

Vaisala HVAC

Product family presentation

VAISALA



Technological Leadership

- Technology used in Mars curiosity rover
- Inhouse manufacturing in our own cleanroom located in Finland
- Humidity and dew point sensors
- CO₂ sensors including light sources, detectors, and filters
- Barometric pressure sensors
- Temperature sensors



Vaisala HVAC Product Families

Features	80-series	90-series	110-series
Vaisala inhouse sensing technology	X	X	X
2-year warranty	X	X	X
Duct/outdoor models	X		X
Calibration certificate		X	X
Smart measurement modules		X	
Field adjustable		X	X
Configurable options		X	X
Splashproof	*)		X
Enhanced chemical tolerance		X	X

*) in some models

The 80-series

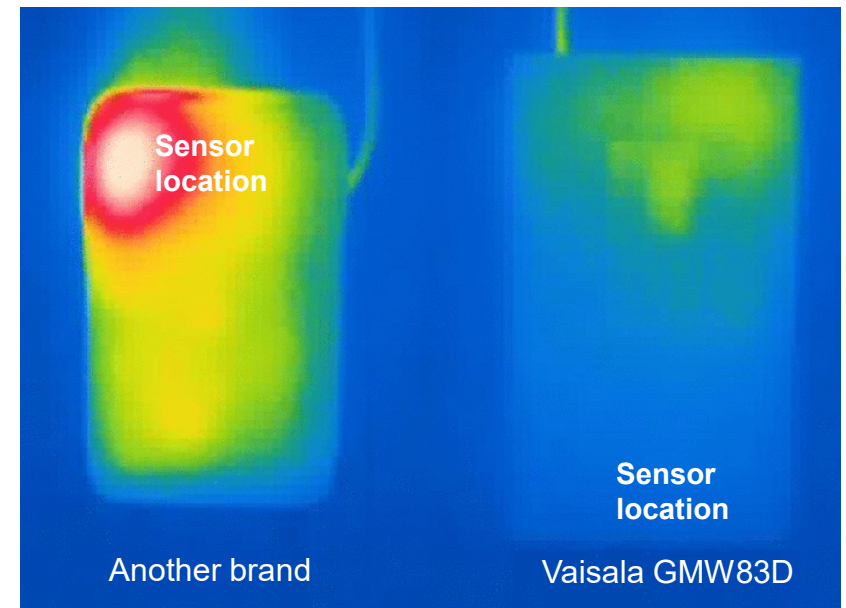
- HMW80 humidity and GMW80 CO₂ transmitters
- Cost-efficient for measuring indoor air quality (IAQ)
- Vaisala HUMICAP[®] and CARBOCAP[®] sensor technology
 - long lifetime
 - long-term stability
 - minimal lifetime cost
 - suitable for spaces occupied 24/7 (CARBOCAP[®]) thanks to true internal reference measurement



GMW80 series transmitters.

The 80-series

- Low self-heating thanks to CARBOCAP[®] sensor
- Accurate CO₂ and temperature measurements in a single device
- Easy installation:
 - No warm-up time or calibration period
 - Loop-powered versions available
 - Wiring in the back plate – snap-on cover
- Wide-range of cost-efficient options available at short delivery times



Above: Comparison of self-heating between Vaisala GMW83D and another brand.



Wiring in the back plate.

The 90-series

- HMW90 humidity and GMW90 CO₂ transmitters
 - Designed for the most demanding HVAC applications
 - Calibration certificate included
 - Highest accuracy
 - Digital ModBus RTU / BACnet MSTP outputs available
 - Field serviceable
 - Low life-cycle cost

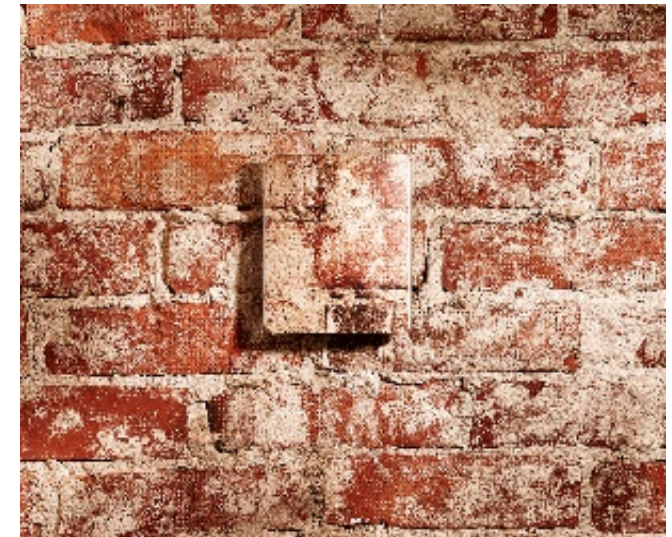
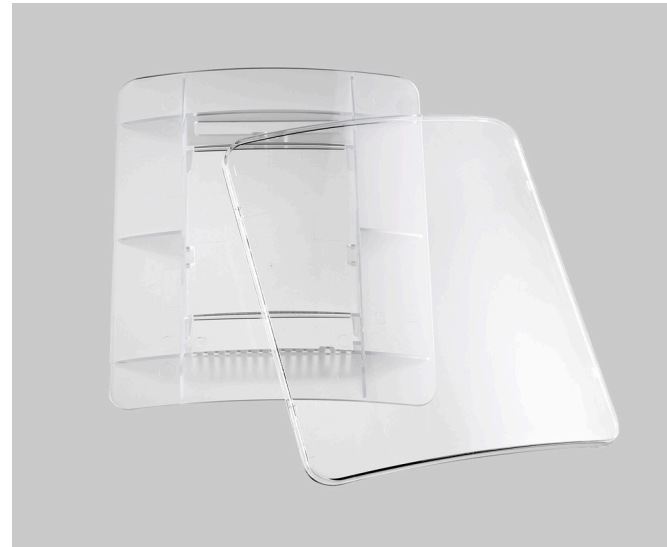


The 90-series

- Field serviceable
 - Module replacement (calibration certificate included)
 - Calibration against a Vaisala handheld meter or calibration gas
 - Reduced life-cycle cost
- Available in different colors
- Decorative cover
 - For best fit to architectural environment



Calibrating the HMW90 using the Vaisala HUMICAP® Handheld Humidity and Temperature Meter HM70



Decorative covers help to camouflage the 90-series transmitters.

The 110-series

- HMDW110 series
 - HUMICAP® technology
 - Designed for demanding applications also in washdown areas
 - IP65 – duct- and wall-mounted options and also for outdoors with a radiation shield
 - ± 2 %RH accuracy and long-term stability
 - Traceable calibration certificate included
 - 4 ... 20 mA loop-powered outputs



Wall- and duct-mounted options and for use outdoors together with a radiation shield.

The 110-series

- Compatible with the RDP100 remote display
- Special sensors available for H₂O₂ disinfection application
- Field serviceable
- Easy installation



HMS110 in freezing conditions.



The 80-series options

HMW80 series models								
Features	TMW82	TMW83	HMW82	HMW83	HMW88	HMW88D	HMW89	HMW89D
RH measurement			x	x	x	x	x	x
Humidity parameters					x	x	x	x
T measurement	x	x	x	x	x	x	x	x
4 ... 20 mA	x		x		x	x		
0 ... 10 V		x		x			x	x
Wall-mounted	x	x	x	x	x	x	x	x

HMD80 series models								
Features	TMD82	TMD83	HMD82	HMD82D	HMD83	HMD83D	HMS82	HMS83
RH measurement			x	x	x	x	x	x
Humidity parameters			x	x	x	x	x	x
T measurement	x	x	x	x	x	x	x	x
4... 20 mA			x	x			x	
0 ... 10 V	x	x			x	x		x
Duct-mounted	x	x	x	x	x	x		
Outdoor mounting							x	x

The 80-series options

GMW80 series models										
Features	GMW84	GMW84S	GMW83	GMW83A	GMW83RP	GMW83T	GMW83D	GMW83DRP	GMW86P	GMW88
CO2 measurement	x	x	x	x	x	x	x	x	x	x
T measurement	x	x	x	x	2)	x	x	2)	1)	1)
Humidity measurement					x			x		
4 ... 20 mA	x	x							x	x
0 ...10 V			x	x	x	x	x	x	x	x
Traffic lights				x						
Relay		x								
Temperature setpoint						x				
Display								x		
IP64										x

- 1) Passive Pt1000
- 2) Passive Pt1000 and active voltage output

The 90-series options

HMW90 series models								
Features	TMW92	TMW93	HMW92	HMW92D	HMW93	HMW93D	HMW95	HMW95D
RH measurement			X	X	X	X	X	X
T measurement	X	X	X	X	X	X	X	X
Calculated parameters			X	X	X	X	X	X
4...20 mA	X		X	X				
0...5/10 V		X			X	X		
Bacnet MS/TP							X	X
ModBus RTU							X	X
Display				X		X		X
Relay					X	X		

Configurable models are:

- TMW90
- HMW90
- GMW90
- GMW90R

GMW90 series models												
Features	GMW93	GMW93D	GMW93R	GMW93RD	GMW93RA	GMW94	GMW94D	GMW94RD	GMW95	GMW95D	GMW95R	GMW95RD
CO ₂ measurement	X	X	X	X	X	X	X	X	X	X	X	X
RH measurement			X	X	X			X			X	X
T measurement	X	X	X	X	X	X	X	X	X	X	X	X
Calculated parameters			X	X	X			X			X	X
4..20 mA						X	X	X				
0..5/10 V	X	X	X	X	X							
Bacnet MS/TP									X	X	X	X
ModBus RTU									X	X	X	X
Display		X		X			X	X		X		X
LED indicator					X							

The 110-series options

HMDW110 series models						
Features	HMW110	HMD110	HMS110	HMW112	HMD112	HMS112
RH	X	X	X	X	X	X
T	X	X	X	X	X	X
Calculated parameters	X	X	X	X	X	X
Wall-mounted	X			X		
Duct-mounted		X			X	
Outdoor mounting			X			X
Catalytic sensor	*	*				
Configurable outputs	X	X	X			
Modbus	X	X	X	X	X	X

*) Catalytic sensor for environments with hydrogen peroxide disinfection.

Additional Information

- Visit www.vaisala.com/hvac
- Contact your local sales representative at <https://www.vaisala.com/en/contact-us>
- Read about interesting stories on our site
<https://www.vaisala.com/en/about-vaisala/news-and-media/blogs-and-success-stories>
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Sensor Technology

HUMICAP[®] and CARBOCAP[®]

VAISALA

Vaisala HUMICAP® Humidity Sensor

- HUMICAP® sensor is used in
 - Demanding industrial applications
 - Power generation
 - Auto industry
 - Industrial drying
 - Paper mills
 - HVAC
- Benefits of HUMICAP® sensor
 - Unbeatable stability indoors and outdoors
 - Accurate measurements not only today, but after years of use
 - Robustness
 - The sensor tolerates dust, dirt and high humidity
 - Selectivity
 - Fresh paint, cleaning fluids and new building materials do not cause false readings or drift

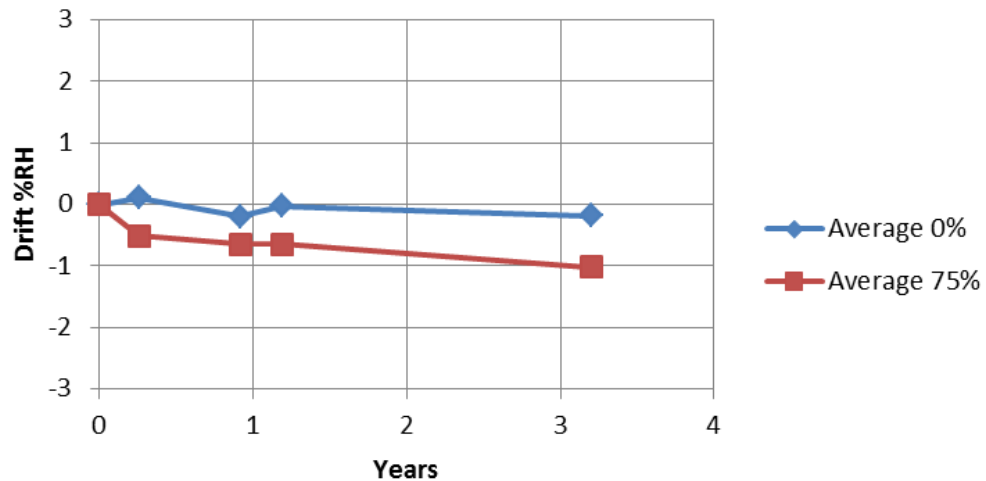


Vaisala HUMICAP[®] Humidity Sensor

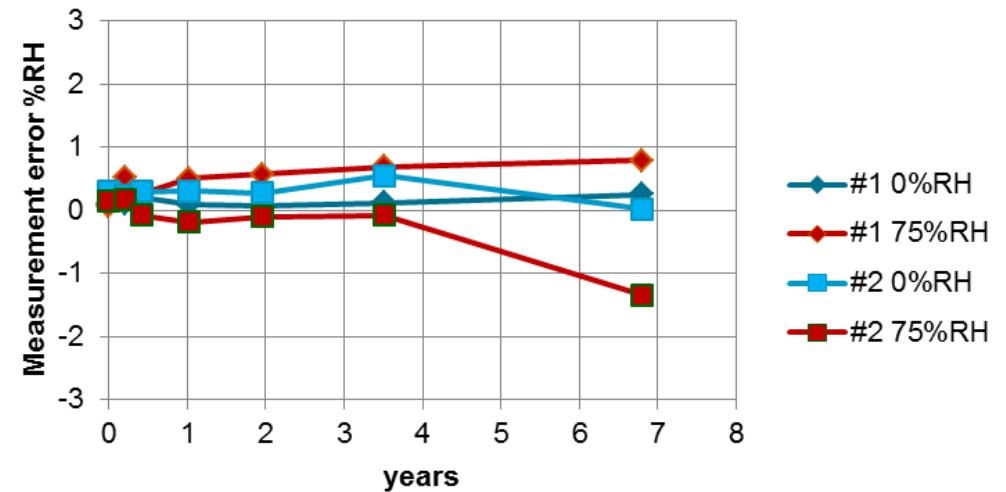


Humicap180R specified stability in typical HVAC applications:
 $\pm 0.5\% \text{RH/year}$

Indoor stability test



Outdoor stability test

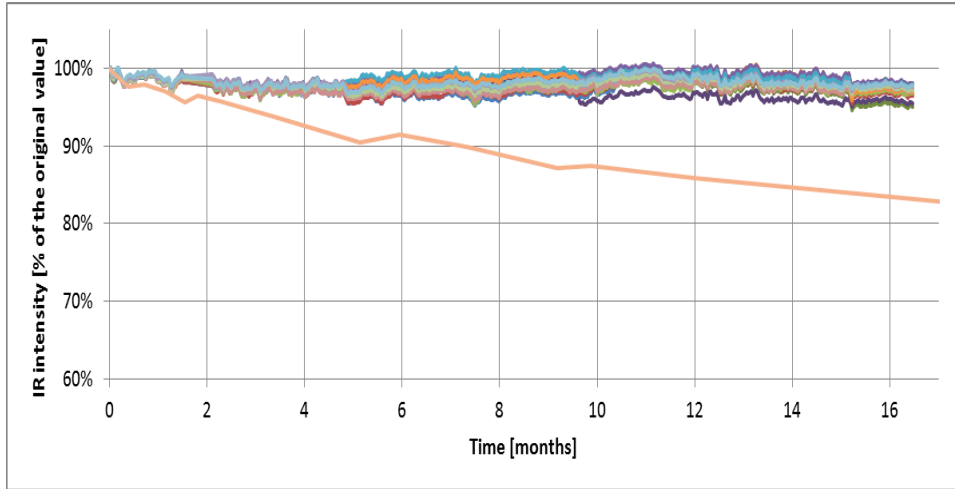
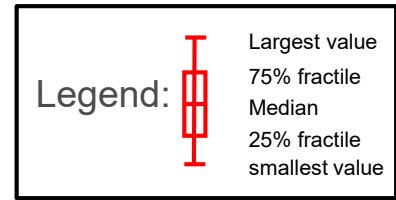


Vaisala CARBOCAP® CO₂ Sensor

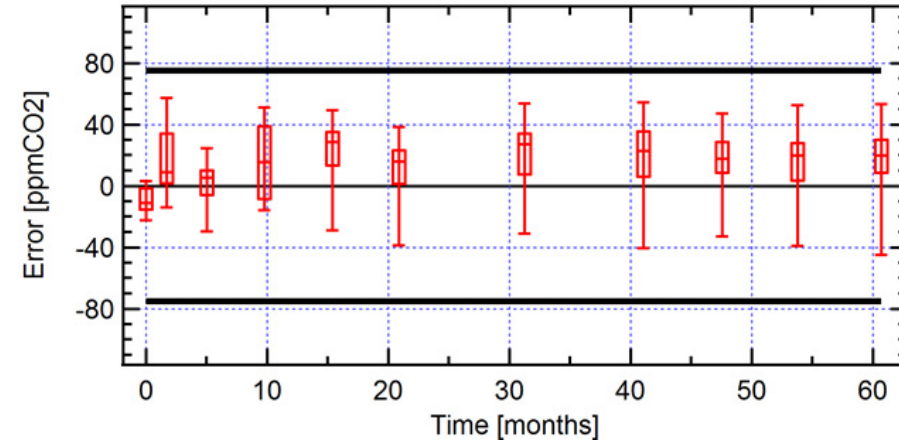
- CARBOCAP® CO₂ sensor
 - Brings analyzer-level reliability to HVAC measurements
 - Dual wavelength single-beam technology guarantees the best possible stability.
- Benefits of CARBOCAP® sensor
 - Immediately correct measurements when plugged in, no waiting for the sensor to correct offset drift
 - Works also in spaces occupied 24/7 as reference measurement is performed in every cycle
 - Excellent stability and long lifetime with proprietary microglow lightsource



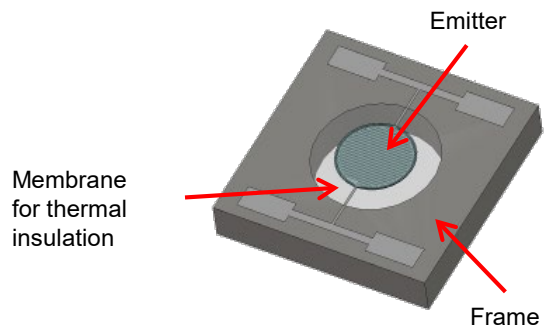
Vaisala CARBOCAP® CO₂ Sensor



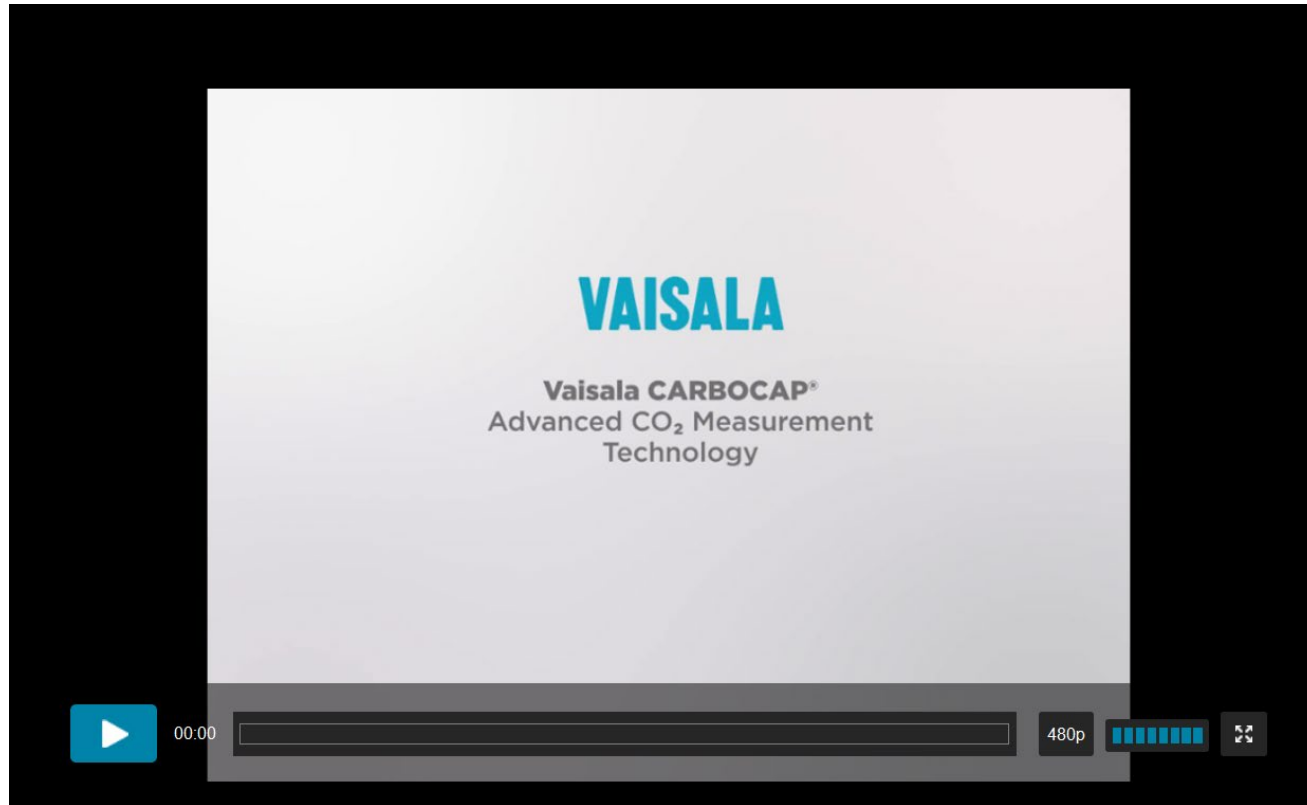
The light output from the microglow chip is much more stable over time than traditional filament lamps. This means improved CO₂ measurement stability and longer sensor lifetime



Reference and CO₂ measurement is performed on every measurement cycle using an inhouse tunable filter chip. This guarantees excellent stability and low temperature dependence. 1000 ppm stability test results for 23 powered units in office conditions shown in picture with ±75 ppm 5-year total accuracy specification.



Vaisala CARBOCAP® CO₂ Sensor – Animation of the Operating Principle



www.vaisala.com/CARBOCAP