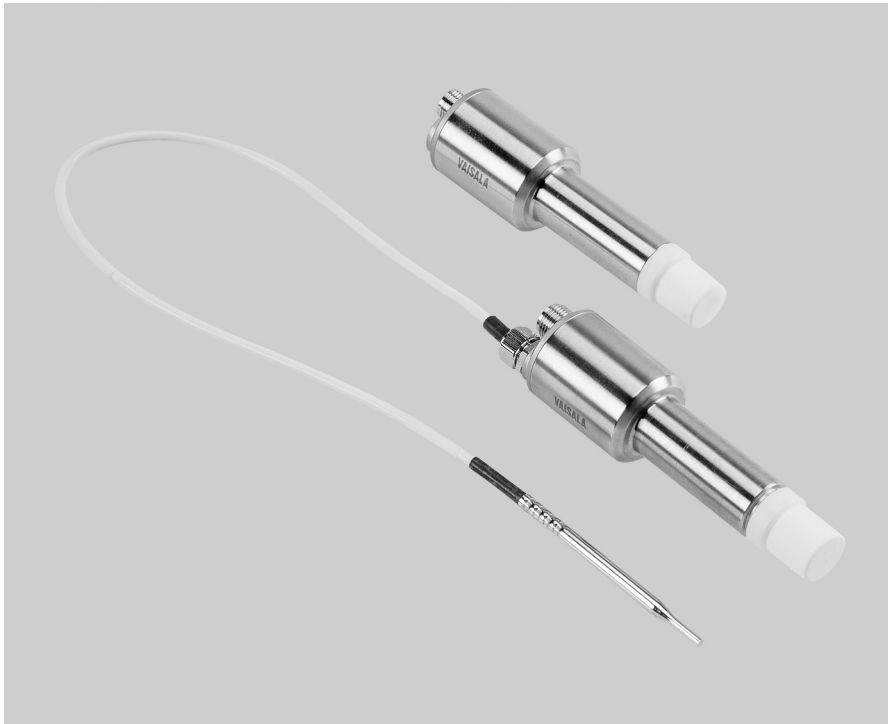




## HPP270 Series Probes

For hydrogen peroxide, humidity,  
and temperature measurement



### Features

- Basic probe option HPP271 for  $\text{H}_2\text{O}_2$  vapor concentration measurement
- Advanced probe option HPP272: compact 3-in-1 probe with real-time measurement of  $\text{H}_2\text{O}_2$  vapor concentration, humidity, and temperature
- Superior long-term stability and repeatability with proprietary PEROXCAP® technology
- Corrosion-resistant stainless steel housing (IP65)
- Traceable calibration certificate
- Standalone probe with digital Modbus RTU over RS-485 or 2 analog outputs
- Compatible with Vaisala Indigo products and Insight PC software

The Vaisala PEROXCAP® Hydrogen Peroxide, Humidity, and Temperature Probes HPP271 and HPP272 are designed for demanding hydrogen peroxide bio-decontamination where repeatable, stable, and accurate measurement is essential. The 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.

### Relative saturation for comprehensive humidity monitoring

Similar to water,  $\text{H}_2\text{O}_2$  vapor affects the humidity level of decontaminated air. The advanced HPP272 probe option enables the measurement of relative saturation, which indicates the total humidity level caused by water vapor and  $\text{H}_2\text{O}_2$  vapor together. This tells you reliably when the bio-decontaminated air starts to condense.

### Repeatable measurement for highly condensing environments

Intelligent measurement technology including the sensor purge function helps to maintain accuracy between calibrations in challenging  $\text{H}_2\text{O}_2$  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.

### Indigo and Insight compatible

The probe can be connected to Vaisala Indigo transmitters and the Indigo80 handheld indicator to extend the selection of available features.

Indigo products provide a range of additional display, output, and relay options, as well as convenient interfaces for monitoring, configuration, and calibration and adjustment. For more information, see [www.vaisala.com/indigo](http://www.vaisala.com/indigo).

For easy-to-use access to configuration, calibration, and adjustment, the probe can be connected to Vaisala Insight PC software. See [www.vaisala.com/insight](http://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  $\text{H}_2\text{O}_2$ , 3 points for humidity, 1 point for temperature.

# HPP271 technical data

## 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 H <sub>2</sub> O <sub>2</sub>	±10 ppm
Accuracy at +10 ... +25 °C (+50 ... +77 °F), 10 ... 2000 ppm H <sub>2</sub> O <sub>2</sub> <sup>1)</sup>	±10 ppm or 5 % of reading (whichever is greater)
Factory calibration uncertainty at +25 °C (+77 °F), 500 ppm H <sub>2</sub> O <sub>2</sub> <sup>2)</sup>	±10 ppm
Response time (T <sub>63</sub> )	70 s

### Other parameters

H<sub>2</sub>O ppm by volume

1) Including non-linearity, hysteresis, and repeatability.

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

## Inputs and outputs

Operating voltage	Digital output: 15 ... 30 VDC Analog output: 15 ... 25 VDC
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### Current consumption at +25 °C (+77 °F)

In digital mode	Max. 10 mA
In analog mode	Max. 50 mA
During sensor 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 (typical)	±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
IP rating	IP65

## Compliance

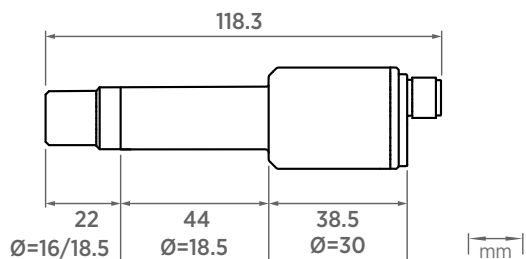
EU directives and regulations	EMC, RoHS
EMC compatibility	EN 61326-1, industrial environment
EMC emissions	CISPR 32 / EN 55032, Class B
Compliance marks	CE, China RoHS, RCM

## Mechanical specifications

Connector	M12/5 male
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### Materials

Probe body	AISI316L stainless steel
Filter cap	Porous PTFE



HPP271 dimensions

## Spare parts and accessories

Indigo USB adapter <sup>1)</sup>	USB2
Probe cable with open wires, 1.5 m (4.9 ft)	254294SP
Probe cable with open wires, 3 m (9.8 ft)	254295SP
Probe cable with open wires, 5 m (16 ft)	254296SP
Probe cable with open wires, 10 m (33 ft)	254297SP
Flat cable, M12-5F - M12-5M, 1 m (3.3 ft)	CBL210493SP
Filter	DRW246363SP
Gland set for through-wall installation, HPP271	HPP271MOUNTINGSET1
Flange for through-wall installation, HPP271	HPP271MOUNTINGSET2
Wall mount for HPP271 and HPP272	HPP272WALLMOUNT
Indigo transmitters	See <a href="http://www.vaisala.com/indigo">www.vaisala.com/indigo</a>
Indigo80 handheld indicator	See <a href="http://www.vaisala.com/indigo">www.vaisala.com/indigo</a>

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

# HPP272 technical data

## 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 H <sub>2</sub> O <sub>2</sub>	±10 ppm
Accuracy at +10 ... +25 °C (+50 ... +77 °F), 10 ... 2000 ppm H <sub>2</sub> O <sub>2</sub> <sup>1)</sup>	±10 ppm or 5 % of reading (whichever is greater)
Factory calibration uncertainty at +25 °C (+77 °F), 500 ppm H <sub>2</sub> O <sub>2</sub> <sup>2)</sup>	±10 ppm
Response time (T <sub>63</sub> )	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 H <sub>2</sub> O <sub>2</sub>	±0.5 %RS
Accuracy at +25 °C (+77 °F) <sup>1)</sup>	±4 %RS
Factory calibration uncertainty at +25 °C (+77 °F), 500 ppm H <sub>2</sub> O <sub>2</sub> <sup>2)</sup>	±2 %RS

### Relative humidity

Measurement range	0 ... 100 %RH
Measurement temperature range	+5 ... +70 °C (+41 ... +158 °F)
Accuracy: <sup>1)</sup>	
at +25 °C (77 °F), 0 ppm H <sub>2</sub> O <sub>2</sub> , 0 ... 90 %RH	±1 %RH
over full temperature measurement and H <sub>2</sub> O <sub>2</sub> range	±2 %RH
Response time (T <sub>63</sub> )	20 s
Factory calibration uncertainty at +25 °C (77 °F), 0 ppm H <sub>2</sub> O <sub>2</sub> , 0 ... 95 %RH <sup>2)</sup>	±1 %RH

### Temperature

Sensor	Pt1000 RTD Class F0.1
Accuracy over temperature range	±0.2 °C (±0.36 °F)

### Other parameters

Absolute H<sub>2</sub>O<sub>2</sub> and H<sub>2</sub>O, H<sub>2</sub>O ppm by volume, water vapor saturation pressure (H<sub>2</sub>O and H<sub>2</sub>O+H<sub>2</sub>O<sub>2</sub>), dew point temperature, vapor pressure (H<sub>2</sub>O and H<sub>2</sub>O<sub>2</sub>)

<sup>1)</sup> Including non-linearity, hysteresis, and repeatability.

<sup>2)</sup> Defined as ±2 standard deviation limits. See also calibration certificate.

## Inputs and outputs

Operating voltage	Digital output: 15 ... 30 VDC Analog output: 15 ... 25 VDC
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### Current consumption at +25 °C (+77 °F)

In digital mode	Max. 10 mA
In analog mode	Max. 50 mA
During sensor 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 (typical)	±0.1 % of full scale
Analog output temperature dependence	0.005 %/°C (0.003 %/°F) full scale

## Operating environment

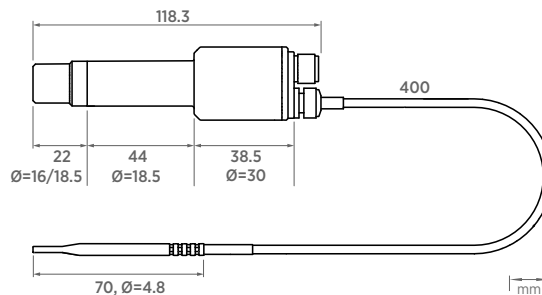
Operating temperature	+0 ... +70 °C (+32 ... +158 °F)
Storage temperature	-20 ... +70 °C (-4 ... +158 °F)
Ambient pressure	Normal atmospheric pressure
IP rating	IP65

## Compliance

EU directives and regulations	EMC, RoHS
EMC compatibility	EN 61326-1, industrial environment
EMC emissions	CISPR 32 / EN 55032, Class B
Compliance marks	CE, China RoHS, RCM

## Mechanical specifications

Connector	M12/5 male
Materials	
Probe body	AISI316L stainless steel
Filter cap	Porous PTFE
Temperature probe	AISI316L stainless steel
Temperature probe cable	PTFE



HPP272 dimensions

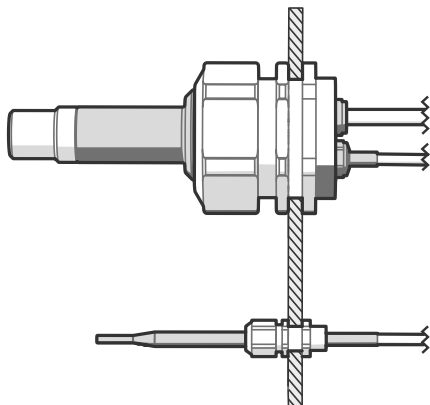
## Spare parts and accessories

Indigo USB adapter <sup>1)</sup>	USB2
Probe cable with open wires, 1.5 m (4.9 ft)	254294SP
Probe cable with open wires, 3 m (9.8 ft)	254295SP
Probe cable with open wires, 5 m (16 ft)	254296SP
Probe cable with open wires, 10 m (33 ft)	254297SP
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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 <a href="http://www.vaisala.com/indigo">www.vaisala.com/indigo</a>
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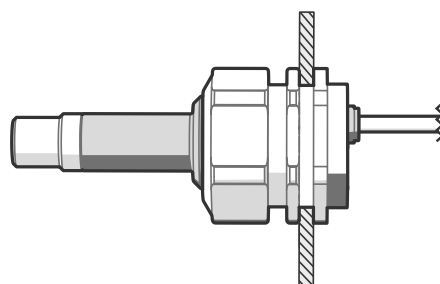
<sup>1)</sup> Vaisala Insight software for Windows available at [www.vaisala.com/insight](http://www.vaisala.com/insight).

# HPP271 and HPP272 installation accessories

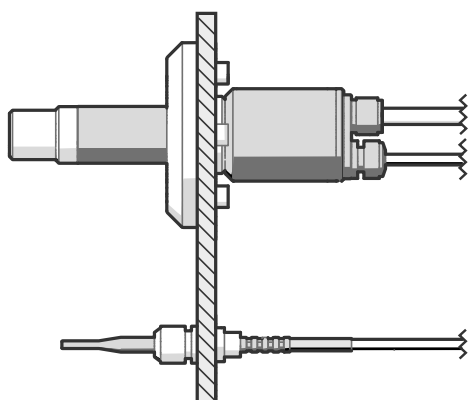
**HPP272MOUNTINGSET1**



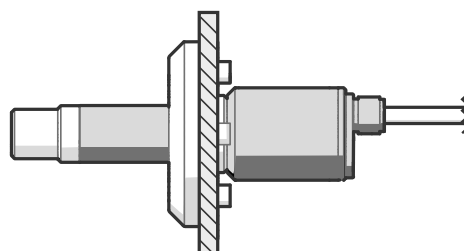
**HPP271MOUNTINGSET1**



**HPP272MOUNTINGSET2**



**HPP271MOUNTINGSET2**



**HPP272WALLMOUNT**

