

DATA SHEET

Humidity-Reference cells REFZ-M20-xxRH

Description



Characteristic features

- Reference cells for capacitive humidity probes
- High accuracy due to salt of Quality level "Analytical reagent"
- Different models with salt filling of 11 % RH to 97 % RH
- High quality diaphragm for contact less checking of measuring probes
- Transparent housing for visual inspection of saturation condition
- Long life, refillable
- Alternatively available with 1/2" or M20 x 1.5 mm connection threads

Areas of application

- Calibration of hygrometers
- Defined humidity storage of probes
- Humidification cell for research and experimental purposes

Technical data

Humidity reference cells	
Humidity value	11.3 % RH = Lithium chloride 22.8 % RH = Potassium acetate (at nominal temperature 23°C) 32.9 % RH = Magnesium chloride 43.2 % RH = Potassium carbonate
Salt filling	53.5 % RH = Magnesium nitrate 75.4 % RH = Sodium chloride 84.7 % RH = Potassium chloride 94.0 % RH = Potassium nitrate 97.4 % RH = Potassium sulphate
Typical accuracy	± 1 % RH at 23 °C
Nominal temperature	23 °C
Application temperature (Small Temperature cycle)	20 ... 40 °C
Storage temperature	0 ... 60 °C
Operating pressure	Atmospheric ambient pressure
Membrane	Polyethylene-Sinter filter, pore width 3 µm
Life	Almost indefinite
Material	Polyethylene, Acryl glass, ABS
Cell dimensions	Ø 40 x 105 mm (with cover)

Features

The humidity reference cells are meant for checking and adjustment of capacitive type humidity probes as well as for use as humidity standards in scientific applications. In the test chamber of the cell, a saturated salt solution is created with a defined level of relative humidity. The accuracy of humidity value in the reference cells is determined by the physiochemical properties. Under laboratory conditions, an accuracy of +/-1% RH can be achieved. The test chamber is separated from the solution by a diaphragm so that the sensor under test is protected against contamination by the solution. The test containers always work correctly even if held upside down and can be used in both laid down or overhead mounted positions. The complete humidity range of 11 % to 97 % RH is covered through different models, which differ in their salt content. For checking purposes, at least one cell is required. For adjustment of sensors, at least two different cells (e.g. 11% RH and 75 % RH) should be used. Complete sets are available for the most common adjustment points. For simple adaptation of the probe, the reference cell is provided with a gland of 1/2" threads (e.g. for our pressure dew point probe) or M20 x 1.5 mm threads for thread mounting. The threaded mounting ensures airtight connection with the probe (Ø 10 ... 14 mm).

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Salt tables (summary)*

Salt	Lithium chloride	Potassium acetate
Temp. [°C]	Humidity value [% RH]	Humidity value [% RH]
20	11.31	23.11
23**	11.31	22.75
25	11.30	22.51
30	11.28	21.61
35	11.25	---
40	11.21	---

Salt	Magnesiumchloride	Potassiumcarbonate
Temp. [°C]	Humidity value [% RH]	Humidity value [% RH]
20	33.02	43.16
23**	32.88	43.16
25	32.78	43.16
30	32.44	43.17
35	32.05	---
40	31.60	---

Salt	Magnesium nitrate	Sodium chloride
Temp. [°C]	Humidity value [% RH]	Humidity value [% RH]
20	54.38	75.47
23**	53.49	75.36
25	52.89	75.29
30	51.40	75.09
35	49.91	74.87
40	48.42	74.68

Salt	Potassium chloride	Potassium nitrate
Temp. [°C]	Humidity value [% RH]	Humidity value [% RH]
20	85.11	94.62
23**	84.65	94.00
25	84.34	93.58
30	83.62	92.31
35	82.95	90.79
40	82.32	89.03

Salt	Potassium sulphate
Temp. [°C]	Humidity value [% RH]
20	97.59
23**	97.41
25	97.30
30	97.00
35	96.71
40	96.41

Useful Life

With proper usage, the reference cells can be used for over many years. If there is change in liquid level, the cells can be returned to our customer service department for regeneration or re-filling. For each service order, you can get a test report with record of accuracy. Further information on handling is enclosed with the cells.

Packaging

The cells are available in two physical shapes with nine different salt fillings each. The salts used are of most pure laboratory grade. An overview of the delivery program is available on our homepage. Besides the standard models, unfilled membrane containers as well as special designs are also available. For further information, please contact us !

Product variants

REFZ-M20-xxRH: Reference cells with thread M20 x 1.5 mm, Scope of supply inclusive of mounting hardware.

REFZ-12Z-xxRH: Reference cells with threads 1/2".

Complete sets

M20-Thread	
SET 1	33 / 75 % RH incl. Carry case REFZ-KOFF
SET 2	11 / 33 / 75 % RH incl. Carry case REFZ-KOFF
SET 3	11 / 33 / 75 / 85 / 94 % RH incl. Carry case REFZ-KOFF

1/2"-Thread	
SET 1	11 / 33 % RH incl. Carry case REFZ-KOFF
SET 2	11 / 33 / 75 % RH incl. Carry case REFZ-KOFF
SET 3	11 / 33 / 75 / 85 / 94 % RH incl. Carry case REFZ-KOFF

* Reference: Greenspan, NIST – USA

** Note: The value for 23 °C can be linearly interpolated from value of 20 °C and 25 °C.