The Vaisala PEROXCAP® Hydrogen Peroxide, Humidity, and Temperature Probe HPP270 series probes HPP271 and HPP272 are designed for demanding hydrogen peroxide bio-decontamination where repeatable, stable, and accurate measurement is essential. HPP270 series probes are suitable for a variety of applications such as isolator, material transfer hatch, and room bio-decontamination.

Up to Three Measurements in One Compact Unit
The advanced HPP272 probe option provides all the parameters you need to measure during bio-decontamination processes: hydrogen peroxide vapor, temperature, and humidity as relative saturation and relative humidity.

Repeateble Measurement for Highly Condensing Environments
Intelligent measurement technology including the chemical purge function helps to maintain accuracy between calibrations in challenging H₂O₂ environments. The purging process involves rapid heating of the sensor to remove possible contamination.

The PEROXCAP sensor used in the HPP270 series probes is warmed, which prevents condensation from forming on the sensor. This provides reliable measurement even in condensing conditions.

Relative Saturation for Comprehensive Humidity Monitoring
Similar to water, H₂O₂ vapor affects the humidity level of the decontaminated air. The advanced HPP272 probe option enables the measurement of relative saturation, which indicates the total humidity level caused by water vapor and H₂O₂ vapor together. This tells you reliably when the bio-decontaminated air starts to condense.

Indigo and Insight Compatible
Vaisala Indigo transmitters provide additional features such as analog and digital outputs, relays, and a smartphone configuration interface. For easy-to-use access to configuration, calibration, and adjustment, the probe can be connected to Vaisala Insight PC software. See www.vaisala.com/indigo and www.vaisala.com/insight.

Traceable Calibration at Vaisala
Every probe and sensor is manufactured and individually calibrated at Vaisala world-class facilities. Available traceable calibration certificates: 2 points for H₂O₂, 3 points for humidity, 1 point for temperature.
# Measurement Performance

<table>
<thead>
<tr>
<th>Hydrogen Peroxide</th>
</tr>
</thead>
</table>
| Sensor | PEROXCAP™  
| Measurement range | 0 ... 2000 ppm  
| Measurement temperature range | +5 ... +50 °C (+41 ... +122 °F)  
| Repeatability at +25 °C (+77 °F) up to 500 ppm H₂O₂ | ±10 ppm  
| Accuracy (including non-linearity, hysteresis, and repeatability) at +10 ... +25 °C (+50 ... +77 °F), 10 ... 2000 ppm H₂O₂ | ±10 ppm or 5 % of reading (whichever is greater)  
| Factory calibration uncertainty, at +25 °C (+77 °F), 500 ppm H₂O₂ | ±10 ppm  
| Response time (T₆₃) | 70 s  

### Other Parameters

<table>
<thead>
<tr>
<th>H₂O ppm by volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defined as ±2 standard deviation limits. See also calibration certificate.</td>
</tr>
</tbody>
</table>

## Inputs and Outputs

| Operating voltage | Digital output: 15 ... 30 VDC  
|-------------------|  
| Analog output | 15 ... 25 VDC  

### Current Consumption at +25 °C (+77 °F)

| In digital mode | Max. 10 mA  
|-----------------|  
| In analog mode | Max. 50 mA  
| During purge | Max. 250 mA  

### Digital Output

| Interface | RS-485, not isolated; do not use termination on the RS-485 line  
| Communication protocol | Modbus RTU v1.02  

### Analog Output

| Outputs | 2 × 4 ... 20 mA 3-wire current outputs  
| Max. load | 500 Ω  
| Accuracy | ±0.1 % of full scale  
| Analog output temperature dependence | 0.005 %/°C (0.003 %/°F) full scale  

## Operating Environment

| Operating temperature | +0 ... +70 °C (+32 ... +158 °F)  
| Storage temperature | -20 ... +70 °C (-4 ... +158 °F)  
| Ambient pressure | Normal atmospheric pressure  
| EMC compliance | EN/IEC 61326-1, Industrial Environment  

## Mechanical Specifications

| IP rating | IP65  
| Connector | M12/5 male  
| Materials |  
| Probe body | AISI316L stainless steel  
| Filter cap | Porous PTFE  

## HPP271 Dimensions

![HPP271 Dimensions Diagram]

**HPP271 Dimensions**

<table>
<thead>
<tr>
<th>Ø=16/18.5</th>
<th>Ø=18.5</th>
<th>Ø=30</th>
</tr>
</thead>
</table>

## Spare Parts and Accessories

| USB cable for PC connection | 242659  
| Probe cable with open wires (1.5 m) | 254294SP  
| Probe cable with open wires (3 m) | 254295SP  
| Probe cable with open wires (5 m) | 254296SP  
| Probe cable with open wires (10 m) | 254297SP  
| Filter | DRW246363SP  
| Gland set for through-wall installation, HPP271 | HPP271MOUNTINGSET1  
| Flange for through-wall installation, HPP271 | HPP271MOUNTINGSET2  
| Wall mount for HPP271 and HPP272 | HPP272WALLMOUNT  

## Officers

**Indigo transmitters**

[See www.vaisala.com/indigo](http://www.vaisala.com/indigo)

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1) Vaisala Insight software for Windows available at [www.vaisala.com/insight](http://www.vaisala.com/insight)
**Measurement Performance**

**Hydrogen Peroxide**

Sensor: PEROXCAP®

**Measurement range**

0 ... 2000 ppm

**Measurement temperature range**

+5 ... +50 °C (+41 ... +122 °F)

**Repeatability at +25 °C (+77 °F) up to 500 ppm H₂O₂**

±10 ppm

**Accuracy (including non-linearity, hysteresis, and repeatability) at +10 ... +50 °C (+50 ... +77 °F), 500 ppm H₂O₂**

±10 ppm or 5 % of reading (whichever is greater)

**Factory calibration uncertainty, at +25 °C (+77 °F), 500 ppm H₂O₂**

±10 ppm

**Response time (T₆₃)**

70 s

**Relative Saturation**

**Measurement range**

0 ... 100 %RS

**Measurement temperature range**

+5 ... +50 °C (+41 ... +122 °F)

**Repeatability at +25 °C (+77 °F), 500 ppm H₂O₂**

±0.5 %RS

**Accuracy (including non-linearity, hysteresis, and repeatability) at +25 °C (+77 °F)**

±4 %RS

**Factory calibration uncertainty, at +25 °C (+77 °F), 500 ppm H₂O₂**

±2 %RS

**Relative Humidity**

**Measurement range**

0 ... 100 %RH

**Measurement temperature range**

+5 ... +70 °C (+41 ... +158 °F)

**Accuracy (including non-linearity, hysteresis, and repeatability): at 0 ppm H₂O₂, 0 ... 90 %RH, +25 °C (77 °F)**

±1 %RH

**Over full H₂O₂ and temperature measurement range:**

±2 %RH

**Response time (T₆₃)**

20 s

**Factory calibration uncertainty, at +25 °C (77 °F), 0 ppm H₂O₂**

±1 %RH

**Temperature**

**Sensor**

Pt-1000 RTD Class F0.1

**Accuracy over temperature range**

±0.2 °C (±0.36 °F)

**Other Parameters**

Absolute H₂O₂ and H₂O, H₂O ppm by volume, water vapor saturation pressure (H₂O and H₂O+H₂O₂), dew point temperature, vapor pressure (H₂O and H₂O₂)

1) Defined as ±2 standard deviation limits. See also calibration certificate.

**Inputs and Outputs**

**Operating voltage**

Digital output: 15 ... 30 VDC

**Current Consumption at +25 °C (+77 °F)**

In digital mode Max. 10 mA

In analog mode Max. 50 mA

During purge Max. 250 mA

**Digital Output**

Interface: RS-485, not isolated; do not use termination on the RS-485 line

**Communication protocol**

Modbus RTU v.1.02

**Analog Output**

Outputs: 2 x 4 ... 20 mA 3-wire current outputs

**Max. load**

500 Ω

**Accuracy**

±0.1 % of full scale

**Analog output temperature dependence**

0.005 %/°C (0.003 %/°F) full scale

**Mechanical Specifications**

**IP rating**

IP65

**Connector**

M12/5 male

**Materials**

**Probe body**

AISI316L stainless steel

**Filter cap**

Porous PTFE

**Temperature probe**

AISI316L stainless steel

**Temperature probe cable**

PTFE

**Operating Environment**

**Operating temperature**

+0 ... +70 °C (+32 ... +158 °F)

**Storage temperature**

-20 ... +70 °C (-4 ... +158 °F)

**Ambient pressure**

Normal atmospheric pressure

**EMC compliance**

EN/IEC 61326-1, Industrial Environment

**Spare Parts and Accessories**

**USB cable for PC connection**

242659

**Probe cable with open wires (1.5 m)**

254294SP

**Probe cable with open wires (3 m)**

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**Probe cable with open wires (5 m)**

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**Probe cable with open wires (10 m)**

254297SP

**Filter**

DRW246363SP

**Gland set for through-wall installation, HPP272**

HPP272MOUNTINGSET1

**Flange for through-wall installation, HPP272**

HPP272MOUNTINGSET2

**Wall mount for HPP271 and HPP272**

HPP272WALLMOUNT

**Indigo transmitters**

See www.vaisala.com/indigo

1) Vaisala Insight software for Windows available at www.vaisala.com/insight
HPP271 and HPP272 Installation Accessories

HPP272MOUNTINGSET1

HPP272MOUNTINGSET2

HPP272WALLMOUNT

HPP271MOUNTINGSET1

HPP271MOUNTINGSET2

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