

1500-AC VAC Powered Transportable Dew Point Hygrometer System

APPLICATION: The **Model 1500** VAC Powered transportable Dew Point Hygrometer is an economical, precision hygrometer based on the chilled mirror sensor measurement technique. Because of the many sensor configurations available, the model 1500AC may be used in many types of applications including performance testing of Dryers in the field, furnace monitoring, process troubleshooting, scientific study, HVAC test cells, engine test cells, pharmaceutical quality test labs, high purity welding, aeronautics, pharmaceutical fluid bed monitoring, Environmental chambers,



DESCRIPTION: The **Model 1500-AC** may be coupled with a variety of chilled mirror sensors and options depending on the type of application. The unit features a detachable power cable, quick connect sample inlet port (Female) and supplied (male) port for customer connection, a sample flow meter, and optional vacuum pump. The 1500-AC can also accommodate precision temperature probes and pressure transducers. Temperature measurement provides information required to calculate RH%, wet bulb and dry bulb units. Pressure measurement provides information required to calculate PPMv, PPMw, Gr/LB, Gr/Kg and other psychrometric values. Other options include the sample filter and various signal outputs.

SENSOR CHOICES: The 1500VAC may be coupled with any of the **S series sensors, the DS2 probe, or the Dx probe**. If you need the X3 series sensor, use the PDM-75X3. The Chilled mirror sensors are available in 2 or 3 stage configurations, flow through or insertion probe sampling, and choice of mirror construction for chemical compatibility.

The S series chilled mirror sensors are designed for flow through sampling and the DS2 and Dx are designed as insertion probes. The main difference between the DS2 and the Dx probes is dew point range. The DS2 probe uses convection of heat flow through the aluminum body and is limited to approximately -20°C dew point at STP. The Dx probe features an on-board, high efficiency fan directed heat exchange and can measure dew points down to -40C/F.

New for 2018- Dx insertion probe: In addition to the ability to measure down to -40° C/F dew point, the Dx offers 3 additional important features:

1. **Built-in on-board temperature probe.** When configuring a system using the Dx, there is no need to add the external AT temperature probe. Temperature is already included! This saves money and complexity of the system. For process measurements, only one penetration is required to measure both temperature and dew point. Since the temperature probe is now at the point of the chilled mirror dew point measurement, you can be assured the temperature measurement is more representative than a remote mounted probe.
2. **Optional built-in on-board barometric pressure measurement.** Same benefit as listed above but in addition to dew point and pressure, now you can include barometric pressure! With the addition of pressure measurement, the hygrometer can be configured to read pressure, dew point, temperature and PPMv.
3. **Optional built-in on-board aspirator fan.** When sampling in zero flow situations such as ambient air measurements, glove box, or low flow ductwork- the aspirator fan circulates air from outside the probe to the chilled mirror sensor. Ensure reliable, accurate readings in zero flow (stagnant) air sampling situations.

Sampling Choices: When using the S-series sensors, the 1500AC can be configured for **positive pressure sampling or vacuum pump sampling**.

If you specify the cable mounted **DS2 or Dx probes**, sampling options include:

- Consider switching to the Dx sensor with on-board aspirator fan for stagnant air conditions
- Aspirator mount for the Dx: on-board fan circulates the sample to the sensor
- SC1 or SC sample head for the DS2 sensor: provides ¼ inch compression fitting ports
- SCx for the Dx probe: provides ¼ inch compression fittings.

It is recommended that when choosing an insertion probe Cm sensor, you go with the Dx sensor when specifying Aspirator, Sample Head, Air Temperature probe options. These options are built in on the Dx probe and external on the DS2. Some of these options can be specified on the DS2 but should only be used in former applications when you are repeating a past order.

Positive Pressure Sample Configuration: This configuration is generally specified with the S series sensors. Although the standard S series sensors are rated to measure sample gas pressures up to 300psig, the 1500AC is equipped with a flowmeter which is rated to 150 psig. So the maximum sample gas pressure rating for the 1500AC with local mounted s-series sensor is 150 psig.

If you choose the remote mount S- series sensor, then there is no flowmeter and the sensor follows its rating (300 psig standard, optional 900 psig).

Vacuum Pump Sample Configuration: If the sample gas is ambient pressure, then you can choose the vacuum pump option when using the S series sensors. In this case, sample is extracted from the measuring point across the sensor, enters the flowmeter and then goes to the vacuum port of the pump. The pump is mounted onto the flowmeter. When choosing the vacuum pump option, the flow meter is equipped with a valve for control of sample flow to the S- series sensor (approx. 2 scfh flow recommended).

The DS2 and the Dx sensor probes are always mounted remote and typically configured for diffusion sampling (No vacuum pump or not for extractive sampling). The standard pressure rating for the DS2 is 50 psig and the Dx is 10 psig.

Chemical Compatibility: Since the DS2 and S series sensors are constructed of aluminum, they are typically coupled with our STD (standard) chrome mirror. You can choose to have EHN (SS) or MAX (Platinum) mirrors. The Dx probe wetted portion is constructed of Delrin.

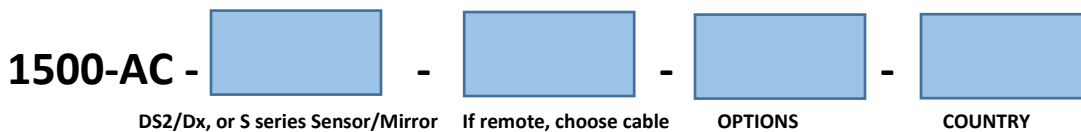
1500-AC VAC powered Dew Point System with supply voltage range of 90-260VAC; 47-400Hz. complete with: Measurements in °C or °F, 4-20mA or 0-5VDC outputs, Automatic Balance Control (ABC), power cord with case, N.I.S.T certified +/- 0.25°C accuracy, integral flow meter, black case, instruction manual and 1 year warranty.

Chilled Mirror sensor selection required

TO ORDER THE Model 1500-AC:

- a. Determine type of measurement: DewPoint, Relative Humidity, Pressure, Temperature. The AT temperature probe is required for Relative Humidity. If the sample pressure varies, you may want to consider the Pressure Transducer option that automatically converts Dew Point to PPMv (only available with the S series sensor).
 - b. Determine the range of measurement and type of sensor: two stage or three stage Chilled Mirror.
 - c. Determine mirror type, chrome is most common.
 - d. Your application determines whether to select local mounted sensor(s) or remote. The DS2 and Dx are only available remote mounted. S-series can be local or remote with cable (S sensor always provided w/ mounting plate).
 - e. For the S series sensors, determine if the sample gas is positive pressure or requires a vacuum pump.
1. Select Sensor Type- DS2 or Dx probes (remote mount) or S- series (remote or local mount).
Select Mirror Type: STD (Chrome standard), ENH (Stainless Steel), or MAX (Platinum)
 2. Select Cable Kit if **remote sensor**. **For S-series remote mounted sensor, you must always choose the RC cable; standard is 10 feet long (3m). For DS2 and Dx sensors a standard 10 foot long cable is already included in sensor price and configuration and no additional specifier is needed. If you need longer than 10' (3m), then you must specify RK# or RDX#:**
If choosing the DS2-Probe with longer cable: RK# where # = total length of cable in feet.
If choosing the Dx-Probe with longer cable: RDX# where # = total length of cable in feet
If choosing a remote s-series flow through sensor, then select **"RC"** if you want the sensor to be remote mounted on a cable (a mounting bracket is also included). **"RC#"** to be used for cables longer than 10' (3m) where # = total length of cable in feet.
 3. A. DS2 probe options: If you need special mounting considerations on the DS2 probe
 B. Select other Options such as temperature sensor, RS232 serial interface,...
 4. Select Country so that we can match up the proper power cord
 5. List as separate line items additional choices such as Accessories, Calibration Packages, and Ext Warranty.

Only list suffix if option or selection is needed (no blanks)



1500AC: VAC Powered, includes power cord **BASE PRICE, must add sensor & options.....\$3,003**

For Ex: **1500AC-Dx-ARX-USA** would be a 1500 VAC powered with Dx fan cooled CM sensor w/ chrome mirror, built-in air temperature probe, and built-in aspirator mount, for use in the USA. **\$3,003 + \$2,530 + \$231 = \$5,995.00**

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 S-Series sensors are equipped with a liquid chill port for the flow of chilled liquid to aid in cooling the TEC to allow for lower dewpoint measurement.
3. The Standard DS2-Probe features air convection heat exchange. The Dx-Probe features fan cooled air convection.
4. Addition of the Pressure transducer option to the S series configuration allows the 1500 to be configured to display PPMv, pressure and other psychrometric values (Gr/Lb, Gr/KG,...). You must specify units that you want displayed.
5. The standard maximum pressure rating of the DS2 probe is 50PSIG. Inquire for the special Hermetically sealed version that is rated up to 100 psig. The Dx is rated to 10 psig.

6. The standard S series sensors are rated to 300 psig. Adding the suffix "P" to the S series sensor modifies the sensor for special pressure rating of 900 psig – however this is valid for **remote mounted** S series sensors.

Chilled Mirror Dew Point Sensors for the Model 1500-AC

S-Type, Standard Duty		Description	Depression	Choose Mirror		
				Chrome	SS	Platinum
S2SC	Two Stage, Al Body, Fan Cooled, Flow Through Sampling		65°C	\$2,530.00	\$2,780.00	\$2,970.00
S3	Three Stage, Al Body, Fan Cooled, Flow Through Sampling		95°C ²	\$5,198.00	\$5,448.00	\$5,638.00
P	S2P or S3P: High Pressure option 900 PSIG		S2SC: Add \$275.00 S3: Add \$660			

1. Depression capability based on standard 25°C ambient conditions

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

Insertion Probe		Description	Depression	Choose Mirror		
				Chrome	SS	Platinum
DS2	2 Stage, Insertion Probe, Al Body, Convection Air Cooled, Diffusion Sampling; Includes 3m long sensor cable		50°C	\$1,840	\$2,090.00	\$2,280.00
Dx	2 Stage, Miniature Insertion Probe, 1.25 Male NPT, Integral Temperature Sensor, Delrin Body, Fan Cooled, Diffusion Sampling; Includes 3m long sensor cable		65°C	\$2,500.00	\$2,750.00	\$2,940.00

STEP 1: SELECT SENSOR MIRROR TYPE:

DS2 Insertion Probe

Dx Insertion Probe

S2SC fan or liquid cooled

S3 fan or liquid cooled
STEP 1 cont... SELECT MIRROR TYPE:

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

A Excellent
B Very Good
C Good

STEP 2: Choose Local or Remote Sensor (DS2 and Dx sensor probes always remote mounted):
NO DESIGNATION = LOCAL SENSOR MOUNTING (S-SERIES)- STANDARD CONFIGURATION

-RC2	Remote Mounting Kit S2-type Sensor 10' Cable, additional lengths add \$4/ foot	\$550.00
-RC3	Remote Mounting Kit S2SC or S3 Sensors 10' Cable, additional lengths add \$8 foot	\$550.00
-RK	Remote Mounting Kit D-type Sensor 10' Cable, additional lengths add \$4/ foot	\$550.00
-RDx	Remote Mounting Kit Dx type Sensor 10', additional lengths add \$8/ foot beyond 10'	\$550.00

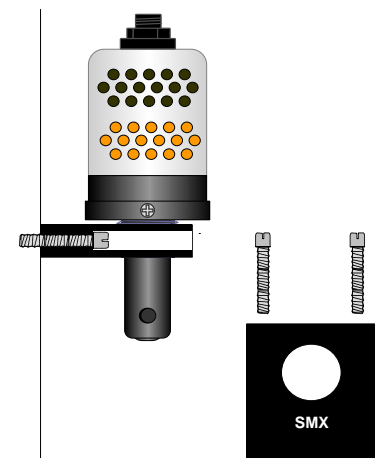
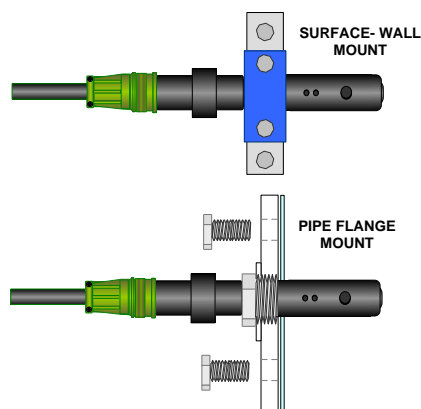
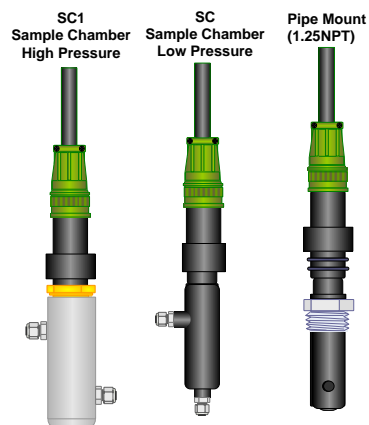
STEP 3A: Choose Special Sensor Options for DS2 or Dx Probes:

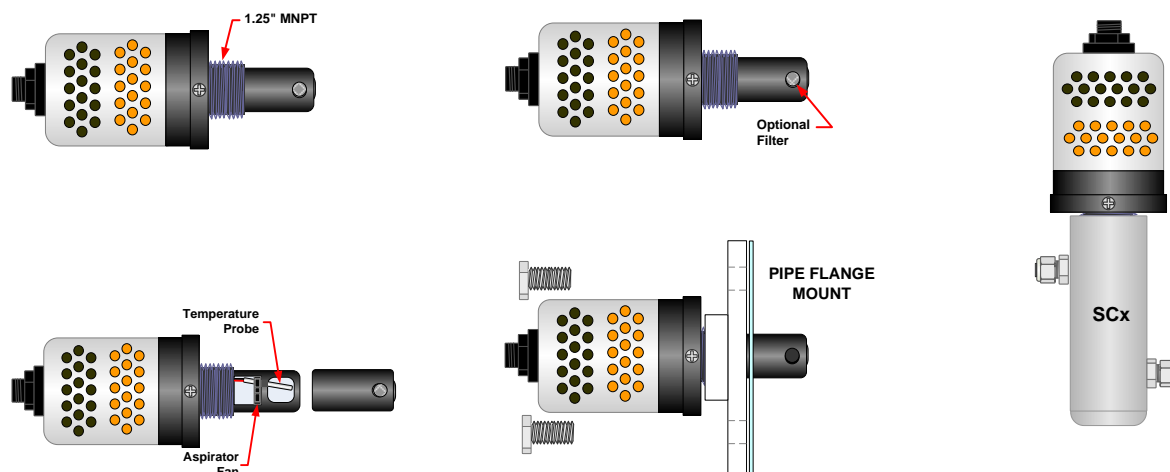
When Ordering the D-probe options, you can specify:

-AR	Aspirator Mount, this features a built-in aspirator to extract a gas sample from the surrounding area	\$ 468.00
-P	Pipe Mount, mounts to the D-Probe and allows 1.25inch Male NPT port on the probe	\$ 150.00
-FNG	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
-SM	Surface Wall Mount, The D-Probe is retained between two polypropylene blocks w/ bracket	\$ 99.00
-SC1	Sample Chamber High Pressure (up to 100psig), Permanently connected to probe	\$ 578.00
-SC	Sample Chamber Low Pressure, same as -SC1, not permanent but is Slip-On	\$ 358.00

When Ordering the Dx-probe options, you can specify:

-ARx	Aspirator Mount, this features a built-in aspirator to extract a gas sample from the surrounding area	\$ 199.00
-FNG	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
-SMx	Surface Wall Mount, The Dx Probe is retained between two polypropylene blocks w/ bracket	\$ 145.00
-FLT	On-Board Filter for the Dx probe, helps prevents contamination on mirror	\$ 150.00
-SCx	Sample Chamber for Dx sensor with 1/4" compression inlet/outlet gas flow ports	\$ 578.00




STEP 3B: Choose Options such as PRESSURE TRANSDUCER, AIR TEMPERATURE SENSOR,... :

-AT	Air temperature probe, stainless steel sheath with 10ft cable and connector (add \$5/ft for additional)	\$ 660.00
-PT	Pressure Transducer, 0 to 25PSIA or 0-150PSIA, or 0-300PSIA automatic pressure compensation (add \$4/ft for remote)	\$1,485.00
-RS	RS-232 Serial Interface	\$ 275.00
-VPAC	Integrated Vacuum Pump extracts gas sample	\$ 622.00
-SA/.1	0.1°C Special accuracy, traceable to NIST (Certified)	\$ 660.00
-SA/.15	0.15°C Special accuracy, traceable to NIST (Certified)	\$ 550.00

LIST ACCESSORIES / SPARE PARTS/ SPECIAL SERVICES AS SEPARATE LINE ITEMS:

511 SS Tag	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
FIL	Filter kit: includes 1/4T SS compressions fittings & additional elements; 0.1 micron particulate	\$ 165.00
DX	Filter Element Kit, Qty 3	\$ 83.00
SC/S	Screw On Replacement Sensor Cap for the S-Series	\$ 66.00
SC/O	Slide on replacement cover for the D-probe sensor	\$ 248.00

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

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