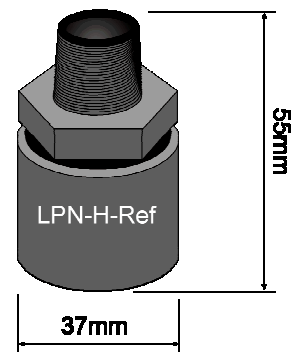


Calibration system for LPN-H series Humidity sensors.

The LPN-H-Ref calibration system is designed to allow in situation calibration checking of LPN-H-W and LPN-H-D humidity Transmitters. The LPN-H-Ref system consists of corrosion resistant stainless canisters containing Humidity regulating salt solutions which replace the black protective filter on the sensor.

Important Note:

- 1. For the calibration system to be useful it is essential that the sensor be mounted with the filter at the bottom to prevent spillage.**
- 2. The LPN-H-Ref calibration canisters are not suitable for the older LPN-H transmitters fitted with the blue protective filter.**



Preparation of salt solution

As the salts and canisters are supplied separately, it is necessary to prepare the salt solution before carrying out testing.

- Step 1 Carefully place enough salt into the canister to completely cover the bottom to a depth of approximately 2mm (in the case of pellets place enough pellets to cover the bottom of the container). NB. care should be taken not to get the salts around the canister threads.
- Step 2 Using a dropper (or syringe), slowly add distilled water (filtered water if distilled water is not available) to the salts until the mixture becomes a slurry with no visible film of water on the surface. With pellets, add water until the pellets are covered.

Procedure

The calibration procedure is simply a matter of unscrewing the filter from the Sensor, removing the sealing cap from the LPN-H-Ref canister, screwing the LPN-H-Ref canister in place of the filter and waiting for the sensor to stabilise at the known humidity.

Warning; check the mouth of the canister to ensure that no salt residues will contact the sensor before attaching. The cannisters should remain upright at all times to prevent salt entering the mouth of the cannister.

The use of thread sealant on the canister is not recommended as tightening the canister may pressurise the chamber.

After the sensor has stabilised the reading can then compared with the known value of the salt solution. Actual RH can be calculated taking into account the ambient temperature of the salt solution during testing and the error, if any recorded (see table below).

Where the sensor has been in a high humidity environment, it is recommended that a low RH canister is applied first to the sensor before applying canisters of high RH values, to dry any moisture trapped in the sensor. After completing the calibration reverse the procedure above being sure to apply the cap to the canister not in use. **Always store canister in upright position**

Rejuvenation

The canisters are provided with a cap to give long term storage capability to the salt solutions.

To rejuvenate the low humidity LPN-H-Ref canisters, place in an oven at 110 degrees C with the cap removed until some salt becomes visible above the surface of the solution. Ensure a slurry still exists. Replace the cap to the canister.

To rejuvenate the High humidity LPN-H-Ref cannisters, add distilled water until a salt slurry forms. Replace the cap to the canister.

Response time

Laboratory testing have shown settling times of 6hrs are needed.

If many sensors need to be calibrated it is recommended that a number of the canisters be purchased to reduce calibration time. Settling can be extended if there are significant air leaks into the sensor chamber while attempting to calibrate.

Accuracy

Salt solutions produced by Intech Instruments are measured against a psychrometer system conforming to ASTM E337 with temperature sensing calibration traceable to Australian National standards. Site conditions particularly temperature and air leakage effect measured values. Below is a table showing the effect of ambient temperature on RH values of various salts. Providing the calibration procedure is carried out with care and by suitably qualified personal, and using LPN-H-Ref canisters provided by Intech Instruments Ltd, accuracy's of better than $\pm 1\%$ should be achieved.

Part #	TEMPERATURE DEGREES C										
	0	5	10	15	20	25	30	35	40	50	
LPN-H-Ref84% (KCl)	88.6	87.7	86.8	85.9	85.1	84.3	83.6	83.0	82.3	81.2	%RH
LPN-H-Ref75% (NaCl)	75.5	75.7	75.7	75.6	75.5	75.3	75.1	74.9	74.7	74.4	%RH
LPN-H-Ref43% (K ₂ CO ₃)	43.1	43.1	43.1	43.2	43.2	43.2	43.2				%RH
LPN-H-Ref33% (MgCl ₂)	33.7	33.6	33.5	33.3	33.1	32.8	32.4	32.1	31.6	30.5	%RH
LPN-H-Ref8% (KOH)		14.3	12.3	10.7	9.3	8.2	7.4	6.7	6.3	5.7	%RH

Due to ongoing research and development, designs, specifications, and documentation, are subject to change without notification.

No liability will be accepted for errors, omissions, or amendments to specifications.