

Field Calibration Procedure and Certificate

For M303, M304 and, M305

Calibration Recommendations:

In the absence of other calibration standards, methods, and recommendations for your application we recommend that the Temperature Guard unit be calibrated annually.

It is highly recommended that the unit be recalibrated if, during installation, any lead wire to the temperature sensor is added or eliminated.

Required Equipment:

1. An NIST traceable temperature measurement standard such as a thermometer or other measuring device (referred as Standard)
2. Data Capture software running on a computer
3. Fully installed and functioning Temperature Guard system with sensors

Temperature calibration is a one point calibration and shall be performed with the temperature sensor in place.

Preparation

1. Open Data Capture, click on Setup -> Temperature Guard Servers and Sensors
2. Select the Temperature Guard to be calibrated by left clicking on the name in the list.
3. Right click on the selected Temperature Guard and select Edit Sensors.
4. Data Capture will download and display all sensor parameters.
5. Click on the **Cal** button.
6. Click on the Reset button to set the correction factors to 0.

Calibration

1. Locate the Standard as close to the temperature sensor being calibrated as possible. If the sensor is in a vial, unscrew the top and insert the Standard.
2. Allow the Standard and the temperature displayed by the Temperature Guard unit to normalize. (approx. 10-15 minutes)
3. Enter the temperature obtained from the Standard. (see page 3 of procedure)
4. Click on the **Store Correction Factors** button. Data Capture will upload the correction factors and then refresh the sensor data. The current temperature reading will now match the Standard.
5. Record the calibration results in the table on page 2 of this procedure.
6. Repeat steps 1 to 6 for all temperature sensors in the system.

Field Calibration Certificate

	Column 1	Column 2	Column 3	Column 4
Channel	NIST Traceable Temperature Measuring Standard	Temperature Reading	Correction	Corrected
1				
2				

Temperature Guard model number	
Temperature Guard serial number	
NIST traceable thermometer serial number (Note 2)	
Certified by (Signature)	
Printed Name	
Today's Date	
Due Date (one yr. from today's date)	

Calibration Screen for M30X models

This screen is found in Data Capture. Setup/Temperature Guard Servers and Sensors/Edit Sensors. Click the Cal button.

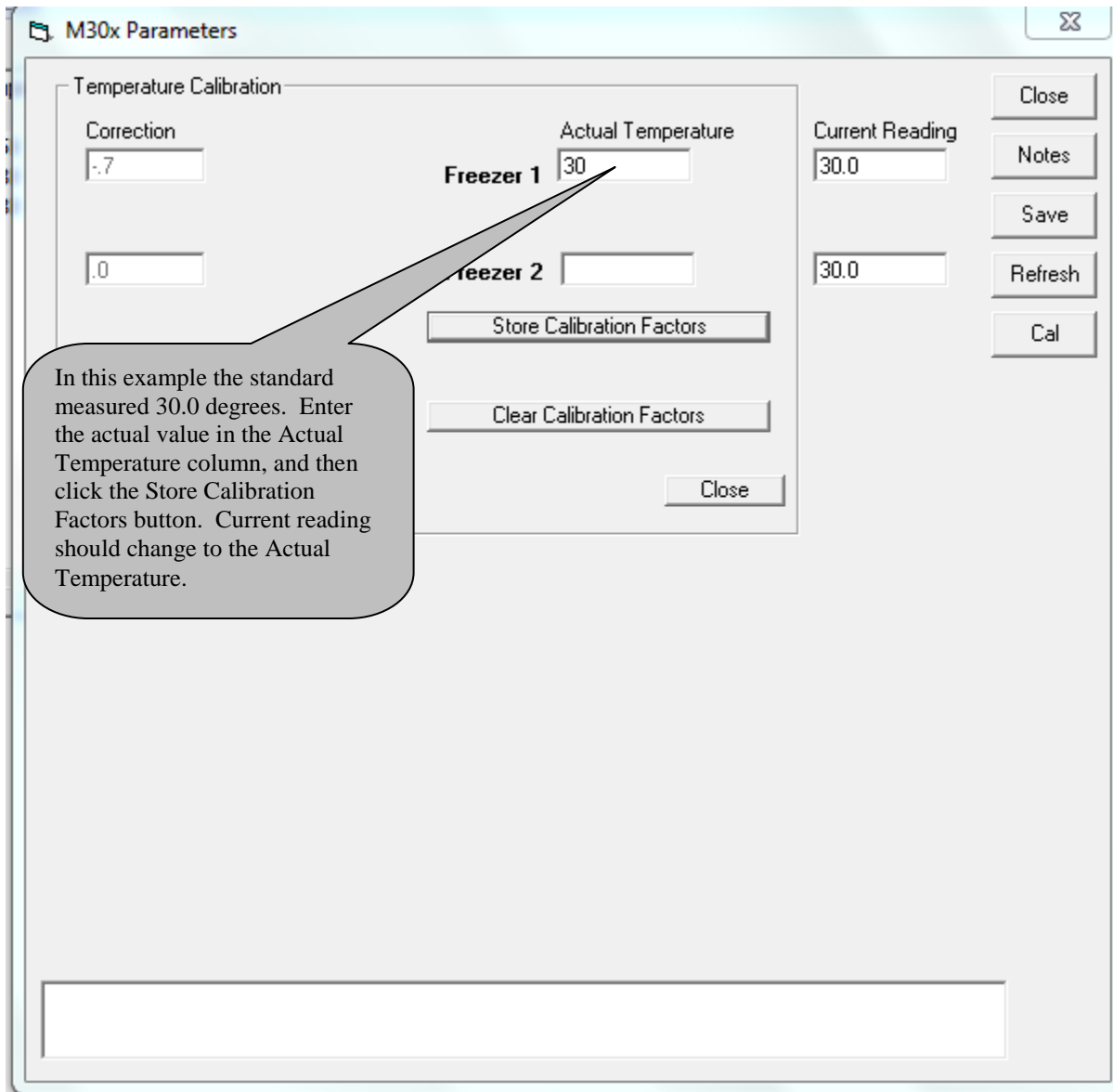
The screenshot shows the 'M30x Parameters' window with a 'Temperature Calibration' section. The window title is 'M30x Parameters' and it has a close button (X) in the top right corner. The 'Temperature Calibration' section contains the following elements:

- Correction:** A text input field containing '.0'.
- Actual Temperature:** A label above two input fields: 'Freezer 1' and 'Freezer 2', both currently empty.
- Current Reading:** A label above two input fields: '30.7' and '30.0'.
- Buttons:** 'Store Calibration Factors', 'Clear Calibration Factors', and 'Close' (bottom right).
- External Buttons:** 'Close', 'Notes', 'Save', 'Refresh', and 'Cal' (bottom right of the window).
- CF Button:** A small button with 'CF' inside, located at the bottom left of the calibration section.

Four instructional callouts are present:

- Step 1:** Click Reset to clear all calibration factors. (Points to the 'Cal' button.)
- Step 2:** 7. Enter the temperature measurement from the standard in this column for each sensor. (Points to the 'Freezer 1' and 'Freezer 2' input fields.)
- Step 3:** Click to store the correction factors to the unit. (Points to the 'Store Calibration Factors' button.)
- CF Button:** Click the "CF" button to see the Correction values. (Points to the 'CF' button.)

M30X screen shot after calibrating temperature sensor number 1



Notes

Note 1: An Ice bath procedure (see below) can be used instead of a calibrated NIST thermometer. 32.0°F or 0.0°C would be entered in Column 1.

Note 2: Please note the NIST certificate of the thermometer used to calibrate must not be expired. Please keep the thermometer's NIST certificate with this completed document.

Optional: Calibrating using an Ice Bath Procedure

- 1) Create an ice bath by filling 600-mL beaker three-quarters full of crushed ice.
- 2) Add enough pre-cooled de-ionized water to cover the ice, but not so much water such that the ice floats.
- 3) Thoroughly stir the ice/water mixture.
- 4) Suspend the bare temperature probe in the ice bath.
- 5) Allow the temperature shown on the M305 display (M303/304 have no display, use Data Capture) to stabilize for at least 10 minutes.

Sample Chart on page 1

	Column 1	Column 2	Column 3	Column 4
Channel	NIST Traceable Temperature Measuring Standard	Temperature Reading	Correction	Corrected
1	30.0	30.7	-.7	30.0
2				

This is the NIST traceable thermometers reading.

This is what the Temperature Guard unit reads without correction.

This is the correction from the calibration page in Data Capture

Column 1 and 4 should be equal (or very close) once the “Store Calibration Factors” button is clicked.