CHECKPOINT®

Wireless Monitoring System *by TempSys*

How To Reconcile Differences in Readings Between CheckPoint and Independent Measurement Devices

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1.0 Problem Description

Some readings on the CheckPoint system do not agree with an independent thermometer (or another measurement device) inside the appliance or readings displayed on the appliance's external digital readout.

2.0 Summary of Possible Explanations

2.1 Possible Explanations for Non-Matching Readings

The CheckPoint system utilizes high-precision, calibrated probes to ensure the highest level of sensor measurement accuracy. Checkpoint probes are calibrated to NIST-traceable standard prior to shipping and installation for use.

Common explanations for the difference in readings between the CheckPoint system and other measurement devices, along with the recommended resolution steps, are summarized in Table 1 below.

2.2 TempSys Calibration & Testing Credentials

TempSys is an A2LA-certified (by the American Association for Laboratory Accreditation) calibration laboratory, meeting calibration and testing requirements as set forth in accordance with:

- ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*
- ANSI/NCSL Z540-1-1994
- National Institutes of Standard and Testing (NIST)-traceable temperature calibration methodology, practices and procedures.

Refer to Figure 1 for a copy of our A2LA accreditation certificate, valid through June 30, 2012.

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Table A - Possible Explanations for Differences in Readings

#	Explanation	Description	Notes & Comments
1	Sensor Probes Not Co-Located	Comparisons between temperature readings should only be made if the probes for the CheckPoint system and the independent measurement device are **co-located**. Ideally, both probes should be bundles together and placed in the same media (e.g., glycol solution) and allowed to come to equilibrium prior to taking measurements. A third, calibrated thermometer may also be employed as an independent reference. If the readings between this third thermometer and the CheckPoint system are with +/- 0.5 C, then the CheckPoint system is reading correctly.	Temperature readings inside an appliance can have a wide variance. Factors that impact measured temperature include, but are not limited to: 1. Sensor probe placement 2. Air currents from the air circulation fan 3. Proximity of probes to cooling or heating elements 4. Proximity of sensor probe to door and the integrity of door seals 5. How tightly packed the appliance is with product, samples, items, etc. 6. Rapid cooling or warming appliance cooling cycles 7. Sensor bottle size, volume, and media used 8. Temperature gradients in equipment such as heat blocks and gel incubators
2	Independent Measure Device (Thermometer) Not Calibrated	If the independent thermometer is out of calibration, its readings will be inaccurate and not match readings from the CheckPoint system.	The appliance's digital display readout may sometimes be misleading, especially if it is out of calibration or the sensor has been damaged.
3	CheckPoint Sensor Damaged	It is also possible the CheckPoint sensor has been damaged and is not reading correctly.	Please contact CheckPoint customer support for further assistance.

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Figure 1 - TempSys is an Accredited A2LA Calibration Laboratory

3.0 Contacting TempSys for Further Assistance

If a difference between the CheckPoint system and an independent measurement device (e.g., a thermometer) persists, please contact CheckPoint Customer Support for further assistance:

1. **Online (Preferred)**: Navigate to our website (www.tempsys.net) and click on the **HELP DESK** option in the **SUPPORT** menu to register and submit a support ticket.

2. **E-Mail**: Send an e-mail message to support@tempsys.net and include the following information:
   a. Your name and contact information (phone and e-mail address)
   b. Name of your organization
   c. Description of the problem
   d. Best time to reach you

3. **Phone (Emergency Only)**: Call our Support Center Dispatching Center at (510) 526-7624