

MEPNN Supplier Scouting Opportunity Synopsis

Section 1: General Information

Scouting Number	2025-242
Item to be Scouted	Pyrgeometer & Pyranometer
Days to be scouted	15
Response Due By	08/07/2025
Description	The NOAA Pacific Marine Environmental Laboratory (PMEL) requires a pyrgeometer, pyranometer, and accompanying accessories to capture direct solar radiation and longwave irradiance, which are critical for evaluating the net

Section 2: Technical Information

Type of supplier being sought	high-quality observations vital for weather forecasting and marine operations. Manufacturer
Reason	Background: The CMP22 pyranometer measures shortwave solar radiation, essential for evaluating incoming energy at the ocean surface. The CGR4 pyranometer measures longwave infrared radiation, critical for quantifying incoming radiation from the atmosphere. Together these sensors allow PSL to determine the net radiation budget at the ocean-atmosphere interface, a core component of PSL's air-sea flux programs.
Describe the manufacturing processes (elaborate to provide as much detail as possible)	Similar in form, fit, and function to the CGR4 pyranometer.
Provide dimensions / size / tolerances / performance specifications for the item	<p>Response time (95%): < 18 s</p> <p>Stability (change/year): < 1 %</p> <p>Non-linearity (-250 to 250 W/m²): < 1 %</p> <p>Window heating offset (with 1000 W/m² solar radiation): < 4 W/m²</p> <p>Temperature dependence of sensitivity: < 1 % (-20 °C to +50 °C)</p> <p>Sensitivity: 5 to 15 µV/W/m²</p> <p>Operating temperature: -40 °C to +80 °C</p> <p>Field of view: 180 °</p> <p>Spectral range (50 % points): 4.5 to 42 µm</p> <p>Irradiance (net): -250 to 250 W/m²</p> <p>Similar in form, fit, and function to the CMP22 pyranometers:</p> <p>Analog Outputs: 0 to 21 mV</p> <p>Cable Length: 33, 82, 164, 330 ft (10, 25, 50, 100 m)</p> <p>Classification: Spectrally Flat Class A (ISO 9060:2018)</p> <p>Digital Outputs: N.A.</p> <p>Directional Response: ? 5 W/m² (up to 80 ° with 1000 W/m² beam)</p> <p>Drying Cartridge and Maintenance Interval: External, replacement after approx. 6 months</p> <p>IP Rating: IP67</p> <p>Irradiance Saturation: 4000 W/m² (Max.)</p> <p>Material Enclosures: Aluminum, anodised</p> <p>Non-linearity: ? ±0.2% (100 to 1000 W/m²)</p> <p>Non-stability: ? ±0.5% (change/year)</p> <p>Operating Humidity: 0 to 100%</p> <p>Operating Temperature Range: -40 to +80 °C</p> <p>Response Time: ? 1.7 s (63%), ? 5 s (95%)</p> <p>Sensitivity: 7 to 14 µV/W/m² ? ±0.5 % (-20 to +50 °C)</p> <p>Spectral Accuracy: 200 to 3600 nm</p> <p>Temperature Correction: ? ±0.5% (-20 to +50 °C)</p> <p>Weight: 1.3 lb (600 g)</p> <p>Zero offset A: ? ±3 W/m²</p> <p>Zero offset B: ? ±1 W/m²</p>
List required materials needed to make the product, including materials of product components	Unknown except as provided in attached spec sheet.
Are there applicable certification requirements?	No
Are there applicable regulations?	No

Are there any other standards, requirements, etc.?	No
Additional Technical Comments	Any offered product must be completely compatible (form, fit, and function) with the existing system, without the need for modification to the product or system.

Section 4: Business Information

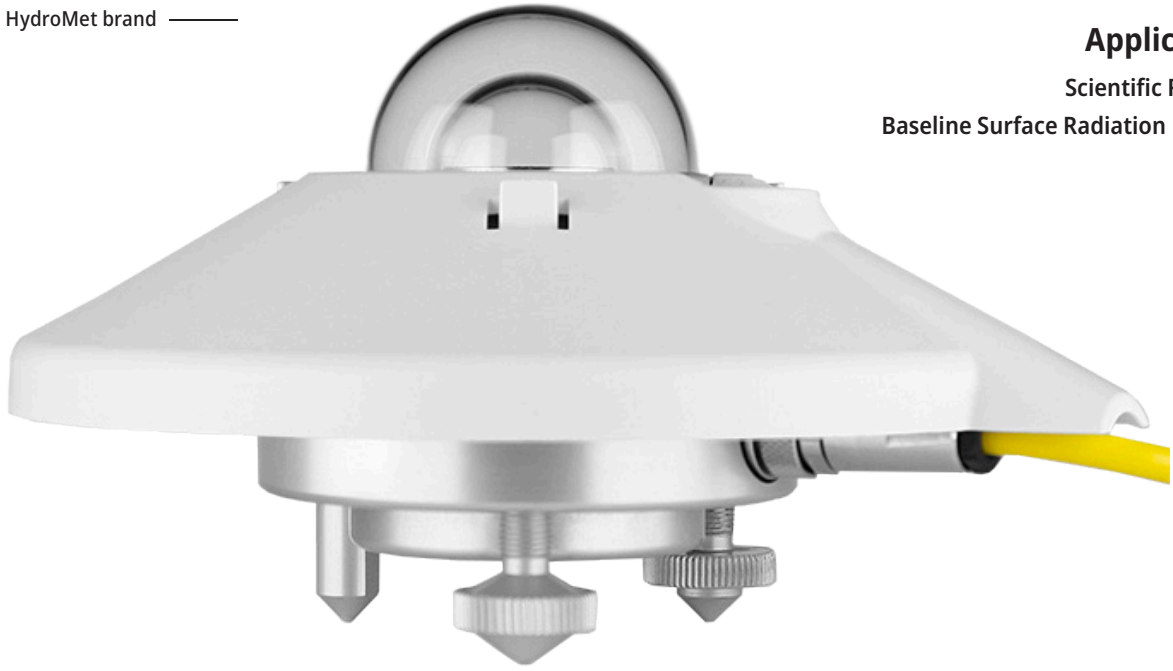
Estimated potential business volume	One-time purchase
Estimated target price / unit cost information (if unavailable explain)	Quantity of one (1) CGR4 equivalent pyrgeometer approximately \$7,434.00, quantity of two (2) waterproof 4-pin plug 10m cable approximately \$182.00 each, and quantity of one (1) CMP22 equivalent pyranometer approximately \$8,419.50.
When is it needed by?	Anticipate contract award by 9/15/2025, with delivery by 9/30/2025.
Describe packaging requirements	Best available. Delivered undamaged. Specifics discussed in negotiation.
Where will this item be shipped?	Boulder, CO

Additional Comments

Is there other information you would like to include?	<p>This is a Simplified Acquisition, which has a shorter lead time to completion than an action over \$250,000.00. It is expected that this requirement will be awarded within the next 30-60 days, and any timely scouting (requested completed within 15 days from submission) would be appreciated to align with Simplified Acquisition requirements for posting and the Buy American Act Waiver process.</p> <p>Department of Commerce Point of Contact: Marcelle Loveday, Director Acquisition Policy & Workforce, Office of Acquisition Management, MLoveday@doc.gov</p>
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Applications

Scientific Research
Baseline Surface Radiation Network



Pyranometer

Premium pyranometers for highest requirements

ISO 9060 Spectrally Flat Class A

Highest level accuracy

Broadest spectral range

Analog and digital outputs

5 years warranty

ISO 9060 & IEC 61724 Class A

Fully compliant with ISO 9060:2018 spectrally flat Class A specifications, the CMP21, CMP22, and SMP22 provide solar irradiance measurements with highest accuracy and reliability. They are the sensors of choice for renowned research institutes around the world. Adding highest-quality quartz domes for a wider spectral range makes the CMP22 and the SMP22 the most accurate pyranometers available.

Minimized maintenance

The CMP21 and CMP22 as well as the smart SMP22 are extremely robust pyranometers that have been designed to fulfill the highest requirements of scientific research. The CMP21 and CMP22 have an easy-to-remove drying cartridge filled with easy-to-replace desiccant that is supplied in convenient refill packets. In contrast, the SMP is fitted with a maintenance-free internal desiccant that lasts at least 10 years.

Analog or digital outputs

The CMP21 and CMP22 do not require any power. Incoming solar radiation generates a continuous millivolt output, which is converted in a data logger to irradiance in W/m^2 using the calibrated sensitivity. For easy integration into SCADA systems the SMP22 has Modbus® RTU RS-485 serial communication, plus an amplified analog output. A specific, individual polynomial correction function is stored in each SMP22.

5 years warranty

All pyranometers from Kipp & Zonen come with a 5-year warranty and we have service and calibration centers around the world.

Technical Specifications

	CMP21	CMP22	SMP22
Classification to ISO 9060:2018	Spectrally Flat Class A	Spectrally Flat Class A	Spectrally Flat Class A
Sensitivity	7 to 14 $\mu\text{V/W/m}^2$	7 to 14 $\mu\text{V/W/m}^2$	-
Impedance	10 to 100 Ω	10 to 100 Ω	-
Expected output range (0 to 1500 W/m ²)	0 to 21 mV	0 to 21 mV	-
Maximum operational irradiance	4000 W/m ²	4000 W/m ²	4000 W/m ²
Analogue output • V-version	-	-	0 to 1 V
Analogue output range • V-version*	-	-	-200 to 2000 W/m ²
Analogue output • A-version	-	-	4 to 20 mA
Analogue output range • A-version*	-	-	0 to 1600 W/m ²
Serial output	-	-	RS-485 Modbus® RTU
Serial output range	-	-	-400 to 4000 W/m ²
Response time (63 %)	< 1.66 s	< 1.66 s	< 0.7 s
Response time (95 %)	< 5 s	< 5 s	< 2 s
Spectral range (20 % points)	270 to 3000 nm	210 to 3600 nm	210 to 3600 nm
Spectral range (50 % points)	285 to 2800 nm	210 to 3600 nm	350 to 3500 nm
Zero offsets (unventilated)			
(a) thermal radiation (at 200 W/m ²)	< ± 7 W/m ²	< ± 3 W/m ²	< ± 3 W/m ²
(b) temperature change (5 K/h)	< ± 2 W/m ²	< ± 1 W/m ²	< ± 1 W/m ²
(c) total zero offset	< ± 9 W/m ²	< ± 4 W/m ²	< ± 4 W/m ²
Non-stability (change/year)	< $\pm 0.5\%$	< $\pm 0.5\%$	< $\pm 0.5\%$
Non-linearity (100 to 1000 W/m ²)	< $\pm 0.2\%$	< $\pm 0.2\%$	< $\pm 0.2\%$
Directional response (up to 80° with 1000 W/m ² beam)	< ± 10 W/m ²	< ± 5 W/m ²	< ± 5 W/m ²
Spectral selectivity (350 to 1500 nm)	< $\pm 3\%$	< $\pm 3\%$	< $\pm 3\%$
Tilt response (0° to 180° at 1000 W/m ²)	< $\pm 0.2\%$	< $\pm 0.2\%$	< $\pm 0.2\%$
Temperature response	< $\pm 1\%$ (-20 to +50°C)	< $\pm 0.5\%$ (-20 to +50°C)	< $\pm 0.3\%$ (-20 to +70°C) < $\pm 0.3\%$ (-40 to +70°C)
Field of view	180°	180°	180°
Accuracy of bubble level	$\pm 0.1^\circ$	$\pm 0.1^\circ$	$\pm 0.1^\circ$
Power consumption (at 12 VDC)	-	-	V-version: 55 mW A-version: 100 mW
Supply voltage	-	-	5 to 30 VDC
Software, Windows™	-	-	SmartExplorer Software, for configuration, test and data logging
Detector type	Thermopile	Thermopile	Thermopile
Operating temperature range	-40 °C to +80 °C	-40 °C to +80 °C	-40 °C to +70 °C
Storage temperature range	-40 °C to +80 °C	-40 °C to +80 °C	-40 °C to +80 °C
Humidity range	0 to 100%	0 to 100%	0 to 100%
MTBF (Mean Time Between Failures)	> 15 years	> 15 years	> 10 years
Ingress Protection (IP) rating	IP67	IP67	IP67
Recommended applications	Scientific research requiring the highest level of measurement accuracy and reliability under all conditions.		

Dimensions	CMP21	CMP22	SMP22
Diameter x height	150 x 92.5 mm	150 x 92.5 mm	150 x 92.5 mm
Diffusor height	68 mm	68 mm	68 mm
Cable length	10, 25, or 50 m	10, 25, or 50 m	10, 25, or 50 m

* adjustable with SmartExplorer Software | Note: The performance specifications quoted are worst-case and/or maximum values



Pyrgeometers

FOR THE PRECISE MEASUREMENT OF FAR INFRARED RADIATION

Measure incoming thermal radiation from the sky and clouds
Measure outgoing thermal radiation from the ground
Used around the world in meteorology, hydrology and climate research
Reliable all-weather performance
Easily portable for field use

INTRODUCTION

Radiation from the sun is mainly in the 'short-wave' range from 300 to 4000 nm (4 μm) that includes the visible and ultraviolet. A proportion of this radiation is absorbed by clouds, aerosols and molecules in the atmosphere, which warms up and radiates 'long-wave' radiation. This is far infrared thermal energy (FIR) at wavelengths from 4.5 μm to beyond 40 μm . Both the short-wave and long-wave radiation reach the Earth, where some is reflected and the remainder warms up the surface. The Earth radiates long-wave thermal energy back to the sky.

The relationship of incoming and outgoing short-wave and long-wave radiation is the 'Energy Balance'. Short-wave radiation is measured by a pyranometer and the long-wave radiation by a pyrgeometer.

Kipp & Zonen pyrgeometers comply with the requirements of the World Meteorological Organisation and are fully traceable to the World Infrared Standard Group (WISG) in Davos, Switzerland, where the Kipp & Zonen CGR 4 forms part of the Group.

APPLICATIONS

CGR pyrgeometers have been developed for use in all environments, from the Antarctic to deserts. They are installed around the world for meteorology, hydrology, climate research, and agriculture; wherever accurate measurements of the radiation energy balance are required. Kipp & Zonen pyrgeometers are designed for a long operating life with simple maintenance.

CHOICE OF PYRGEOMETER

A pyrgeometer provides a voltage that is proportional to the radiation exchange between the instrument and the sky (or ground) in its field of view. The detector signal output can be positive or negative.

For example, if the sky is colder than the pyrgeometer, the instrument radiates energy to the sky and the output is negative.

In order to calculate the incoming or outgoing FIR it is necessary to know the temperature of the instrument housing close to the detector and the data must be recorded simultaneously with the detector signal.

Kipp & Zonen CGR pyrgeometers use silicon windows to transmit infrared radiation and these have an internal thin film coating that blocks short-wave solar radiation from reaching the broadband thermopile detector.

There is an integrated bubble level and a white sun shield prevents the body heating up. The waterproof connector has gold-plated contacts and is fitted with 10m of high quality signal cable as standard. A 10K thermistor internal temperature sensor is fitted (Pt-100 optional).

The instruments do not require power and are supplied with calibration certificates traceable to the WISG. The most appropriate model for an application depends on the desired accuracy and performance.



CGR 3 is the partner to the CMP 3 pyranometer. It has a flat silicon window which provides a field of view of 150°. The small size and sealed construction make this instrument the ideal choice for horticulture and agriculture. A screw-in mounting rod is available for easy installation.





CGR 4 is the best pyrheliometer currently available and is the choice for scientific use and in top level solar radiation monitoring networks such as the Baseline Surface Radiation Network (BSRN) of the World Meteorological Organisation. It is the partner for CMP 11, CMP 21 and CMP 22 pyranometers.

CGR 4 has a specially designed silicon meniscus dome that provides a 180 ° field of view and has a hard-carbon coating on the outside to smooth the spectral response and provide extra surface protection. The detector is compensated for changes in sensitivity due to temperature variations.

All pyrheliometers use infrared window materials that absorb a large part of the short-wave radiation. The window heats up and creates an offset in the readings. For increased accuracy it is normally necessary to shade the pyrheliometer from direct solar radiation to minimise this effect. However, the unique design of CGR 4 reduces the dome heating offset to a negligible level (particularly when ventilated), eliminating the need for dome temperature measurements or dome shading.

BUILDING A SYSTEM

The system capabilities of Kipp & Zonen pyrheliometers can be extended with our wide range of compatible products and accessories. Please refer to the specific product brochures, available at our website, www.kippzonen.com

Ventilation Unit

The CVF 3 ventilation unit is designed not only for use with the CMP pyranometers, but also the CGR 4 pyrheliometer. Ventilation helps to keep the dome clean and reduces infrared thermal offsets by stabilization of the dome temperature. The CVF 3 has 2 levels of heating that can be used to remove raindrops, dew, frost and snow.

Sun Tracker

SOLYS 2 and 2AP sun trackers are all-weather reliable instruments used to accurately point a pyrliometer at the sun for direct radiation measurements. Adding the shading assembly, two pyranometers (one shaded) and a CGR 4 pyrheliometer (shaded) to a sun tracker complies with the requirements for a basic Baseline Surface Radiation Network (BSRN) station.

Data loggers

Kipp & Zonen has a range of high performance data logging products for use with CGR pyrheliometers.



Amplification

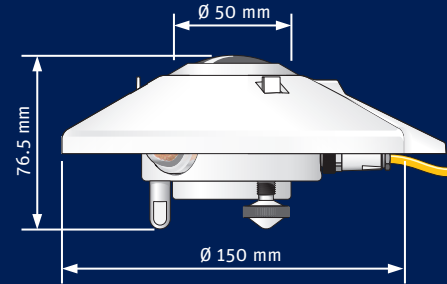
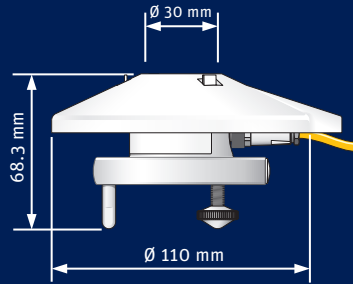
Pyrheliometers have low output signals in the mV range. AMPBOX converts this to the industrial standard 4 - 20 mA current loop signal and provides a defined output range in W/m². The zero point is offset to allow negative readings. Amplification is advised for noisy environments, use with data acquisition equipment with high-level inputs, and for very long cables (> 100 m).

Mounting plates

Kipp & Zonen offers two mounting fixtures suitable for both CGR pyrheliometers. CMF 1 is a small round plate with integral rod for mounting upward and/or downward facing pyrheliometers. CMF 2 is a larger version that can also be used for mounting the CGR 4 fitted with the CVF 3 ventilation unit.

Net Long-wave radiometer

Net long-wave radiation can be calculated using two pyrheliometers, one looking up and one looking down. The CGR 3 is especially designed so that two instruments can be mounted base-to-base and fitted with the optional mounting rod. In this case the temperature of the pyrheliometers is the same and is irrelevant for the net radiation calculation.



Specifications	CGR 3	CGR 4
Response time (95 %)	< 18 s	< 18 s
Non-stability (change/year)	< 1 %	< 1 %
Non-linearity (-250 to 250 W/m ²)	< 1 %	< 1 %
Window heating offset (with 1000 W/m ² solar radiation)	< 15 W/m ²	< 4 W/m ²
Temperature dependence of sensitivity	< 5 % (-10 °C to +40 °C)	< 1 % (-20 °C to +50 °C)
Sensitivity	5 to 15 µV/W/m ²	5 to 15 µV/W/m ²
Operating temperature	-40 °C to +80 °C	-40 °C to +80 °C
Field of view	150 °	180 °
Spectral range (50 % points)	4.5 to 42 µm	4.5 to 42 µm
Irradiance (net)	-250 to 250 W/m ²	-250 to 250 W/m ²
CGR instruments have a standard cable length of 10 m. Optional cable lengths 25 m and 50 m		
Standard 10 K Thermistor (YSI 44031) or optional Pt-100 temperature sensor		
Under most conditions the output from CGR pyrometers is negative and suitable data acquisition equipment must be used		

Note: The performance specifications quoted are worst-case and/or maximum values



**KIPP &
ZONEN**
SINCE 1830

Go to www.kippzonen.com for your local distributor

HEAD OFFICE

Kipp & Zonen B.V.
Delftechpark 36, 2628 XH Delft
P.O. Box 507, 2600 AM Delft
The Netherlands
T: +31 (0) 15 2755 210
F: +31 (0) 15 2620 351
info@kippzonen.com

Kipp & Zonen B.V. reserve the right to alter specifications of the equipment described in this documentation without prior notice

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