



Rev: 1

THERMAL PRODUCT SOLUTIONS
 2821 OLD ROUTE 15
 NEW COLUMBIA, PA 17856 USA
 570-538-7200



CERTIFICATE OF CALIBRATION

Customer: Monterey Bay Aquarium Research Institute
 7700 Sandholdt Road

Moss Landing CA 95039

Contact: Nadia Allaf

All calibrations are done on customer site. Site location (if different than the above address) will be listed on data page.

Description: Chamber
Manufacturer: Tenney
Model: C30S2.0-A-S1.1-B
Serial No.: 128082
Controller: Eaton

Report No.: 15189
PO#: 2210190
Cal Date: 2/24/2022
*** Due Date:** 2/23/2023
Asset No.: -

* The user should be aware that any number of factors may cause this instrument to drift out of calibration before the specified calibration interval has expired. The re-calibration date may be based upon a number of factors, such as Mfg. Recommendations, customers requirements, ect. Ultimately it is up to the customer to determine the calibration interval.

Test Room Environment

Temperature: 21.8 °C / - °F
Procedures: M169

Relative Humidity: 43.3 %RH

Received condition: Visually found in Good serviceable condition. Initial testing to MFG. specifications found the UUT, IN Tolerance.

Returned condition: UUT was left, IN Tolerance.
 The calibration data was compared to MFG. accuracy's and listed as Pass / Fail.
 Our decision rule is; Simple Acceptance with a TUR 4:1 or greater

Calibration Standards Used:

<u>Tool No.</u>	<u>Model No.</u>	<u>Serial#</u>	<u>Mfg.</u>	<u>Description</u>	<u>Next Cal Due</u>	<u>Uncertainty</u>
TPS0190	744	8376003	Fluke	Temperature Calibrator	3/18/2022	0.79 C
TPS0206	HMP77/M170	R3520158/K4220026	Vaisala	Humidity Calibrator	3/25/2022	3.5% RH
TPS1201	61XTSEX300F/G714437/1637	TPS1201	Watlow	Thermocouple- Type T	7/16/2022	1.4
TPS1204	61XTSEX300F/G714437/1637	TPS1204	Watlow	Thermocouple- Type T	7/16/2022	1.4

NOTE: Additional thermocouples, if needed, are listed on page two of the "Certificate of Calibration"

Thermal Product Solutions certifies the above instrument has been calibrated and/or verified using instruments or reference materials that provide traceability to the SI through NIST or other national laboratories, accredited laboratories, intrinsic or consensus standards of measurement. The specific standards used for this calibration are uniquely identified within this document. This certification applies only to the specific instruments identified by serial number or asset ID number and calibrated to the specific procedure identified. This document shall not be reproduced except in full, without the documented approval of Thermal Product Solutions. The policies and procedures used at Thermal Product Solutions include ISO/IEC 17025, ANSI/NCSL Z540-1-1994. Thermal Product Solutions Quality program is written to comply with the above stated documents. Thermal Product Solutions is A2LA Accredited for compliance to ISO/IEC 17025. A2LA Certificate Number 3782.01. Thermal Product Solutions laboratory offers on-site services. Reported uncertainties are stated at approximately the 95% confidence level using a coverage factor K=2. This certificate shall not be reproduced in full, without written approval of TPS.

Calibrated By: *David Mantz*
 Field Technician

Certified By: *Jack Boyce* 2/28/22
 Technical Manager Dated

Report reviewed for ISO/IEC17025 and A2LA requirements and authorized by: *Buddy Clouse* 2/228
 Calibration Supervisor Dated



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Prepared For: Monterey Bay Aquarium Research Institute
 7700 Sandholdt Road
 Moss Landing CA 95039

Report No.: 15189
P.O. No.: 2210190

Site Location: Same as page one

Sensors Used

	<u>Tool #</u>	<u>Description</u>	<u>Location</u>	<u>Next Cal Due</u>	<u>Uncertainty</u>
1)	-	-	-	-	-
2)	-	-	-	-	-
3)	-	-	-	-	-
4)	-	-	-	-	-
5)	-	-	-	-	-
6)	-	-	-	-	-
7)	-	-	-	-	-
8)	-	-	-	-	-
9)	TPS1204	Thermocouple- Type T	At Chamber Center	7/16/2022	1.4
10)	TPS1201	Thermocouple- Type T	At Chamber Sensor	7/16/2022	1.4

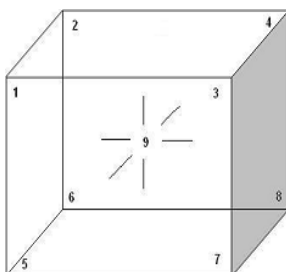
Out of tolerance conditions/limitations of certification:

Chamber was found to be in good condition, and all parameters are "as found".

Pertinent Information: Adjusted controller offset from 0.0 to 1.5 degrees C.

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Controller set point:	35.0	° C
<i>Average Temperature:</i>	35.0	° C
<i>Soak Time:</i>	60	min.



Measurements are compared to a ± 3.0 C tolerance.

Sensor Survey

<u>Time</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>U/C</u>
12:15	-	-	-	-	-	-	-	-	35.1	34.9	0.79 C
12:16	-	-	-	-	-	-	-	-	35.1	34.9	0.79 C
12:17	-	-	-	-	-	-	-	-	35.2	34.9	0.79 C
12:18	-	-	-	-	-	-	-	-	35.2	34.9	0.79 C
12:19	-	-	-	-	-	-	-	-	35.2	34.9	0.79 C
	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	
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	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	
Avg:	-	-	-	-	-	-	-	-	35.2	34.9	

[illegible]

Sensor results of the mean Pass/Fail

PASS

