

APPLICATION NOTE

2015_06_16 PDM 75 Portable DewMaster Rev 4

Using the PDM-75 (Portable DewMaster) Chilled Mirror Hygrometer

The Model PDM-75 is an acronym for “Portable DewMaster”. It is a portable, multi-function, optical chilled mirror hygrometer designed to accurately measure the moisture content in gases. It offers precision dew point measurement in a robust, transportable carrying case. The PDM-75 uses the chilled mirror (CM) dew point temperature condensation principle to determine the water vapor concentration in gas mixtures, and a precision platinum resistance thermometer to measure the mirror temperature.

The CM uses a thermo-electric device to control the temperature of the mirror in determining dew point. Since it is a direct measurement of dew point and thus a Primary Standard Measurement Technique. The PDM-75 is highly regarded by calibration technicians and manufacturing facilities for its portability, accuracy, quick dry down, fast response in detecting upset conditions and long life characteristics.



The PDM-75 may be fitted with a precision air temperature sensor (needed to determine RH), pressure transducer, and a wide range of either local or remote chilled mirror sensors.

Two main types of chilled mirror sensors are available for the PDM-75: the remote mounted D-Probe featuring a two stage air cooled chilled mirror or the S-Series sensor- available in both local and remote mount configurations. Depending on the desired measurement range, the S-Series sensor is available in Two or Three stage chilled mirror configurations. To accommodate different cooling thresholds, the S-Series sensor may be air cooled, fan cooled or liquid cooled. In contrast, the D-Probe is only available as a Two-Stage chilled mirror. But since it is configured as a probe, it may be used in a wide array of applications including ambient air monitoring, insertion into glove boxes, HVAC ducts, environmental test chambers, circulation pipes, refrigerated storage rooms, engine test filter rooms,...

APPLICATIONS

Troubleshooting Dryer Systems

Diffusion Furnaces

Product Drying Chambers

Environmental Testing

Food Packaging

Medical Packaging

Heat Treat/ Annealing Ovens

Chemical Reactors

Data Center Air Makeup

Fuel Cell Testing

Compressed Air Systems

Pharmaceutical Powder Drying

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The PDM-75 offers many standard features including:

- PRIMARY STANDARD MEASUREMENT: Chilled Mirror measurement technique
- NIST Traceable calibration certificate
- Automatic Balance Cycle (ABC) automatically re-standardizes and corrects for contaminants
- Programmable Balance Cycle: ABC at programmed intervals or MABC (Manual ABC)
- Real Time Clock with date
- Two selectable Analog Outputs (4-20 mA , 0-20 mA, 0-5 VDC, 0-10 VDC scaleable)
- RS-232 Serial Interface
- Two programmable electrically isolated alarm relays
- Integral Flowmeter for control and viewing sample flow
- Universal VAC Power Input

To best serve your application requirements, the PDM-75 sensor may be ordered in a variety of mirror configurations:

Chilled Mirror Compatibility Chart

Applications CM Configuration	General Purpose Gases	Acids	Caustics	Salts	Organics	Nuclear Application	High Temperature
Chrome Plated Copper	A	D	D	C	C	D	C
316 Stainless Steel	A	B	B	B	B	C	B
Platinum	A	A	A	A	A	A	A
Teflon Coated Chamber	A	A	A	A	A	D	D
High Pressure Chamber	A	NR	NR	NR	NR	NR	A

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

BENEFITS of the Edgetech Instruments PDM-75:

- Portable unit great for troubleshooting and convenient measurements
- The CM Sensor is a direct, Primary Standard measurement method, **NIST traceable**
- **Improve** your quality control: Excellent Precision and Stability
- **Reduce Maintenance Costs:** Chilled Mirror is robust, long Life with no moving parts
- Rapid dry-down time in comparison to other technologies
- **Eliminate Scrap or Lost Time:** Fast response in responding to upset process conditions.

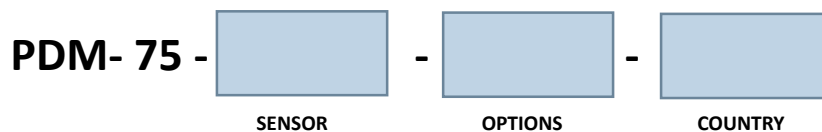
Sensor Notes/ Sampling Configuration Options

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- The D-probe is mounted (*remote*) tethered on a signal cable.
- The S-series sensor can be mounted either local at the PDM-75 or remote tethered.
- The standard D-Probe is configured for diffusion sampling.
- To measure an extracted flow of sample gas with the D-Probe, the optional flow through cover (SC) or the Sample Chamber (SC1) may be installed (includes fittings).
- A precision air temperature probe is optional. Temperature can be used to calculate and display Relative Humidity.
- The VP vacuum pump option may be used to extract a gas sample from the measurement point and direct it through the sensor. Ideal flow is 1-2 SCFH
- An optional chiller may be used to obtain temperature depressions greater than 95C when using the S-series sensors. Chiller liquid ports are provided on all chilled mirror sensors.
- Optional Pressure transducers may be specified to determine sample pressure and Psychometric calculations.

TO ORDER:

1. Determine type of measurement: DewPoint, Relative Humidity, Pressure, Temperature. If you need to measure RH, then you also need to include the temperature probe.
2. Determine the range of measurement and type of sensor: D-Probe or S-Series.
3. Your application determines whether to select local mounted sensor(s) or remote.
4. **Select Sensor Type** This includes either D series or S series and mirror type
5. **Select Options** such as temperature sensor, Pressure Transducer, PPMv measurement,..
6. **Select Country/ Voltage**
7. **List as separate line items additional choices such as Accessories, Calibration Packages, and Extended Warranty.**



Accessories, Spare parts, and services are ordered as separate line items

To determine total Price: Base Unit + Sensor Type + Options + Accessories + Spares + Services = Total Price

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FIRST choose the Sensor Type:

CM Sensors	Description	Stages TEC	TEC Cooling	Notes	Depression
DS2	Probe Style	2	Air Cooled	Chrome Pltd Mirror	60C
DS2SS	Probe Style	2	Air Cooled	316 SS Mirror	60C
DS2PT	Probe Style	2	Air Cooled	Platinum mirror	60C
S2	Flow-thru (upto 300 psig)	2	Air Cooled	Chrome Pltd Mirror	60C
S2P	FT- Hi Press(upto 900 psig)	2	Air Cooled	Chrome Pltd Mirror	60C
S2PT	Flow-thru (upto 300 psig)	2	Air Cooled	Platinum mirror	60C
S2SS	Flow Thru (upto 300 psig)	2	Air Cooled	316 SS Mirror	60C
S2T	Flow-thru (upto 300 psig)	2	Air Cooled	TF coated chamber	60T
S2SC	Flow-thru (upto 300 psig)	2	Fan Cooled	Chrome Pltd Mirror	65C
S2SCP	Flow-thru (upto 900 psig)	2	Fan Cooled	Chrome Pltd Mirror	65C
S2SCPT	Flow-thru (upto 300 psig)	2	Fan Cooled	Platinum mirror	65C
S2SCSS	Flow-thru (upto 300 psig)	2	Fan Cooled	316 SS Mirror	65c
S2SCT	Flow-thru (upto 300 psig)	2	Fan Cooled	TF coated chamber	65C
S3	Flow-thru (upto 300 psig)	3	Fan Cooled	Chrome Pltd Mirror	95C
S3T	Flow-thru (upto 300 psig)	3	Fan Cooled	TF coated chamber	95C
S3P	Flow-thru (upto 900 psig)	3	Fan Cooled	Chrome Pltd Mirror	95C
S3SS	Flow-thru (upto 300 psig)	2	Fan Cooled	316 SS Mirror	65c
S3PT	Flow-thru (upto 300 psig)	3	Fan Cooled	Platinum mirror	95C

SECOND choose Options:

OPTIONS	DESCRIPTION
-ATDM	Air Temperature Probe, SS sheath with 10 foot cable and connector
-PTDM	Pressure Transducer, 0 to 25 PSIA or 0 to 150PSIA, or 0-300PSIA
-VP	Vacuum Pump for sample extraction
-PPM	PPMv measurement at fixed pressure configuration
-RC	Remote Mounting Kit w/ 10 foot cable (3M) S type sensor
-RK	Remote Mounting Kit w/ 10 foot cable (3M) D type sensor
-SA/ 0.1	0.1°C Special Accuracy, NIST Traceable (certified)
-SA/ 0.15	0.15°C Special Accuracy, NIST Traceable (certified)

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THIRD Identify your Country and VAC voltage/ cycles; for example 230VAC/ 50Hz France

LIST ACCESSORIES OR SPARE PARTS AS A SEPARATE LINE ITEMS:

ACCESSORIES/ SPARE PARTS	DESCRIPTION
-FIL	Filter Kit: includes fittings and spare elements; rated for 0.1 micron
-DX	Box of spare filter elements - QTY 3
-MN	Spare Printed Manual
-SC/D	Sensor Assembly Cover for the D-Series Sensor
-SC/S	Sensor Assembly Cap for the S-Series Sensor

BUY SERVICES NOW AND SAVE MONEY! PLEASE LIST AS SEPARATE LINE ITEMS:

SERVICES	DESCRIPTION
-3 EXTW	*3 year Extended Warranty includes any repairs covered in the warranty statement
-3 YNIST1P	**3 year DewPoint NIST Traceable Calibrations 1 point (buy 2 get 3 rd free)
-3 YNIST2PT	**3 year NIST 2-point Traceable Calibrations (buy 2 get 3 rd free)

*3 year extended warranty is limited and covers normal use of product as intended and described in the manual. It does not cover improper use or damaged products.

** 3 year NIST Traceable Calibrations covers calibration of normal operating, un-damaged units



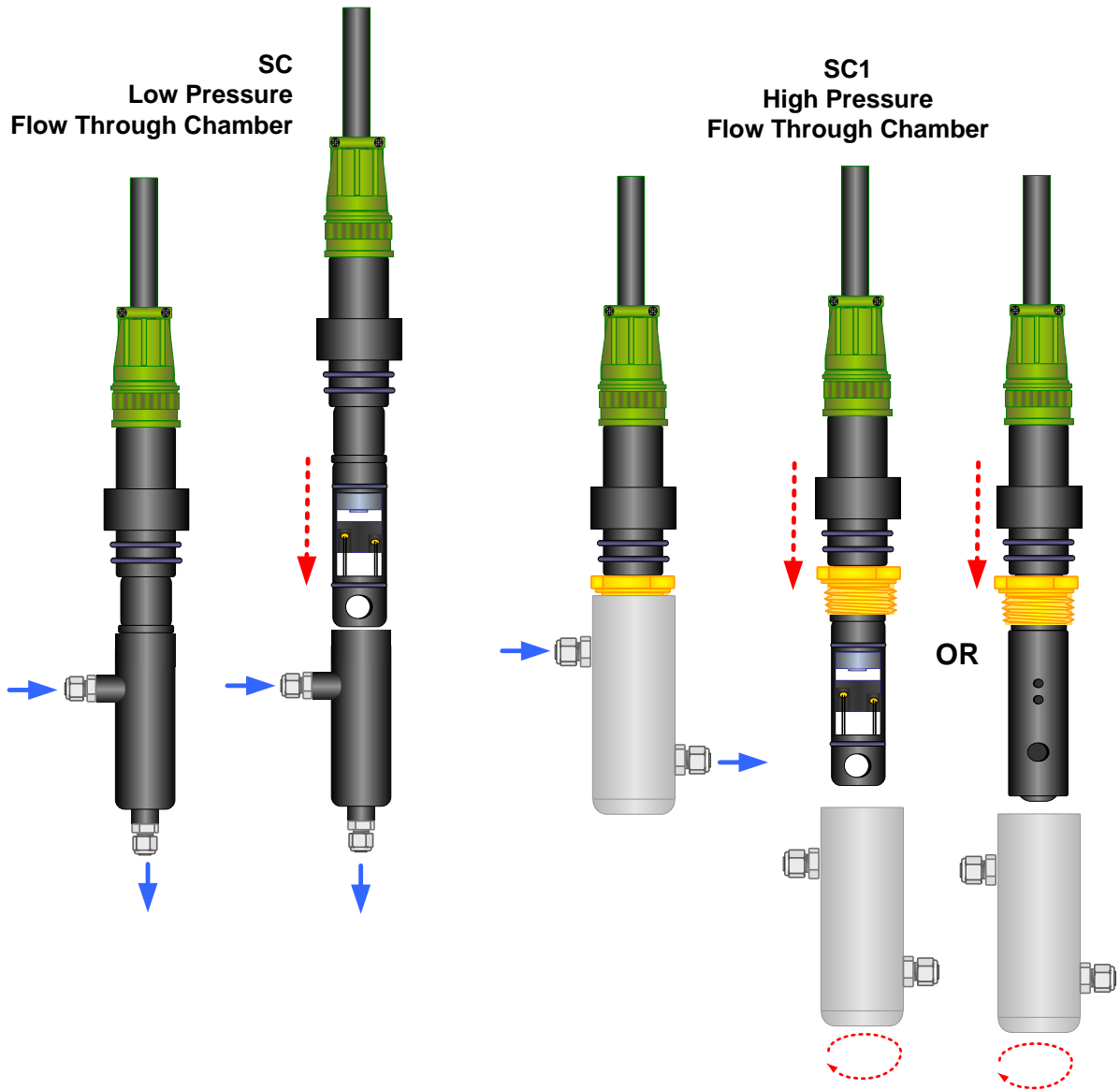
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Flow Through Sampling with D-Probe and SC or SC1



**Insert the Probes close to the measuring point
and monitor remotely!**

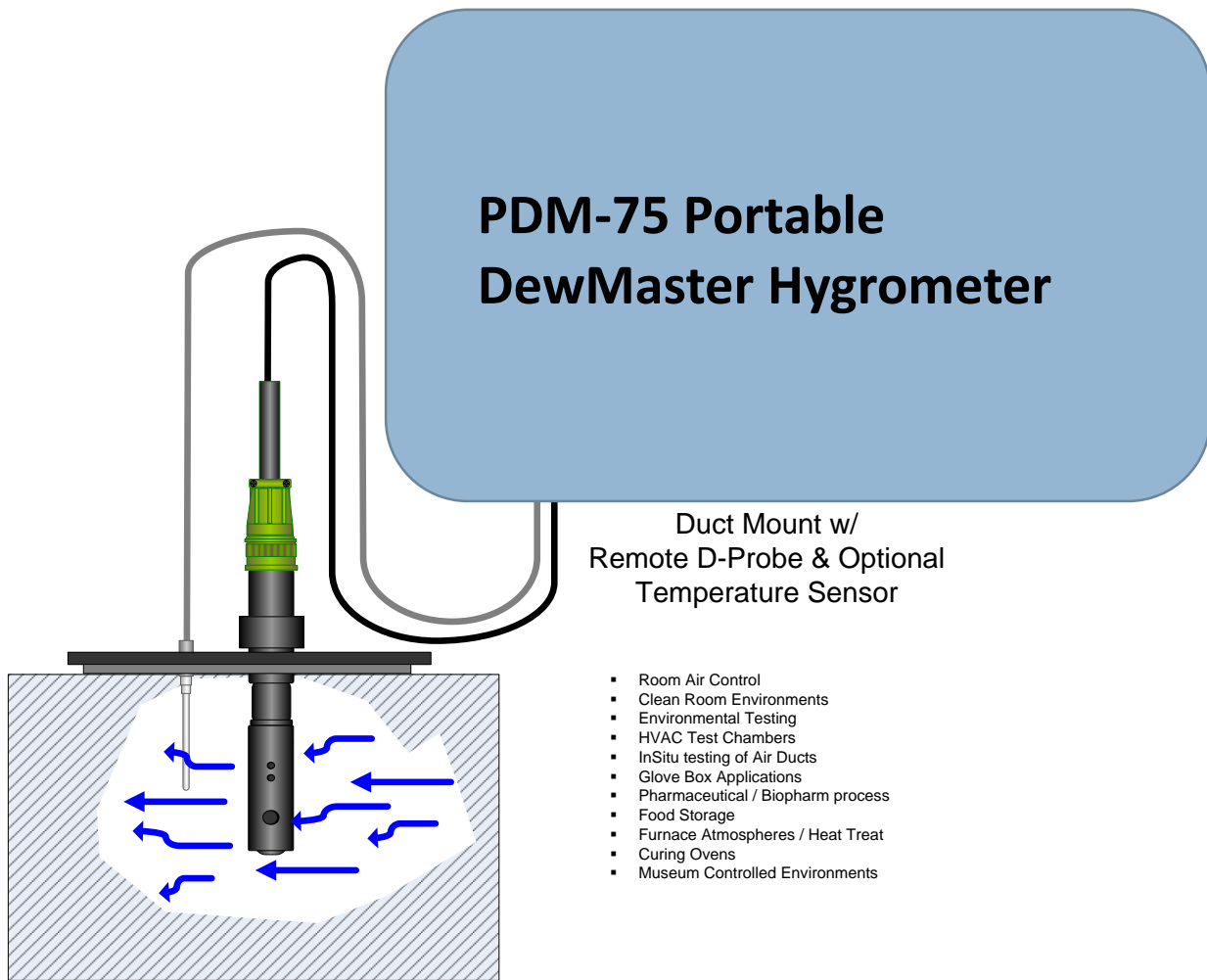
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DUCT Mount D-Series remote sensor probe



Convenient Gasket Sealed Mounting Plate for use with the D-Probe!

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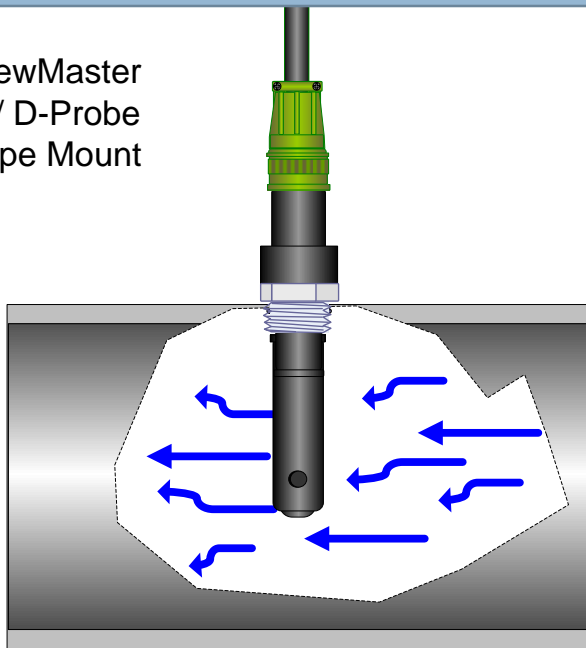
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Other variations of the D-Series remote sensor probe (cont)

PDM-75 Portable DewMaster Hygrometer

DewMaster
w/ D-Probe
Pipe Mount



Standard Configuration of D-Probe Pipe mount rated to 100 psig Max.

In High Pressure applications, pressure may also have to be measured for accurate Dew Point measurements. (1.25 inch male NPT threaded penetration

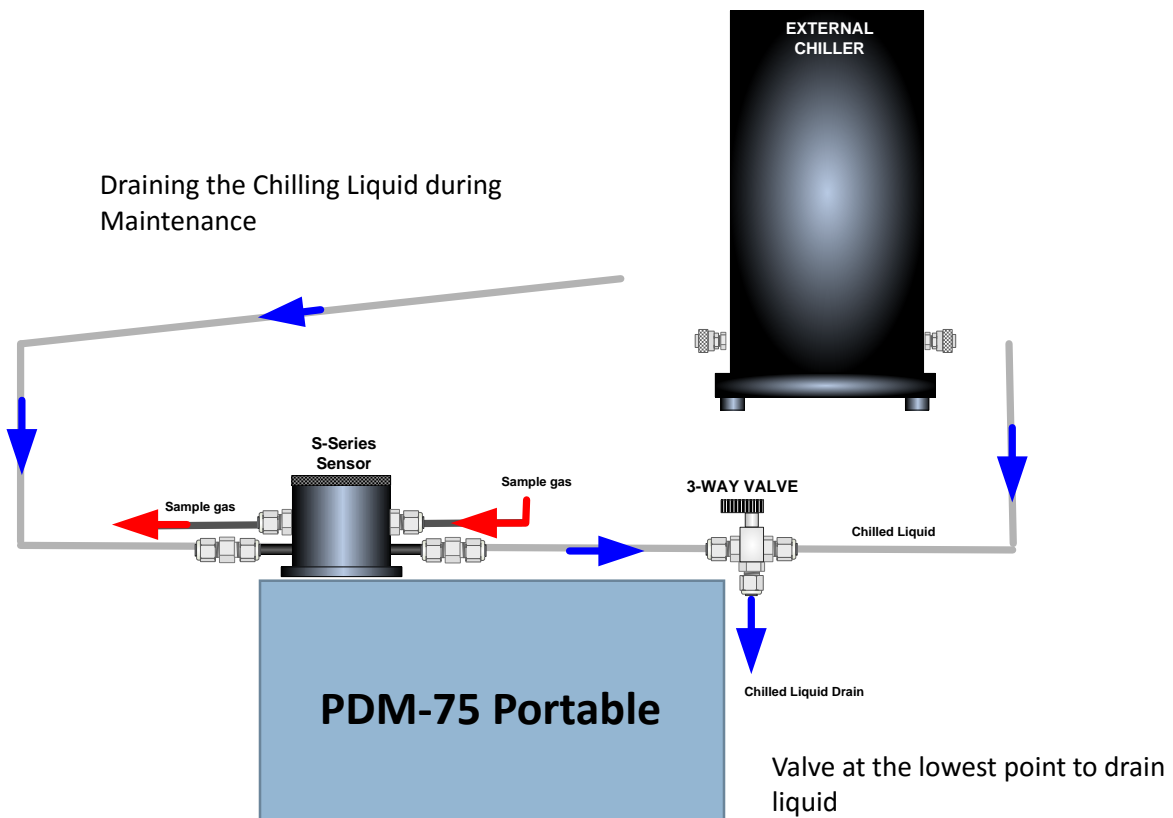
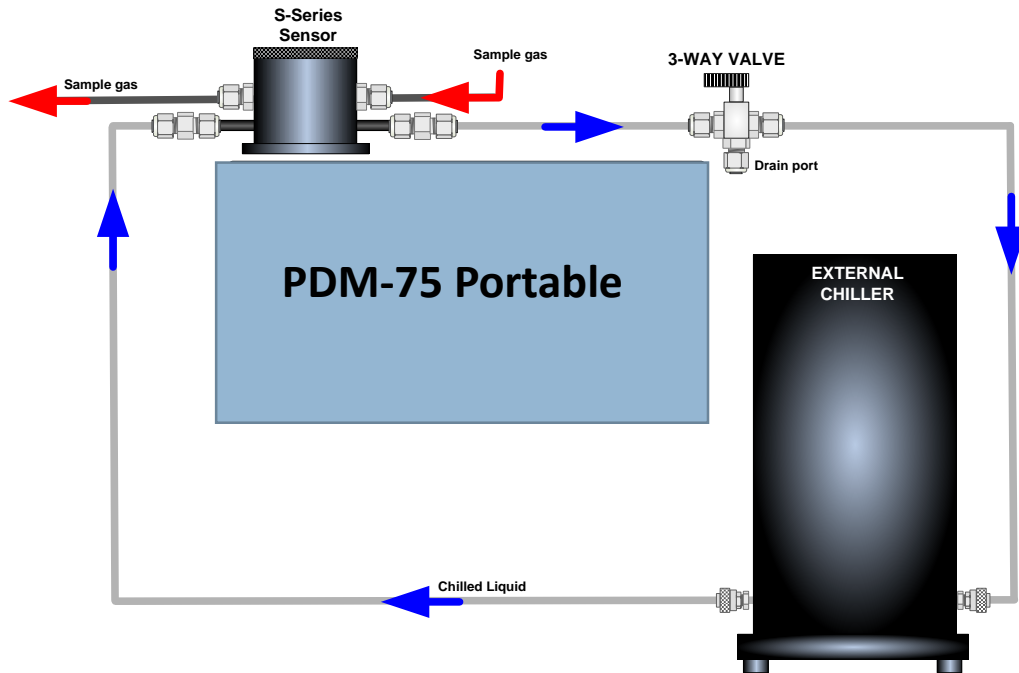
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Using an external Chiller to acquire lower dew point measurements



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