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Shaw Dewpoint Sensors and Meters

Shaw Dewpoint Sensors

The Shaw Dewpoint Sensors are developed more than 50 years ago and are still the best direct dewpoint sensors available on the market today. Acting as a variable capacitor, the dielectric layer is only a few microns in thickness for quick equilibrium with the surrounding water vapor pressure and the corresponding value is converted by the meter in dewpoint temperature.

The Shaw Dewpoint sensor is an expensive, sensitive piece of equipment and should be treated with due respect. Keeping the sensor in similar conditions over a longer period of time will affect the sensitive of the sensor; it will slowly fade away. It can take several days to recover or even be irreversible damaged.

The sensor installed in e.g. a dryer at stable dewpoint is not to be considered as 'similar conditions'. Since there will be change of air flow, pressure and …….. eventually dewpoint.

The sensor is supplied by the manufacturer in an aluminum container with desiccant. That's an excellent way for transportation and temporarily storage, BUT "similar conditions" will occur if kept there for several months in a row. Exposing the sensor to ambient air for a couple of days every now and then will improve its performance, sensitivity and life span.

The most important and unique feature of the Shaw dewpoint sensor is the "Automatic Calibration" facility. Each dewpoint sensor is precisely manufactured so as to saturate with water vapor at its design maximum. When the sensor is exposed to moisture above its maximum operating range, it will rapidly come into equilibrium at its design maximum and will not respond to any further moisture. This forms the basis of "Automatic Calibration".

The Shaw dewpoint sensor can be calibrated, by simply exposing it to any atmosphere which is "wetter" than the operating range of the sensor – usually room air is sufficient – and adjusting the calibration control on the electronic board.

Re-calibration can be done in-situ, and without recourse to any special equipment or skilled personnel.

Over their typical operating life of 15 years the Shaw Dewpoint sensor doesn't drift outside the given tolerance. To compensate for the sensor drift and the natural drift of the electronics it is recommended to perform the "Automatic Calibration" procedure every several months.

Although all Shaw dewpoint sensors are interchangeable they are not identical. Every sensor of the same range (same color if you like) should be tuned in with the electronics in accordance to the "Automatic Calibration" procedure.

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Basic Checking Shaw Dewpoint Meters Electronics (advanced only)

This is a basic check of the electronics. The intermittent particular scale value for each resistor value is approximate. Disconnect the sensor from the co-ax cable. Check with resistors the behavior of the board (Superdew, SADP etc.), connecting to sensor connector on co-ax cable.

		e.g. Gray Spot -80 to 0 °C DP
"DRY" Limit:	Infinity (open)	-80 °C
approx. 1/3 of scale	62 Kohm	approx. -55 °C
2/3 of scale	18.6 Kohm	approx. -25 °C
"Wet" Limit	8.6 Kohm	0 °C

Auto-Calibration of Shaw Dewpoint Meters

This is valid for Shaw Dewpoint meters: Superdew and all OEM Boards.

"DRY" Limit Setting

E.g. the "DRY" limit for a Gray spot sensor this is -80 °C (-112 °F) Dewpoint Temperature. With nothing but the mains connected to the meter and it switched on adjust the "DRY" potentiometer on the front of the Superdew (board) until the display (or output) shows the "DRY" limit -80 °C (-112 °F).

"WET" Limit Setting (Auto-cal)

Connect the sensor to the Superdew (board) using the supplied co-ax connector lead and note the "WET" limit of the sensor e.g. for the Gray spot this is 0 °C (32 °F) Dewpoint Temperature. Hold the sensor in ambient air i.e. well above 0 °C (32 °F) (typical ambient dewpoints are around 5 - 20 °C) so the sensor should be fully saturated. Now adjust the "WET" potentiometer until the Superdew display (board output) reads the "WET" limit of the sensor i.e. 0 °C (32 °F) for the Gray spot sensor.