DATA SHEET

Humidity-Reference cells
REFZ

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 11,3 % RH to 97,4 % 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 G1/2“-thread or M20 x 1.5 mm connection thread

Areas of application

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

Technical data

Humidity reference cells	
Humidity value	11,3% RH = LiCl
	22,8% RH = $C_2H_3KO_2$
(at nominal temperature 23°C)	32,9% RH = $MgCl_2$
	43,2% RH = K_2CO_3
Salt filling	53,5% RH = $Mg(NO_3)_2$
	75,4% RH = NaCl
	84,7% RH = KCL
	94,0% RH = KNO_3
	97,4% RH = K_2SO_4
Typical accuracy	± 3 % 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 11,3 % to 97,4 % 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. 32,9 % RH and 75,4 % RH) should be used. Complete sets are availablefor the most common adjustment points. For simple adaption of the probe, the reference cell is provided with a gland of G1/2“-threads or M20 x 1.5 mm thread for thread mounting. The threaded mounting ensures airtight connection with theprobe (Ø 10 ... 14 mm). **You have to use the calibration container to protect the reference cells against fluctuating environmental influences.**

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Salt tables (summary)*

Salt	Lithium chloride LiCl	Potassium acetate $C_2H_3KO_2$
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 $MgCl_2$	Potassiumcarbonate K_2CO_3
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 $Mg(NO_3)_2$	Sodium chloride NaCl
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 KCL	Potassium nitrate KNO_3
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 K_2SO_4	
Temp. [°C]	Humidity value [% RH]	
20	97,59	
23**	97,41	
25	97,30	
30	97,00	
35	96,71	
40	96,41	

* Reference: Greenspan, NIST – USA

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

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 (G1/2“ thread or M20 x 1,5 mm thread) with nine different salt fillings each. The salts used are of most pure laboratory grade.
Besides the standard models, unfilled membrane containers as well as special designs are also available. For further information, please contact us !

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Ordering numbers

Reference cells with M20 x 1,5 mm thread	Articleno.
Reference cell with humidity level 11,3% RH	REFZ-M20-11RH
Reference cell with humidity level 22,8% RH	REFZ-M20-23RH
Reference cell with humidity level 32,9% RH	REFZ-M20-33RH
Reference cell with humidity level 43,2% RH	REFZ-M20-43RH
Reference cell with humidity level 53,5% RH	REFZ-M20-54RH
Reference cell with humidity level 75,4% RH	REFZ-M20-75RH
Reference cell with humidity level 84,7% RH	REFZ-M20-85RH
Reference cell with humidity level 94,0% RH	REFZ-M20-94RH
Reference cell with humidity level 97,4% RH	REFZ-M20-97RH
Accessories	**Articleno.**
Calibration container	0954 0129

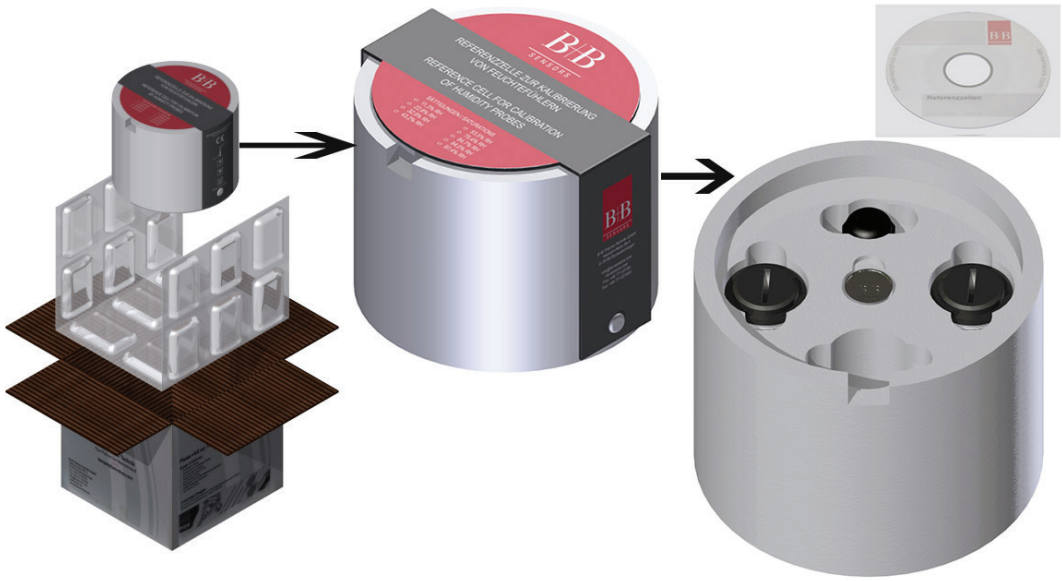
Standard complete set	Articleno.
Humidity-reference cells with thread M20 x 1,5 mm: 32,9 % /75,4 % RH	REFZ-M20-SET1

Reference cells with G1/2“-thread	Articleno.
Reference cell with humidity level 11,3% RH	REFZ-12Z-11RH
Reference cell with humidity level 22,8% RH	REFZ-12Z-23RH
Reference cell with humidity level 32,9% RH	REFZ-12Z-33RH
Reference cell with humidity level 43,2% RH	REFZ-12Z-43RH
Reference cell with humidity level 53,5% RH	REFZ-12Z-54RH
Reference cell with humidity level 75,4% RH	REFZ-12Z-75RH
Reference cell with humidity level 84,7% RH	REFZ-12Z-85RH
Reference cell with humidity level 94,0% RH	REFZ-12Z-94RH
Reference cell with humidity level 97,4% RH	REFZ-12Z-97RH
Accessories	**Articleno.**
Calibration container	0954 0129

Standard complete set	Articleno.
Humidity-reference cells with thread G1/2“: 32,9 % /75,4 % RH	REFZ-12Z-SET1

Delivery

of sets in insulating styrofoam calibration container incl. operating instruction on CD:



ATTENTION! The styrofoam packing is used for calibration. Please do not discard.

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