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Thermometer Guide for Prevention Partnership Providers

All prevention partnership providers are required to use a calibrated thermometer with certificate of traceability and calibration testing. In addition to this requirement, the Centers for Disease Control and Prevention recommends the use of a digital thermometer with detachable probe that is kept in a glycol-filled bottle. The glycol encased probe is preferred as it measures a liquid temperature which approximates the vaccine temperature in the refrigerator/freezer. Other recommendations for thermometers include the following specifications:

- Alarm system for out-of-range temperatures
- Current, minimum and maximum temperature records
- Low battery indicator
- A thermometer which can provide continuous data monitoring information with user programmable recording interval
- A thermometer display which can be placed outside the refrigerator/freezer to ease reading
- The calibration report of a thermometer tells the level of accuracy of the thermometer against reference standard. A thermometer with levels of accuracy of +/- 1°F/+/-.5°C is recommended.

Certificates of calibration should fulfill either of the following four criteria:

- **Criteria 1:** The certificate must identify an ILAC/MRA signatory body accredited laboratory (A2LA, L-A-B, ACLASS, IAS, and PJLA) and has a model number, a serial number, date of calibration, and measurement results indicate unit passed test and documented uncertainty is within suitable limits (recommended uncertainty = +/- 1°F or .5°C). OR
- **Criteria 2:** The certificate must have a statement that the calibration testing conforms to International Organization for Standardization (ISO) 17025, has a date of calibration, serial number and model number and measurement results indicate unit passed test and documented uncertainty is within suitable limits (recommended uncertainty = +/- 1°F or .5°C). OR
- **Criteria 3:** Meets specifications and testing requirements for the American Society for Testing and Materials (ASTM) Standard E2877 Tolerance Class F (< +/-.5° C or < +/-1° F) and has a model number, a serial number, date of calibration, and measurement results indicate unit passed test and documented uncertainty is within suitable limits (recommended uncertainty = +/- 1°F or .5°C). OR
- **Criteria 4:** Traceable to the standards maintained by the National Institute of Standards and Technology (NIST) and has a model number, a serial number, date of calibration, and measurement results indicate unit passed test and documented uncertainty is within suitable limits (recommended uncertainty = +/- 1°F or .5°C).

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Notice: The following table provides list of thermometers that can be considered as options when providers plan to buy a thermometer. The information in the table, including the price and the specifications, may change over time. Providers may purchase thermometers not manufactured by companies on this list, but that also have certificates of calibration that meet program requirements.

Abbreviations:

MRA - Mutual Recognition Arrangements

A2LA - American Association for Laboratory Accreditation

IAS - International Accreditation Service Inc.

ACLASS - ANSI-ASQ National Accreditation Board

ILAC- International Laboratory Accreditation Cooperation

PJLA - Perry Jonson Laboratory Accreditation Service Inc.

Thermometer	Model	Price	Frequency of calibration	Recalibration Price	Manufacturer or distributor	Software	Certificate of Calibration	Min/Max recording	Alarm	Low Battery Indicator	Accuracy	Remark	Website
VFC-5000 TP data logger	VFC-5000 LCD TP	$152	Every year	$45	Control Solutions, Inc. (Distributor)	Needs software	√	√	√	√	±1°F (±0.5°C)	Recommended for vaccine transport	http://www.vfcdataloggers.com/VFC5000-TP.aspx
VFC 300 WiFi	VFC 300 WiFi	$230	Every year	$45	Control Solutions, Inc. (Distributor)	Needs software	√	√	√	√	±0.4°F (±0.25°C)		http://www.vfcdataloggers.com/vfc-300-wifi/
VFC 350 WiFi	VFC 350 WiFi	$389	Every year	$45	Control Solutions, Inc. (Distributor)	Needs software	√	√	√	√	±0.4°F (±0.25°C)		http://www.vfcdataloggers.com/vfc-350-wifi/
Fridge Tag®	Fridge Tag3 GSM®	$250	Every 2 years	Will update when the information is available	Berlinger	Does not need software	√	√	√	√	±1°F (±0.5°C)	Cloud based service needed.	http://www.berlingerusa.com/fridgetag3/
Fridge Tag®	Fridge Tag2L®	$145	Needs to be changed after 3 years (no calibration)		Berlinger	Does not need software	√	√	√	√	±1°F (±0.5°C)		http://www.berlingerusa.com/fridgetag2l/
VFC 400	VFC 400	$147	Every 2 years	$45	Log Tag Solutions (manufacturer)	Needs software	√	√	√	√	±0.3°C	Yearly subscription to the Vaccine Monitoring Cloud can be purchased	http://www.vfcdataloggers.com/vfc400
Traceable® Memory-Card Refrigerator/ Freezer Thermometer	6430	$149	Every year	$43.50	Control Company	Does not need software	√	√	√	√	±0.25°C	Requires a USB flash drive to transfer data	https://traceable.com/6430.html
Touchscreen - WiFi/ Ethernet with AC	AC	$524	Every year	$99-269	Dickson One (manufacturer)	Software needed	√	√	√	√	±0.9°F from -58 to 68°F		http://www.dicksondata.com/products/TWE
Touchscreen - POE, WiFi/ Ethernet	POE	$599	Every year	$99-269	Dickson One (manufacturer)	Software needed/ WiFi	√	√	√	√	±0.9°F from -58 to 68°F		http://www.dicksondata.com/products/TWP
Touchscreen - USB	DSB	$199	Every year	$99-269	Dickson One (manufacturer)	Software needed	√	√		√	±0.9°F from -58 to 68°F		https://www.dicksondata.com/products/DSB

Thermometer	Model	Price	Frequency of calibration	Recalibration Price	Manufacturer or distributor	Software	Certificate of Calibration	Min/Max recording	Alarm	Low Battery Indicator	Accuracy	Remark	Website
USB Temperature Data Logger, IP67 rated, supplied with configuration software	EL-USB-1	$60	Every 2 year	$50	Lascar Electronics (manufacturer)	Software needed	√	√	√	√	±1°C	Recommended for vaccine transport	https://www.lascarelectronics.com/easylog-data-logger-el-usb-1/
Temperature Data Logger with LCD	EL-USB-1-LCD	$70	Every 2 year	$50	Lascar Electronics (manufacturer)	Software needed	√	√	√	√	±0.5°C	Recommended for vaccine transport	https://www.lascarelectronics.com/easylog-data-logger-el-usb-1-lcd/
Temperature Data Logger with LCD screen and external Thermistor Glycol Probe	EL-USB-TP-LCD-PROBE-G	$180	Every 2 year	$50	Lascar Electronics (manufacturer)	Software needed	√	√	√	√	±0.1°C	Recommended for vaccine transport	https://www.lascarelectronics.com/easylog-data-logger-el-usb-tp-lcd-probe-g/
WiFi Temperature & Humidity Data Logging Sensor	EL-WiFi-TH	$150	Every 2 year	$50	Lascar Electronics (manufacturer)	Software needed	√	√	√	√	±0.1°C		https://www.lascarelectronics.com/easylog-data-logger-el-wifi-th/
WiFi Temperature Data Logging Sensor	EL-WiFi-T	$100	Every 2 year	$50	Lascar Electronics (manufacturer)	Software needed	√	√	√	√	±0.1°C		https://www.lascarelectronics.com/easylog-data-logger-el-wifi-t/
Temperature and Relative Humidity Data Logger with Graphic LCD Screen	EL-GFX-2	$150	Every 2 year	$50	Lascar Electronics (manufacturer)	Software needed	√	√	√	√	±0.5°C		https://www.lascarelectronics.com/easylog-data-logger-el-gfx-2/
Temperature Data Logger with Graphic LCD Screen	EL-GFX-1	$135	Every 2 year	$50	Lascar Electronics (manufacturer)	Software needed	√	√	√	√	±0.1°C		https://www.lascarelectronics.com/easylog-data-logger-el-gfx-1/
High Accuracy Temp/RH Data Logger with Graphic Screen	EL-GFX-2+	$200	Every 2 year	$50	Lascar Electronics (manufacturer)	Software needed	√	√	√	√	±0.2°C		https://www.lascarelectronics.com/easylog-data-logger-el-gfx-2plus/

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Dual Channel Temperature Probe Data Logger with Graphic Screen	EL-GFX-DTP	$185	Every 2 year	$50	Lascar Electronics (manufacturer)	Software needed	√	√	√	√	±0.1°C		https://www.lascarelectronics.com/easylog-data-logger-el-gfx-dtp/
InTemp VFC Temperature Data logger	CX402-VFC	$159	3 year calibration (one time) for a total of six year life	$75	ONSET	Software needed	√	√	√	√	±0.5°C	InTemp app and cloud data storage no charge	http://www.onsetcomp.com/intemp/products/data-loggers/cx402-vfcxxx
SMART Wi-Fi Guard	SMART Wi-Fi Guard	$209.00	$45 every two years for replacement monitors		SMART Temps		√	√	√	√	±0.5 °C	Yearly subscription to the Vaccine Monitoring Website needs to be purchased for $180.00 or $27.71/month	http://www.smart-temps.com/web/oursystem_guard.cfm
SMART Guard G3	SMART Guard G3 with SMART Link	$189.00 for the SMART Guard $289.00 for the SMART Link	$45 every two years for replacement monitors		SMART Temps		√	√	√	√	±0.5°C	Yearly subscription to the Vaccine Monitoring Website needs to be purchased for $180.00 or $38.81/ month	http://www.smart-temps.com/web/oursystem_link.cfm
Point Six Wifi System	3020-01	$486 with 3 point NIST certificate	Contact vendor		Point Six Wireless		√	√	√	√	±0.5°C	Cloud service needed	http://www.pointsix.com/PDFs/CDC%20compliant%20temperature%20sensor%20with%20display.pdf
Point Six Wifi System	3008-28-V6	$276 for internal antenna $322 with external antenna	Contact vendor		Point Six Wireless		√	√	√	√	±0.5°C	Cloud service needed.	http://www.pointsix.com/PDFs/3008-28-V6.pdf

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SmartSense		Cellular Gateway $250 Sensor and Screen with product simulator $200			DIGI		√	√	√	√	±0.5°C	Cloud-based monitoring system $180 per year	www.smartsense.co
ThermCo Dual Probe	ACCRT 8017	Contact Vendor	2 years	$84	Thermco		√	√	√	√	±0.3°C		http://www.thermcoproducts.com/ACCRT8017-Vaccine-Temperature-Alert-Data-Logger.html
Vaccine Temperature Data Logger	ACCRT 8002	Contact Vendor	2 years	$84	Thermco		√	√	√	√	±0.5°C		http://www.thermcoproducts.com/ACCRT8002-Vaccine-Temperature-Data-Logger.html?zoom_highlight=ACCRT8002

Manufacturers of equipment who wish to add or edit the information above can contact the Immunization Program with the phone number provided.

Please contact the North Dakota Immunization Program at 701.328.3386 or 800.472.2180 with any questions.