# HX-9100 Dew Point Monitor Sensor

## **Product Bulletin**

The HX-9100 Dew point Monitor sensor is used to prevent condensation on Cold Ceiling, Active and Passive Chilled Beams and on surfaces such as cold water pipes, and windows.

The Dew Point monitor measures the relative humidity near the dew point using its robust sensor based on polymer film. Reaching the switching point of 90% RH the output will provide an early warning signal for starting a control sequences steps to avoid water dripping.

The HX-9100 can be connected to Johnson Controls controllers as well as any third party device, that can accept an ON/OFF or a 0 to 10 V signal, to provide override functions when condensation is forming.



# Accurate Dew Point Monitoring Achieve Optimal efficiency of your HAVC system preventing water condensation.

- Reliable and accurate
  Practically unaffected by moisture does not require tuning to offer repeatable actions.
- **Proven design based on large installed base** Provides a reliable solution making commissioning and service easy.
- Small and metal case Robust and easy to be positioned for a quick installation.
- Extended supply range from 15 VDC to 24 VAC / VDC Can be used with any controller managing digital signals.
- Open collector output and 0 to 10 V Can be used with any controller managing digital signals.



#### **Application**

The principle of the sensor is based on the change in resistance of a conductive polymer in a thin film on a small ceramic substrate. As the sensing polymer becomes wet (90 to 95% RH), its resistance will increase drastically because the polymer expands and therefore causes a larger distance between the conductive particles.

The HX Sensor is used to sense precisely the dew point and provide the information to the connected controller. A small hysteresis of 1 to 2% RH is present in order to avoid oscillations of the information but it can't be used to determine, in a reliable way, when the humidity has significantly fallen below the dew point.

Therefore for applications such as chilled ceilings it requires a specific function in the controller, i.e. a suitable delay time has to be introduced in the controller reading the dew point information in order act in a proper way (lock the valve to the off position for a suitable time).

It can be used in conjunction with any controllers not equipped with the possibility to define a delay interlock time, only for cold water pipe applications, where there is usually a small condensation on the pipe and therefore the HX output remains active for a suitable time (the time necessary to the valve to close the flow of cold water and recover from the high humidity situation).

### **Ordering Codes**

Ordering Codes	Supply	Output Signal	Output Max Rating	Operating Condition	Cable
HX-9100-9024	24 VAC 24 VDC ±15% 7 mA or 15 VDC ±10% 7 mA	ON/OFF Open Collector Closed for RH > 90% Hysteresis 1%	Max 30 VDC Max 10 mA	Operating 0 to 50°C IP44 With condensing up 1000 hours	1.5 m
HX-9100-9324					3 m
HX-9100-9A24		0 to 10 V Open Collector Closed at 0.5 V for RH >90% Hysteresis 1%	Nominal 0 to 10 V		1.5 m



#### Mounting

The HX-9100 Dew Point Sensor can be mounted to plane glass or metal surfaces using only the special double-sided bonding tape which is packed with the sensor. For maximum bond strength, the surface should be thoroughly cleaned and dried. Typical cleaning solvents are heptane or isopropyl alcohol.

Bond strength can also be improved with firm application pressure and moderate heat, from 38°C to 54°C, causing the adhesive to develop intimate contact with the bonding surface. Ideal tape application temperature range is 21°C to 38°C.

One or two plastic clamps can be used when the sensor has to be clamped to metal pipes.

The sensor wiring may be lengthened, shielded cable should be used if transient problems can occur.



#### **Wiring Instructions**

For wiring follow the instructions below:

- All wiring must be in accordance with local regulations and national rules.
- Do not attempt field repairs. If the transmitter is not operating properly, even though it is wired correctly, please replace it.





HX-9100-9x24 Open Collector Models

Collector Max 30 Vdc and 10 mA

HX-9100-9A24 0...10 V Model

Output Nominal 0.5 VDC to 10 VDC



# **Technical Specifications**

Models	HX-9100-9A24	HX-9100-9024	HX-9100-9324		
Output Action	0 to 10 V On/Off	Open Collector On/Off			
Open Collector Characteristics	0.5 VDC, 10 VDC	Max 30 VDC, 10 mA			
Output at Threshold 90%100% rH	0.5 VDC max	0.5 VDC max			
Hysteresis	Typically 1%				
Supply voltage	15 VDC ±10% or 24 VDC or 24 VAC ±15%				
Cable Lenght	1.5 m	1.5 m	3 m		
Max Current Consumption	Approximately 7.0 mA				
Operating Conditions	0 to 50°C				
Humidity Operating Limits	No permanent moisture condensation; no change of characteristic after 1,000 hours under condensation				
Protection Class	IP44 (EN 60529)				
Storage Conditions	-20 to 80°C, non condensing				
Electrical Connections	tions Three-wire cable with terminal sleeves				
<b>C €</b> Compliance	Johnson Controls declares that these products are in compliance with the essential requirements and other relevant provisions of the EMC Directive				

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.



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