

HYGRODYNAMICS

PORTABLE DEW POINT MONITOR

MODEL 8098
8098-230VAC

TABLE OF CONTENTS

SPECIFICATIONS	1
PRINCIPLE OF OPERATION	1
INSTALLATION	2
Enclosure Mounting	2
Sample Air Connection	2
Remote Alarm Connection	2
Recorder Output Connection	2
OPERATION	3
MAINTENANCE	3
Dry Down Test	3
Sensor Replacement Procedure	4
Alarm Set Point Adjustment	4
Recorder Output Selection	4
Display Units Selection	4
Electronic Test	5
SPARE PARTS	5
WARRANTY	8

DIAGRAMS

WIRING DIAGRAM (DWG NO. 8072WD)	6
GENERAL ARRANGEMENT (DWG NO. 8098)	7

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**DEW POINT MONITOR
MODEL 8098**

SPECIFICATIONS

Dew Point Range:	-40°F to +15 °F (-40° C to -9° C)
Sensor Part #:	1205DM
Accuracy:	±2 °F
Max. Pressure:	+7 psig
Alarm Set Point:	-10°F (-23°C) (Adjustable, see Maintenance)
Alarm Indication:	Red Light and Audible Alarm With Silencer Switch.
Alarm Output:	Normally Open and Normally Closed Dry Contacts Rated @ 5AMP, 115VAC.
Recorder Output:	4-20mA scaled as -40° F to +70° F. Jumper selectable 0-5V. $\text{mA} = \frac{\text{DP} + 67.5}{6.875} \quad \text{or} \quad \text{V} = \frac{\text{DP} + 40}{22}$ -40 = 4mA or 0V 70 = 20 mA or 5V
Power Requirements:	115VAC ±10%, 50/60Hz, 0.1 AMPS (230V available)
Pump Specifications:	Flow: 2.5 L/min (0.08 SCFM) Vacuum: 6.8" of Hg Pressure: 3.2 psi (All pump specifications are nominal)
Enclosure:	Lexan NEMA-12 Electrical Box, CSA Approved. Wall Mountable or Portable With Removable Front Cover.
Dimensions:	10½" x 8½" x 6"
Net Weight:	8.5 lbs.

PRINCIPLE OF OPERATION

The Dew Point Monitor is an instrument used to check the operation of a desiccant dryer. The monitor samples process air from the dryer into an internal manifold containing a **HYGROSENSOR** which varies its electrical resistance inversely proportional to the dew point of the sampled air.

The **HYGROSENSOR** is measured by an internal circuit which drives the LED display and illuminates either the red or green light. Air is sampled via tubing through an in line filter and through a copper cooling coil. The cooling coil enables dew point monitoring at elevated temperatures (500°F max.). A green light indicates a properly functioning desiccant dryer.

INSTALLATION

The Dew Point Monitor can be used to sample air that is at a pressure between -3 and +7 psig. This pressure range is typical of plastic hopper drying systems. Air up to 500 °F (drybulb) can be sampled.

Enclosure Mounting

1. Remove the screws that hold the brackets on the backside of the unit.

2. Re-install brackets so the flanges extend beyond the top and bottom of the unit.
3. Mount the unit to a chosen location with bolts.

Sample Air Connection

Choose a sampling location in your system where you wish to measure dew point. Insert one end of the clear tubing into your sample location and connect the other end to the copper coil.

Turn power on and allow reading to stabilize. This may take 10-20 minutes when Dew Point Monitor is first installed. After the unit has operated a while, it will respond to changes in dew point in about 5 minutes. Faster response can be obtained by shortening the length of sample tubing as your application allows.

NOTE: The length of copper tubing should not be shortened.

Remote Alarm Connection

Refer to the wiring diagram for details on alarm connection.

- 1) Route wires through the liquid tight fitting on the side of the dew point monitor.
- 2) Connect wires to terminal block on PC Board.
 - 5 & 6 are normally closed. They make continuity when the dew point is below set point (green light).
 - 4 & 5 are normally opened. They make continuity when the dew point is above set point (red light).
- 3) Gently tighten the liquid tight fitting.

Recorder Output Connection

- 1) Route wires through the liquid tight fitting on the side of the dew point monitor.
- 2) Connect wires to terminal 7 & 8 of the PC Board. Terminal 7 is positive, 8 is common.
- 3) Gently tighten the liquid tight fitting.

OPERATION

If the unit is sampling process air after it leaves a drying hopper filled with hygroscopic material, initially high dew points will be encountered. As the moisture is purged out of the material the dew point decreases. For most thermoplastic resins -10°F dew point is an acceptable condition for the process air leaving the hopper.

If the Dew Point Monitor indicates a High Alarm, the following conditions should be considered:

1. There is a leak in the dryer system or sampling line.
2. The dryer is overloaded by excessively wet material.
3. The dryer has a mechanical or electrical failure.
4. The Dew Point Monitor has failed (see calibration and maintenance instructions).

MAINTENANCE

Field calibration of the Hygrosensor is impractical. Therefore it is suggested that a spare sensor be kept on hand to serve as a quick accuracy check.

Dry Down Test

Verification of the Dew Point Monitor's ability to read down to -40°F can be performed by the following steps.

1. Connect one end of the desiccant cartridge to the sample air inlet tubing and the other end to the pump vent tubing.
2. Turn the power on and allow 10 – 20 minutes for the unit to read -40°F ($\pm 2^\circ\text{F}$). If Dew Point Monitor doesn't read properly, check for proper vacuum (3" of Hg minimum), replace sensor, perform Electronic Test, or contact Newport Scientific for factory service.

The desiccant in the tube should be blue. If the color has faded, the desiccant should be regenerated by pouring the desiccant into a suitable container and then heated in a 350°F oven for one hour. This can also be done in a microwave oven for 10 minutes set on high. Allow desiccant to cool and replace back in tube.

Sensor Replacement Procedure

Replacement of the sensor is recommended on a **yearly** basis.

**** Remove power to the Dew Point Monitor before servicing.**

- 1) Remove the panel from instrument case.
- 2) Disconnect the sensor cable from the manifold.
- 3) Remove the hex nut and slide the sensor and socket out of the manifold. Remove old desiccant capsule from manifold if present.
- 4) If your new sensor is packaged with a desiccant capsule, drop it into the manifold.
- 5) Remove old sensor from socket and press the new sensor into the socket. Then slide the sensor and socket into the manifold.
- 6) Replace and hand-tighten the hex nut.
- 7) Install panel in instrument case.

Alarm Set Point Adjustment

**** Remove power to the Dew Point Monitor before servicing.**

1. Remove the front cover.
2. Locate the set point switch (SW1) on the PC Board.
3. Move the switch to the upper position and apply power to the Dew Point Monitor.
4. View the set point on the digital display and adjust P3 for desired set point.
5. Remove power, return SW1 to the lower position and replace the front cover.

Recorder Output Selection

**** Remove power to the Dew Point Monitor before servicing.**

1. Remove the front cover.
2. Locate jumper J9 on the PC Board.
3. Refer to the wiring diagram to select either 4-20mA or 0-5V jumper position.
4. Replace the front cover.

Display Units Selection

**** Remove power to the Dew Point Monitor before servicing.**

1. Remove the front cover.
2. Locate jumpers J10 and J11 on the PC Board.
3. Refer to the wiring diagram to select either °F or °C jumper positions. Both J10 and J11 must be in the same position for proper operation.
4. Replace the front cover.

Electronic Test Procedure

This procedure checks the operation of the circuit. Perform this procedure if display does not respond to the DRY-DOWN TEST described earlier and if the electronics are suspect.

<p><u>WARNING</u></p> <p>THE FOLLOWING PROCEDURE IS PERFORMED WITH POWER APPLIED. TO PREVENT SHOCK, <u>DO NOT TOUCH ANY TERMINALS INSIDE THE DEW POINT MONITOR.</u></p>

1. Remove the front cover and disconnect the brown sensor cable from the sensor manifold.
2. Connect the Dew Point monitor to power and turn it on. With sensor cable disconnected, the Dew Point Monitor should read $-40^{\circ}\text{F} \pm 2^{\circ}\text{F}$.
3. Place a jumper across the sensor cable. The Dew point Monitor should read $+15^{\circ}\text{F} \pm 2^{\circ}\text{F}$.

If display fails to read these values, contact Newport Scientific for factory service.

SPARE PARTS

6245 -----	Desiccant Tube
1205DM -----	HYGROSENSOR
3305005 -----	Filter

HYGRODYNAMICS

LIMITED WARRANTY

NEWPORT SCIENTIFIC, INC. warrants that all equipment manufactured by NSI shall be free from defects in material and workmanship which might impair its usefulness. SELLER DOES NOT WARRANT THAT THE EQUIPMENT IS FIT FOR ANY PARTICULAR USE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF; the obligation under this warranty is limited to repairing or replacing, at Seller's factory, any defective parts which, when returned by the buyer, **transportation prepaid**, examination discloses to have been factory defective. The time limit of this warranty is ONE YEAR from date of shipment of new equipment, SIX MONTHS from date of shipment of Hygrodynamics Wide-Range Sensors and THREE MONTHS from date of shipment of Hygrodynamics Narrow-Range Sensors and repaired equipment. THIS WARRANTY IS EXPRESSLY IN LIEU OF OTHER WARRANTIES. Seller shall not be held liable for any special, indirect, consequential damages arising out of this warranty or any breach thereof, of any defect in or failure or malfunction of the equipment and materials are further subject to tolerances and variations consistent with usages of trade. This warranty shall run in favor only of the purchaser from Seller and may not be passed on or represented on behalf of Seller to any subsequent purchaser.

WARRANTIES: OTHER PRODUCTS

NEWPORT SCIENTIFIC, INC. makes no express or implied warranty as to items, which are the products of other manufacturers. Seller shall use its best efforts to obtain from the manufacturer, in accordance with its customary practice, the repair or replacement of such products may prove defective in workmanship or material. The foregoing states the entire liability in respect to such products, except as an authorized executive of the corporation may otherwise agree in writing.

In the case of special equipment or modifications to standard equipment manufactured at the request of the buyer, under buyer-approved specifications, buyer will indemnify Seller against the risk damages due to patent infringement.