



## The Requirements

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As mandated by the CDC and the Oregon VFC program:

**Calibrated thermometers (including one back-up unit) are a requirement for providers who receive VFC vaccines or other vaccines purchased with public funds.**

The CDC recommends thermometers with the following characteristics:

- 1) Provide continuous monitoring information with an active display.
- 2) Be a digital thermometer with a probe in a glycol-filled bottle.
- 3) Include an alarm for out- of- range temperatures.
- 4) Be capable of showing current, as well as minimum and maximum temperatures, which indicate the coldest and warmest temperatures recorded since last reset.
- 5) Be accurate within  $\pm 0.5^{\circ}\text{C}$  ( $\pm 1^{\circ}\text{F}$ ).
- 6) Have a low battery indicator.
- 7) Memory storage for at least 4,000 readings.

In Oregon, VFC providers are **REQUIRED** to use continuous monitoring loggers in any storage unit containing VFC vaccine.

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# The Requirements Explained

## Calibration

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According to the CDC, “Thermometer calibration must be tested annually (or according to the manufacturer’s recommendation) by a laboratory with accreditation from an International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) signatory body. Laboratories that have attained this accreditation meet the requirements for traceability.”

To be considered “valid,” a calibration certificate must EITHER:

- A** Come from an ILAC-accredited laboratory (look for one of the logos below)

<b>A2LA</b> 	<b>L-A-B</b> 	<b>ACLASS</b> 	<b>IAS</b> 	<b>PJLA</b> 	<b>NVLAP</b> 
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 This logo may appear on the certificate. It represents a group of accreditation organizations such as the ones whose logos appear above.

**and contain all of the below items:**

- Name of Device (optional)
- Model Number
- Serial Number
- Date of Calibration (Report or Issue Date)
- Measurement results indicate unit passed test and the documented uncertainty is within suitable limits (recommended uncertainty = +/-1F (0.5C))

- B** If from a non- ILAC-accredited laboratory, it must contain all of the above items **PLUS:**

- A statement that calibration testing conforms to ISO 17025

## Sample of ILAC-accredited Oregon laboratories

### Control Solutions

[www.vfcdataloggers.com](http://www.vfcdataloggers.com)

PJLA Certificate #78234

35851 Industrial Way, Suite D

St Helens, OR 97051

Phone: (888) 311-0636

### Micro Precision Calibration, Inc.

[www.microprecision.com](http://www.microprecision.com)

A2LA Certificate# 935.18

7925 SW Nimbus Ave, #28D

Beaverton, OR 97008

Phone: (503) 746-5845

### Cal-Cert Company

[www.cal-cert.com](http://www.cal-cert.com)

IAS Certificate #CL-108

6709 SE Lake Rd

Portland, OR 97222

Phone: (800) 356-4662

### Quality Control Services, Inc.

[www.qc-services.com](http://www.qc-services.com)

A2LA Certificate# 1550.01

2340 SE 11th Ave

Portland, OR 97214

Phone: (503) 236-2712

### JJ Calibrations, Inc.

[www.jjcalibrations.com](http://www.jjcalibrations.com)

A2LA Certificate# 723.01

7007 SE Lake Rd

Portland, OR 97267

Phone: (503) 786-3005

## Calibrated back-up thermometer

In 2015, CDC made it a requirement that all participating VFC clinics maintain a calibrated, back-up thermometer. While this means added expense to your clinic, it's also an excellent way to safeguard your vaccine supply. Uses include:

- 1) Replacement logger while your main units are being calibrated.
- 2) Calibrated second opinion when you suspect thermometer malfunction.
- 3) Temperature tracking during vaccine transport.

## Continuous monitoring

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Oregon VFC requires the use of a continuous monitoring logger. This is a logger with the ability to record/graph temperatures over time. Do not confuse a high/low recording thermometer with a continuous monitoring thermometer. High/low units offer only basic information about the warmest and coldest temperature a thermometer has reached. By contrast, continuous monitoring units give you the ability to store *all* past temperatures for future reference.

## Internal vs. external temperature probes

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The CDC and Oregon VFC program STRONGLY encourage you to purchase loggers with an external probe in glycol-filled (or similar buffered solution) bottle. A study conducted by the National Institute of Standards and Technology (NIST) has shown that:

***“A glycol-filled bottle approximates the thermal mass and properties of liquid vaccine, producing measurements representative of actual vaccine temperatures.”***

2011 National Immunization Conference, Washington, D.C.  
*Cold Chain Management: Temperature Monitoring Solutions*

## Alarm (high/low)

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Choose a unit that allows you to set a high and low alarm. With this functionality, your clinic will be alerted any time your refrigerator or freezer temperature goes outside of the recommended range.

## Display (min/max)

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A large, easy to read display is extremely useful when monitoring vaccine. Avoid loggers that use confusing symbols/ icons and those with small, hard to read displays. Your logger should have the ability to display (and reset) min/max temperatures between readings. A clear, uncomplicated display will go a long way in making your twice-daily readings a simple task.

## Accuracy

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When choosing a thermometer, look for high accuracy, **+/-1°F (+/-0.5°C)**. This information should be contained in the Certificate of Traceability and Calibration Testing (also known as a Report of Calibration).

## Low battery indicator

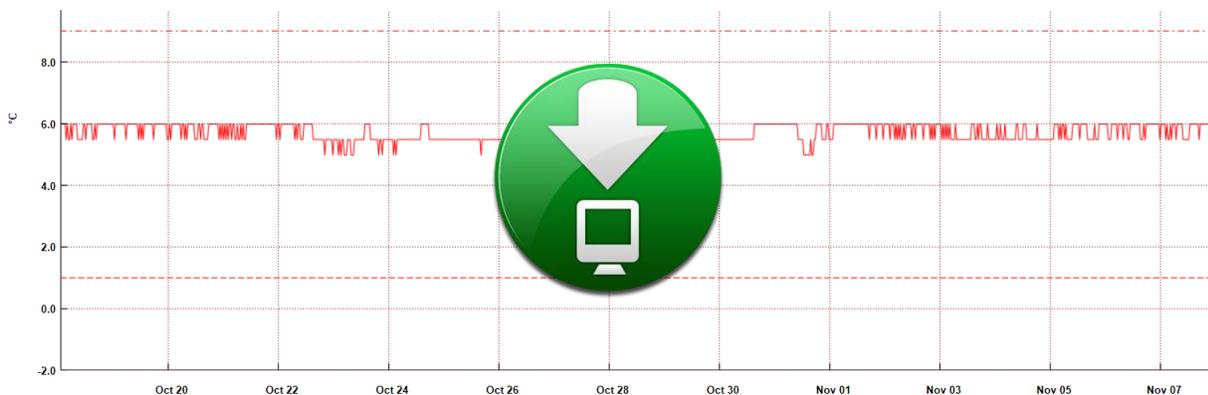
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Notification of low battery status is essential for accurate vaccine temperature recording. Such notification gives you advanced warning and ensures that vaccine monitoring is not interrupted or incomplete.

## Software

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Some digital units do not include free graphing software and will require an additional purchase. Refer to the manufacturer or distributor for full details on your chosen unit.



## Wireless and cloud-based systems

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Relative newcomers to the field of continuous temperature monitoring, Wi-Fi and Ethernet based systems are quickly gaining in popularity. While more costly than stand-alone units, the increase in convenience and accessibility makes them a smart purchase. Some of the newer systems send temperature data directly to a cloud storage site which can be accessed, in real-time, from any computer in the world. Real-time feedback is especially useful when addressing time-sensitive vaccine excursions. Clinics will likely



need a competent IT staff person (or tech savvy employee) to help implement such a system.

## A Brief Disclaimer

As a state agency, we are precluded from endorsing any specific brand or product. Ultimately, the terms & conditions of your purchase are between you and your vendor.

## Equipment Options

Not long ago, medical clinics had limited options when it came to inexpensive, continuous monitoring data loggers. Fortunately, there are now a myriad of respected manufacturers offering continuous monitoring equipment. Because of this, it would be nearly impossible to keep an exhaustive, updated list of every VFC qualified logger option. Instead, we offer this overview of the *types* of loggers to consider during your search.

As always, the Oregon Immunization Program is here to help. Don't hesitate to contact our VFC health educators with any question you have about this requirement or logger options you are considering.

### Online vendors

You have many options when it comes to purchasing your loggers. Below are a few of the most popular online vendors:

- **Control Solutions (an Oregon-based company):** [www.VFCdataloggers.com](http://www.VFCdataloggers.com)
- **CAS Dataloggers:** [www.dataloggerinc.com](http://www.dataloggerinc.com)
- **TheDataLoggerStore.com:** [www.microdaq.com](http://www.microdaq.com)
- **ThermoWorks:** [www.ThermoWorks.com](http://www.ThermoWorks.com)

## Basic stand-alone loggers

These simple and inexpensive loggers come in a myriad of shapes, sizes and styles. They're often simple to use and easy to set-up. Some manufacturers offer units that allow dual (freezer and refrigerator) temperature monitoring in one unit. They work by storing continuous temperature data in the device's built-in memory or external media card. This stored data can then be downloaded to your computer for review and backup.



### **Popular units in this category include:**

- **LogTag TRED30-7:** Temperature Recorder with 30-day Summary Display and Remote Probe. [www.logtagrecorders.com/products/tred30-7.html](http://www.logtagrecorders.com/products/tred30-7.html)
- **Lascar EL-USB-TP-LCD:** Thermocouple Data Logger with LCD and USB Interface. [www.lascarelectronics.com/temperaturedatalogger.php?datalogger=462](http://www.lascarelectronics.com/temperaturedatalogger.php?datalogger=462)
- **Lascar EL-GFX-DTP:** Dual Channel Temperature Probe Data Logger with Graphic Screen. [www.lascarelectronics.com/temperaturedatalogger.php?datalogger=463](http://www.lascarelectronics.com/temperaturedatalogger.php?datalogger=463)
- **T&D TR-71wf:** Dual probe temperature data logger with Wi-Fi and USB. [www.tandd.com/product/tr7wf/index.html](http://www.tandd.com/product/tr7wf/index.html)

## Wi-Fi and Ethernet loggers

Wireless systems offer a step up in convenience and monitoring. The biggest advantage of wireless logging is the ability to monitor multiple refrigerators and freezers from a single computer (or internal network) in real-time. These systems save staff from having to manually disconnect and download temperatures or change out paper wheels on a weekly basis. **However, a wireless system does not relieve you from the requirement of twice-daily temperature checks**



## Popular units in this category include:

- **Lascar EL-WiFi-TP (and TP+):** WiFi Thermocouple Temperature Data Logging Sensor.  
[www.lascarelectronics.com/temperaturedatalogger.php?datalogger=433](http://www.lascarelectronics.com/temperaturedatalogger.php?datalogger=433)
- **Accsense:** Vaccine Storage Temperature Monitoring Kit.  
[www.accsense.com/products/monitoring-systems/vaccine-storage-temperature-monitoring-kit/](http://www.accsense.com/products/monitoring-systems/vaccine-storage-temperature-monitoring-kit/)
- **SensoScientific B10-202:** Wireless Temperature Monitoring System.  
[www.sensoscientific.com/vaccine-vfc/](http://www.sensoscientific.com/vaccine-vfc/)
- **T&D TR-701AW:** Wi-Fi and LAN temperature data logger.  
[www.tandd.com/product/tr700w/index.html](http://www.tandd.com/product/tr700w/index.html)

## Enterprise-level Monitoring Systems

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These monitoring/tracking solutions are targeted at large healthcare organizations, medical groups, hospitals and research facilities. They are distinct in their ability to scale and expand as needed. If your organization is growing fast, consider upgrading to a unified and scalable temperature monitoring system.



## Popular units in this category include:

- **Accsense:** Continual Cloud-Based Monitoring System.  
<http://accsense.com/products/monitoring-systems/>
- **Temptrak:** 24/7 Remote Environmental Monitoring.  
<http://www.cooper-atkins.com/Products/TempTrak/>
- **Aeroscout:** Single, Unified Wi-Fi-based Solution for Monitoring.  
<http://www.aeroscout.com/pharmaceutical-chemicals>

# Extras

This section was created to showcase additional equipment, add-ons and services you may want to consider when assessing your vaccine storage and monitoring needs. These options are in **no way required** to participate in VFC; they are merely being offered as a resource for those who are interested.

## Alarm phone dialers

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Now a relatively old technology, these units still have a place in clinics with limited internet connectivity or recurrent power outages. They are sold by several manufacturers with varied models, styles and prices to choose from. Designed to call pre-determined phone numbers when temperatures go out of range, they're a simple and reliable alarm option. Keep in mind, the system is only useful if it's accurate. Make sure the temperature is set to mirror your calibrated continuous logger.



### Popular units in this category include:

- **Sensaphone 400 Monitoring System:** [www.sensaphone.com/products/sensaphone-400-monitoring-system.php](http://www.sensaphone.com/products/sensaphone-400-monitoring-system.php)
- **TemperatureGuard:** [www.temperatureguard.com/products.html](http://www.temperatureguard.com/products.html)