

Field Calibration Procedure and Certificate

For models VM505E, VM605E, VM510E, and VM610E

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 (Note 2)
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				
3				
4				
5				
6				
7				
8				

Temperature Guard serial number	
NIST traceable thermometer serial number (Note 3)	
Certified by (Signature)	
Printed Name	
Today's Date	
Due Date (one yr. from today's date)	

Calibration Screen for models VM605E, VM610E, VM505E, and VM510E

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

The screenshot shows a software window titled "Refrigerator / Freezer Guard Parameters". Inside, there is a "Temperature Calibration" section with a table of sensors. Each sensor has three input fields: "Actual Temperature", "Correction", and "Current Reading". A "Cal" button is on the right side of the table. Below the table are "Store Correction Factors" and "Reset" buttons. At the bottom, there are radio buttons for alarm settings and a "Backup Battery Voltage" field.

Sensor	Actual Temperature	Correction	Current Reading
Microtech Main Shop		.0	67.0
Test Java		.0	-9.6
Flu Shots		.0	17.3
Plasma		.0	22.1
Lunch		.0	18.2
Cold Room		.0	-249.4
NIH samples		.0	20.1
FDA Drugs		.0	21.2

Step 1
Click Reset to clear all calibration factors.

Step 2
7. Enter the temperature measurement from the standard in this column for each sensor.

Step 3
Click to store the correction factors to the unit.

Backup Battery Voltage (vdc) 4.1

Turn on alarm relay when a sensor goes into alarm. Turn off alarm relay when a sensor goes into alarm or the main power fails.

Enable Alarm Buzzer Disable Alarm Buzzer

Download complete

VM605E, VM610E, VM505E, and VM510E screen shot after calibrating temperature sensor number 5

Refrigerator / Freezer Guard Parameters

Temperature Calibration

	Actual Temperature	Correction	Current Reading
Microtech Main Shop		.0	67.0
Test Java		.0	-9.6
Flu Shots	18	.7	18.0
asma		.0	22.1
Lunch		.0	18.2
Cold Room		.0	-249.4
NIH samples		.0	20.1
FDA Drugs		.0	21.2

Buttons: Close, Save, Notes, Refresh, Cal, Store Correction Factors, Reset

Backup Battery Voltage (vdc) 4.1

Turn on alarm relay when a sensor goes into alarm.
 Turn off alarm relay when a sensor goes into alarm or the main power fails.

Enable Alarm Buzzer
 Disable Alarm Buzzer

Download complete

In this example the standard measured 18.0 degrees. Enter the actual value in the Actual Temperature column, and then click the Store Correction Factors button. Current reading should change to the Actual Temperature.

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: For all units temperature corrections can be made over the phone. See page 8 of the manual for details.

http://www.temperatureguard.com/Documentation/Manuals/VM505_manual.pdf
http://www.temperatureguard.com/Documentation/Manuals/VM60502_LF.pdf

Note 3: 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 unit's display 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				
2				
3	18.0	17.3	.7	18.0
4				
5				
8				

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 Correction Factors" button is clicked.