Sistemas de Controlo e Medida

Hovacal
DATASHEET

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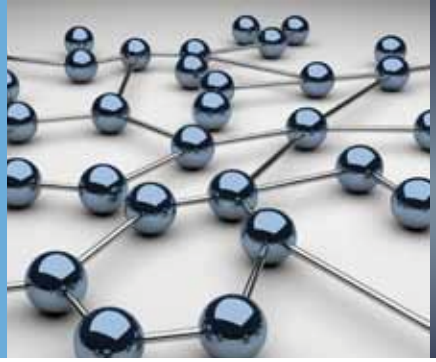
IAS
INSPIRE ANALYTICAL SYSTEMS



HovaCAL®

digital MF

Calibration gas generator
with integrated mass flow sensor

INSPIRE ANALYTICAL SYSTEMS

HovaCAL® digital MF

The calibration gas generator with integrated mass flow sensor

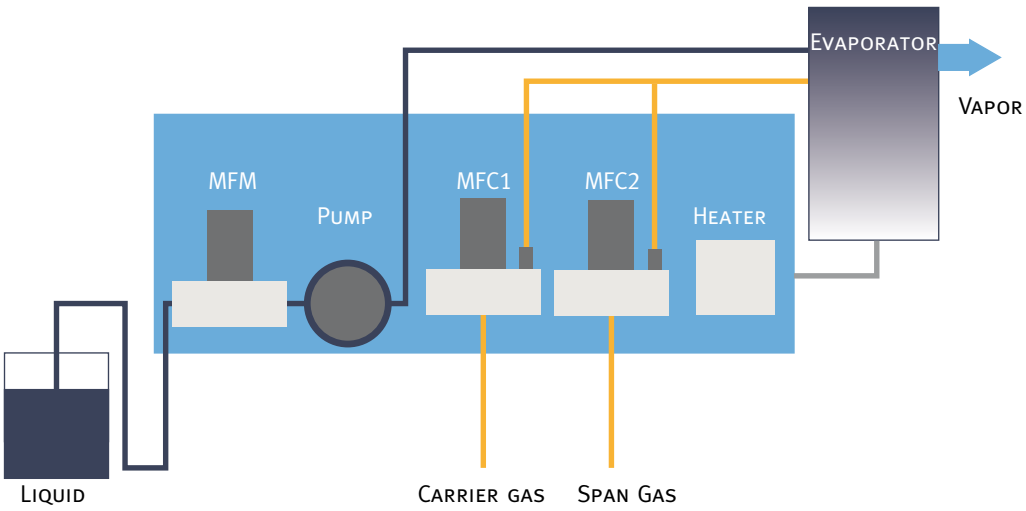
For the generation of span gases with defined concentration of H_2O, HCl, HF, NH_3 or $HgCl_2$ and the mixing of dry span gases like SO_2, NO_x, CO, CO_2, O_2 and others.

Technical advantages:

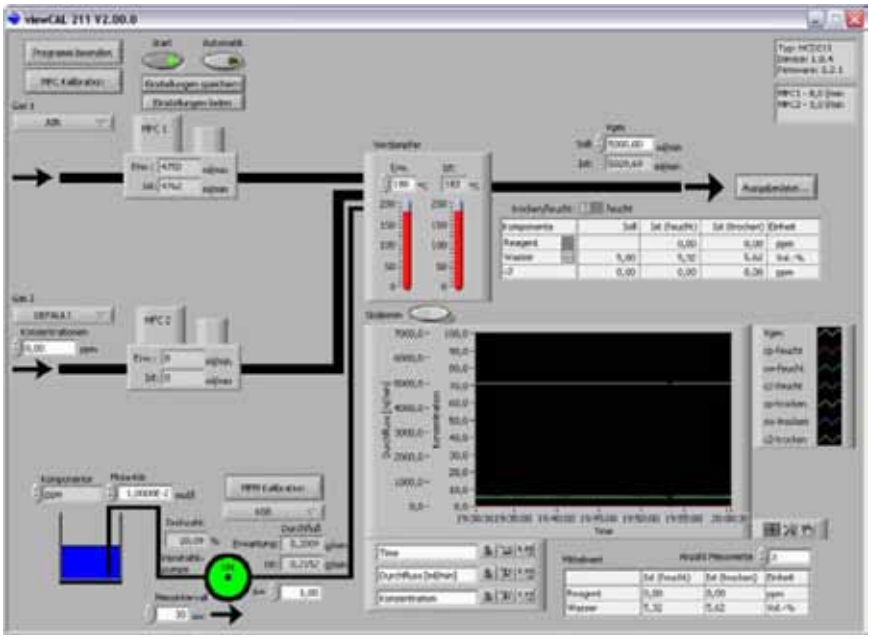
- liquid flow metering inside
- no need for an external electronic scale
- self-adjusting on given values
- direct indication of gas- and vapor concentrations
- one unit for all gaseous components
- remote operable
- concentration traceable to primary standards
- space saving, portable case

What is HovaCAL® digital MF?

HovaCAL® digital MF fulfills the desire for a compact calibration gas generator for all gaseous components of the emission measurement technology. Through an innovative mass flow technology made for liquids, there is no need for a gravimetric measurement trough an external electric scale.
Thereby, it is not supposed to replace the electric scale as a primary reference method, but to provide a supplement: Whenever the setting up of an external scale is not possible, the integrated mass flow sensor handles this task with the same precision.



HovaCAL® digital 211 MF



User interface viewCAL 211

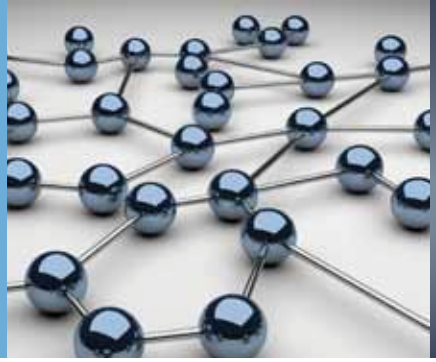
What can HovaCAL® digital MF do?

As with all the HovaCAL® devices, a peristaltic pump carries the reagent solution into the evaporator. Hereby, a gas-vapor-mixture of the respective component is being generated. Through the quick response time of the mass flow sensor, a self-regulated operation is possible. This means, that the desired concentration of water vapor or of a dissolved component, like e.g. hydrogen chloride, is regulated to the set point of the gas concentration. HovaCAL® digital MF has two to four gas channels for the dilution and mixing of dry span gases. Hence, the linearity check of emission measurement systems can take place also for dry components like SO_2, NO_x, CO, CO_2 or O_2.

Moreover, the defined humidification of span gases is possible, in order to determine cross sensitivities of analyzers or test the effectiveness of gas coolers.

Handling

HovaCAL® digital MF can either be operated comfortably via the integrated touchscreen interface or via remote control from notebook/PC with the software viewCAL.
viewCAL collects and saves all measurement data and enables an automatic operating. Moreover, viewCAL allows the checking of the gas and liquid measurement.



Specification

Flow ranges

Gas flow controller	0,1/1,0/10,0 l/min	(air)
Liquid sensor	0,05 – 3,0 ml/min	(Water or aqueous solution)

Other flow ranges on request

Typical concentration ranges

Humidity	1,0 % Vol. – 50 % Vol.	(At total flow 300 l/h)
Hydrogen chloride	0,1 – 2000 mg/m³	(depending on reagent solution)
Ammonia	0,1 – 1000 mg/m³	(depending on reagent solution)
Hydrogen fluoride	0,1 – 1000 mg/m³	(depending on reagent solution)
Mercuric (II) chloride	1 – 100 µg/m³	(depending on reagent solution)

Other concentration ranges on request

Typical dilution range

Dry span gases	1:1 – 1:1000	(At total flow 300 l/h)

Other dilution ranges on request

Performance based on reading

Linearity	< 2 %
Accuracy	< 2 %
Range of variation	< 2 %
Reproducibility	< 2 %

Time characteristics

Warming-up time	30 min
T-90%	30 s for wet, < 10 s for dry components

Adjustable parameter

Total flow	180 – 600 l/h wet, 30 – 600 l/h dry
Concentration inlet	span gas
Concentration outlet	span gas, reagent solution each related to dry or wet gas
Evaporator temperature	up to 200 °C

Gas connection

Supply unit	front side 6 mm press fitting
Evaporator	entrance and exit 6 mm press fitting

Applicable Media

Gases	instrument air, nitrogen, span gas, each 2 – 6 bar
Liquids	distilled Water, reagents (aqueous solutions)

Power supply

Voltage	110 V or 230 V, 48 – 62 Hz
Power	max. 1000 W

Portable case

Dimensions	approx. 510 x 160 x 440 mm (W x H x D)
Weight	approx. 15 kg

Evaporator

Dimensions	approx. 245 x 100 mm (H x B)
Weight	approx. 3 kg

Suitcase housing

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