



Certificate of Calibration

Model: CR1000

Serial Number: 35780

Temperature Option: Extended Temperature Tested

Test Panel Location: 3

CSI Calibration Number: 230410467

Calibration Procedures: TST12215A R14 TST12215C R21 PRC33A R24

Instrument Calibration Condition

Received Disposition: In Tolerance

Returned Disposition: In Tolerance

Recommended Calibration Schedule

If the customer has not requested a calibration interval, a non-mandatory recommended interval is provided. Based on past experience and assumed normal usage, it is recommended that this instrument be calibrated in accordance with the interval stated below to ensure sustained accuracy and reliable performance.

Calibration Date: 10-Apr-23

Recommended Interval: 3 Years of Service

Report of Calibration Standards Used

Make/Model	Serial Number	Cal. Due Date	Trace Number
Krohn Hite 523	LD50018	24-Feb-24	LD50018
CSI Oscillator	08/20/01	08-Jul-23	08/20/01

Calibration Procedures

Voltage Excitation

Analog Input Ranges

Pulse Counters

System Power

Period Averaging

Control Ports

CSI certifies the above instrument meets or exceeds published specifications and has been calibrated using standards and instruments whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant or a ratio calibration technique. The collective measurement uncertainty of the calibration process exceeds a 4:1 accuracy ratio. Policies and procedures at this facility comply with ISO-9001.

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Instrument Data Report

Analog Input Accuracy

S/N: 35780

Datalogger Option: Extended Temperature Tested

Range	Input (mV)	*Tolerance (mV)	Single-Ended (Full Scale)		Differential		Temp. (°C)
			As Received (mV)	As Returned (mV)	As Received (mV)	As Returned (mV)	
6	5000	±3	5001.40	5000.31	5001.36	5000.00	24.0
6	-5000	±3	-5000.97	-4999.69	-4999.66	-5000.00	24.0
5	2500	±1.5	N/A	N/A	2499.83	2499.83	24.0
4	250	±0.15	N/A	N/A	250.007	249.981	24.0
3	25	±0.015	N/A	N/A	25.003	25.002	24.0
2	7.5	±0.0045	N/A	N/A	7.500	7.500	24.0
1	2.5	±0.0015	N/A	N/A	2.500	2.500	24.0
1	-2.5	±0.0015	N/A	N/A	-2.499	-2.499	24.0
6	5000	±6	N/A	5000.35	N/A	5000.68	-25
6	5000	±6	N/A	4999.74	N/A	4998.99	50
6	5000	±9	N/A	5001.28	N/A	5002.41	-55
6	5000	±9	N/A	4999.57	N/A	4999.66	85

*Tolerance values are specified accuracy not including offset. Offset voltages are not included because an offset removal procedure is used to account for calibrator offset. Refer to CSI Process Control Document PRC7A.

Quiescent System Power

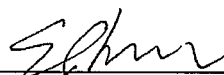
Typical (mA)	As Received (mA)	As Returned (mA)	Temp. (°C)
<1.0	0.52	0.63	24.0

Real-Time Clock

Tolerance (min/year)	As Returned (min/year)	Temp. (°C)
± 3 minutes	Within Tolerance	-55 to +85

Laboratory Environment

Temperature (°C)	Relative Humidity (%)
24.0	27.



Calibration Technician

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Certificate of Calibration

Model: CR1000

Serial Number: 66277

Temperature Option: Extended Temperature Tested

Test Panel Location: 2

CSI Calibration Number: 230412279

Calibration Procedures: TST12215A R14 TST12215C R21 PRC33A R24

Instrument Calibration Condition

Received Disposition: In Tolerance

Returned Disposition: In Tolerance

Recommended Calibration Schedule

If the customer has not requested a calibration interval, a non-mandatory recommended interval is provided. Based on past experience and assumed normal usage, it is recommended that this instrument be calibrated in accordance with the interval stated below to ensure sustained accuracy and reliable performance.

Calibration Date: 12-Apr-23

Recommended Interval: 3 Years of Service

Report of Calibration Standards Used

Make/Model	Serial Number	Cal. Due Date	Trace Number
Krohn Hite 523	LD50018	24-Feb-24	LD50018
CSI Oscillator	08/20/01	08-Jul-23	08/20/01

Calibration Procedures

Voltage Excitation

Analog Input Ranges

Pulse Counters

System Power

Period Averaging

Control Ports

CSI certifies the above instrument meets or exceeds published specifications and has been calibrated using standards and instruments whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant or a ratio calibration technique. The collective measurement uncertainty of the calibration process exceeds a 4:1 accuracy ratio. Policies and procedures at this facility comply with ISO-9001.

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Instrument Data Report

Analog Input Accuracy

S/N: 66277

Datalogger Option: Extended Temperature Tested

Range	Input (mV)	*Tolerance (mV)	Single-Ended (Full Scale)		Differential		Temp. (°C)
			As Received (mV)	As Returned (mV)	As Received (mV)	As Returned (mV)	
6	5000	±3	4999.55	4999.84	4999.33	4999.33	24.0
6	-5000	±3	-5000.45	-5000.16	-4999.33	-5000.00	24.0
5	2500	±1.5	N/A	N/A	2500.25	2499.83	24.0
4	250	±0.15	N/A	N/A	250.011	250.022	24.0
3	25	±0.015	N/A	N/A	25.006	25.004	24.0
2	7.5	±0.0045	N/A	N/A	7.501	7.501	24.0
1	2.5	±0.0015	N/A	N/A	2.500	2.500	24.0
1	-2.5	±0.0015	N/A	N/A	-2.500	-2.500	24.0
6	5000	±6	N/A	5002.78	N/A	5001.70	-25
6	5000	±6	N/A	4999.57	N/A	4999.66	50
6	5000	±9	N/A	5003.75	N/A	5002.72	-55
6	5000	±9	N/A	4999.09	N/A	4998.31	85

*Tolerance values are specified accuracy not including offset. Offset voltages are not included because an offset removal procedure is used to account for calibrator offset. Refer to CSI Process Control Document PRC7A.

Quiescent System Power

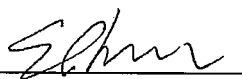
Typical (mA)	As Received (mA)	As Returned (mA)	Temp. (°C)
<1.0	0.43	0.60	24.0

Real-Time Clock

Tolerance (min/year)	As Returned (min/year)	Temp. (°C)
± 3 minutes	Within Tolerance	-55 to +85

Laboratory Environment

Temperature (°C)	Relative Humidity (%)
24.0	29.


Calibration Technician

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721 West 1800 North
Logan, UT 84321

Certificate of Calibration LI-COR Pyranometer Model LI-200X

Customer Name : Andrew Bliss
Serial Number : PY85840
Calibration Date : 15-Apr-2023
Previous Calibration Date : 26-Apr-2019
Recommended Recalibration Date : 14-Apr-2025
Calibration Factor : 199.42 W m^{-2} per mV
Output : 95.0 μA per 1000 W m^{-2}
Calibration Factor as Received : 197.90 W m^{-2} per mV
Output as Received : 95.7 μA per 1000 W m^{-2}
Resistance (Measured) : 52.8 Ω
Change in Output : -0.8 %
Change in Output per Year : -0.2 %

Calibration Procedure

Calibration is based on a side-by-side comparison under high intensity discharge metal halide lamps using the mean of (4) LI-COR transfer standard pyranometers. LI-COR transfer standards are calibrated to the mean of at least (2) ISO-classified reference pyranometers under sunlight (clear sky conditions) in Logan, Utah. Each of the four ISO-classified reference pyranometers are recalibrated on an alternating year schedule (two instruments per year) at the National Renewable Energy Laboratory (NREL) in Golden, Colorado. NREL reference standards are calibrated to the World Radiometric Reference (WRR) in Davos, Switzerland.

Traceability

Reference Instrument	Serial Number	ISO 9060 Classification
EKO Instruments MS80*	S16088044	Spectrally Flat Class A
Kipp & Zonen CM11	060089	Spectrally Flat Class A
Kipp & Zonen CMP11	101625	Spectrally Flat Class A
Hukseflux SR20	2497	Spectrally Flat Class A
Li-Cor LI-200	PY68846	Fast Response Class C
Li-Cor LI-200	PY68847	Fast Response Class C
Li-Cor LI-200	PY68895	Fast Response Class C
Li-Cor LI-200	PY68896	Fast Response Class C

*MS80 purchased new in 2017. Initial calibration conducted by EKO Instruments with traceability to the World Radiometric Reference.

Technical Manager :

Jacob Bingham

Date : 15-Apr-2023

Please keep this document for your records



RM Young Service Model 05103-L

RMA: 36643

Technician: C. Santos

Serial Number: 87996

Checkout Date: 4/13/2023

Accessories Received: Cable ☒ Vane ☒ Propeller ☒ Propeller Nut ☒ Mount Clamp ☒

Condition as received: Worn propeller and vertical bearings

Repairs		Additional Repair Notes
Replaced Prop Bearings...	☒	Accuracy: Wind Speed: ± 0.3 m/s (0.6 mph) or 1% of reading Wind Direction: $\pm 3^\circ$
Replaced Vertical Bearings	☒	
Replaced Coil.....	☐	
Replaced Potentiometer...	☐	
Aligned Potentiometer.....	☒	
Replaced Vane.....	☐	
Replaced Propeller.....	☐	
No Repairs Needed.....	☐	
Replaced Propeller Nut....	☐	
Replaced Prop. Shaft w/Hub	☐	
Replaced Nose Cone.....	☐	
Replaced Lower Housing.	☐	
Replaced Circuit Board....	☐	
Repaired Cable.....	☐	
Replaced Cable.....	☐	

Wind Direction Linearity Test						Wind Speed Output Test	
*Reference Point	30	90	180	270	350	300 ☒	Pass ☒
Measured	33	93	180	268	351	1500 ☒	
						1800 ☒	

* Reference is not traceable to a standard. It is used for checkout purposes only.

*Wind Vane Torque Test		**Propeller Torque Test	
Vane Torque:	Pass ☒	Propeller Torque:	Pass ☒

*Measured with RM Young Torque Gauge and fixture in CW&CCW at four locations.

**Measured with RM Young Torque Disk.



RM Young Service Model 05103-L

RMA: 36643

Technician: C. Santos

Serial Number: 148032

Checkout Date: 4/13/2023

Accessories Received: Cable ☒ Vane ☒ Propeller ☒ Propeller Nut ☒ Mount Clamp ☒

Condition as received: Worn propeller bearings, damaged propeller shaft w/hub and out of balance 6 pole magnet.

Repairs		Additional Repair Notes
Replaced Prop Bearings... ☒	Replaced Propeller Nut.... ☐	Replaced 6 pole magnet. Accuracy: Wind Speed: ± 0.3 m/s (0.6 mph) or 1% of reading Wind Direction: $\pm 3^\circ$
Replaced Vertical Bearings ☐	Replaced Prop. Shaft w/Hub ☒	
Replaced Coil..... ☐	Replaced Nose Cone..... ☒	
Replaced Potentiometer... ☐	Replaced Lower Housing. ☐	
Aligned Potentiometer.... ☒	Replaced Circuit Board.... ☐	
Replaced Vane..... ☐	Repaired Cable..... ☐	
Replaced Propeller..... ☐	Replaced Cable..... ☐	
No Repairs Needed..... ☐		

Wind Direction Linearity Test						Wind Speed Output Test	
*Reference Point	30	90	180	270	350	300 ☒	Pass ☒
Measured	33	92	180	270	351	1500 ☒	
						1800 ☒	

* Reference is not traceable to a standard. It is used for checkout purposes only.

*Wind Vane Torque Test		**Propeller Torque Test	
Vane Torque:	Pass ☒	Propeller Torque:	Pass ☒

*Measured with RM Young Torque Gauge and fixture in CW&CCW at four locations.

**Measured with RM Young Torque Disk.



Certificate of Calibration

Model: CR1000

Serial Number: 66278

Temperature Option: Extended Temperature Tested

Test Panel Location: 4

CSI Calibration Number: 230713523

Calibration Procedures: TST12215A R14 TST12215C R21 PRC33A R24

Instrument Calibration Condition

Received Disposition: In Tolerance

Returned Disposition: In Tolerance

Recommended Calibration Schedule

If the customer has not requested a calibration interval, a non-mandatory recommended interval is provided. Based on past experience and assumed normal usage, it is recommended that this instrument be calibrated in accordance with the interval stated below to ensure sustained accuracy and reliable performance.

Calibration Date: 13-Jul-23

Recommended Interval: 3 Years of Service

Report of Calibration Standards Used

Make/Model	Serial Number	Cal. Due Date	Trace Number
Krohn Hite 523	LD50018	24-Feb-24	LD50018
CSI Oscillator	08/20/07	05-May-24	08/20/07

Calibration Procedures

Voltage Excitation

Analog Input Ranges

Pulse Counters

System Power

Period Averaging

Control Ports

CSI certifies the above instrument meets or exceeds published specifications and has been calibrated using standards and instruments whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant or a ratio calibration technique. The collective measurement uncertainty of the calibration process exceeds a 4:1 accuracy ratio. Policies and procedures at this facility comply with ISO-9001.

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Instrument Data Report

Analog Input Accuracy

S/N: 66278

Datalogger Option: Extended Temperature Tested

Range	Input (mV)	*Tolerance (mV)	Single-Ended (Full Scale)		Differential		Temp. (°C)
			As Received (mV)	As Returned (mV)	As Received (mV)	As Returned (mV)	
6	5000	±3	5001.29	5001.19	5001.37	5001.03	22.9
6	-5000	±3	-5000.08	-5000.18	-5001.37	-5000.69	22.9
5	2500	±1.5	N/A	N/A	2500.60	2500.26	22.9
4	250	±0.15	N/A	N/A	250.070	250.052	22.9
3	25	±0.015	N/A	N/A	25.010	25.005	22.9
2	7.5	±0.0045	N/A	N/A	7.503	7.504	22.9
1	2.5	±0.0015	N/A	N/A	2.501	2.501	22.9
1	-2.5	±0.0015	N/A	N/A	-2.499	-2.501	22.9
6	5000	±6	N/A	5002.19	N/A	5002.41	-25
6	5000	±6	N/A	5000.85	N/A	5001.37	50
6	5000	±9	N/A	5004.11	N/A	5003.80	-55
6	5000	±9	N/A	5000.17	N/A	5000.69	85

*Tolerance values are specified accuracy not including offset. Offset voltages are not included because an offset removal procedure is used to account for calibrator offset. Refer to CSI Process Control Document PRC7A.

Quiescent System Power

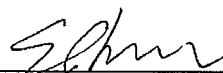
Typical (mA)	As Received (mA)	As Returned (mA)	Temp. (°C)
<1.0	0.52	0.57	22.9

Real-Time Clock

Tolerance (min/year)	As Returned (min/year)	Temp. (°C)
± 3 minutes	Within Tolerance	-55 to +85

Laboratory Environment

Temperature (°C)	Relative Humidity (%)
22.9	41.



Calibration Technician

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RMA: 37107

Technician: Carlos Santos

Serial Number: 69984-716

Checkout Date: 7/18/2023

Funnel Size 6.064 in.

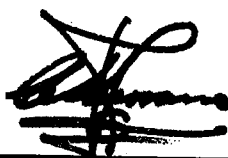
As Received Measurements

Tips Per 473mL Reservoir				
Nozzle #	1 st	2 nd	3 rd	Average
A	55.09	55.06	55.3	55.15
Balance error %	0.01	0.52	0.27	0.27

As Returned; Repair/Calibration Measurements

Tips Per 473mL Reservoir				
Nozzle #	1 st	2 nd	3 rd	Average
A	57.81	57.33	56.9	57.35
Balance error %	0.4	0.53	0.23	0.39

The average flow rate for the testing above is just under 2 in/hr or (50 mm/hr)



Calibration Technician

Funnel Inner Diameter	Funnel Area	Bucket Capacity	Rainfall Per Tip	Optimal Tips Per 473mL Reservoir	Acceptable Tips Per 473mL Reservoir (±1%) up to 1 in/hr	Acceptable Tips Per 473mL Reservoir (±3%) 1-2 in/hr
5.94 in.	27.71 in ²	4.54 mL	0.01 in.	104.2	103.1-105.5	101.1-107.3
6.064 in.	28.88 in ²	4.73 mL	0.01 in.	100.0	99.0-101.0	97.0-103.0
8.00 in.	50.27 in ²	8.25 mL	0.01 in.	57.3	56.8-57.9	55.6-59.1
9.664 in.	73.35 in ²	4.73 mL	0.1 mm.	100.0	99.0-101.0	97.0-103.0



Certificate of Calibration

Model: CR1000X

Serial Number: 52084

Temperature Option: Standard Temperature Tested

Test Panel Location: 1

CSI Calibration Number: 767257

Calibration Procedures: TST31865A R1 TST31865C R2 PRC33A R24

Instrument Calibration Condition

Received Disposition: N/A

Returned Disposition: In Tolerance

Recommended Calibration Schedule

If the customer has not requested a calibration interval, a non-mandatory recommended interval is provided. Based on past experience and assumed normal usage, it is recommended that this instrument be calibrated in accordance with the interval stated below to ensure sustained accuracy and reliable performance.

Calibration Date: 10-Jul-23

Recommended Interval: 3 Years of Service

Report of Calibration Standards Used

Make/Model	Serial Number	Cal. Due Date	Trace Number
KROHN-HITE 523	JF50102	02-Dec-23	JF50102
CSI 10 KHz	08/20/28	30-Mar-24	08/20/28

Calibration Procedures

Voltage Excitation

Analog Input Ranges

Pulse Counters

System Power

Period Averaging

Control Ports

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Instrument Data Report

Analog Input Accuracy

S/N: 52084

Datalogger Option: Standard Temperature Tested

Range (mV)	Input (mV)	*Tolerance (mV)	Differential		Temp. (°C)
			As Received (mV)	As Returned (mV)	
±5000	5000	±2.0	N/A	5000.11	23.6
±5000	-5000	±2.0	N/A	-5000.11	23.6
±1000	1000	±0.4	N/A	1000.024	23.6
±200	200	±0.08	N/A	200.005	23.6
±200	-200	±0.08	N/A	-200.004	23.6
±5000	5000	±3.0	N/A	4999.95	-40
±5000	5000	±3.0	N/A	4999.90	70
±5000	5000	±4.0	N/A	N/A	-55
±5000	5000	±4.0	N/A	N/A	85

*Tolerance values are specified accuracy not including offset. Offset voltages are not included because an offset removal procedure is used to account for calibrator offset. Refer to CSI Process Control Document PRC7A.

Quiescent System Power

Typical (mA)	As Received (mA)	As Returned (mA)	Temp. (°C)
<1.0	N/A	0.74	23.6

Real-Time Clock

Tolerance (min/year)	As Returned (min/year)	Temp. (°C)
± 3 minutes	Within Tolerance	-40 to +70

Laboratory Environment

Temperature (°C)	Relative Humidity (%)
23.6	36.


Calibration Technician

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CALIBRATION CERTIFICATE

R.M. Young Company certifies that the following sensor

Serial Number Wm 201338

was inspected and calibrated prior to shipment in accordance with established manufacturing and testing procedures. Standards established by R.M. Young Company for calibrating measuring and test equipment used in controlling product quality are traceable to the National Institute of Standards and Technology.

To maintain published specifications, regular maintenance intervals are required.

Date: 8/2/23

By:


Insp. By

R.M. YOUNG COMPANY 2801 Aero Park Drive, Traverse City, Michigan 49686 U.S.A.

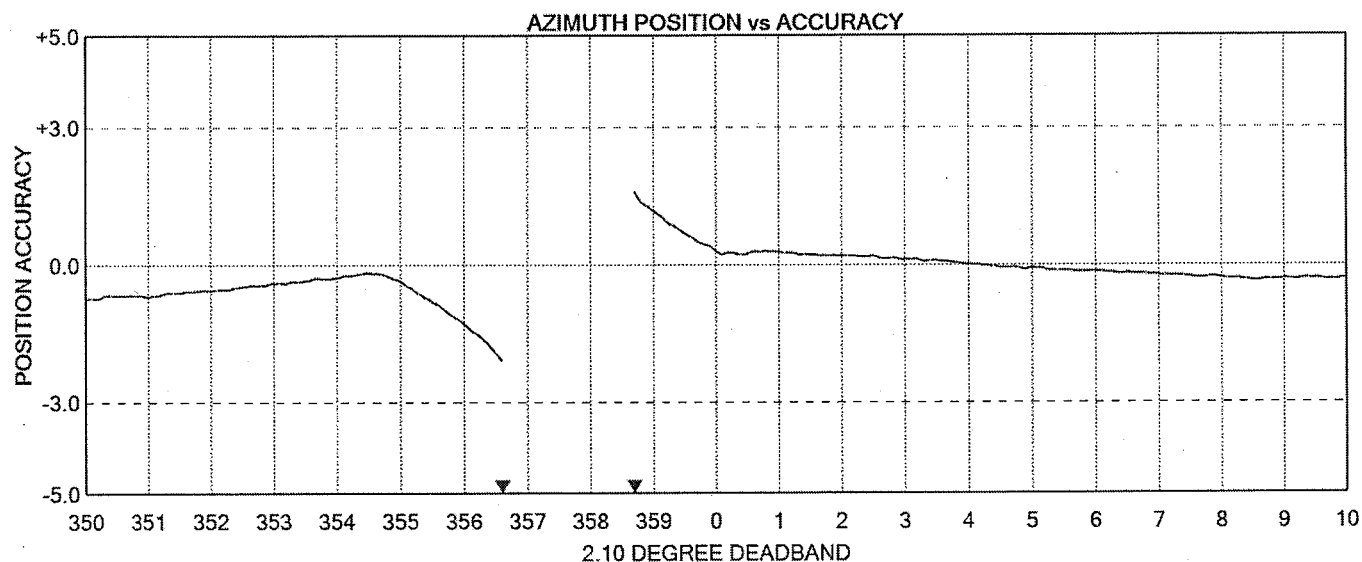
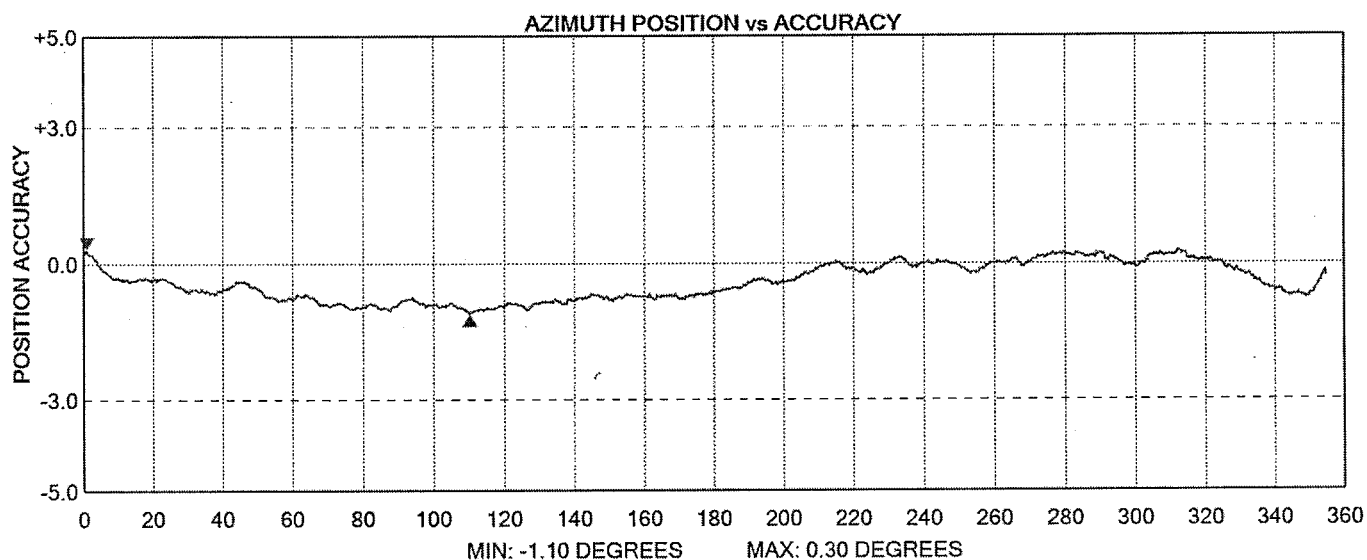
Tel: (231) 946-3980 Fax: (231) 946-4772 Email: met.sales@youngusa.com



R. M. YOUNG COMPANY WIND SENSOR CALIBRATION CERTIFICATE

SENSOR: 05108-45-5A WIND MONITOR
SENSOR SERIAL NUMBER: WM201338
BEARINGS: CERAMIC
DATE: AUGUST 02, 2023
WIND SPEED THRESHOLD: PASS
LOW WIND SPEED AMPLITUDE/FREQUENCY TEST: PASS
HIGH WIND SPEED AMPLITUDE/FREQUENCY TEST: PASS
VANE TORQUE TEST: PASS
SPECIAL NOTES:

Inspected By: TH



NOTE: Azimuth Position vs Accuracy graphs are accurate to within 0.5 degrees. The accuracy shown in the potentiometer deadband region between 355 and 0 degrees is the result of no resistance change while position changes. The gap represents the actual deadband (open circuit).

R.M. YOUNG COMPANY 2801 Aero Park Dr, Traverse City, MI 49686 USA
Tel: 231-946-3980 Fax: 231-946-4772 Email: met.sales@youngusa.com Website: www.youngusa.com



CALIBRATION CERTIFICATE

R.M. Young Company certifies that the following sensor

Serial Number WM 201331

was inspected and calibrated prior to shipment in accordance with established manufacturing and testing procedures. Standards established by R.M. Young Company for calibrating measuring and test equipment used in controlling product quality are traceable to the National Institute of Standards and Technology.

To maintain published specifications, regular maintenance intervals are required.

Date: 8/2/23

By:


Insp. By

R.M. YOUNG COMPANY 2801 Aero Park Drive, Traverse City, Michigan 49686 U.S.A.

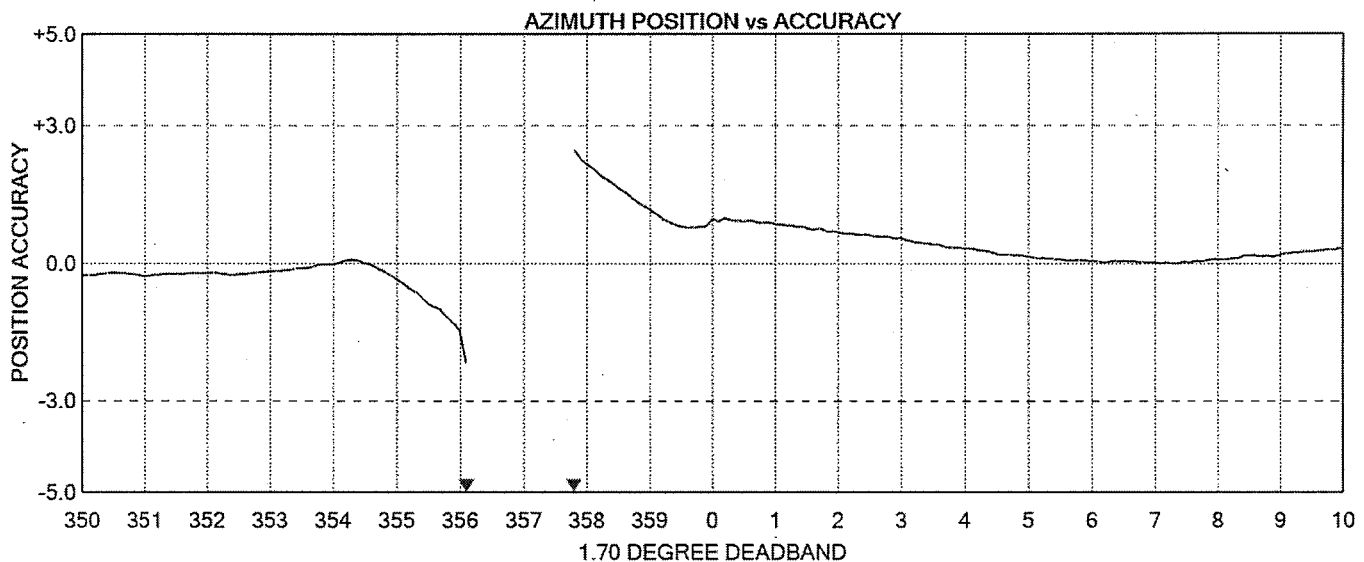
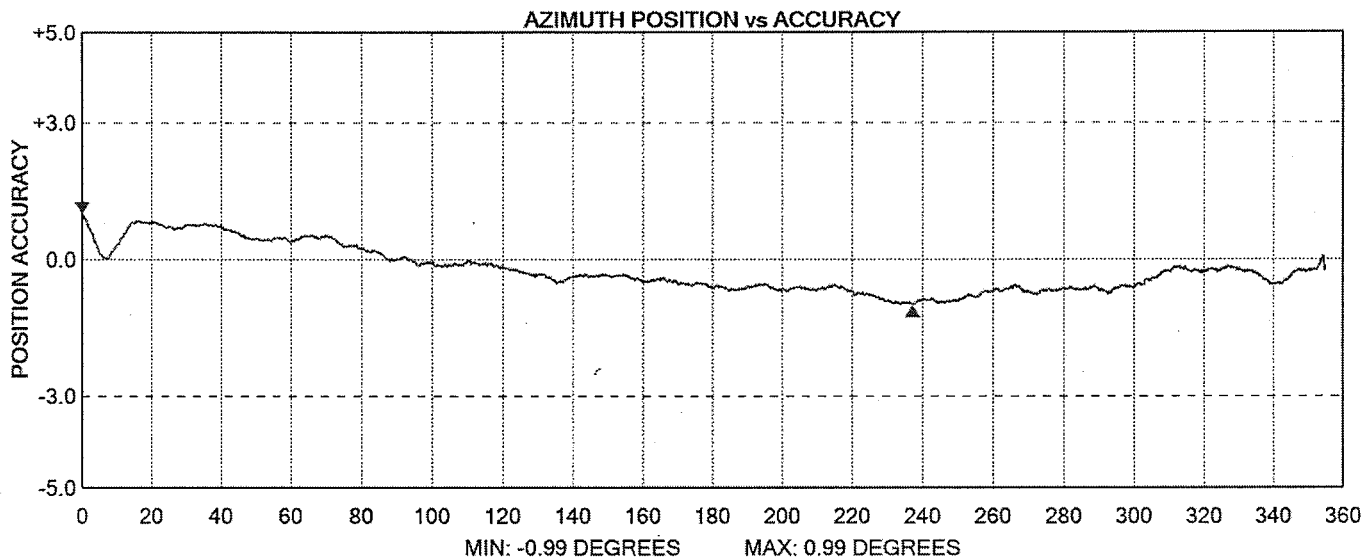
Tel: (231) 946-3980 Fax: (231) 946-4772 Email: met.sales@youngusa.com



R. M. YOUNG COMPANY WIND SENSOR CALIBRATION CERTIFICATE

SENSOR: 05108-45-5A WIND MONITOR
SENSOR SERIAL NUMBER: WM201331
BEARINGS: CERAMIC
DATE: AUGUST 02, 2023
WIND SPEED THRESHOLD: PASS
LOW WIND SPEED AMPLITUDE/FREQUENCY TEST: PASS
HIGH WIND SPEED AMPLITUDE/FREQUENCY TEST: PASS
VANE TORQUE TEST: PASS
SPECIAL NOTES:

Inspected By: TH



NOTE: Azimuth Position vs Accuracy graphs are accurate to within 0.5 degrees. The accuracy shown in the potentiometer deadband region between 355 and 0 degrees is the result of no resistance change while position changes. The gap represents the actual deadband (open circuit).

R.M. YOUNG COMPANY 2801 Aero Park Dr, Traverse City, MI 49686 USA
Tel: 231-946-3980 Fax: 231-946-4772 Email: met.sales@youngusa.com Website: www.youngusa.com



Certificate of Calibration

Model: CR1000X

Serial Number: 52456

Temperature Option: Standard Temperature Tested

Test Panel Location: 18

CSI Calibration Number: 768737

Calibration Procedures: TST31865A R1 TST31865C R2 PRC33A R24

Instrument Calibration Condition

Received Disposition: N/A

Returned Disposition: In Tolerance

Recommended Calibration Schedule

If the customer has not requested a calibration interval, a non-mandatory recommended interval is provided. Based on past experience and assumed normal usage, it is recommended that this instrument be calibrated in accordance with the interval stated below to ensure sustained accuracy and reliable performance.

Calibration Date: 21-Jul-23

Recommended Interval: 3 Years of Service

Report of Calibration Standards Used

Make/Model	Serial Number	Cal. Due Date	Trace Number
KROHN-HITE 523	JF50102	02-Dec-23	JF50102
CSI 10 KHz	08/20/28	30-Mar-24	08/20/28

Calibration Procedures

Voltage Excitation

Analog Input Ranges

Pulse Counters

System Power

Period Averaging

Control Ports

CSI certifies the above instrument meets or exceeds published specifications and has been calibrated using standards and instruments whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant or a ratio calibration technique. The collective measurement uncertainty of the calibration process exceeds a 4:1 accuracy ratio. Policies and procedures at this facility comply with ISO-9001.

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Instrument Data Report

Analog Input Accuracy

S/N: 52456

Datalogger Option: Standard Temperature Tested

Range (mV)	Input (mV)	*Tolerance (mV)	Differential		Temp. (°C)
			As Received (mV)	As Returned (mV)	
±5000	5000	±2.0	N/A	4999.90	23.4
±5000	-5000	±2.0	N/A	-4999.90	23.4
±1000	1000	±0.4	N/A	999.982	23.4
±200	200	±0.08	N/A	199.997	23.4
±200	-200	±0.08	N/A	-199.996	23.4
±5000	5000	±3.0	N/A	5000.07	-40
±5000	5000	±3.0	N/A	5000.08	70
±5000	5000	±4.0	N/A	N/A	-55
±5000	5000	±4.0	N/A	N/A	85

*Tolerance values are specified accuracy not including offset. Offset voltages are not included because an offset removal procedure is used to account for calibrator offset. Refer to CSI Process Control Document PRC7A.

Quiescent System Power

Typical (mA)	As Recieved (mA)	As Returned (mA)	Temp. (°C)
<1.0	N/A	0.83	23.4

Real-Time Clock

Tolerance (min/year)	As Returned (min/year)	Temp. (°C)
± 3 minutes	Within Tolerance	-40 to +70

Laboratory Environment

Temperature (°C)	Relative Humidity (%)
23.4	43.


Calibration Technician

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Certificate of Calibration

Model: CR1000X

Serial Number: 52457

Temperature Option: Standard Temperature Tested

Test Panel Location: 19

CSI Calibration Number: 768738

Calibration Procedures: TST31865A R1 TST31865C R2 PRC33A R24

Instrument Calibration Condition

Received Disposition: N/A

Returned Disposition: In Tolerance

Recommended Calibration Schedule

If the customer has not requested a calibration interval, a non-mandatory recommended interval is provided. Based on past experience and assumed normal usage, it is recommended that this instrument be calibrated in accordance with the interval stated below to ensure sustained accuracy and reliable performance.

Calibration Date: 21-Jul-23

Recommended Interval: 3 Years of Service

Report of Calibration Standards Used

Make/Model	Serial Number	Cal. Due Date	Trace Number
KROHN-HITE 523	JF50102	02-Dec-23	JF50102
CSI 10 KHz	08/20/28	30-Mar-24	08/20/28

Calibration Procedures

Voltage Excitation

Analog Input Ranges

Pulse Counters

System Power

Period Averaging

Control Ports

CSI certifies the above instrument meets or exceeds published specifications and has been calibrated using standards and instruments whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant or a ratio calibration technique. The collective measurement uncertainty of the calibration process exceeds a 4:1 accuracy ratio. Policies and procedures at this facility comply with ISO-9001.

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Instrument Data Report

Analog Input Accuracy

S/N: 52457

Datalogger Option: Standard Temperature Tested

Range (mV)	Input (mV)	*Tolerance (mV)	Differential		Temp. (°C)
			As Received (mV)	As Returned (mV)	
±5000	5000	±2.0	N/A	4999.92	23.4
±5000	-5000	±2.0	N/A	-4999.92	23.4
±1000	1000	±0.4	N/A	999.987	23.4
±200	200	±0.08	N/A	199.998	23.4
±200	-200	±0.08	N/A	-199.995	23.4
±5000	5000	±3.0	N/A	4999.95	-40
±5000	5000	±3.0	N/A	4999.91	70
±5000	5000	±4.0	N/A	N/A	-55
±5000	5000	±4.0	N/A	N/A	85

*Tolerance values are specified accuracy not including offset. Offset voltages are not included because an offset removal procedure is used to account for calibrator offset. Refer to CSI Process Control Document PRC7A.

Quiescent System Power

Typical (mA)	As Received (mA)	As Returned (mA)	Temp. (°C)
<1.0	N/A	0.82	23.4

Real-Time Clock

Tolerance (min/year)	As Returned (min/year)	Temp. (°C)
± 3 minutes	Within Tolerance	-40 to +70

Laboratory Environment

Temperature (°C)	Relative Humidity (%)
23.4	43.



Calibration Technician

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