

**Certificate Number:** K008-1133876

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**Customer:** VTG LLC  
520 SE Columbia  
River Dr #223  
Vancouver WA 98661

**Manufacturer:** Vaisala Oyj

**Instrument:** VL-2000-20R Humidity and Temperature Logger

**Serial Number:** 16512090

The measurement results were calculated from recorded values by using adjustment coefficients and averaging. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to a coverage probability of approximately 95 %.

The conformity status for each measurement point is determined using a guard band equal to the expanded ( $k=2$ , 95% confidence level) measurement uncertainty.

Pass: Error is less than or equal to the specification limit minus the measurement uncertainty.

\*Pass or N/A: Error is less than the specification limit plus the measurement uncertainty.

Fail: Error is more than or equal to the specification limit plus the measurement uncertainty.

The calibration results and the statement of conformity with specification/acceptance limit relate only to the calibrated instrument and the calibration points

The statement of conformity is based on 95 % confidence level acceptance, whether the calibration result is within or outside the manufacturer's specification/acceptance limits. The expanded calibration uncertainty ( $k=2$ , 95 % confidence level) is taken into account in the statement of conformity. The probability of accepting a non-conforming result or rejecting a conforming result can be as large as 2.5 % with this acceptance rule when the calibration result is close to the acceptance limit.

The measurement results are traceable to the international system of units (SI) through national metrology institutes (NIST USA or equivalent) or via ISO/IEC 17025 accredited calibration laboratories.

**Note(s):**

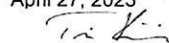
Service report as an attachment

**Calibration Date:** April 25, 2023

**Next Calibration:** April 25, 2024

**Issue Date:** April 27, 2023

**Signature:**



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Tomi Keinänen

Technician

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The measurements carried out and the Certificates of Calibration issued by an Accredited Calibration Laboratory comply with the measurement ranges and uncertainties approved by FINAS Finnish Accreditation Service. The measurement results issued by the Laboratory are traceable to national or international measurement standards. Measurement Standards Laboratory of Vaisala Oyj is a calibration laboratory K008 accredited by FINAS Finnish Accreditation Service, accreditation requirement ISO/IEC 17025. The accreditation is included in the Multilateral Agreement (EA MLA) of the European co-operation for Accreditation (EA).

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ID 0124416-2

## Calibration Certificate

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The internal temperature sensor of the logger was calibrated by comparing the logger readings to a reference thermometer in Vaisala Measurement Standards Laboratory (MSL). Calibration procedure DOC227678.

### Measurement results before adjustment:

Reference Temperature	Observed	Error	Channel 1 Uncertainty	Limit	Pass/Fail
°C	°C	°C	°C	°C	
25.02	24.97	-0.05	0.06	±0.15	Pass

### Measurement results after adjustment:

Reference Temperature	Observed	Error	Channel 1 Uncertainty	Limit	Pass/Fail
°C	°C	°C	°C	°C	
25.02	25.02	0.00	0.06	±0.1	Pass

### Reference(s):

Fluke 1560/2560

### Instrument Number

TP 14845/1

### Calibration Date

November 30, 2022

### Certificate

K008-F06454

### Next Calibration

November 30, 2023

### Note(s):

Service report as an attachment

Calibration Date: April 25, 2023

Next Calibration: April 25, 2024

### Ambient Condition(s):

23.2 °C ±1.5 °C

32.9 %rh ±3.1 %rh

999.8 hPa ±1.9 hPa

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## Calibration Certificate

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The humidity sensor of the logger was calibrated by comparing the logger readings to the generated reference humidity readings in Vaisala Measurement Standards Laboratory (MSL). Calibration procedure DOC227678.

### Measurement results before adjustment:

Reference		Channel 2				
Humidity	Temperature	Observed	Error	Uncertainty	Limit	Pass/Fail
%rh	°C	%rh	%rh	%rh	%rh	
11.00	25.00	11.01	0.01	0.70	±2	Pass
44.90	25.02	44.62	-0.28	0.80	±2	Pass
79.91	25.01	79.67	-0.24	0.80	±2	Pass

### Measurement results after adjustment:

Reference		Channel 2				
Humidity	Temperature	Observed	Error	Uncertainty	Limit	Pass/Fail
%rh	°C	%rh	%rh	%rh	%rh	
11.00	25.00	11.05	0.05	0.70	±1	Pass
44.90	25.02	44.92	0.02	0.80	±1	Pass
79.91	25.01	79.93	0.02	0.80	±1	Pass

Reference(s):	Instrument Number	Calibration Date	Certificate	Next Calibration
Thunder 2500	UG 14324	October 26, 2022	K008-F05737	October 31, 2023
Fluke 1560/2560	TP 14845/1	November 30, 2022	K008-F06454	November 30, 2023
PTU303	PA 14534	June 21, 2022	K008-F03369	June 30, 2023

### Note(s):

Service report as an attachment

Calibration Date: April 25, 2023

Next Calibration: April 25, 2024

### Ambient Condition(s):

23.2 °C ±1.5 °C  
 32.9 %rh ±3.1 %rh  
 999.8 hPa ±1.9 hPa