

## РЕГИСТРАТОРЫ ДАННЫХ

DL 1000, 1016, 1400, 1416, 1700, 4000

## ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ

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# Vaisala DL1000-1400 Temperature



The 1000/1400 temperature data loggers include the VL-series for regulated environments and the SP-series for non FDA/GxP regulated industries. The VL-series of data loggers, together with vLog VL software, provide a superior, high accuracy solution for use in FDA/GxP regulated environments by ensuring tamperproof files and electronic records that meet 21 CFR Part 11 requirements. The SP-series provides a compact, easily deployable, highly

accurate measurement and recording device. Coupled with vLog SP software for downloading, displaying, analyzing and reporting of recorded environmental data, the SP-series was designed for use in non FDA/GxP regulated environments. Optional browser-based viewLinc software provides 24/7 multi-stage alarm notification and remote monitoring for both the VL and SP series of data loggers.

## Features/Benefits

- Industry-leading precision and accuracy
- Printed reports for any time period
- 10-year battery
- Validation and continuous monitoring with the same model
- Two year limited warranty
- Superior alternative to chart recorders and hard-wired systems
- Traceable to SI units through national metrology institutes.\*
- Timebase calibrated over the operating temperature range
- Adjustable time based recording
- Snap-in logger cradle for easy network connectivity
- Two probe options give high accuracy - from -90 °C to +70 °C

\* Measurement results are traceable to the international system of units (SI) through national metrology institutes (NIST USA, MIKES Finland, or equivalent) or ISO/IEC 17025 accredited calibration laboratories.

## Applications

Ideal for Monitoring & Validation of:

- Refrigerators & Freezers (to -90 °C)
- Incubators
- Stability Chambers
- Warehouses
- Ambient conditions

# Technical Data

## General

Size	85 x 59 x 26 mm (3.4 x 2.3 x 1") 76 g (2.7oz)
Interfaces	RS-232 serial, USB, Ethernet, WiFi, PoE network interface available
Mounting	3M Dual Lock™ Fasteners Snap-in connector locks provide secure probe connections
PC Software	Graphing & Reporting Software vLog SP for SP-series vLog VL for VL-series viewLinc for continuous monitoring & alarming OPC Server to add on to existing OPC compatible monitoring systems
Internal Clock	Accuracy ±1 min. /month -25 °C to +70 °C (-13 °F to +158 °F)
Electromagnetic Compatibility	FCC Part 15 and CE
Power Source	Internal 10-year lithium battery (Battery life specified with sample interval of 1 min. or longer)
Logger Operating/Storage Range	-40 °C to +85 °C (-40 °F to +185 °F) 0 %RH to 100 %RH non-condensing

## Internal Temperature Sensor

Series	Sensor Type
1000-21x	Precision-tolerance epoxy-encapsulated NTC thermistor

## Memory

Data Sample Capacity	
1000-2XX	48,100 12-bit samples
1400-44X	85,300 12-bit samples
Memory Type	Non-volatile EEPROM
Memory Modes	User selectable: wrap (FIFO) or stop when memory is full. User selectable start time. User selectable stop time (VL series only).
Sampling Rates	User-selectable (in 10 second intervals) from once every 10 seconds to once a day.

## Recording Span: 1000-2xx

SAMPLE INTERVAL	NUMBER OF CHANNELS ENABLED	
	1	2
10 Seconds	5.5 Days	2.7 Days
1 Minute	1.1 Months	16.7 Days
5 Minutes	5.5 Months	2.7 Months
15 Minutes	1.3 Years	8.3 Months
1 Hour	5.4 Years	2.7 Years



VL-1000-21x



VL-1000-22x

## Recording Span: 1400-44x

SAMPLE INTERVAL	NUMBER OF CHANNELS ENABLED			
	1	2	3	4
10 Seconds	9.8 Days	4.9 Days	3.2 Days	2.4 Days
1 Minute	1.9 Months	29.6 Days	19.7 Days	14.8 Days
5 Minutes	9.8 Months	4.9 Months	3.2 Months	2.4 Months
15 Minutes	2.4 Years	1.2 Years	9.8 Months	7.4 Months
1 Hour	9.7 Years	4.8 Years	3.2 Years	2.4 Years



VL-1400-44x

# Vaisala DL1700 Thermocouple Data Logger



## Designed for Controlled Environments such as:

- Extreme temperatures
- Liquid Nitrogen (LN<sub>2</sub>)
- Ovens
- Sterilization chambers

## Applications

- Ideal for extreme temperatures from -240 °C to 1760 °C
- Accepts type J, K, T, E, R and S thermocouples
- No programming or complicated equations required
- Highly accurate replacement for bulky data acquisition systems
- Traceable to SI units through national metrology institutes.\*

\* Measurement results are traceable to the international system of units (SI) through national metrology institutes (NIST USA, MIKES Finland, or equivalent) or ISO/IEC 17025 accredited calibration laboratories.

The Vaisala DL1700 series data loggers provide highly accurate temperature data acquisition and are ideal for demanding environments. The DL1700 data loggers can be used with Vaisala software, either viewLinc or vLog, to download, display, and analyze environmental data. The viewLinc monitoring system provides 24/7 multi-stage alarm notification, remote, real-time monitoring and gap-free data. The vLog software is a simple solution for validation/mapping applications. All reports are customizable and can be exported

to spreadsheets and PDF to provide records that meet the requirements of 21 CFR Part 11 and Annex 11.

Easy to use with standard thermocouples, these compact data loggers can offer up to five channels of data in temperatures ranging from -240 °C to +1760 °C.

We offer models for both validated and non-validated applications. Choose the DL1700 VL series for GxP-compliant environments and the DL1700 SP series for non-validated applications.

# Technical Data

## General

Size	3.4 x 2.1 x 1" (85x59x26mm); 60g (2.7 oz)
Operating Range	-40 °C to +85 °C (-40 °F to +185 °F) and 0 %RH to 100 %RH (non-condensing)
Interfaces	RS-232 serial, USB, Ethernet, WiFi network interface available
Mounting	3M Dual Lock™ fasteners
Software	viewLinc for Monitoring, Alarming & Reporting vLogVL for Validation/Mapping GxP environments vLogSP for graphing & reporting non-GxP environments OPC Server to add Vaisala loggers to any OPC-compatible monitoring system
Internal Clock	Accuracy: ±1 min./month at -25°C to +70°C
Electromagnetic Compatibility	FCC Part 15 and CE
Power Source	Internal 10-year lithium battery (Battery life specified with sample interval of 1 min. or longer)

## Data Logger Inputs

1700 MODEL	NUMBER OF CHANNELS ENABLED		
	Thermocouple	CJT	Total
1700-54T	4	1	5

Note: One channel is designated for Cold Junction Temperature (CJT) reference using an on-board precision-tolerance thermistor.

## Thermocouple Input Channels

COMPATIBLE THERMOCOUPLE TYPES: J, K, T, E, R, S

INITIAL ACCURACY:

Input Range	Resolution	Initial Accuracy
-7.2 to +55.4 mV	0.016 mV	±0.042 mV @ +25 °C (+77 °F)

INPUT IMPEDANCE: 10M OHMS

Input Range	Resolution	1-Year Accuracy
-7.2 to +55.4 mV	0.016 mV	±0.055 mV @ +25 °C (+77 °F)

Additional error at 3 V/m RF field from

450 MHz ... 580 MHz: ±0.350 mV

And at 3 V conducted RF from 3 MHz ... 80 MHz: ±1.0 mV

## Temperature Accuracy

	TYPE K	TYPE J	TYPE T	TYPE E	TYPE R	TYPE S
Temperature Measurement Range	-220 °C to +1370 °C (-364 °F to +2498 °F)	-130 °C to +900 °C (-202 °F to +1652 °F)	-240 °C to +350 °C (-400 °F to +662 °F)	-110 °C to +740 °C (-166 °F to +1364 °F)	-50 °C to +1760 °C (-58 °F to +3200 °F)	-50 °C to +1700 °C (-58 °F to +3092 °F)
Instrument Temperature Accuracy at mid-range*	±1.3 °C (±2.3 °F)	±1.0 °C (±1.8 °F)	±1.2 °C (±2.2 °F)	±0.70 °C (±1.3 °F)	±4.4 °C (±7.9 °F)	±5.1 °C (±9.2 °F)
Resolution at mid-range	0.37 °C (0.67 °F)	0.29 °C (0.52 °F)	0.34 °C (0.61 °F)	0.20 °C (0.36 °F)	1.3 °C (2.3 °F)	1.5 °C (2.7 °F)

\* Listed accuracies are for data logger only at 25°C (+77°F). They do not include the accuracy of the thermocouple probe or cold junction compensation or electromagnetic interference.

## Cold Junction Temperature Channel

Measurement Range	-40 °C to +85 °C (-40 °F to +185 °F)
Accuracy	±0.25 °C over +20 °C to +30 °C (±0.45 °F over +68 °F to +86 °F) ±0.35 °C over -25 °C to +70 °C (±0.63 °F over -13 °F to +158 °F)

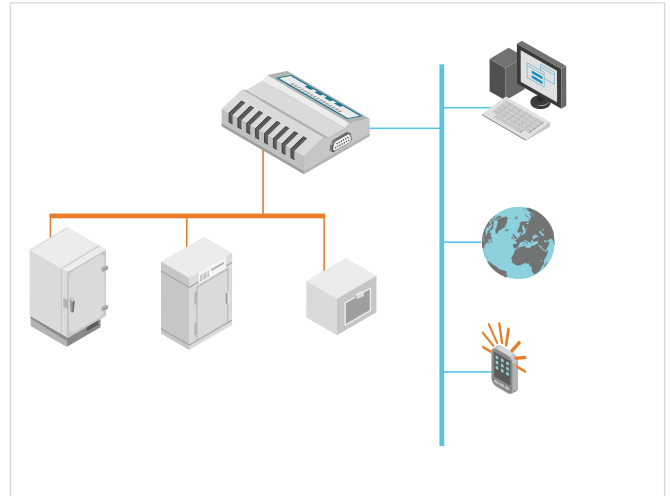
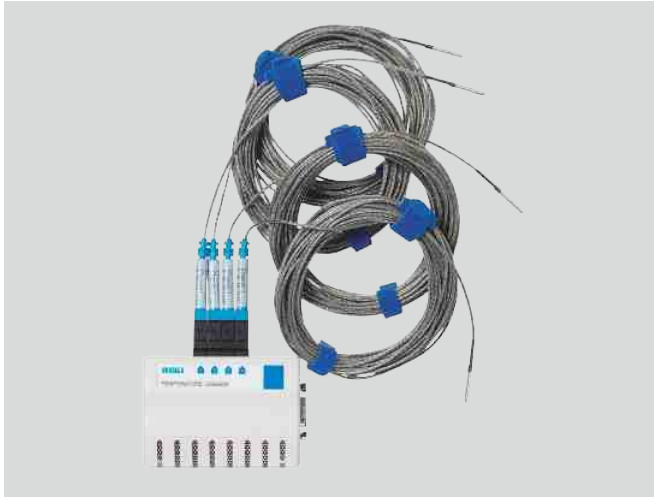
## ACCESSORIES:

Thermocouple probe Type	EPT-22T-20T T
Conductors	Copper/Constantan
Operating range	-200°C to 200°C (-328°F to 392°F)
Length	6.096 meters
Error	±1°C to ±1.5%

## Memory

Memory Type	Non-volatile EEPROM
Data Sample Capacity	135,165 12-bit samples
Memory Modes	User-selectable wrap (FIFO) or stop when memory is full. User-selectable start time.
Sampling Rates	User-selectable from once every 10 seconds to once a day. (Battery life specified with sample interval of 1 min. or longer)
Recording Span	Recording span depends upon sample interval selected and number of channels enabled.

# Vaisala DL1016-1416 Multi-application Temperature Data Logger



## Features/Benefits

- Industry-leading precision and accuracy
- Real-time monitoring & alarming with viewLinc
- Reliable validation/mapping with vLog
- Easy connectivity to your existing network – wired or wireless
- Validation and continuous monitoring with the same data logger
- Superior alternative to chart recorders and hard-wired systems
- Traceable to SI units through national metrology institutes.\*

### MODEL NUMBERS & CHANNELS

- VL-1016-22V  
Two external channels for validatable applications
- VL-1416-44V  
Four external channels for validatable applications
- SP-1016-22V  
Two external channels
- SP-1416-44V  
Four external channels

Vaisala's multi-application temperature data loggers monitor temperatures in up to four applications with one logger – ultra-low temperature freezers, freezer/refrigerators and incubators.

The DL1016-1416 data loggers can be used with Vaisala software, either viewLinc or vLog, to download, display, and analyze environmental data. The viewLinc monitoring system provides 24/7 multi-stage alarm notification, remote, real-time

monitoring and gap-free data.

The vLog software is a simple solution for validation/mapping applications. All reports are customizable and can be exported to spreadsheets and PDF to provide records that meet the requirements of 21 CFR Part 11 and Annex 11.

Choose the DL1016-1416 VL series data logger for GxP-compliant environments and the DL1016-1416 SP series for non-GxP applications.

## Technical Data

### General

Size	85 x 59 x 26 mm (3.4 x 2.3 x 1") 76 g (2.7oz)
Interfaces	RS-232 serial, USB, Ethernet, WiFi, PoE network interface available
Mounting	3M Dual Lock™ Fasteners Snap-in connector locks provide secure probe connections
PC Software	vLog Graphing & Reporting Software viewLinc for continuous monitoring & alarming OPC Server to add Vaisala recorders to any OPC-compatible monitoring system
Internal Clock	Accuracy ±1 min. /month 0 °C to +50 °C (32 °F to +122 °F)
Electromagnetic Compatibility	FCC Part 15 and CE
Power Source	Internal 10-year lithium battery (Battery life specified with sample interval of 1 min. or longer)

# Technical Data

## Temperature Range & Accuracy

Sensor	"V" Range External Probe
Calibrated	-90 °C to +50 °C
Measurement Range	(-130 °F to +122 °F)
Operating Range	-95 °C to +70 °C
Range	(-139 °F to +158 °F)
Initial Accuracy*	±0.25 °C over -90 °C to +50 °C (±0.45 °F over -130 °F to +122 °F)
One Year Accuracy*	±0.35 °C over -90 °C to +50 °C (±0.63 °F over -130 °F to +122 °F)
Resolution	0.01 °C at +25 °C (0.02 °F at +77 °F)

## 1016 Series

Data Sample Capacity	68,600 16 bit samples
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## 1416 series

Data sample Capacity	101,375 16 bit samples
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## 1016 and 1416 series

Memory type	non-volatile EEPROM
Memory Modes	User-selectable rates from once every 10 seconds to once per day. (Battery life specified with sample interval of 1 min. or longer)
Sampling Rates	User-selectable rates from once every 10 seconds to once per day. (Battery life specified with sample interval of 1 min. or longer)

## Data Logger

Operating Range	0 °C to +50 °C (+32 °F to +122 °F) 0 %RH to 100 %RH non-condensing
Storage Range	-40 °C to +85 °C (-40 °F to +185 °F) 0 %RH to 100 %RH non-condensing

## Recording Span: 1016-22V

SAMPLE INTERVAL	NUMBER OF CHANNELS ENABLED	
	1	2
1 Minute	1.5 Months	23.8 Days
5 Minutes	7.6 Months	3.8 Months
15 Minutes	1.9 Years	11.5 Months
1 Hour	7.8 Years	3.9 Years

\*Specification for external channels is for a probe calibrated to the specified channel of the data logger, with the logger at 0 °C to +50 °C (+32 °F to +77 °F)

## Recording Span: 1416-44V

SAMPLE INTERVAL	NUMBER OF CHANNELS ENABLED			
	1	2	3	4
1 Minute	2.3 Months	1.1 Months	23.5 Days	17.6 Days
5 Minutes	11.3 Months	5.6 Months	3.7 Months	2.8 Months
15 Minutes	2.8 Years	1.4 Years	11.3 Months	8.5 Months
1 Hour	11.5 Years	5.7 Years	3.8 Years	2.8 Years

## Thermistor Probes

Sensor	"V" Range External Probe
Operating Range	-95 °C to +70 °C (-139 °F to +158 °F)
Connector Color Code	Blue
Sensor Tip	Stainless Steel, Diameter: 3.2 mm (1/8"), Length: 38 mm (1.5") Sealed Teflon Tip Diameter: 3 mm (0.12"), Length: 28 mm (1.1")
Probe Length	3 m (10') and 7.6 m (25') lengths available
Cable Construction	2 mm (0.07") Diameter, Teflon coated cable

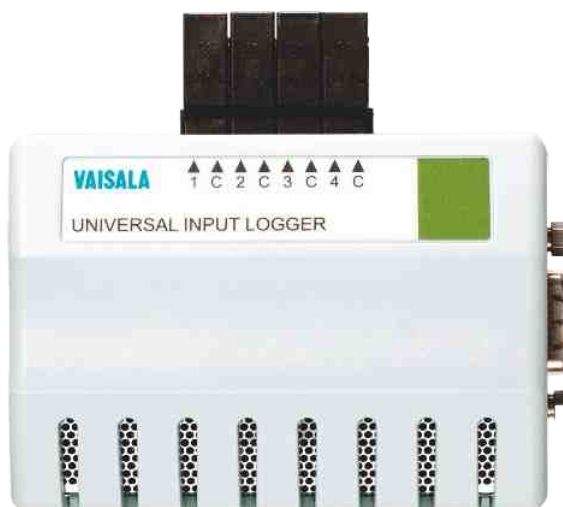
## Immersion/Dry Probes

DESCRIPTION/LENGTH	PART NUMBER
Thermistor V Range probe 25'	235139SP
Thermistor V Range probe 10'	235218SP
Thermistor immersion V Range probe 25'	235140SP
Thermistor immersion V Range probe 10'	235217SP

## Temperature Probe Accessories

EPT-TDB-2: Thermal Damping Block, for use in refrigerators and freezers. Simulates a glycol bottle to reduce alarms generated by opening and closing a door.

# Vaisala DL4000 Universal Data Logger



## Features/Benefits

- 10-year battery and large onboard memory
- Single and multi-channel models with up to four input channels
- Easily set scaling and measurement units for recording
- Time-based digital recording in a range of sample intervals
- Multiple connectivity options - USB, Ethernet, WiFi
- Optional vNet cradle for Ethernet or Power over Ethernet connectivity
- Traceable to SI units through national metrology institutes.\*
- Two year limited warranty

\* Measurement results are traceable to the international system of units (SI) through national metrology institutes (NIST USA, MIKES Finland, or equivalent) or ISO/IEC 17025 accredited calibration laboratories.

The 4000 series of data loggers are designed to interface with a wide range of transducers, transmitters, and sensors with a DC voltage or 0 - 20 mA current loop output. The 4000 is a simple solution for recording and monitoring pressure, flow, fluid level, PH, electrical properties, moisture and gas concentrations.

Ideal for use in standalone or networked applications, the 4000 Universal Input logger connects directly to a PC with USB or installs to an existing network via Ethernet, Power over Ethernet or WiFi. Each logger contains a 10-year battery and onboard memory for recording a wide range of variables at the point of measurement. With autonomous power and recording capacity, data is immune to network and power interruptions.

The DL4000 data loggers can be used with Vaisala software, either viewLinc or vLog, to download, display, and analyze environmental data. The viewLinc monitoring system provides 24/7 multi-stage alarm notification, remote, real-time monitoring and gap-free data. The vLog software is a simple solution for validation/mapping applications.

All reports are customizable and can be exported to spreadsheets and PDF to provide records that meet the requirements of 21 CFR Part 11 and Annex 11.

Choose the DL4000 VL series data logger for GxP-compliant environments and the DL4000 SP series for non-GxP applications.



# Technical Data

## General

Size	85 x 59 x 26 mm (3.4 x 2.3 x 1") 76 g (2.7 oz)
Operating Range	-40 °C to +85 °C (-40 °F to +185 °F) and 0 %RH to 100 %RH (non-condensing)
Interfaces	RS-232 serial USB Wifi module Ethernet and Power over Ethernet (vNet)
Mounting	3M Dual Lock™ fasteners
PC Software	Graphing & Reporting Software vLog SP for SP-series vLog VL for VL-series viewLinc for continuous monitoring & alarming OPC Server to add on to existing OPC compatible monitoring systems
Internal Clock	Accuracy ±1 min./month @ -25 °C to +70 °C (-13 °F to +158 °F)
Electromagnetic Compatibility	FCC Part 15 and CE EN 55022:2006 EN 61000-4-2:2001 EN 61000-4-3:2006
Power Source	Internal 10-year lithium battery (Battery life specified with sample interval of 1 min. or longer)

## Memory

Memory Type	Non-volatile EEPROM
Data Sample Capacity	120,000 12-bit samples
Memory Modes	User-selectable wrap (FIFO) or stop when memory is full. User-selectable start and stop times.
Sampling Rates	User-selectable from once every 10 seconds to once a day. (Battery life specified with sample interval of 1 min. or longer)
Recording Span	Recording span depends upon sample interval selected and number of channels enabled. Please see table above.

## Recording Span

SAMPLE INTERVAL	NUMBER OF CHANNELS			
	1	2	3	4
10 seconds	13.8 days	6.9 days	4.6 days	3.4 days
1 minute	2.7 months	1.3 months	27.7 days	20.8 days
5 minutes	1.1 years	6.9 months	4.6 months	3.4 months
15 minutes	3.4 years	1.7 years	1.1 years	10.4 months
1 hour	13.6 years	6.8 years	4.5 years	3.4 years

## Current Loop and Voltage Inputs

INPUT TYPE	CURRENT LOOP	ANALOG VOLTAGE
Available Ranges	0 to 20mA	0 to 5 VDC, 0 to 10 VDC
Resolution	5.5 µA	0.025 % F.S.
Accuracy	±0.15 % F.S. at +25 °C (+77 °F)	±0.15 % F.S. at +25 °C (+77 °F)
Input Impedances	75 Ohms	>1 MOhm
Isolation	One common per logger	One common per logger
Overload Protection	40 mA max. (reverse- polarity protected)	±24 VDC max. (reverse- polarity protected)

## Channel Configurations

MODEL	1, 2 OR 4 CHANNELS
4000-405	0 to 5 VDC
4000-40A	0 to 10 VDC
4000-40C	0 to 20 mA

## По вопросам продаж и поддержки обращайтесь:

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