MI-220

DESCRIPTION

The MI-220 has a hand-held meter, attached via cable, that displays and stores sensor measurements. The sensor has a 18° half-angle field of view and a response time of 0.6 seconds. Typical applications include plant canopy temperature measurement for use in plant water status estimation, road surface temperature measurement of determination of icing conditions, and terrestrial surface (soil, vegetation, water, snow) temperature measurement in energy balance studies.

The meter has a sample and log mode, and will record an average daily value. 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 average daily value 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 average daily value 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 Apogee AMS software. Comes with a free protective carrying case.

Features:

Output Options

- Regular response
- Fast response (SIF, 0.2 second response time)
- SDI-12
- Attached hand-held meter with digital readout

High Accuracy

Calibrated to a custom, black-body cone with a measurement uncertainty of ± 0.2 C from -30 to 65 C when the sensor temperature is within 20 C of the target. Radiometers are only sensitive from 8 to 14 µm to minimize the influence of water vapor and CO_2 on the measurement.

Rugged Housing

Anodized aluminum body with fully-potted electronics. The outer radiation shield reduces thermal fluctuations.

High Speed Options

New fast response models (SIF) have a 0.2 second response time.

Typical Measurement Applications

- Plant water status estimation
- Road surface temperature measurement for determination of icing conditions
- Terrestrial surface (soil, vegetation, water, snow) temperature measurement in energy balance studies

Spectral Response

Spectral response of SI series infrared radiometers. Spectral response (green line) is determined by the germanium filter and corresponds closely to the atmospheric window of 8 to 14 µm, minimizing interference from atmospheric absorption/emission bands below 8 µm and above 14 µm. Typical terrestrial surfaces have temperatures that yield maximum radiation emission within the atmospheric window

Calibration Traceability

Apogee Instruments' MI series infrared temperature meters are calibrated to the temperature of a custom blackbody cone held at multiple fixed temperatures over a range of radiometer (detector/sensor body) temperatures. The temperature of the blackbody cone is measured with replicate precision thermistors thermally bonded to the cone surface. The precision thermistors are calibrated for absolute temperature measurement against a platinum resistance thermometer (PRT) in a constant temperature bath. The PRT calibration is directly traceable to the National Institute of Standards and Technology (NIST)

MI-220

	MI-210	MI-220	MI-230	MI-2H0
Measurement Range	-60 to 110 C *Uncertainty has been determined for ranges below			
Calibration Uncertainty (-20 to 65 C), when target and detector ΔT are <20 C)	0.2 C		0.3 C	0.2 C
Calibration Uncertainty (-40 to 80 C), when target and detector ΔT are >20 C	0.5 C		0.6 C	0.5 C
Measurement Repeatability	Less than 0.05 C			
Long-term Drift	Less than 2 % change in slope per year when germanium filter is maintained			
Response Time	0.6 s, time for detector signal to reach 95 % following a step change; meter firmware averaging results in a 3 s response for digital output on meter screen			
Field of View (half-angle)	22°	18°	14°	32° horizontal; 13° vertical
Spectral Range	8 to 14 µm; atmospheric window			
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			
Meter Dimensions	126 mm length, 70 mm width, 24 mm height			
Sensor Dimensions	23 mm diameter, 60 mm length			
Mass	270 g (with radiation shield)			
Cable	2 m of four conductor, 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			

Contact info

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