Honeywell

24-04-03-02
11/98

DewProbe Sensor
Model SSP129B

Specification

Function

The SSP129 DewProbe (Figure 1) is a dewpoint sensor designed to work with recorders, indicators, controllers, and continuous indicating systems.

The B model is supplied with resistance coils for use with Nickel A resistance bridges.

Description

The DewProbe is an electrically-heated, self-regulating, lithium chloride dew point hygrometer. It consists of two wire electrodes wound side by side on a cloth sleeve which covers a hallow tube; 24 Vac power is supplied to the electrodes. The SSP129B has integral transformers.

The cloth sleeve is impregnated with lithium chloride, which absorbs water from the air and becomes conductive. It has an inherent ability to maintain itself at a constant value just above 11% RH when in a moist atmosphere and heated by an electric current. This allows current to flow from one electrode through the cloth sleeve to the other electrode producing heat at the bobbin. Moisture is thereby evaporated from the lithium chloride unit a heat-moisture equilibrium is obtained. Below 11% RH, the lithium chloride dries to a crystalline solid and becomes non-conductive. The equilibrium bobbin temperature is related to the dew point of the gas sample. By measuring the temperature in the cavity of the bobbin, the dew point can be determined.

Sensed Mediums

Sensors can be used in atmospheres of moist air, or in moist atmospheres of pure nitrogen, helium, and other rare gases. They may also be used in moist atmospheres containing vapors of (but not liquids of) heptane, forming gas, ethane, hydrogen, gasoline, methane, other petroleum gases. Stoddard solvent, and vapors of chlorinated hydrocarbons such as carbon tetrachloride, perchlorethylene, or trichlorethylene.

CAUTION: The bobbin assembly is not explosion proof. Established codes must be followed in applying DewProbe sensor to any potentially explosive or otherwise dangerous gas, vapors, or atmospheres.

Unsuitable Atmospheres

1. Do not allow condensation to form on the elements; moisture droplets will cause errors and will require bobbin retreatment.
2. Do not use in atmospheres which contain the following:
   a. Gases of ionic nature,
   b. Atmospheres containing suspended salts or salt spray,
   c. Vapors or spray from hydroscopic fluids such as glycerine or glycols,
   d. Vapors of contamination such as

Sulphur dioxide	Alkaline vapors
Hydrogen sulfide	Acetylene
Acid vapors	Ethylene oxide
Chlorine	Alcohols
Ammonia	Acetone

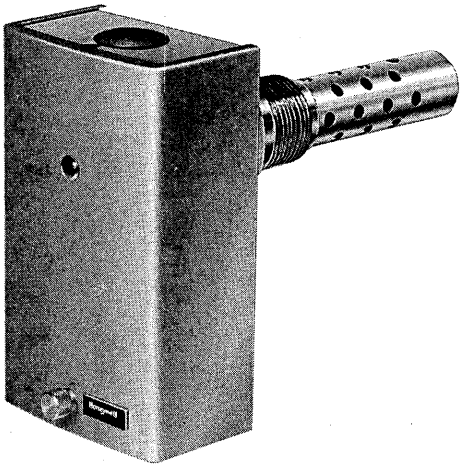


Figure 1—SSP129B DewProbe Sensor

System Application

Selecting Dewpoint Controi Equipment

How to Read the Chart (Figure 2)

1. Select the desired dewpoint temperature on the left side of the chart (along the slanted "Saturation Line").
2. Read left-to-right through the gray DewProbe operating zone.
3. From the point where the left-to-right line leaves the gray zone, read directly down to the "drybulb Temperature" line. This gives the highest drybulb temperature for the dewpoint selected. The lowest permissible drybulb temperature is always the same as the dewpoint. For practical purposes, it is best not to operate directly on either drybulb limit, but somewhere well in between.

The Selection Chart

This chart can be used when choosing the right dewpoint control equipment for your application. From it, you can select the right instrument combination to operate at any dewpoint between –40° F and 160° F (–40°C and 72°C) and any drybulb temperature above –40°C or F.

Selecting Dewpoint Sensor Equipment

Direct Reading

The following unit has a padded resistor network which permits direct reading of dewpoint on an instrument calibrated as indicated below.

100 ohm PIT Bulb
SSP129B171

An Example Application

Suppose, for example, we wanted to control at 75°F (24°C) dewpoint, and wanted to know the drybulb temperature limits of the application. We would read up the slanted "Saturation Line" to 75, then directly right to the far edge of the gray zone, and down to the "Drybulb Temperature" line at the bottom of the chart. We find that 150° F (66°C) is the maximum drybulb temperature — so to use the DewProbe sensor alone, our application must stay between 75° F and 150°F (24°C and 66°C) drybulb temperature.

Conversely, of course, we could find the dewpoint of an application by reading up from the Drybulb Line to the gray zone and then horizontally left to the Saturation Line. This gives the low dewpoint limit — the high dewpoint limit is the same as the drybulb temperature selected. At 150°F (66°C) dry bulb, for example, the total possibilities would be between 75° F and 150° F (24°C and 66°C) dewpoint temperature.

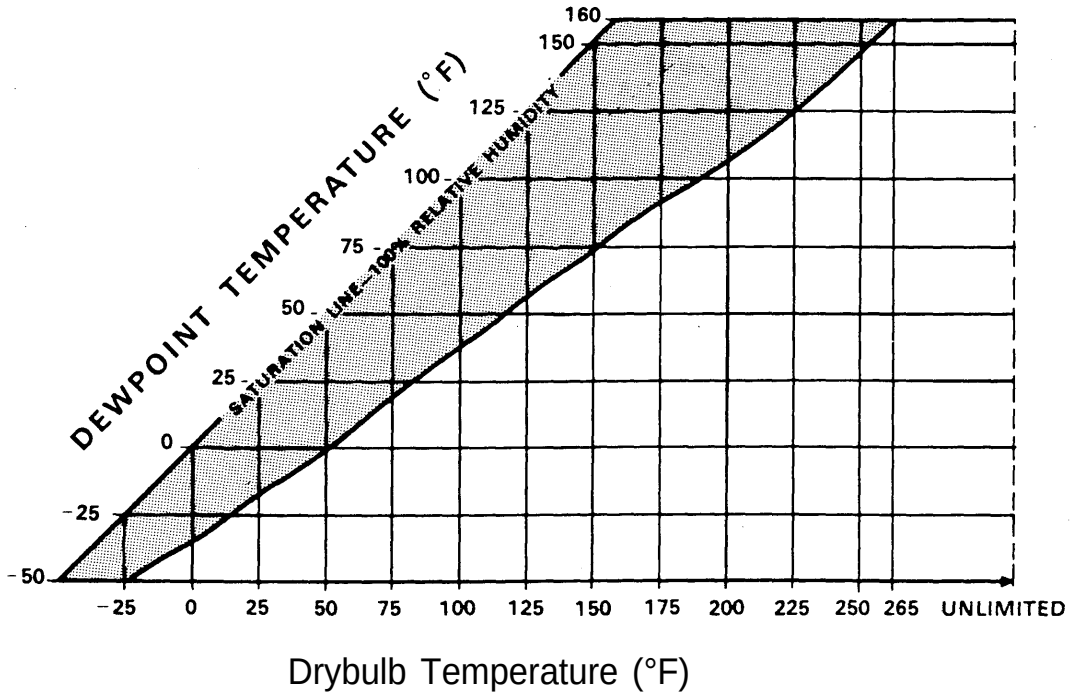
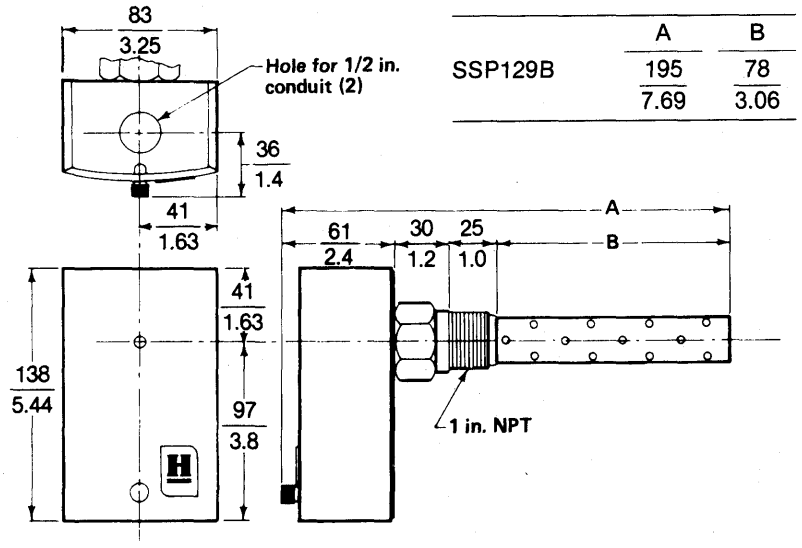


Figure 2—Dewpoint Temperature Selection Chart

Secifications

Performance	
Dewpoint Range	–40°C to 72 °C(–40°F to 160°F)
Response Time	Less than 3 minutes for a 90% step change in dewpoint at temperatures above – 12°C (10°F) For a dewpoint at (– 18°C, 0°F), may exceed 10 minutes, and for a dewpoint at – 40°C (– 40°F), may exceed 30 minutes.
Maximum Ambient Temperature	Operating: 82°C (180°F). (Do not use DewProbe at higher temperatures.) *Shipping:* –40°C to 71°C(–40° to 160°F)
Maximum Pressure of Gas	0 to 104 kPa (0 to 15 psi), or 0 to 1034 kPa (0-150 psi) when using an optional plate — see accessories.
General Design Features	
Casing Material	Steel
Dimensions	Figure 3
Mounting	1" NPT duct wall mounting. Requires standard floor flange or an SSP129Z001 DewProbe mounting flange. May be mounted in any position.
Power Requirements	
Electrical	120 or 220 Vac, 50 or 60 Hz (separate models)
Power Consumption	10W at startup; 3W running.
Accuracy	**Dewpoint equals 47.2°F (± °F)** — 2 **Dewpoint of 0 and 100°F (± °F)** — 3 NOTE: This is as shipped. Age, contamination, etc. affect accuracy.
Accessories Furnished	Use the windguard with all models in air flow velocities greater than 0.254 m/s (50 f/m). A bob-bin is supplied with each sensor.

Dimensions: millimetres / inches



	A	B
SSP129B	195 / 7.69	78 / 3.06

Figure 3—SSP129B

Ordering Information

SSP129B	DewProbe Dewpoint Sensor use with electronic equipment calibrated for nickel A bulb. 10 psi rating.
SSP129B121	DewProbe 120/50-60.
SSP129B122	220/50.
SSP129C	DewProbe. Use with electronic equipment calibrated for balco T/C. 500 ohm @ 50°F. Dewpoint pressure range 0-15 psi.
SSP129C111	DewProbe. 120/50-60.
SSP129C112	DewProbe. 220V 50-60.
SSP129D	DewProbe. Use with electronic equipment calibrated for nickel A thermometer. Industrial housing for pressure to 150 psi.
SSP129D021	120/50-60.
SSP129D022	220/50-60.
SSP129E	DewProbe. For use with customers temperature sensor.
SSP129E111	120 Vac 50-60 Hz A bulb.
SSP129Z	Accessories for SSP129 DewProbe.
SSP129Z001	Mounting Flange.
SSP129Z004	Retreatment Kit.
SSP129Z011	Powerhead ASM, SSP129D 120/50-60.
SSP129Z018	Bobbin for SSP129B, C, D DewProbe.
SSP129Z019	Bobbin for SSP129A DewProbe.

Reference:

1. For further technical and operational data, see Product Manual 24-04-25-09.
2. For data on SSP129Z DewProbe Bobbins, see instruction 24-04-33-01.

For more information contact the nearest Honeywell sales office of
Honeywell Industrial Automation and Control
1100 Virginia Drive, Fort Washington, PA 19034.

In Canada,
Honeywell Limited
155 Gordon Baker Road
Willowdale, Ontario M2H 3N7.

Specifications are subject to change without notice.