

Certificate Number: K008-1133880

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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: 16512063

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:



Tomi Keinänen

Technician

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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 | Channel 1 | | | | |
|-------------|-----------|-------|-------------|-------|-----------|
| Temperature | Observed | Error | Uncertainty | Limit | Pass/Fail |
| °C | °C | °C | °C | °C | |
| 25.02 | 25.00 | -0.02 | 0.06 | ±0.15 | Pass |

Measurement results after adjustment:

| Reference | Channel 1 | | | | |
|-------------|-----------|-------|-------------|-------|-----------|
| Temperature | Observed | Error | 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 | 11.09 | 0.09 | 0.70 | ±2 | Pass |
| 44.90 | 25.02 | 44.54 | -0.36 | 0.80 | ±2 | Pass |
| 79.91 | 25.01 | 79.00 | -0.91 | 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 | 44.96 | 0.06 | 0.80 | ±1 | Pass |
| 79.91 | 25.01 | 79.89 | -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