MEPNN Supplier Scouting Opportunity Synopsis

Item Information

Scouting Number	2023-073
Item to be Scouted	Temperature and Humidity Sensors and Accessories
Days to be scouted	15
Description	The Oceanic and Atmospheric Research (OAR) Earth Systems Research Laboratories (ESRL) Physical Sciences Laboratory (PSL) needs to purchase sensor elements compatible with Campbell Scientific Inc's HygroVUE10-10-PT Digital Temperature/RH sensors (P/N 35210-1), HygroVUE10-17-PT Digital Temperature/RH sensors (P/N 35210-3), RAD10E METSPEC 10-plate solar radiation shields (P/N 32360), Radiation shield adapters (P/N 6637), and HygroVUE10 replacement elements and caps (P/N 39310). The radiation shield adapter is manufactured within the U.S., all other products are manufactured in Great Britain.
State item to be used in	California

Contact Information

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First Name	Stephanie
Last Name	Long
Department / Company / MEP Center	Commerce, U.S. Department of
Bureau / Division / MEP Center Regional Office	National Oceanic and Atmospheric Administration (NOAA)

Supplier Information

Type of supplier being sought	Manufacturer
Reason	Other
Details	Buy American Act Waiver

Summary of technical specifications and performance requirements

Describe the manufacturing processes (elaborate to provide as much detail as possible)	Mechanical and electronic assembly.
Provide dimensions / size / tolerances / performance specifications for the item	The sensors offer a combined temperature and relative humidity element in an advanced digital sensor that is ideal for weather networks. The electronics within the sensor provide accurate measurements, and the sensor is easy to use. The digital SDI-12 output allows a simple connection and measurement by many data logging systems. Another benefit is that this digital output avoids the extra errors associated with measuring analog sensors. A hydrophobic sintered filter prevents dirt and water from entering the cap. The filter is designed to be resistant to wind-driven rain. A secondary PTFE membrane filter is bonded to the surface of the sensor element to prevent finer dust and mold from directly influencing the measurements. Because the sensor housing is designed to withstand permanent exposure to various weather conditions and to fit inside a range of radiation shields (including compact shields), the HygroVUE™10 is truly suitable for a wide range of monitoring applications.

	The humidity sensor utilizes a latest-generation, Swiss-made, combined relative humidity and temperature element that offers good measurements, accuracy, and stability. Each element of the sensor is individually calibrated with the calibration corrections stored on the chip. You can easily change the sensor element in the field, which reduces your downtime and calibration costs. General Specifications: Sensing Element: SHT35 Communication Standard: SDI-12 V1.4 (responds to a subset of commands) Supply Voltage: 7 to 28 Vdc EMC Compliance: Tested and conforms to IEC61326:2013. Standard Operating Temperature Range: -40° to +70°C Main Housing Material: UV stable, white PET-P Electronics Sealing Classification: IP67 Sensor Protection: Outer glass-filled polypropylene cap fitted with a stainless-steel mesh dust filter with nominal pore size of < 30 µm. The sensor element has a PTFE protective film with a filtration efficiency of > 99.99% for particles of 200 nm or larger size. Sensor Connector: M12, male, 4-pole, A-coded Cable: Polyurethane sheathed, screened cable, nominal diameter 4.8 mm (0.19 in.) Field-Replaceable Chip or Recalibrate: Field-replaceable chip Sensor Cap Diameter: 12.5 mm (0.5 in.) Body Diameter at Connector: 18 mm (0.7 in.) Length: 180 mm (7.1 in.) without cable fitted Sensor Body Weight: 50 g (1.8 oz) Weight: 250 g (8.8 oz) with 5 m (16.4 ft) cable Relative Humidity Specifications: Measurement Range: 0 to 100% RH Accuracy: ±2% (at 25°C, over the range 80 to 100% RH) -NOTE- The accuracy figures quoted are the 95% confidence limits relative to factory standards. ±1.5% (at 25°C, over the range 0 to 80% RH) Short-Term Hysteresis: < ±1% RH Additional Errors at Other Temperatures: < ±1% RH (over -40° to +60°C) Long-Term Stability: ±0.5% per year (maximum drift in clean air conditions) Reported Resolution: 0.001% RH Repeatability: 0.05% RH (3s noise level) Response Time with Filter: < 20 s (63% response time in still air) HygroVUE10 Air Temperature Specifications: Measurement Range: -40°C to +70°C -NOTE- The accuracy figures quoted are the 95% confidence limits relative to factory standards. Accuracy: ±0.1°C (over the range 20 to 60°C) ±0.2°C (over the range -40 to +70°C) Long-Term Drift: < 0.03°C per year Reported Resolution: 0.001°C Repeatability: 0.04°C (3s noise level) Response Time with Filter: < 130 s (63% response time in air moving at 1 m/s) Calibration Traceability: NIST and NPL standards HygroVUE10 Maximum Current Drain Specifications: Quiescent: 50 µA During Measurement: 0.6 mA (takes 0.5 s)
List required materials needed to make the product, including materials of product components	Exact materials not specified within product specification sheet, except for as listed above. Additional specifications documentation for the RAD10E will be attached with this opportunity.
Are there applicable certification requirements?	No
Are there applicable regulations?	No

Additional Technical Comments	Any suggested alternative products must be fully compatible with Campbell Scientific's HygroVUE10 products, as these are already in use by the PSL and these are replacement parts and accessories. Other similar products were sent to the program office for technical evaluation including - AcuRite Iris temperature/RH element, Adafruit AM2320 temperature/RH sensor, Control DAVIS-7714 solar radiation shield, HOBO RS3-B solar radiation shield, Schneider HS temperature/RH element, and TE Connectivity HTU20D temperature/RH sensor. I am still waiting on a response.

Volume and Pricing

Estimated potential business volume	One-time-purchase for quantity 40 HygroBUE10-10-PT, quantity 20 HygroVUE10-17-PT, quantity 35 RAD10E METSPEC, quantity 15 radiation shield adapter, and quantity 10 HygroVUE10 replacement element.
Estimated target price / unit cost information (if unavailable explain)	Aggregate purchase of $32,699.60 for all products.

Delivery Requirements

When is it needed by?	Delivery by 09/30/2023.
Describe packaging requirements	No requirements specified.
Where will this item be shipped?	Boulder, CO

Additional Comments

Is there other information you would like to include?	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 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.

CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

HygroVUE10

Digital Temperature and Relative Humidity Sensor with M12 Connector

Rugged, Reliable, and Flexible

Simple to use and easy to maintain

Overview

The HygroVUE™10 offers a combined temperature and relative humidity element in an advanced digital sensor that is ideal for weather networks. The electronics within the sensor provide accurate measurements, and the sensor is easy to use. The digital SDI-12 output allows a simple connection and measurement by many data logging systems. Another benefit is that this digital output avoids the extra errors associated with measuring analog sensors.

A hydrophobic sintered filter prevents dirt and water from entering the cap. The filter is designed to be resistant to wind-driven rain. A secondary PTFE membrane filter is bonded to the surface of the sensor element to prevent finer dust and mold from directly influencing the measurements.

Because the sensor housing is designed to withstand permanent exposure to various weather conditions and to fit inside a range of radiation shields (including compact shields), the HygroVUE™10 is truly suitable for a wide range of monitoring applications.

The HygroVUE™10 utilizes a latest-generation, Swiss-made, combined relative humidity and temperature element based on CMOSens® technology that offers good measurements, accuracy, and stability. Each element of the HygroVUE™10 is individually calibrated with the calibration corrections stored on the chip. You can easily change the sensor element in the field, which reduces your downtime and calibration costs.

Benefits and Features

- Uses a combined, pre-calibrated digital humidity and temperature element
- Field-changeable element for fast, on-site recalibration
- Digital SDI-12 output, allowing long cables with no added errors
- Simple data logger programming
- Low power consumption
- Wide operating voltage
- Rugged design with potted electronics
- Standard M12 connector with IP67 sealing rating

Detailed Description

Mounting

When you use the HygroVUE 10 outdoors, it is standard practice to install the sensor within a housing, known as a

shield. The shield prevents solar radiation from heating the sensor and creating measurement errors. The radiation shield also provides a degree of protection from adverse weather, such as hail or driving rain. The most common type of shield is a relatively small, naturally ventilated screen that is low maintenance and requires no power.

The HygroVUE 10 is specifically designed for field use with dimensions to suit common radiation shields. (Campbell Scientific recommends the RAD10E 10-Plate Solar Radiation Shield.) You can mount the RAD10E on vertical or horizontal poles.

Field Calibration

Calibration is easy to carry out by simply changing the sensor element. As each sensor element is individually calibrated, no further adjustments of the sensor are required. This means that when you change the element, it returns the sensor to the factory calibration state for both temperature and humidity—without interrupting your measurement collection for long periods.

Specifications

Sensing Element	SHT35 modified by Campbell Scientific
Communication Standard	SDI-12 V1.4 (responds to a subset of commands)
Supply Voltage	7 to 28 Vdc
EMC Compliance	Tested and conforms to IEC61326:2013.
Standard Operating Temperature Range	-40° to +70°C
Main Housing Material	UV stable, white PET-P
Electronics Sealing Classification	IP67
Sensor Protection	Outer glass-filled polypropylene cap fitted with a stainless-steel mesh dust filter with nominal pore size of < 30 µm. The sensor element has a PTFE protective film with a filtration efficiency of > 99.99% for particles of 200 nm or larger size.
Sensor Connector	M12, male, 4-pole, A-coded
Cable	Polyurethane sheathed, screened cable, nominal diameter 4.8 mm (0.19 in.)
Field-Replaceable Chip or Recalibrate	Field-replaceable chip
Sensor Cap Diameter	12.5 mm (0.5 in.)
Body Diameter at Connector	18 mm (0.7 in.)
Length	180 mm (7.1 in.) without cable fitted
Sensor Body Weight	50 g (1.8 oz)
Weight	250 g (8.8 oz) with 5 m (16.4 ft) cable

Relative Humidity	
Measurement Range	0 to 100% RH
Accuracy	❱ ±2% (at 25°C, over the range 80 to 100% RH) ❱ *-NOTE- The accuracy figures quoted are the 95% confidence limits relative to factory standards.* ❱ ±1.5% (at 25°C, over the range 0 to 80% RH)
Short-Term Hysteresis	< ±1% RH
Additional Errors at Other Temperatures	< ±1% RH (over -40° to +60°C)
Long-Term Stability	±0.5% per year (maximum drift in clean air conditions)
Reported Resolution	0.001% RH
Repeatability	0.05% RH (3σ noise level)
Response Time with Filter	< 20 s (63% response time in still air)

Air Temperature	
Measurement Range	-40°C to +70°C
-NOTE-	*The accuracy figures quoted are the 95% confidence limits relative to factory standards.*
Accuracy	❱ ±0.1°C (over the range 20 to 60°C) ❱ ±0.2°C (over the range -40 to +70°C)
Long-Term Drift	< 0.03°C per year
Reported Resolution	0.001°C
Repeatability	0.04°C (3σ noise level)
Response Time with Filter	< 130 s (63% response time in air moving at 1 m/s)
Calibration Traceability	NIST and NPL standards

Maximum Current Drain

Quiescent	50 µA
During Measurement	0.6 mA (takes 0.5 s)

RAD10E

10-Plate Solar Radiation Shield for Larger Sensors

Overview

The RAD10E, manufactured by MetSpec, is attached to a Campbell Scientific crossarm or mast. The RAD10E uses a double-louvered design that offers improved sensor protection from driving rain, snow, and insect intrusion. This shield also has lower self-heating in bright sunlight combined with higher temperatures (> 24°C (~75°F)) and low wind speeds (< 2 m s^{-1} (~4.5 mph)), giving a better measurement.

Read More ›

Benefits and Features

- Improved sensor protection from driving rain, snow, and insect intrusion
- Lower self-heating

Images

RAD10E

Detailed Description

The RAD10E 10-Plate Solar Radiation Shield houses the EE181-L Temperature and Relative Humidity Probe. The probe fits in the bottom of the shield and is held in place with a foam-lined gland that tightens down around the probe.

The RAD10E includes a 5.08 cm (2 in.) U-bolt with a plastic V-block. The U-bolt is placed in the holes on the side of the bracket for attachment to a mast or vertical pole. The U-bolt is placed in the holes on the bottom of the bracket for attachment to a crossarm.

Specifications

Construction	UV-stabilized white thermoplastic plates, aluminum mounting bracket, white powder-coated stainless-steel U-bolt clamp
Plate Diameter	12.3 cm (4.84 in.)
Height	20.8 cm (8.19 in.)
Weight	1.01 kg (2.23 lb)

Compatibility

Note: The following shows notable compatibility information. It is not a comprehensive list of all compatible or incompatible products.

Sensors

Product	Compatible	Note
EE181-L	✔	
HygroVUE10	✔	

Additional Compatibility Information

The RAD10E attaches to a crossarm, mast, or user-supplied pipe with a 2.54 to 5.334 cm (1.0 to 2.1 in.) OD.

Articles and Press Releases

Blog Articles

Evolution Not Revolution: Updating an Established Product Range
01-06-2020 Author: Andrew Sandford

The Most Rugged Air Temp/RH Sensor We Know of: the EE181
12-14-2016 Author: Robin Deissinger

Newsletter Articles

EE181 Now for Sale 01-16-2017

Listed Under

Common Accessory for the following products:

- **EE181-L** - Air Temperature and Relative Humidity Sensor
- **HYGROVUE10** - Digital Temperature and Relative Humidity Sensor with M12 Connector
- **CM202** - 2 ft Crossarm with One CM210 Mounting Kit
- **CM203** - 3 ft Crossarm with One CM210 Mounting Kit
- **CM204** - 4 ft Crossarm with One CM210 Mounting Kit
- **CM206** - 6 ft Crossarm with One CM210 Mounting Kit