

## **COM.AIR - Compressed Air Dew Point Hygrometer**

**Application:** The **Model COM.AIR** is an industrial duty hygrometer designed monitor compressed air/ dryer system quality or furnace atmospheres. Unlike other lower cost hygrometers on the market, the COM.AIR features a Chilled Mirror sensor. This is a direct reading of dew point (Primary Measurement Method) and offers exceptional accuracy, no-drift, and long life. It is one of the few sensor technologies that can be field serviced by the customer by easy access to clean the mirror. Because of the unique characteristics of the COM.AIR, it is highly sought after to measure the quality of compressed air sources used in pharmaceutical processing, PET Blow Molding, and other types of manufacturing operations where precision and low maintenance are required. Other applications include monitoring furnace environments such as heat treating, annealing, and Endothermic Gas Atmospheres (CO<sub>2</sub>). Not rated for Hazardous Atmospheres. Oxygen Use- please inquire.

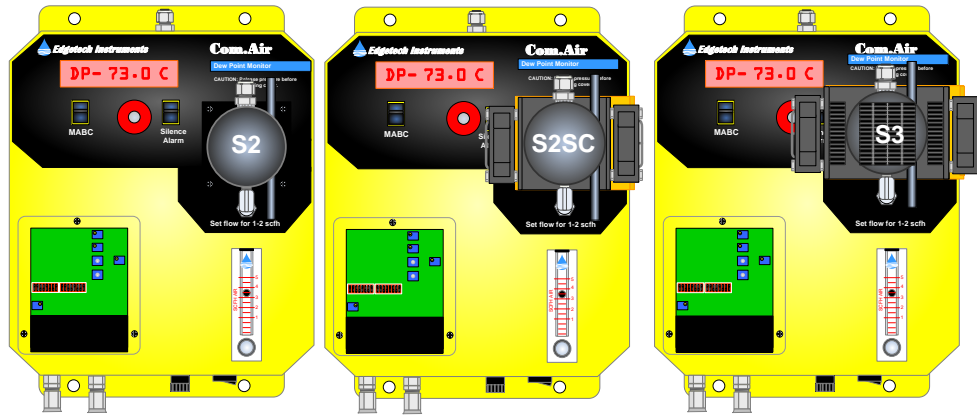


**Description:** The **COM.AIR** control unit's standard features include a digital display of dew point, a field configurable dew point alarm relay, and alarm horn. Included in the standard COMAIR: Qty (1) Programmable Relay for DewPoint, (1 set) Visual and Audible Alarms, Front Panel access button for Automatic Balance Control (ABC), 4-20mA or 0-5VDC analog output for DewPoint, N.I.S.T. traceable accuracy of +/- 0.5°F (0.28°C). The Audible alarm is  $\geq 85$ dba @ 3ft. The digital display also posts "ALARM" during upset conditions. All components and circuitry are integrated into a single, NEMA-12, wall mountable unit, ready for 120 VAC, 240VAC. Each Monitor also includes an integrated flow meter with valve, instruction manual and easy access window to adjust DIP Switch settings and Pots. The installation requires a 1/4" T connection. Although the most common configurations are based on using a local mounted S series sensor, it can be configured with the chemically resistant X series sensors or the D series insertion probe dew point sensors.

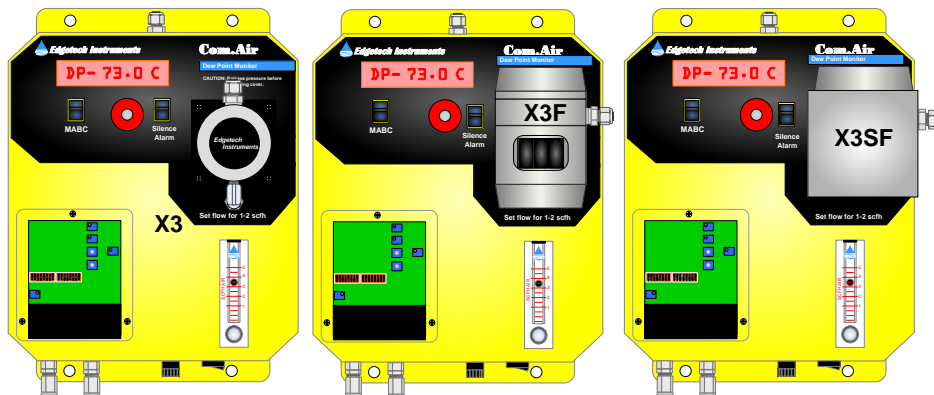
**SENSOR OPTIONS:** The COM.AIR is available with several types of chilled mirror sensors, temperature sensors and pressure transducers. For measurement of dew point, it may be configured with the standard S-series flow through chilled mirror sensors (aluminum body), the X series chemical resistant- low dew point chilled mirror sensors (SS Body), or the D series insertion probe style chilled mirror sensors. The most common configuration is to couple the COM.AIR with the S2 or S3 series chilled mirror dew point sensors. The standard display configuration will display dew point in either °C or °F. If you would like to display the moisture content in PPMv, then you need to add the pressure transducer option. When this is added, PPMv is calculated based on the dew point and pressure information. The COM.AIR will display Dew point in C or F, PPMv, and also pressure in psia or Bar.

- **S-Series:** The most common option is to couple the COM.AIR with the S series chilled mirror dew point sensors. The S-Series sensor bodies are constructed of Aluminum and are designed as flow through sampling systems. Sample gas is extracted from the process point and directed through the S series chilled mirror sensor at the sample inlet/ outlet ports (1/4 inch compression fittings). Depending on the desired dew point, you can choose from the S2, S2SC, or S3 sensors. The S2 and S2C utilize 2 stage TEC (thermal electric cooler) heat pumps to pull heat away from the TECs. Heat from the S series sensors is dissipated through the aluminum bodies and convected to the surrounding ambient air. The S2SC and the S3 sensors also feature fans to help pull the heat from the aluminum bodies. Using this heat exchange system, the S2 (no fans) can develop a 60°C depression, the S2SC (includes fans) a 65°C depression and the S3 (includes fans) an 85°C depression. A unique feature of the S series sensors is the auxiliary chilled liquid ports. If you want to pull the heat away from the sensors more efficiently than by using the standard ambient air heat exchange, chilled liquid may be routed through the auxiliary ports.

Depending on the temperature of the chilled liquid, you can attain even greater depressions (up to an additional 10°C). **Depression is the absolute value in temperature deviation from the surrounding air temperature.** Access to cleaning the mirrors is via screw top lids.

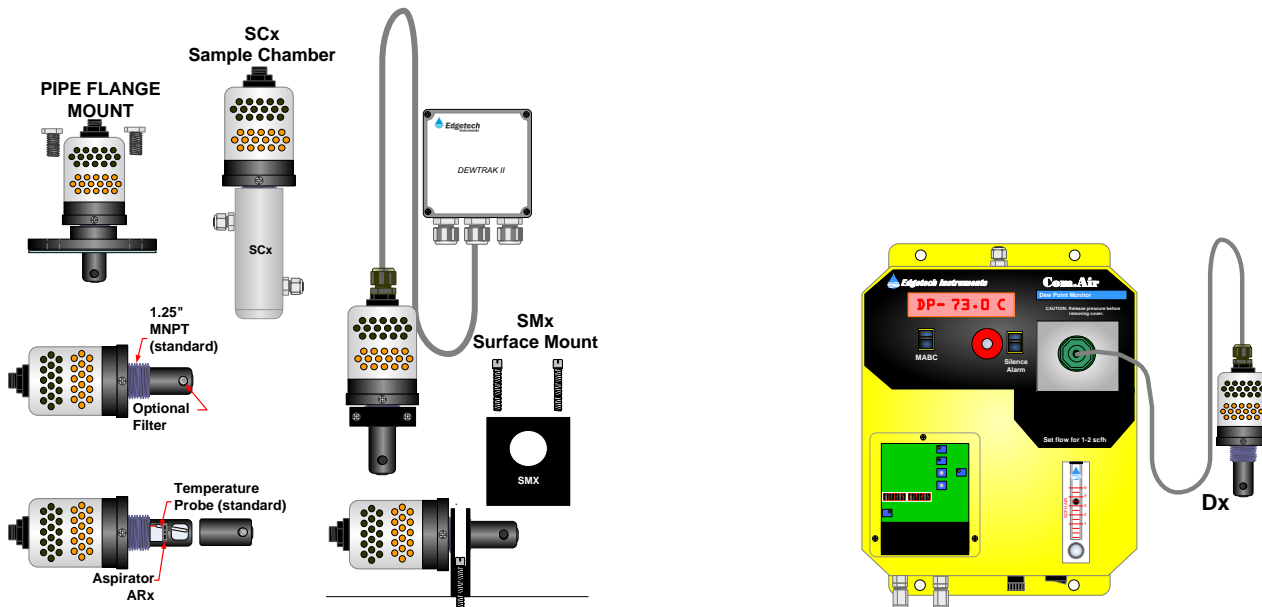


- X3-Series:** The X3 sensor family offers the ability to measure dew point in chemically aggressive background gases, can measure lower dew points and generally has faster response times than the S series. The X3 family features 3 stage TECs. Like the S series, the X3 units also have ¼ inch compression inlet/ outlet ports. The X3 feature flip top easy access lids protected by screw top caps. Unlike the S series, the standard X3 sensors that are used on the COM.AIR do not feature liquid ports. The use air convection to draw away the heat generated at the TECs. The X3 is like the S2 in that heat exchange is via the sensor body only. The X3F and X3SF utilize fan assisted heat exchange to the surrounding ambient air. The X3 offers 65°C depression, the X3F offers 75°C depression and the X3SF offers 95°C depression from the ambient air temperature.

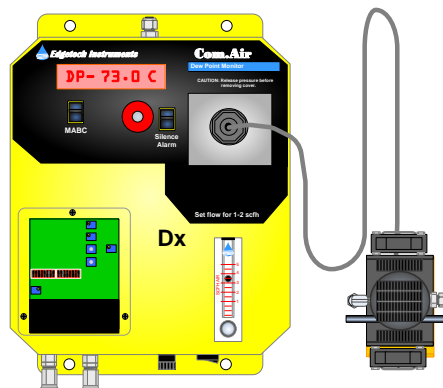


- Dx:** An insertion type probe, the Dx two stage chilled mirror dew point sensor uses diffusion type sampling. Sample gas diffuses from the surrounding environment to the chilled mirror sensor. To attain lower dew point measurements, an on-board fan and high efficiency heat exchanger are featured to measure dew point levels down to -40°C with an ambient temperature of 25°C (65°C depression). It also features an on-board temperature sensor as standard (RH% is always an added measurement when choosing this sensor). With this feature, only a single penetration into the process is required to measure both temperature and dew point (RH%). Other standard features include rotatable sample cap to adjust for sample flow velocity and pipe thread access (always standard on the Dx). The threaded port can be directly inserted into matching 1.25" pipe threads or can be screwed into the SMx block that allows mounting onto a flat

surface. You can order the optional aspirator function which incorporates a built-in fan to circulate sample gas to the sensor in low flow or stagnant air conditions.



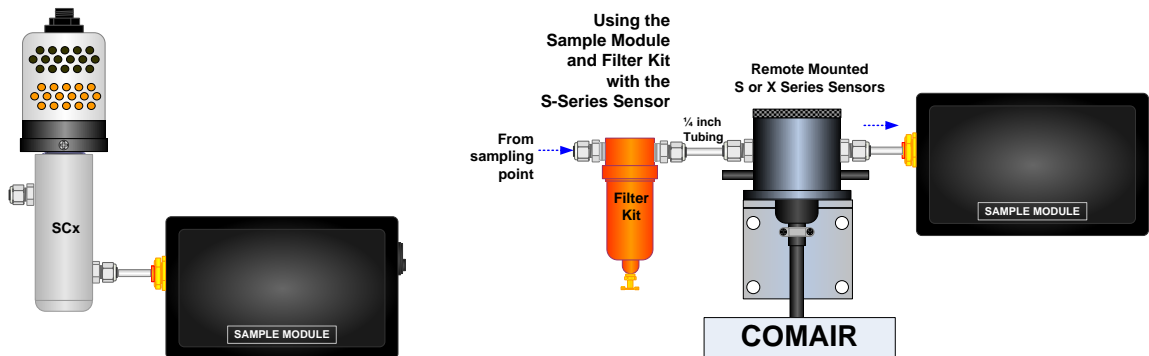
- Local or Remote Chilled Mirror Sensor:** The Dx sensor is always mounted remote as it always includes a signal cable that connects the sensor to the COMAIR control module. The Dx has several mounting options including surface mount and flange mount. Although the standard configuration of the S and X series sensors is to be mounted local at the COMAIR control module, it is possible to mount these two types of sensors remote with connection via a signal interconnecting cable. The remote mounted S and X series include a mounting bracket to support the sensor to a fixed position.



- Pressure ratings of the chilled mirror sensors:** The Dx sensor is rated for max pressure of 10 PSIG, the S and X series have a pressure rating of 300 psig. A special high pressure option is available for the S series sensors (up to 900 psig). **Please note that although the S and X sensors are rated to 300 psig, the flowmeter is only rated to a max pressure of 150 psig. To obtain the 300 psig rating (or 900 psig on the High Pressure versions of the S series) you must select remote mount sensor. In this case, the flowmeter is not included.**

- Other sensors that can be included into the COMAIR:** to measure pressure, an optional pressure transducer may be added to the COMAIR. This allows the conversion of dew point to PPMv. In this configuration, the pressure transducer is mounted within the COMAIR chassis and not visible from normal viewing. You must specify the desired pressure range of the P-trans. Another option is to add a temperature probe to the COMAIR. This measurement allows the conversion of dew point to RH%. Of course, the Dx already includes a built-in temperature sensor.

**SAMPLING OPTIONS:** The COMAIR may be used in positive pressure applications or those that require sample extraction using a pump. The standard operation of the S and X series is positive pressure. To extract a sample gas from atmospheric pressure applications, you can add the internally mounted vacuum pump option. The Dx sensor is configured for diffusion sampling- the sensor is inserted into the measured atmosphere and gas diffuses to the chilled mirror chamber for measurement. You can add the optional internal fan to the Dx that circulates the measured gas to the sensor in non-flow or stagnant air flow applications. It is also possible to add the sample chamber to the Dx which provided inlet and outlet ports to the sensor to direct a flow of gas to the chilled mirror sensor chamber. You can also couple the Sample Module (vacuum pump) option to the sample chamber to extract a gas flow to the sensor.



**OTHER OPTIONS:** The COMAIR electronics may be configured in a variety of ways offering the USER different measurement parameters, additional interface options, and accuracies:

#### TO ORDER THE COM.AIR:

- Select Sensor Type- Dx-probe, S or X series
- Select Mirror Type: STD (Chrome - standard), ENH (Enhanced chemical resistance-Stainless Steel), MAX (Maximum chemical resistance – Platinum)
- Select Local or Remote Sensor (Dx sensor always remote mounted) For the S and X series sensors, this is specified by the addition of the sensor interface cable. The standard length is 10' (3M) but can be increased.
- Select Options such as dual relay alarms, Pressure Transducer, High Pressure, ...
- List as separate line items : Accessories, Sample Module, Calibration Packages, & Extended Warranty.

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For Ex:	CA	-	X3SS	-	RS		<b>\$2,085</b>	+	<b>\$5,750</b>	+	<b>\$275</b>	=	<b>\$8,100</b>

### Notes:

1. The S-Series chilled mirror sensors are flow through sampling and are equipped with 1/4inch Swagelok fittings. Aluminum construction is appropriate for most non-aggressive background gases.
2. The X3 body is constructed of 316SS and more suitable for aggressive chemical background gases.
3. The S-Series sensors are equipped with an auxiliary liquid chill port for flow of chilled liquid through the sensor chassis to attain lower dew points than by air cooling only. When using the liquid chill port, disable the fans on the S2SC and S3.
4. The X-series sensors are designed as fan cooled or liquid cooled, but not both. The X3F and X3SF feature fans used to acquire more efficient heat exchange of the TEC and hence lower dewpoints. For liquid cooled X3, please inquire.
5. When using the S or X series sensors, addition of the Pressure transducer option allows the COM.AIR to be configured to display PPMv units and Pressure.
6. For Oxygen service, please inquire to the factory. This requires the use of an X3 sensor configured and cleaned for oxygen service.
7. ***Please note that although the S and X sensors are rated to 300 psig, the flowmeter is only rated to a max pressure of 150 psig. To obtain the 300 psig rating (or 900 psig on the High Pressure versions of the S series) you must select remote mount sensor. In this case, the flowmeter is not included.***
8. When the Dx insertion sensor is ordered, the flowmeter on the COMAIR is deleted.
9. When the pressure transducer option is ordered with the Dx probe or remote mounted S or X style sensors, then the pressure transducer is provided on a standard 10' (3 m) long cable.

**1. Select Sensor type**
**Chilled Mirror Dew Point Sensors for the COM.AIR**

S-Type, Standard Duty		Description	Depression	Choose Mirror		
				STD	ENH	MAX
<b>S2</b>		Two Stage, Al Body, Convection Air Cooled- No Fans, Flow Through Sampling	60C	\$2,200.00	\$2,450.00	\$2,640.00
<b>S2SC</b>		Two Stage, Al Body, Fan Cooled, Flow Through Sampling	65C	\$2,530.00	\$2,780.00	\$2,970.00
<b>S3</b>		Three Stage, Al Body, Fan Cooled, Flow Through Sampling	95C*	\$5,198.00	\$5,448.00	\$5,638.00
<b>P</b>		S2P or S3P: High Pressure option 900 PSIG		S2:Add \$275.00 S3:Add \$660		

\* Liquid Chilling may be required in the S3 to attain 95C Depression, fan only –depression of 70C

Standard S & X series sensors rated for 300 PSIG sample Pressure

X-Type, Chemical Resistant, High Performance		Description	Depression	Choose Mirror		
				STD	ENH	MAX
<b>X3</b>		3 Stage, Panel Mount, SS Body, Convection Air Cooled- No Fans, Flow Thru	65C	\$5,500	\$5,750.00	\$5,940.00
<b>X3F</b>		3 Stage, SS Body, Standard Fan Cooled, Flow Thru Sampling	85C	\$5,750	\$6,000.00	\$6,190.00
<b>X3SF</b>		3 Stage, SS Body, High Efficiency- Super Fan Cooled, Flow Thru Sampling	95C	\$6,000	\$6,250.00	\$6,440.00

Dx-Type, Insertion Probe		Description	Depression	Choose Mirror		
				STD	ENH	MAX
<b>Dx</b>		2 Stage, Insertion Probe, AL, Fan Air Cooled, Diffusion Sampling	65C	\$2,500.00	\$2,750.00	\$2,940.00

**STEP 2: SELECT MIRROR TYPE:**

Applications CM Configuration	General Purpose Gases	Acids	Caustics	Salts	Organics	Nuclear Application	High Temperature
<b>STD -Standard Chrome</b>	A	D	D	C	C	D	C
<b>EHN - Enhanced 316 Stainless Steel</b>	A	B	B	B	B	C	B
<b>MAX -Maximum Platinum</b>	A	A	A	A	A	A	A

- A** Excellent
- B** Very Good
- C** Good
- D** Not recommended

**STEP 3: Choose Local or Remote Sensor (Dx sensor always remote mounted):**
**NO DESIGNATION = LOCAL SENSOR MOUNTED ON COM.AIR (S or X SERIES)- STANDARD CONFIGURATION**

<b>-RC2</b>	<b>Remote Mounting Kit S2-type Sensor</b> 10' Cable, additional lengths add \$4/ foot	\$ 550.00
<b>-RC3</b>	<b>Remote Mounting Kit S2SC or S3 Sensors</b> 10' Cable, additional lengths add \$8 foot	\$ 550.00
<b>-RX</b>	<b>Remote Mounting Kit X-type Sensor</b> 10' Cable (MAX)	\$ 550.00
<b>-RDx</b>	<b>Remote Mounting Kit Dx type Sensor</b> 10', additional lengths add \$8/ foot beyond 10'	\$ 550.00

**STEP 4: SELECT OPTIONS:**

<b>-DA</b>	Second alarm relay (usually configured for "Clean Mirror" notice)	\$ 165.00
<b>-HPO</b>	High Pressure Option, 900psi- only available on the S-Series sensors	\$ 660.00
<b>-PT</b>	Pressure Transducer kit, LIVE pressure, includes interface board and software	\$1,485.00
<b>-RS</b>	RS232 output	\$ 275.00
<b>-VPH</b>	Vacuum Pump (mounted internal)	\$ 550.00
<b>-SA/.1</b>	0.1°C Special accuracy, traceable to NIST (Certified)	\$ 660.00
<b>-SA/.15</b>	0.15°C Special accuracy, traceable to NIST (Certified)	\$ 550.00

**STEP 5: Choose Special Sensor Options for Dx-Probe: (The Dx-probe is always mounted remote)**

<b>-ARx</b>	Aspirator Mount, this features a built-in aspirator to extract a gas sample from the surrounding area	\$ 199.00
<b>-FNG</b>	Pipe Flange Mount w/ Gasket, The D-Probe gets installed into a 4inch diameter PVC Flange/ gasket add seal, 4 bolt install. For use with Pipe Flanges, isolation chamber, and HVAC DUCT mounting	\$ 150.00
<b>-SMx</b>	Surface Wall Mount, The Dx Probe is retained between two polypropylene blocks w/ bracket	\$ 99.00
<b>-FLT</b>	On-Board Filter for the Dx probe, helps prevents contamination on mirror	\$ 150.00
<b>-SCx</b>	Sample Chamber for Dx sensor with ¼" compression inlet/outlet gas flow ports	\$ 578.00

**LIST ACCESSORIES AS SEPARATE LINE ITEMS:**

<b>511 SS Tag</b>	STAINLESS STEEL IDENTIFICATION TAG, can be riveted or wire connected to the instrument, CUSTOM ETCHED PER CUSTOMER REQUIREMENTS 1" High x 2" Wide x 16 gage SS Tag, Laser Etched, ¼ inch lettering, 3 lines Advanced Graphic Engraving (includes 2)	\$ 125.00
<b>CASE1630</b>	Foam lined transportation case specified to protect instrumentation during shipping, tabletop version	\$ 630.00
<b>FIL</b>	Filter kit: includes 1/4T SS compressions fittings & additional elements; 0.1 micron particulate	\$ 165.00
<b>DX</b>	Filter Element Kit, Qty 3	\$ 83.00
<b>SMU</b>	Sample Module Universal, 115/230 VAC operation	\$ 770.00

**Extended Warranty/Calibration Options: Please list as separate line items:**

<b>3EXTW</b>	3 Year Extended Warranty includes repairs covered in the warranty statement	10% of TOTAL PRICE
<b>3YNIST1P</b>	3 NIST Traceable Calibrations for the price of 2 (1 Parameter)	\$ 1,210.00
<b>3YNIST2P</b>	3 NIST Traceable Calibrations for the price of 2 (2 Parameters)	\$ 1,430.00