MODEL DPS2

Heated Dew Point Measuring System

OPERATOR MANUAL

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Edgetech Instruments

DPS2 Heated Measuring System

QUICK STARTUP GUIDE

STARTUP

1. Mount the DPS2 to a convenient vertical surface.
2. Bring the heated sample line into the unit through the opening on the bottom right side.
3. Connect the sample line to the fitting inside the hinged front cover. Do not connect sample gas source at this time.
4. See Section 4.2, Wiring Connections, as follows:
5. Connect the Analog Output, Alarm Relay, and other desired signal wiring through the center wiring feed-through on the bottom of the unit.
6. Route the AC power line through the bottom left feed-through, and connect it to the main terminal strip inside the front cover.
7. With AC power source OFF, connect the input end of the power wiring to a properly fused source of AC power.
8. Apply AC power. Instrument will go through the ABC cycle, and will then be ready to measure dew point.
9. Set the DPS2 temperature setting to be at least 10ºC above the highest dew point to be measured. **Caution: 110ºC Max.** Allow adequate time for system temperature to equilibrate before connecting the gas source.
10. Connect the input end of the heated sample line to the gas source to be measured. **Important:** Ensure that there are no unheated sample line components upstream of the DPS2. See Section 3.2.
11. The DPS2 should come into control on the dew point, providing continuous readings and tracking the dew point if it changes.

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3.0 INTRODUCTION

3.1 General Description

The Edgetech Instruments Model DPS2 (Figure 3-1) is an integrated system including a microprocessor-based instrument, chilled mirror dew point sensor, sample flow meter and valve, and associated tubing and fittings; all contained within a heated, temperature controlled NEMA 4 enclosure. The wall mount enclosure is easily mounted to any vertical surface.

The system includes:

- An eight-digit, alphanumeric LED display to report the dew point and system status.
- Heated enclosure with LED display and temperature controller.
- Periodic sensor balance check.
- Programmable Alarm Set Point with visual and contact closure alarm indications.
- One 4 to 20mA analog output. Other outputs may be selected.
- One 3 ft. (0.9 meter) heated sample hose.

3.2 The Purpose of a Heated System

When the dew point temperatures to be measured by a sensor are higher than the ambient temperatures outside the sensor, a condition of saturation, or 100% relative humidity, will occur inside the sensor and the rest of the measuring system. Liquid water in the system will be the result. Under these conditions, no reliable dew point measurements can be expected. The solution to this problem is to heat all of the interior surfaces of the dew point sensor and the rest of the sampling system upstream of the sensor so that they are always above the ambient temperature outside the system.

The DPS2 has been developed to solve this measuring problem. The sensor can be heated and controlled so that its interior surface temperature is always above that of the dew point to be measured. In addition, the heated sample hose will also be maintained above the dew point temperature of the sample gas.

AN IMPORTANT NOTE:
It is the responsibility of the operator to ensure that every surface upstream of the sensor that will be exposed to the sample gas to be measured is heated at least 10ºC above the maximum dew point. This includes, for example, any additional filters, flowmeters, tubing, valves, etc. that are not inside the heated enclosure. Heater tape is available from other sources for this purpose. It is not necessary to heat the portion of the sampling system that is located downstream

of the sensor, but liquid condensate should be allowed to escape. In general, a short length of tubing connected to the gas outlet fitting on the right side of the DPS2 housing will suffice.

Figure 3-1 The DPS2 Heated Dew Point System

3.3 Available Options

Factory Options include

- Platinum Mirror Surface
- 115 VAC or 220 VAC
- Pressure Transducer Kit
- RS-232C Digital Output
- One or Two Stage Sensor
- Enhanced Dew Point Accuracy

Consult Edgetech Instruments for further information on these and other options.

4 INSTALLATION

4.1 Mounting

The EdgeTech Instruments DPS2 can be installed on any flat vertical surface with four ¼ inch dia. screws. Mounting hole-center dimensions are 14-1/2 (H) X 10-1/4 (W) inches [36.8 (H) X 26 (W) cm].

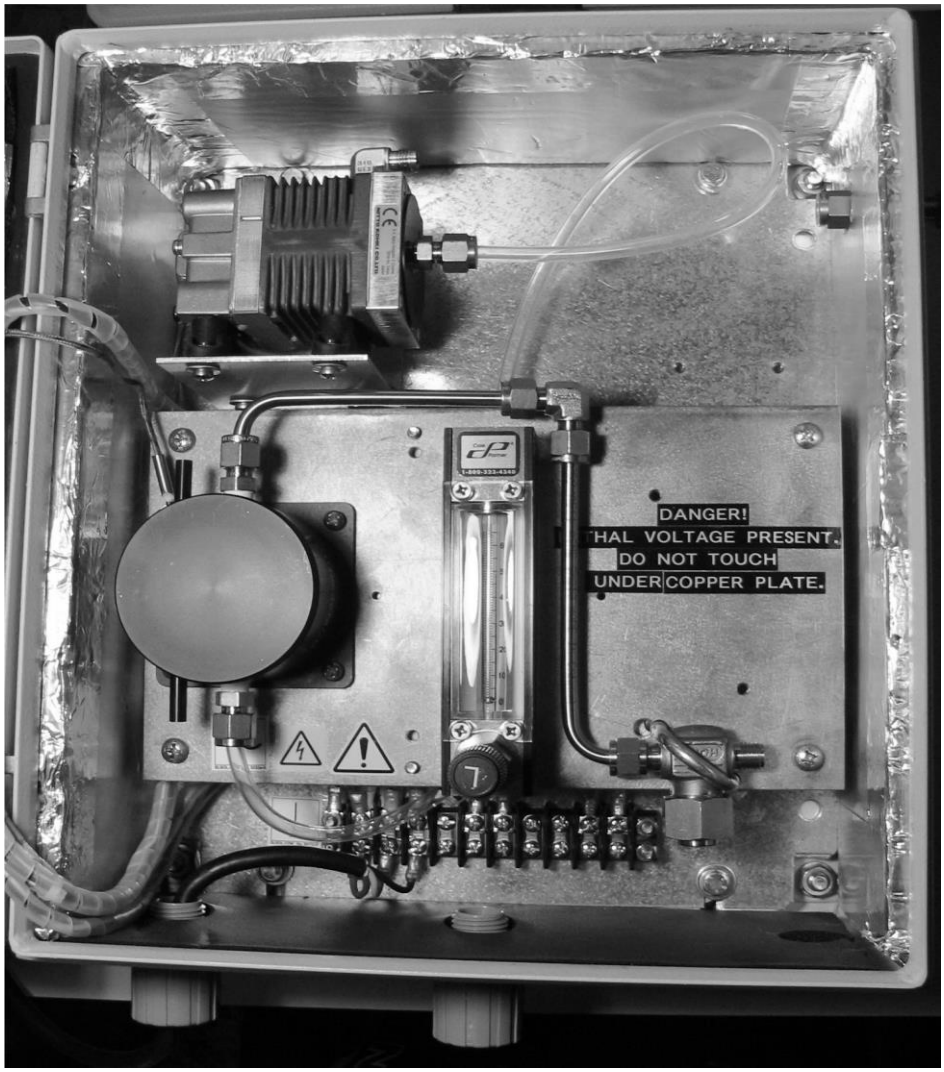


Figure 4-1 Heated Interior

Figure 4-1 above shows the heated housing with the dew point sensor, flow meter with flow control valve, and vacuum pump. The main terminal strip can be seen at the bottom. The Heated Sample Line should be inserted in the opening at the bottom right. The center opening is for the terminal strip signals, and the opening at the left is for the 115 VAC or 220 VAC power line.

4.2 Wiring Connections

The DPS2 is designed to operate on AC voltages of 90 to 260 VAC with a maximum power requirement of 250 watts.

Note: Units are factory wired for either a nominal 115 VAC or 220 VAC. Damage may result if 220 VAC is connected to an instrument wired for 115 VAC. Consult the factory if you are unsure.

Wiring connections are made to the terminal strip inside the hinged cover of the metal housing. See Figures 4-1 and 4-2.

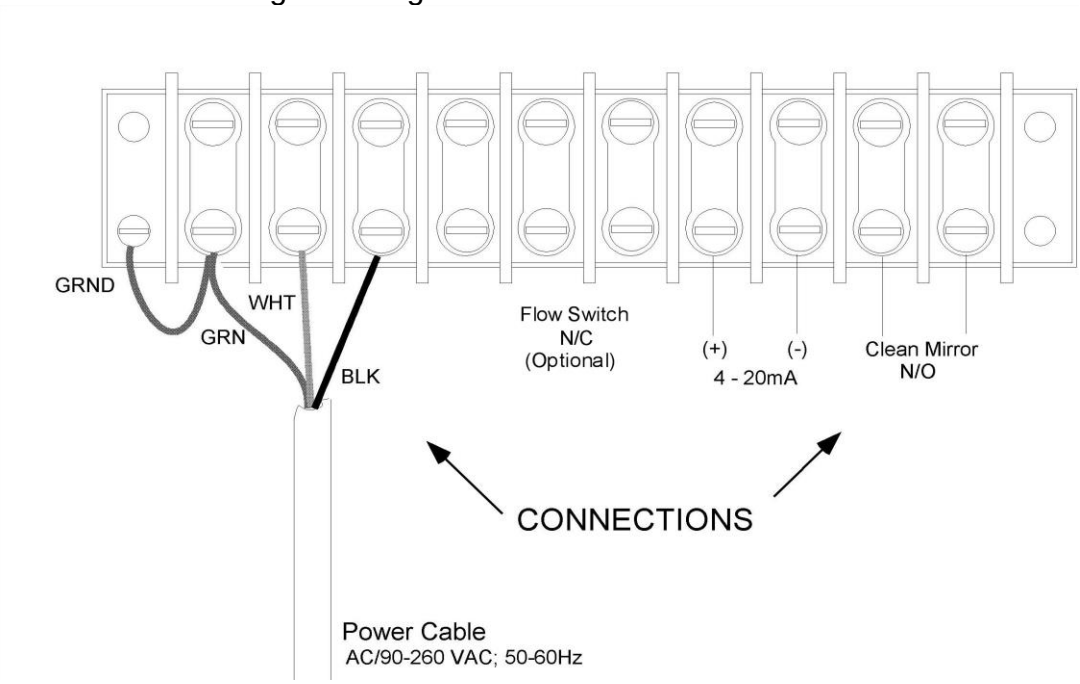


Figure 4-2 Terminal Strip Wiring

4.3 Sample Connections

The sample may be brought to the instrument with ¼ inch stainless steel, or plastic (non-hygroscopic) tubing and terminated in a ¼ inch female compression fitting. A heated 3 foot length of tubing is supplied. Consult the Factory for longer lengths. Note that any sample line upstream of the dew point sensor **must** be heated.

Note: The maximum inlet pressure is 150 PSIG.

4.4 Removing the Electronics Housing Cover

To gain access to the main electronics circuit board and the terminals mounted there, remove the 6 screws holding the molded plastic cover. Lift the cover straight up, and rotate it to the left. Do not put undue strain on the electronic wiring connected to the cover.

4.5 Alarm Relay Connections

The Alarm Relay terminal strip (P2) is located at the bottom of the printed circuit board. When the programmed Alarm Set Point conditions are met, the alarm relay will be energized. Before connecting any device to the Alarm Relay contacts, check the contact ratings in the Specifications section.

See Figure 4–3. Connect one of the Alarm Relay signal wires to the C (Common) terminal, and the other wire to either the NO (Normally Open) or the NC (Normally Closed) terminal. Depending upon the choice of the installer, when the measured dew point exceeds the set point, the relay contacts will either close or open.

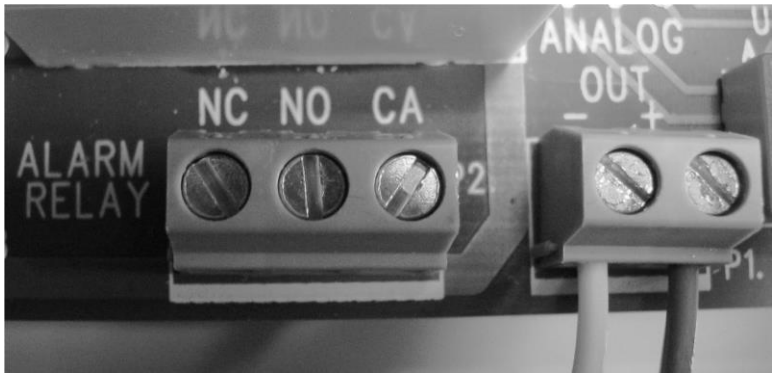


Figure 4-3. Alarm and Analog connections

4.6 Analog Output Connections

Refer again to Figure 4–3. The 4 to 20 mA Analog Output at the PCB connector P1 is factory wired to the main terminal strip shown in Figure 4-2 above. Wiring connections should be made there for operation of data loggers, A/D converters, analog recorders, etc. The standard dew point range for the Analog Output is shown in the Specifications section.

5 FUNCTIONAL DESCRIPTION

5.1 Front Panel

The DPS2 Front Panel includes a Digital Display, a Display switch, and a switch labeled MABC (Manual Automatic Balance Cycle).

5.1.1 Display

The eight character LED display is used to display the dew point data and status messages.
Dew point data is displayed as “DP 34.8 C”, with the units user-selected in degrees C or F. (See the System Setup section.)
When a status message is necessary, the display will alternate between the data and the message at approximately 2 second intervals.

The possible status messages and the meanings are:

“ABC CYCL”: Indicates that an Automatic Balance Cycle is in progress.

During an ABC Cycle:

- The mirror is heated above the ambient temperature for a period of 1 to 3 minutes as determined by the last measured dew point.
- After sufficient time has elapsed to ensure that the mirror is dry, the reflected light level if the mirror is measured and, if necessary, adjusted to the reference level.
- After the adjustment is made, the instrument will begin cooling and seeking the dew point. When a stable lock on the dew point is achieved, the “ABC CYCL” message will disappear, and normal operation will resume.
- The analog output is held to the dew point value *just before* the cycle started until the completion of the ABC cycle, and then the real time dew point is once again displayed.
- If an alarm condition is present when the ABC cycle begins, the ALARM display is disabled, but the Alarm Relay remains energized.

“ALARM”: Indicates that the Alarm Set Point has been exceeded. The Alarm Relay will be energized.

“CLN MIRR”: During an ABC Cycle, the condition of the sensor mirror and the optics are analyzed and a correction is made for changes in the reflectivity since the last cycle. If the mirror reflectivity has *decreased* beyond the automatic correction range, this message will appear at the end of the ABC cycle and indicates that the sensor mirror needs a manual cleaning. The Clean Mirror Alarm relay will also be energized at this time. Perform the “Mirror Cleaning Procedure” in the Maintenance section.

Note: The instrument may *appear* to operate normally with this message present, but the data should not be relied upon until the appropriate maintenance is performed.

"CHK SNSR": If, during the ABC Cycle, the reflectivity has *increased* significantly due to excessive drift of the optics, or abnormal circuit performance, this message will appear. To determine the cause, take the following steps.

- Check for loose connections or components on the printed circuit board and sensor.
- Clean the mirror.
- Initiate a MABC Cycle.
- Check the sample system for proper flow.

Note: If the condition cannot be resolved, contact EdgeTech for service.

5.1.2 MABC Button

Pressing the MABC Button (**M**anual **A**utomatic **B**alance **C**ycle) at any time will initiate an ABC Cycle.

Clean Mirror Relay Output

The Clean Mirror Relay is a Normally Open (NO) relay that is energized whenever maintenance to the mirror is required. The connections are located on the main terminal strip shown in Figure 4-2. During an ABC Cycle, all alarm functions, including the relay, are disabled. However, if an ABC Cycle is initiated when an alarm condition is present, the relay will remain energized until the cycle is complete. At the end of the cycle the relay will remain energized if the clean mirror condition is still present or will be de-energized if the condition has passed. Before connecting any device to the Clean Mirror Relay contacts, check the contact ratings in the Specifications section.

5.1.3 Flow Control Valve

The sample flow rate is adjusted using this flowmeter, which is shown in Figure 4-1. Although the sample flow rate is not critical for proper operation, the recommended rate is 1 – 2 SCFH (**S**tandard **C**ubic **F**eet per **H**our) (0.5 – 1 liter per minute).

5.1.4 Alarm Relay Output

The Alarm Relay is a SPDT (Form C) relay that is energized whenever the measured dew point exceeds the Alarm Set Point. During an ABC Cycle, all alarm functions, including the relay, are disabled. However, if an ABC Cycle is initiated when an alarm condition is present, the relay will remain energized until the cycle is complete. At the end of the cycle the relay will

remain energized if the alarm condition is still present or will be de-energized if the condition has passed.

5.1.5 Analog Output

The Analog Output is a 4 to 20mA output, proportional to the measured dew point, and scaled at the factory for -50 to 125ºC (-58 to 257ºF). During an ABC Cycle, the output is held at the most recent dew point until the cycle is completed. Other analog outputs may be selected by the user. These include 0 to 20mA, 0 to 24mA, and 0 to 5 VDC. See Section 6 for details.

5.1.6 Temperature Controller

This system includes a user programmable temperature controller. It is necessary to maintain the dew point sensor and associated hardware at an elevated temperature when measuring dew points that are near or above ambient temperature, to avoid condensation within the system.

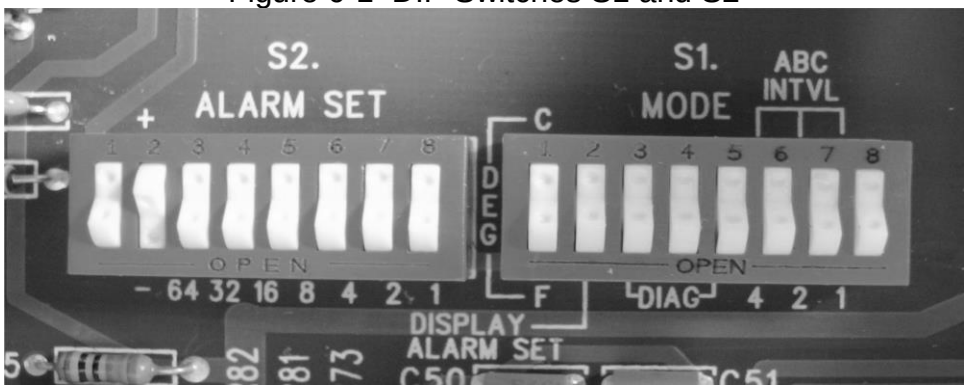
NOTE: TO AVOID DAMAGE, THE TEMPERATURE CONTROLLER SHOULD NEVER BE SET ABOVE 110ºC.

6.0 SYSTEM SETUP

6.1 Alarm Set Point

See Figure 6-1. The Alarm Set Point temperature is set by DIP switch S2 as an integer. The switch setting represents an eight bit binary number in degrees C, with position 8 as the least significant bit (LSB) and position 2 as the most significant bit (MSB). Position 1 is the sign bit. An *open* switch is a '1' and a *closed* switch is a '0'. If the desired set point is in degrees F, convert it to Celsius using Table 6-1a or 6-1b before proceeding.

Figure 6-1 DIP Switches S1 and S2



Set the switches as follows:

1. Convert the desired set point temperature from degrees C to its eight bit binary equivalent code, using Table 6-1a or 6-1b.
2. Set S1-1 'closed' and S1-2 'open'. The alarm temperature setting will be displayed in degrees C.

Note: S1-1 determines whether C or F is displayed in both the measurement and alarm set modes. S1-2 will switch the display between the dew point and the alarm setting.

3. Set S2, positions 1 through 8 according to the eight bit binary number determined in Step 1 above. A '1' is open and a '0' is closed.
4. The display should now read the set point temperature in degrees Celsius.
5. If Fahrenheit units are desired, set S1-1 to 'open'.
6. Return to dew point display by setting S1-2 'closed'.

C	F	BINARY		C	F	BINARY
-50.0	-58.0	10110010		0.0	32.0	00000000
-49.0	-56.0	10110001		1.0	33.0	00000001
-48.0	-54.0	10110000		2.0	35.0	00000010
-47.0	-52.0	10101111		3.0	37.0	00000011
-46.0	-50.0	10101110		4.0	39.0	00000100
-45.0	-49.0	10101101		5.0	41.0	00000101
-44.0	-47.0	10101100		6.0	42.0	00000110
-43.0	-45.0	10101011		7.0	44.0	00000111
-42.0	-43.0	10101010		8.0	46.0	00001000
-41.0	-41.0	10101001		9.0	48.0	00001001
-40.0	-40.0	10101000		10.0	50.0	00001010
-39.0	-38.0	10100111		11.0	51.0	00001011
-38.0	-36.0	10100110		12.0	53.0	00001100
-37.0	-34.0	10100101		13.0	55.0	00001101
-36.0	-32.0	10100100		14.0	57.0	00001110
-35.0	-31.0	10100011		15.0	59.0	00001111
-34.0	-29.0	10100010		16.0	60.0	00010000
-33.0	-27.0	10100001		17.0	62.0	00010001
-32.0	-25.0	10100000		18.0	64.0	00010010
-31.0	-23.0	10011111		19.0	66.0	00010011
-30.0	-22.0	10011110		20.0	68.0	00010100
-29.0	-20.0	10011101		21.0	69.0	00010101
-28.0	-18.0	10011100		22.0	71.0	00010110
-27.0	-16.0	10011011		23.0	73.0	00010111
-26.0	-14.0	10011010		24.0	75.0	00011000
-25.0	-13.0	10011001		25.0	77.0	00011001
-24.0	-11.0	10011000		26.0	78.0	00011010
-23.0	-9.0	10010111		27.0	80.0	00011011
-22.0	-7.0	10010110		28.0	82.0	00011100
-21.0	-5.0	10010101		29.0	84.0	00011101
-20.0	-4.0	10010100		30.0	86.0	00011110
-19.0	-2.0	10010011		31.0	87.0	00011111
-18.0	0.0	10010010		32.0	89.0	00100000
-17.0	1.0	10010001		33.0	91.0	00100001
-16.0	3.0	10010000		34.0	93.0	00100010
-15.0	5.0	10001111		35.0	95.0	00100011
-14.0	6.0	10001110		36.0	96.0	00100100
-13.0	8.0	10001101		37.0	98.0	00100101
-12.0	10.0	10001100		38.0	100.0	00100110
-11.0	12.0	10001011		39.0	102.0	00100111
-10.0	14.0	10001010		40.0	104.0	00101000
-9.0	15.0	10001001		41.0	105.0	00101001
-8.0	17.0	10001000		42.0	107.0	00101010
-7.0	19.0	10000111		43.0	109.0	00101011
-6.0	21.0	10000110		44.0	111.0	00101100
-5.0	23.0	10000101		45.0	113.0	00101101
-4.0	24.0	10000100		46.0	114.0	00101110
-3.0	26.0	10000011		47.0	116.0	00101111
-2.0	28.0	10000010		48.0	118.0	00110000
-1.0	30.0	10000001		49.0	120.0	00110001
0.0	32.0	00000000		50.0	122.0	00110010

Table 6-1a
Alarm Relay Setup

C	F	BINARY		C	F	BINARY
51.0	123.0	10110011		81.0	177.0	01010001
52.0	125.0	10110100		82.0	179.0	01010010
53.0	127.0	10110101		83.0	181.0	01010011
54.0	129.0	10110110		84.0	183.0	01010100
55.0	131.0	10110111		85.0	185.0	01010101
56.0	132.0	10111000		86.0	186.0	01010110
57.0	134.0	10111001		87.0	188.0	01010111
58.0	136.0	10111010		88.0	190.0	01011000
59.0	138.0	10111011		89.0	192.0	01011001
60.0	140.0	10111100		90.0	194.0	01011010
61.0	141.0	10111101		91.0	195.0	01011011
62.0	143.0	10111110		92.0	197.0	01011100
63.0	145.0	10111111		93.0	199.0	01011101
64.0	147.0	11000000		94.0	201.0	01011110
65.0	149.0	11000001		95.0	203.0	01011111
66.0	150.0	11000010		96.0	204.0	01100000
67.0	152.0	11000011		97.0	206.0	01100001
68.0	154.0	11000100		98.0	208.0	01100010
69.0	156.0	11000101		99.0	210.0	01100011
70.0	158.0	11000110		100.0	212.0	01100100
71.0	159.0	11000111		101.0	213.0	01100101
72.0	161.0	11001000		102.0	215.0	01100110
73.0	163.0	11001001		103.0	217.0	01100111
74.0	165.0	11001010		104.0	219.0	01101000
75.0	167.0	11001011		105.0	221.0	01101001
76.0	168.0	11001100		106.0	222.0	01101010
77.0	170.0	11001101		107.0	224.0	01101011
78.0	172.0	11001110		108.0	226.0	01101100
79.0	174.0	11001111		109.0	228.0	01101101
80.0	176.0	11010000		110.0	230.0	01101110

Table 6-1b
Alarm Relay Setup

6.2 ABC Interval

The ABC Interval in the time between the automatic initialization of ABC cycles. In typical applications, an interval of 24 hours is recommended and set at the factory. However, in cases where ambient conditions are more variable, or the sample gas is higher in contaminants, a shorter interval may be desirable.

The times shown below are approximate. The interval is adjustable in 4 hour increments from 4 to 28 hours. See Figure 6-1. Switch positions S1-6, -7, and -8 represent a three bit binary code with a weight of 4 hours per unit.

To set the interval, set S1-6, S1-7, and S1-8 according to the binary number from Table 6-2 below. The factory default is 24 hours.

Note: 'CLOSED' is a zero and 'OPEN' is a one.

ABC INTERVAL	S1- 6	S1- 7	S1- 8
OFF	0	0	0
4 hrs.	0	0	1
8 hrs.	0	1	0
12 hrs.	1	0	0
16 hrs.	1	0	1
20 hrs.	1	1	0
24 hrs.	1	1	1

Table 6-2 ABC interval in Hrs. to binary number

6.3 Temperature Set Point

Mounted on the cover of the enclosure is the temperature controller for the enclosure heater. This user programmable device indicates in degrees Celsius (ºC) and has been factory set for 100ºC. The user can change this temperature setting when sampling higher dew points.

Note: To avoid damage, the heater should never be set higher than 110ºC.

To change the Temperature Set Point:

1. Press the UP or DOWN arrow to raise or lower the set point.
2. Press the "⌶" key on the right to store the new set point.

6.4 Selecting Analog Outputs

DIP switch S3, located on the circuit board and shown in Figure 6-2 below, allows the user to select a desired analog output signal. You can choose from 4 to 20mA, 0 to 20mA, 0 to 24mA, or 0 to 5 VDC. Table 6-3 shows the DIP switch settings.

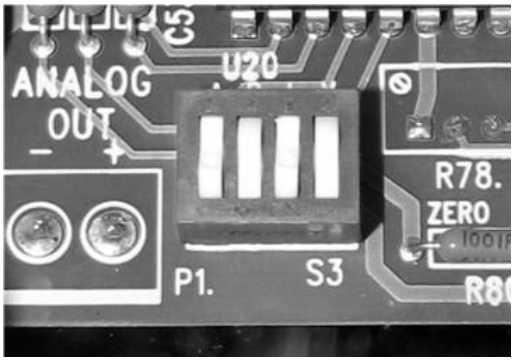


Figure 6-2 Analog Output Selector Switch

SWITCH SETTING

OUTPUT	1	2	3	4
4 - 2O mA	**C**	**O**	**C**	**O**
0 - 20 mA	**O**	**C**	**C**	**O**
0 - 24 mA	**O**	**O**	**C**	**O**
0 – 5 VDC	**C**	**C**	**O**	**C**

Where: **O = Open**
C = Closed

DIP Switch Configuration

Table 6-3 Analog Output Switch Settings

7.0 MAINTENANCE

7.1 Routine Maintenance

To ensure the maximum in accurate and reliable operation of any optical chilled mirror system, a periodic maintenance schedule should be established.

7.2 Mirror Cleaning Schedule

Over time, particulates and other matter present in the sample gas, and not captured by filters, build up on the mirror. The result of the buildup of contaminants on the mirror surface is reduced dry mirror reflectivity and a change in the optical reference point. The ABC Cycle will automatically readjust the optics to the reference point periodically, but eventually the adjustment range will be exceeded and a manual cleaning of the mirror may be necessary. When the contamination becomes too much to be adjusted automatically, an error will be displayed at the end of the ABC Cycle.

Normally, intervals of 90 days between routine mirror cleanings can be easily achieved. However, if the sample gas contaminants are particularly high, more frequent mirror cleanings may be required.

7.3 Mirror Cleaning Procedure

See Figures 7-1 and 7-2, showing the sensor mirror location. When cleaning is required as a periodic maintenance item, or the “CLN MIRR” or “CHK SNSR” message appears on the display, proceed as follows.

1. Turn power off.

Note: When operating with a pressurized sampling system, remove pressure from the Sensor prior to removing the Sensor cover.

2. Remove the spin-off cover from the sensor to expose the mirror.
3. Moisten a clean cotton swab with isopropyl alcohol (IPA). Cotton swabs are provided in the Cleaning Kit supplied with the system.
4. Wipe the mirror surface and the optics surface in a circular motion.
5. After cleaning the mirror surface, wipe the surfaces

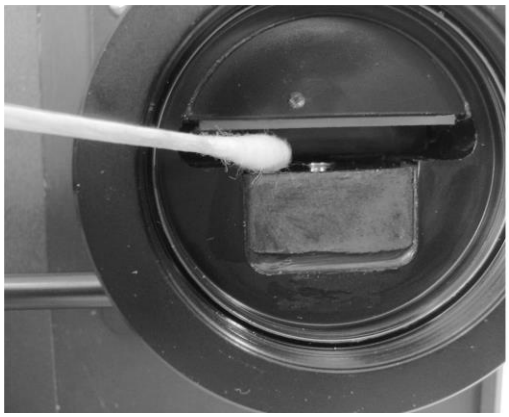


Figure 7-1 Cleaning the Mirror

dry with a clean cotton swab.

6. Next, moisten a clean cotton swab with clean, preferably distilled water and wipe the mirror and optics area.
7. Dry these areas thoroughly with a clean, cotton swab.
8. Replace the sensor cover.
9. Re-establish sample pressure and flow.
10. Turn power on.

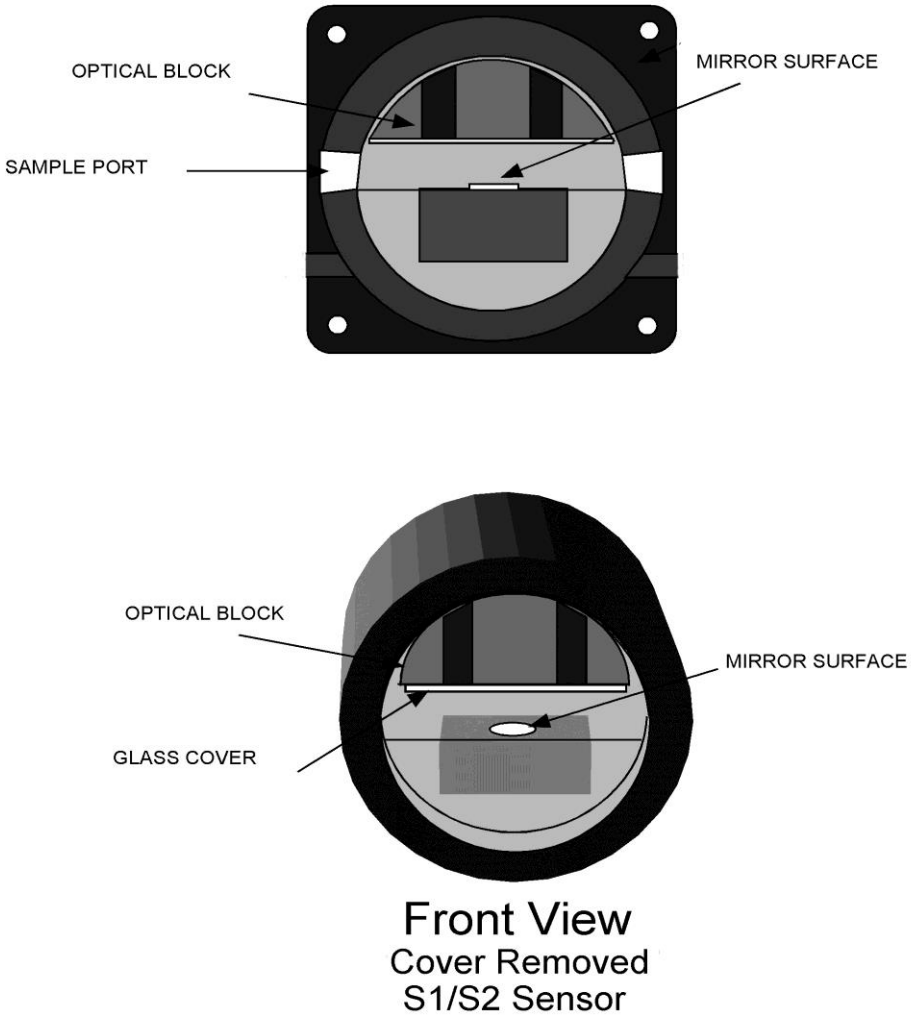


Figure 7-2 Sensor Mirror Location

8.0 SPECIFICATIONS

Measurement Range:	
Dew/Frost Point	-50 to 125ºC (-58 to 257ºF)
Measurement Accuracy:	
Dew/Frost Point	±0.25ºC (±0.45ºF)
Functional:	
Power	90-260VAC, 50-400Hz, 250 Watts
Operating Temperature	
Control Unit	0 to 50ºC (32 to 122ºF)
Heated Enclosure	Ambient to 110ºC, factory set to 100ºC
Sample Connection	¼ in. female compression fitting
Heated Sample Line	115 VAC or 220 VAC option
Length	3 feet (0.9 meters)
Sample Flow	0.5 to 5 SCFH, integral flow meter
Sample Pressure	0 to 150 psig Max.
Purge Connection	¼ in. female compression fitting
Analog Output	4 to 20mA, 0 to 20mA, 0 to 24mA, or 0 to 5 VDC, user selectable
Scaled Range	-50 to 125ºC (-58 to 257ºF)
4 to 20mA Compliance	9.0 VDC, 450 ohms
Display	Eight digit alphanumeric LED, 0.5 in.
High Dew Point Alarm	
Visual	Flashing Message on Display
Relay Contacts	Non-latching, 10A @ 240VAC 8A @ 24VDC
Clean Mirror Alarm	
Visual	Message on Display
Relay Contacts	Non-latching, 10A @ 240VAC 8A @ 24VDC

Physical:

Housing	NEMA-4
Dimensions	14 x 12 x 11 inches (35.6 x 30.5 x 28 cm)
Weight	32 lbs. (14.5kg)
Mounting	Wall Mount Standard
Hole Centers	14-1/2 (H) X 10-1/4 (W) inches [36.8 (H) X 26 (W) cm]

9.0 APPENDIX

9.1 WARRANTY STATEMENT

All equipment manufactured by Edgetech Instruments Inc. is warranted against defective components and workmanship for repair at their plant in Massachusetts, free of charge, for a period of twelve months. Malfunction due to improper use is not covered in this warranty and Edgetech Instruments disclaims any liability for consequential damage resulting from defects in the performance of the equipment. No product is warranted as being fit for a particular purpose and there is no warranty of merchantability. This warranty applies only if (i) the items are used solely under the operating conditions and in the manner recommended in the instruction manual, specifications, or other literature; (ii) the items have not been misused or abused in any manner or repairs attempted thereon; (iii) written notice of the failure within the warranty period is forwarded to Edgetech Instruments and the directions received for properly identifying items returned under warranty are followed; and (iv) the return notice authorizes Edgetech Instruments to examine and disassemble returned products to the extent Edgetech Instruments deems necessary to ascertain the cause for failure. The warranties expressed herein are exclusive. There are no other warranties, either expressed or implied, beyond those set forth herein, and Edgetech Instruments does not assume any other obligation or liability in connection with the sale or use of said products.

Equipment not manufactured by Edgetech Instruments is supported only to the extent of the original manufacturer’s warranties

9.2 EDGETECH INSTRUMENTS'S COMMITMENT TO QUALITY

To Our Customers:

Thank you for purchasing one of our products. At Edgetech Instruments Inc., it is our policy to provide cost-effective products and support services that meet or exceed you requirements, to deliver them on time, and to continuously look for ways to improve both. We all take great pride in the products we manufacture.

We want you to be entirely satisfied with your instrument. The information contained in this manual will get you started. It tells you what you need to get your equipment up and running, and introduces its many features.

We always enjoy hearing from the people who use our products. Your experience with our products is an invaluable source of information that we can use to continuously improve what we manufacture. We encourage you to contact or visit us to discuss any issues whatsoever that relate to our products or your application.

The Employees of Edgetech Instruments Inc.

9.3 N.I.S.T. TRACEABILITY – WHAT DOES IT MEAN?

The Model DPS2 Heated Dew Point Hygrometer is certified by Edgetech Instruments Inc. to be traceable to N.I.S.T., the National Institute of Standards and Technology (formerly known as the National Bureau of Standards, or NBS), in Gaithersburg, Maryland, U.S.A. You have received a Certificate of Calibration with this instrument. What does N.I.S.T. Traceability mean in terms of this instrument?

The Model DPS2 measures Dew Point using the Optical Chilled Mirror (OCM) technique, which provides a primary rather then a secondary measurement of Dew Point temperature. In addition, Dew Point is a fundamental measurement of humidity. It is not affected by temperature.

The Dew Point temperature is measured using a Platinum Resistance Thermometer (PRT). This device is a coil of nearly pure platinum, where the rate of change of resistance with temperature is precisely known. Resistance is accurately measured and is automatically converted to temperature information within the instrument.

TRACEABILITY:

- 1. The precise platinum resistance thermometer is N.I.S.T. traceable by the traceable resistance standards maintained by the PRT manufacturer.

- 2. A multi-point Dew Point calibration is performed on every chilled mirror sensor, using Edgetech Instruments traceable secondary dew point standard. This instrument, a precise chilled mirror hygrometer, is periodically sent directly to N.I.S.T. for certification against the USA's Dew Point transfer standard, a Two-Pressure Generator.

Notes