FREE LOGISTICS & WAREHOUSING THERMOMETER AND SENSOR CALIBRATION TEMPLATE

Thermometer and Sensor Calibration Checklist

Use this 60-point checklist to manage device identity, reference standards, calibration traceability, test setup, as-found and as-left results, adjustment, due dates, certificates, out-of-tolerance impact assessment, corrective actions, and final release.

Warehouse / site	Calibration date	Device / sensor ID	Technician / calibration owner

Internal Logistics & Warehousing template. Apply the approved measurement programme, manufacturer instructions, reference-standard and uncertainty requirements, product and cold-chain needs, quality or regulatory requirements where applicable, calibration-laboratory procedures, and organization-specific acceptance and record controls.

1. Calibration scope, device inventory, measurement use, required accuracy, ownership, and open actions

1 **Confirm warehouse or distribution center, room or zone, calibration date, shift, and thermometer-and-sensor calibration scope are clearly identified.** CRITICAL CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Start with the actual measurement need. Calibration acceptance should reflect the device's intended use, required accuracy, operating range, process risk, and approved measurement...

2 **List thermometer, probe, sensor, data logger, transmitter, controller, display, reference device, or other temperature-measuring instruments included in the activity.** CRITICAL CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Start with the actual measurement need. Calibration acceptance should reflect the device's intended use, required accuracy, operating range, process risk, and approved measurement...

3 **Record each device ID, manufacturer and model where used, serial number, sensor type, measurement range, location, and intended monitoring application.** CRITICAL CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Start with the actual measurement need. Calibration acceptance should reflect the device's intended use, required accuracy, operating range, process risk, and approved measurement...

4 **Identify the approved accuracy, tolerance, uncertainty, or acceptance requirement for each measurement use rather than applying one generic limit to every device.** CRITICAL CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Start with the actual measurement need. Calibration acceptance should reflect the device's intended use, required accuracy, operating range, process risk, and approved measurement...

5 **Review previous calibration failures, drift, out-of-tolerance results, sensor replacements, repair history, excursions linked to device error, and overdue corrective actions.** CRITICAL CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Start with the actual measurement need. Calibration acceptance should reflect the device's intended use, required accuracy, operating range, process risk, and approved measurement...

6 **Record site, calibration date, technician or verifier, measurement-system owner, quality or cold-chain owner where applicable, critical open issues, and next review date.** CALIBRATION

FINAL STATUS | Enter	CALIBRATION OWNER | Enter	QUALITY / COLD CHAIN | Enter	MANAGEMENT APPROVAL | Enter

Execution tip: Start with the actual measurement need. Calibration acceptance should reflect the device's intended use, required accuracy, operating range, process risk, and approved measurement...

2. Reference standards, traceability chain, calibration certificates, uncertainty, validity, and suitability

7 Verify the reference thermometer, calibrator, bath, dry block, simulator, or other standard has a current and traceable calibration appropriate for the work being performed.

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: NIST describes metrological traceability as a documented unbroken chain of calibrations to specified references, with each calibration contributing to measurement uncertainty.

8 Check the reference-standard certificate identifies the instrument, calibration date, measurement results, applicable uncertainty, and traceability information needed by the programme.

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: NIST describes metrological traceability as a documented unbroken chain of calibrations to specified references, with each calibration contributing to measurement uncertainty.

9 Verify the reference standard's range and performance are suitable for the temperatures and uncertainty required for the device under test.

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: NIST describes metrological traceability as a documented unbroken chain of calibrations to specified references, with each calibration contributing to measurement uncertainty.

10 Confirm any intermediate standards used between the reference laboratory and working thermometer or sensor are documented within the measurement-traceability chain.

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: NIST describes metrological traceability as a documented unbroken chain of calibrations to specified references, with each calibration contributing to measurement uncertainty.

11 Check expired, damaged, suspect, uncontrolled, or out-of-tolerance reference standards are not used for calibration or verification decisions.

CRITICAL | CALIBRATION

Accept | Adjust | Remove

RESULT / EVIDENCE | Add

Execution tip: NIST describes metrological traceability as a documented unbroken chain of calibrations to specified references, with each calibration contributing to measurement uncertainty.

12 Escalate missing traceability evidence, unsuitable reference uncertainty, expired calibration, damaged standards, or incomplete certificate information that prevents a defensible calibration result.

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: NIST describes metrological traceability as a documented unbroken chain of calibrations to specified references, with each calibration contributing to measurement uncertainty.

3. Device identification, physical condition, probe integrity, wiring, display, battery, mounting, and pre-calibration readiness

13 **Confirm the device label or ID matches the calibration record and cannot be confused with another thermometer, probe, sensor, logger, or channel.**

CRITICAL | CALIBRATION

Accept | Adjust | Remove

RESULT / EVIDENCE | Add

Execution tip: Inspect the device before calibration. Physical damage, loose connectors, moisture ingress, low battery, or poor mounting can invalidate calibration results or create repeat failures.

14 **Inspect probes, sensing tips, cables, insulation, connectors, glands, housings, displays, mounting brackets, and protective covers for damage or contamination.**

CRITICAL | CALIBRATION

Accept | Adjust | Remove

RESULT / EVIDENCE | Add

Execution tip: Inspect the device before calibration. Physical damage, loose connectors, moisture ingress, low battery, or poor mounting can invalidate calibration results or create repeat failures.

15 **Check batteries, power supplies, charging condition, communication status, memory, data connection, and time or date settings where applicable.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Inspect the device before calibration. Physical damage, loose connectors, moisture ingress, low battery, or poor mounting can invalidate calibration results or create repeat failures.

16 **Verify the device has stabilized after transport, battery replacement, repair, environmental exposure, or power-up as required by the approved method.**

CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Inspect the device before calibration. Physical damage, loose connectors, moisture ingress, low battery, or poor mounting can invalidate calibration results or create repeat failures.

17 **Check removable probes, channels, transmitters, displays, and sensor modules are paired with the correct device or configuration before calibration.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Inspect the device before calibration. Physical damage, loose connectors, moisture ingress, low battery, or poor mounting can invalidate calibration results or create repeat failures.

18 **Escalate cracked probes, damaged cables, loose connections, water ingress, display faults, unstable readings, low power, or other defects requiring repair before calibration continues.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Inspect the device before calibration. Physical damage, loose connectors, moisture ingress, low battery, or poor mounting can invalidate calibration results or create repeat failures.

4. Calibration method, test points, controlled environment, stabilization, immersion or placement, comparison setup, and procedure control

19 **Confirm the approved calibration or verification method is available and appropriate for the device type, sensor technology, measurement range, and intended use.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: The method must suit the instrument and intended use. Test points, stabilization, immersion depth, airflow, sensor placement, and comparison setup should follow the approved...

20 **Verify selected calibration test points cover the operational range or critical temperatures relevant to the device's actual application.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: The method must suit the instrument and intended use. Test points, stabilization, immersion depth, airflow, sensor placement, and comparison setup should follow the approved...

21 **Check dry block, liquid bath, ice-point method, environmental chamber, simulator, comparison fixture, or other calibration setup is stable and operating correctly before readings are taken.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: The method must suit the instrument and intended use. Test points, stabilization, immersion depth, airflow, sensor placement, and comparison setup should follow the approved...

22 **Position the reference and device under test to minimize avoidable temperature gradients, immersion errors, stem conduction, poor airflow, or unequal exposure under the approved method.**

CRITICAL | CALIBRATION

Accept | Adjust | Remove

RESULT / EVIDENCE | Add

Execution tip: The method must suit the instrument and intended use. Test points, stabilization, immersion depth, airflow, sensor placement, and comparison setup should follow the approved...

23 **Allow the reference and device under test to reach the required stabilization before recording comparison results.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: The method must suit the instrument and intended use. Test points, stabilization, immersion depth, airflow, sensor placement, and comparison setup should follow the approved...

24 **Escalate unstable calibration environments, inadequate test-point coverage, incorrect probe placement, insufficient stabilization, or setup conditions likely to distort the result.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: The method must suit the instrument and intended use. Test points, stabilization, immersion depth, airflow, sensor placement, and comparison setup should follow the approved...

5. As-found readings, reference values, indication error, repeated readings, drift, and initial calibration result

25 **Record the as-found indication of the thermometer or sensor at each required test point before adjustment where the approved method calls for as-found data.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Capture the as-found condition before making an adjustment whenever the procedure requires it. That result is important for assessing whether previous product or process...

26 **Record the corresponding reference-standard value and calculate or document the indication error using the approved method.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Capture the as-found condition before making an adjustment whenever the procedure requires it. That result is important for assessing whether previous product or process...

27 **Take repeated readings where required to assess stability, repeatability, hysteresis, response, or other performance relevant to the calibration decision.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Capture the as-found condition before making an adjustment whenever the procedure requires it. That result is important for assessing whether previous product or process...

28 **Compare current as-found error with prior calibration history to identify drift, sudden change, recurring bias, or worsening performance.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Capture the as-found condition before making an adjustment whenever the procedure requires it. That result is important for assessing whether previous product or process...

29 **Determine whether the as-found result meets the approved acceptance criteria for the device and intended measurement use.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Capture the as-found condition before making an adjustment whenever the procedure requires it. That result is important for assessing whether previous product or process...

30 **Escalate significant drift, unstable readings, excessive indication error, failed test points, or an as-found condition that may require product or process impact assessment.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Capture the as-found condition before making an adjustment whenever the procedure requires it. That result is important for assessing whether previous product or process...

6. Adjustment, repair, configuration changes, as-left calibration, acceptance decision, and return-to-service status

31 **If adjustment is permitted, record the adjustment, trim, offset, configuration, firmware, transmitter scaling, probe replacement, or repair performed.** CRITICAL CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Adjustment changes the instrument. Keep as-found and as-left results separate so the historical measurement risk and final device condition remain traceable.

32 **Prevent unauthorized adjustment of sealed, locked, regulated, or controlled devices and use approved access controls where applicable.** CRITICAL CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Adjustment changes the instrument. Keep as-found and as-left results separate so the historical measurement risk and final device condition remain traceable.

33 **After adjustment or repair, repeat the required calibration points and record the as-left measurement results.** CRITICAL CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Adjustment changes the instrument. Keep as-found and as-left results separate so the historical measurement risk and final device condition remain traceable.

34 **Verify the as-left result meets the approved acceptance criteria throughout the required operating range or test points.** CRITICAL CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Adjustment changes the instrument. Keep as-found and as-left results separate so the historical measurement risk and final device condition remain traceable.

35 **Record final device status such as accepted, accepted with restriction, repair required, removed from service, replaced, or specialist evaluation required.** CRITICAL CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Adjustment changes the instrument. Keep as-found and as-left results separate so the historical measurement risk and final device condition remain traceable.

36 **Escalate devices that cannot meet acceptance criteria, show unstable post-adjustment performance, require unapproved offsets, or are returned to use without documented verification.** CRITICAL CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Adjustment changes the instrument. Keep as-found and as-left results separate so the historical measurement risk and final device condition remain traceable.

7. Calibration interval, due-date control, drift history, risk-based frequency, reminders, and overdue-device management

37 **Verify each device has an approved calibration or verification interval appropriate to its use, risk, environment, stability, and governing programme.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: There is no single universal recalibration interval for all thermometers and sensors. Set intervals using manufacturer guidance, drift history, measurement risk, use frequency,...

38 **Check the next-due date is calculated from the approved interval and recorded consistently in the calibration system, asset register, label, or device record.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: There is no single universal recalibration interval for all thermometers and sensors. Set intervals using manufacturer guidance, drift history, measurement risk, use frequency,...

39 **Review historical drift, failures, repairs, environmental exposure, heavy use, transport, shock, moisture, or other factors that may justify shortening or extending the interval under approved change control.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: There is no single universal recalibration interval for all thermometers and sensors. Set intervals using manufacturer guidance, drift history, measurement risk, use frequency,...

40 **Verify reminders, work orders, service schedules, dashboard alerts, or other controls identify devices approaching their due date before they become overdue.**

CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: There is no single universal recalibration interval for all thermometers and sensors. Set intervals using manufacturer guidance, drift history, measurement risk, use frequency,...

41 **Check overdue devices are removed from normal measurement use or managed under an approved risk-based exception process until calibration is completed.**

CRITICAL | CALIBRATION

Accept | Adjust | Remove

RESULT / EVIDENCE | Add

Execution tip: There is no single universal recalibration interval for all thermometers and sensors. Set intervals using manufacturer guidance, drift history, measurement risk, use frequency,...

42 **Escalate repeated overdue calibration, inappropriate intervals, uncontrolled interval extensions, or devices used after due date without an approved assessment.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: There is no single universal recalibration interval for all thermometers and sensors. Set intervals using manufacturer guidance, drift history, measurement risk, use frequency,...

8. Calibration labels, certificates, asset records, digital records, audit trail, corrections, and document retention

43 Verify the physical calibration or verification label shows the required device ID, status, calibration date, due date or interval information, and other programme-required fields.

CRITICAL | CALIBRATION

Accept | Adjust | Remove

RESULT / EVIDENCE | Add

Execution tip: Calibration evidence should connect the physical device to the certificate and asset history. A sticker alone is not sufficient if the underlying record cannot be retrieved.

44 Check calibration certificates and internal records identify the device, reference standard, method, test points, as-found and as-left results where applicable, acceptance status, and responsible person.

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Calibration evidence should connect the physical device to the certificate and asset history. A sticker alone is not sufficient if the underlying record cannot be retrieved.

45 Verify electronic calibration records, asset registers, maintenance systems, or quality systems maintain a traceable audit trail for changes, approvals, and status updates.

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Calibration evidence should connect the physical device to the certificate and asset history. A sticker alone is not sufficient if the underlying record cannot be retrieved.

46 Check manual corrections preserve the original information and identify the corrected value, reason, date, and person making the change where required.

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Calibration evidence should connect the physical device to the certificate and asset history. A sticker alone is not sufficient if the underlying record cannot be retrieved.

47 Confirm calibration certificates, raw data, reference-standard records, repairs, impact assessments, and related evidence are retained for the period required by the applicable programme.

CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Calibration evidence should connect the physical device to the certificate and asset history. A sticker alone is not sufficient if the underlying record cannot be retrieved.

48 Escalate missing certificates, mismatched device IDs, incorrect labels, untraceable record changes, incomplete results, or records that cannot demonstrate the basis for device release.

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Calibration evidence should connect the physical device to the certificate and asset history. A sticker alone is not sufficient if the underlying record cannot be retrieved.

9. Out-of-tolerance result, affected measurement review, product or process impact, quarantine, investigation, and corrective action

49 **Identify any device whose as-found result fails the approved acceptance criterion, shows significant drift, or is otherwise suspected of unreliable measurement.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: An out-of-tolerance thermometer or sensor can affect earlier decisions. Assess the potential impact back to the last known acceptable point using the approved quality or risk process.

50 **Determine the last known acceptable calibration or verification point and the period during which the device may have produced questionable measurements.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: An out-of-tolerance thermometer or sensor can affect earlier decisions. Assess the potential impact back to the last known acceptable point using the approved quality or risk process.

51 **Identify affected rooms, products, batches, shipments, temperature logs, alarms, releases, process decisions, or other records that relied on the suspect device.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: An out-of-tolerance thermometer or sensor can affect earlier decisions. Assess the potential impact back to the last known acceptable point using the approved quality or risk process.

52 **Apply product hold, investigation, remeasurement, alternate-device verification, record review, quarantine, or other immediate controls where required by the applicable programme.**

CRITICAL | CALIBRATION

Accept | Adjust | Remove

RESULT / EVIDENCE | Add

Execution tip: An out-of-tolerance thermometer or sensor can affect earlier decisions. Assess the potential impact back to the last known acceptable point using the approved quality or risk process.

53 **Investigate likely causes such as sensor damage, drift, environmental exposure, calibration method, wiring, power, placement, repair, handling, configuration, or inadequate interval.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: An out-of-tolerance thermometer or sensor can affect earlier decisions. Assess the potential impact back to the last known acceptable point using the approved quality or risk process.

54 **Create corrective actions with accountable owners, due dates, device repair or replacement, impact assessment, retraining, interval review, method changes, and effectiveness verification.**

CRITICAL | CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: An out-of-tolerance thermometer or sensor can affect earlier decisions. Assess the potential impact back to the last known acceptable point using the approved quality or risk process.

10. Programme review, cross-checks, recurring failures, reference-standard control, effectiveness verification, and final sign-off

55 **Review calibration and verification completion rates, overdue devices, failure rates, drift trends, repair frequency, and repeated out-of-tolerance results across the device population.**

CRITICAL

CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Use calibration history to improve the measurement system. Repeated drift, failed probes, overdue work, or reference-standard problems should change the programme rather than...

56 **Perform independent cross-checks, check standards, secondary comparisons, ice-point checks where suitable, or other measurement-assurance activities defined by the programme between formal calibrations.**

CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Use calibration history to improve the measurement system. Repeated drift, failed probes, overdue work, or reference-standard problems should change the programme rather than...

57 **Review reference-standard due dates, storage, handling, transport, environmental control, maintenance, and calibration history for continued suitability.**

CRITICAL

CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Use calibration history to improve the measurement system. Repeated drift, failed probes, overdue work, or reference-standard problems should change the programme rather than...

58 **Verify corrective actions from previous calibration failures are effective and recurring device, method, environmental, training, or scheduling causes have been addressed.**

CRITICAL

CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Use calibration history to improve the measurement system. Repeated drift, failed probes, overdue work, or reference-standard problems should change the programme rather than...

59 **Confirm calibration procedures, acceptance criteria, uncertainty needs, device lists, reference standards, approved laboratories, and escalation contacts remain current after changes.**

CALIBRATION

Calibration item	Result / error	Reference / owner	Evidence	Action / status

Execution tip: Use calibration history to improve the measurement system. Repeated drift, failed probes, overdue work, or reference-standard problems should change the programme rather than...

60 **Record final calibration-programme status, failed or restricted devices, open impact assessments, overdue actions, next programme review date, calibration owner, quality or cold-chain owner where applicable, and management approval.**

CRITICAL

CALIBRATION

FINAL STATUS | Enter

CALIBRATION OWNER | Enter

QUALITY / COLD CHAIN | Enter

MANAGEMENT APPROVAL | Enter

Execution tip: Use calibration history to improve the measurement system. Repeated drift, failed probes, overdue work, or reference-standard problems should change the programme rather than...