenith angle	
Temperature Response	-0.04 ± 0.04 % per C	
Operating Environment	0 to 50 C; less than 90 % non-condensing relative humidity up to 30 C; less than 70 % non-condensing relative humidity from 30 to 50 C; separate sensors can be submerged in water up to depths of 30 m	
Sensor Dimensions	Integrated with Meter	24 mm diameter, 33 mm height
Meter Dimensions	126 cm length, 70 mm width, 24 mm height	
Mass	150 g	180 g
Cable	2 m of shielded, twisted-pair wire; additional cable available; TPR jacket (high water resistance, high UV stability, flexibility in cold conditions)	
Warranty	4 years against defects in materials and workmanship	

This Instrument is manufactured by our principle company

Apogee Instruments - USA

Contact info

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