

# *Vessel for relative humidity calibration and adjustment MD046*

**for use with relative humidity data loggers of families Lxxxx, Sxxxx and Rxxxx,  
Comimeters C3121 and D3121 and transmitters Txxxx, NHxxx and HGxxx**

**Instruction for use**

## **Instruction for use of calibration vessel MD046**

By means of this tool it is possible to verify measurement accuracy (calibration) and optionally also new setting (adjustment) of instruments measuring air relative humidity. In many cases costly special device for humidity generation (calibration chamber) can be substituted. In the vessel, air tightly connected to the humidity transmitter, relative humidity is generated. The value depends on solution applied inside of the vessel. Solutions for generation of selected humidity levels (humidity standards) are not a part of calibration vessel MD046 and must be ordered separately.

### **WARNING:**

- Solutions of humidity standards are dangerous to health! In case of contact with them eyes and skin are irritated. In case of skin or eyes contamination wash skin or eyes by large amount of water!
- In case of ingesting the solution, find out a medicine doctor.
- Manipulate carefully with glass ampoules!

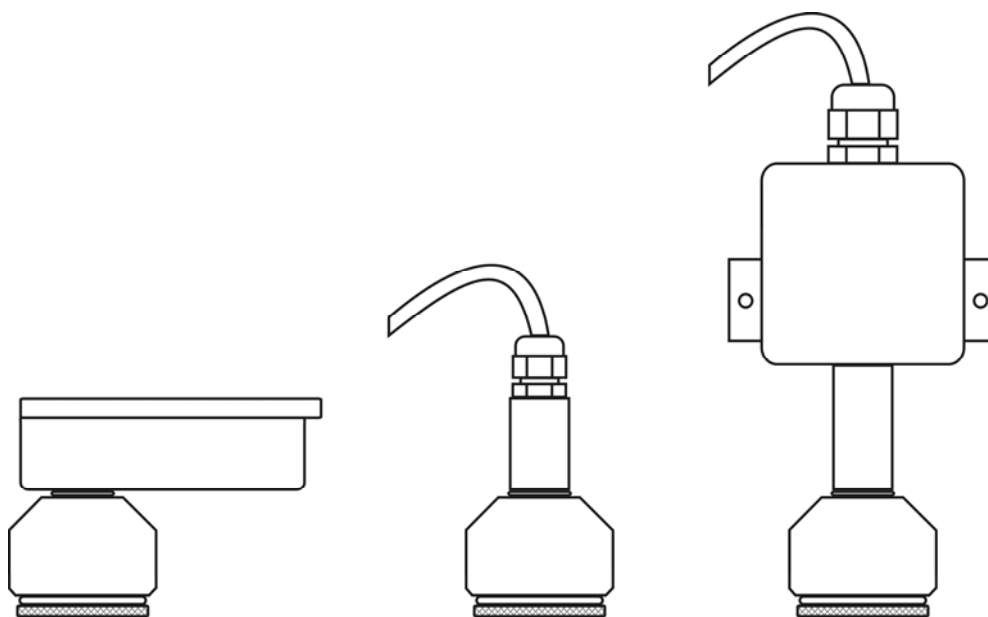
### **General conditions for calibration or adjustment with calibration vessel MD046 (further on only „calibration vessel“):**

- calibration vessel is possible to use for all hygrometers using replaceable sensor cover with G 3/8“ thread
- calibration (optionally adjustment) is performed at temperature of  $23\text{ °C} \pm 2\text{ °C}$
- calibrated instrument (or its external humidity probe), calibration vessel and solution in the vessel must have identical temperature. For comparison: temperature difference of  $1\text{ °C}$  between humidity sensor itself and the solution in calibration vessel causes humidity measurement error up to 6 %RH!
- from the above reason calibration vessel including connected humidity sensor should not be exposed to solar radiation or air draught – ambient temperature must not change during the settling time and during reading of measured values. The best way is to put entire device under calibration and the vessel to a thermo box of suitable size (e.g. polystyrene box with tight lid).
- if ambient temperature differs from recommended value of  $23\text{ °C}$ , it is possible to use correction table of humidity standard specified on the humidity standard packaging. Table describes dependence of humidity standard on its temperature. In that case accurate ambient temperature is necessary to measure by a thermometer.
- ampoule with humidity standard as well as the textile application pads are designed for unrepeatable use.

### **Calibration or adjustment procedure (further on only „calibration“) with calibration vessel:**

- the below procedure only describes, how to substitute large humidity calibration chamber with calibration vessel for humidity calibration of the concrete instrument. The calibration procedure of the concrete instrument itself is not affected by this and it is necessary to follow the calibration procedure of the concrete instrument!
- check before calibration if both sealing O-rings are undamaged and required humidity standards including textile application pads are available. For adjustment two humidity standards are necessary (typically 10 %RH and 80 %RH).
- wash out open calibration vessel carefully before thre procedure by water (best way is to use distilled water) and carefully dry out (it is recommended to use air flow). Even minimum remains of pollution or water influence the ingredients of the humidity standard solution and this way the value of generated humidity!
- carefully unscrew from calibrated instrument (or its external probe) the sensor cover and replace it with dry calibration vessel without a lid and tighten gently. Do not touch the humidity sensor of the instrument and keep the sensor from the damage by the sensor cover or calibration vessel!
- insert new unused textile application pad to the dry clean lid of calibration vessel
- check if instrument under calibration with calibration vessel, lid and ampoule with humidity standard solution have identical temperature (temperature differences can occur e.g. due to drying of calibration vessel by hot air, storing humidity standards at different place etc.). Let components together to allow temperature to stabilize.
- break the seal of the ampoule at marked narrowed point.
- empty the entire ampoule content to the center of textile pad in the lid and continue without delay with the following step.
- hold the instrument with calibration vessel opening for the lid downwards and screw the lid with applied humidity standard. Tighten lid carefully – calibration vessel must be air tightly closed. The working position of the instrument or probe with applied calibration vessel is with lid downwards. No other positions are allowed (see figure)!
- put all set in working position to suitable thermo box to ensure correct condition for temperature and humidity settling. The minimum required time for humidity settling inside of the calibration vessel is 3 hours at constant ambient temperature.
- after necessary settling time read humidity value from calibrated instrument and compare with the value of humidity standard.
- before next step with different humidity standard it is necessary the wash out calibration vessel perfectly and dry out and use new textile pad.
- repeat all procedure as described above.

## Working position of instruments with applied calibration vessel



**WARNING:** Do not flip over calibration vessel with applied humidity standard – the only allowed position is with lid downwards (see figures)!

## The list of instruments for use with calibration vessel MD046

L3120	C3121	R3120	S3120	Txxxx	HG421.65	NH232
L3631	D3121	R3121	S3121		HG421.65-xxx	NH485
L3633	C4141		S3631		NH421.65	NH485-xxx
	D4141		S3541		NH421.65-xxx	
					HG010.65	
					HG010.65-xxx	

## Liquidation of waste

All waste material must be liquidated ecologically !