PORTABLE DEW POINT MONITOR

MODEL DPM8098
DPM8098-230VAC

TABLE OF CONTENTS

DIAGRAMS

PLASTIC PROCESS EQUIPMENT, INC.
8303 CORPORATE PARK DRIVE
MACEDONIA, OHIO 44056
PHONE (800) 362-0706 FAX (800) 223-8305

September 2010

DEW POINT MONITOR
MODEL 8098

SPECIFICATIONS

Dew Point Range:	-40°F to +15 °F (-40° C to –9° C)
Sensor Part #:	1205DM
Accuracy:	±3 °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.

$$mA = \frac{DP + 67.5}{6.875} \quad \text{or} \quad V = \frac{DP + 40}{22}$$

-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 (TB1)

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.
   - 4 & 5 are normally closed. They make continuity when the dew point is below set point (green light).
   - 5 & 6 are normally open. They make continuity when the dew point is above set point (red light).
3. Gently tighten the liquid tight fitting.

Recorder Output Connection (TB3)

1. Route wires through the liquid tight fitting on the side of the dew point monitor.
2. For 4-20mA connect wires to terminals 2 & 3 of TB3 of the PC Board. Terminals 1 & 2 for 0-5V.
3. Gently tighten the liquid tight fitting.

-40°F=0V or 4mA; +15°F=2.5V or 12mA.

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. 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.
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

Locate the display function switch (S1) on PC Board. **Note that only one position of this switch should be ON at a time.**

1. To view and adjust relay #1 setpoint, turn the #1 position of S1 OFF and the SET1 position #2 ON. Turn the SET1 of P2 near the switch to the desired setpoint.
2. When finished adjusting the setpoint, return S1 to the default operating mode by turning OPER position ON and all others OFF.
3. A small red LED near the potentiometer P2 indicates when an alarm is occurring.

°F. TO °C. Display Change

To change the digital display to °C, use needle nose pliers and move jumpers J6 and J7 to the C position on PC Board.

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.

WARNING

THE FOLLOWING PROCEDURE IS PERFORMED WITH POWER APPLIED. TO PREVENT SHOCK, DO NOT TOUCH ANY TERMINALS INSIDE THE DEW POINT MONITOR.

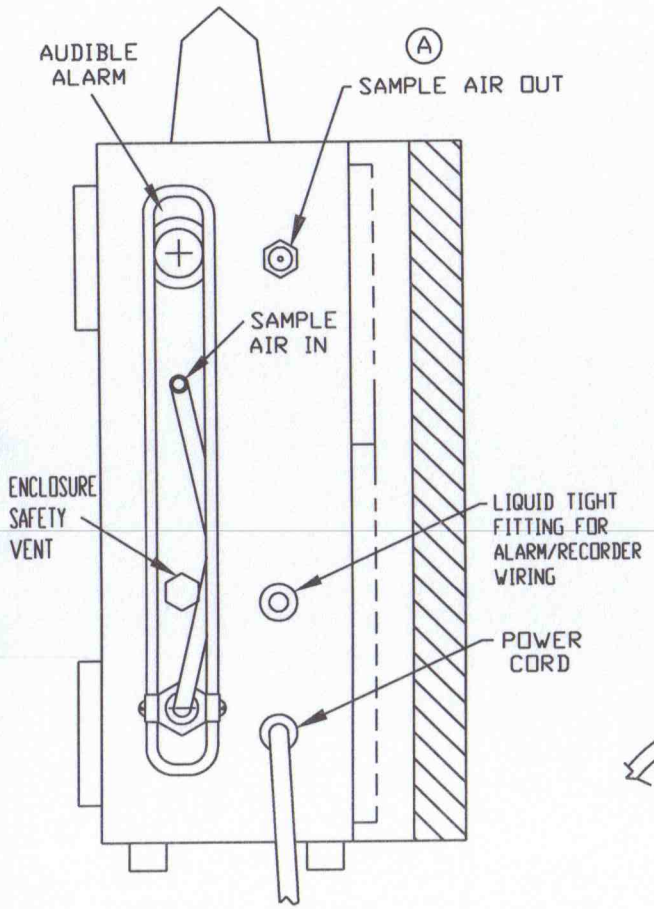
1. Remove the front cover and disconnect the brown sensor cable from the sensor manifold.
2. Connect the Dew Point monitor to power and turn it on. With sensor cable disconnected, the Dew Point Monitor should read -40°F ±1°F.
3. Place a jumper across the sensor cable. The Dew point Monitor should read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

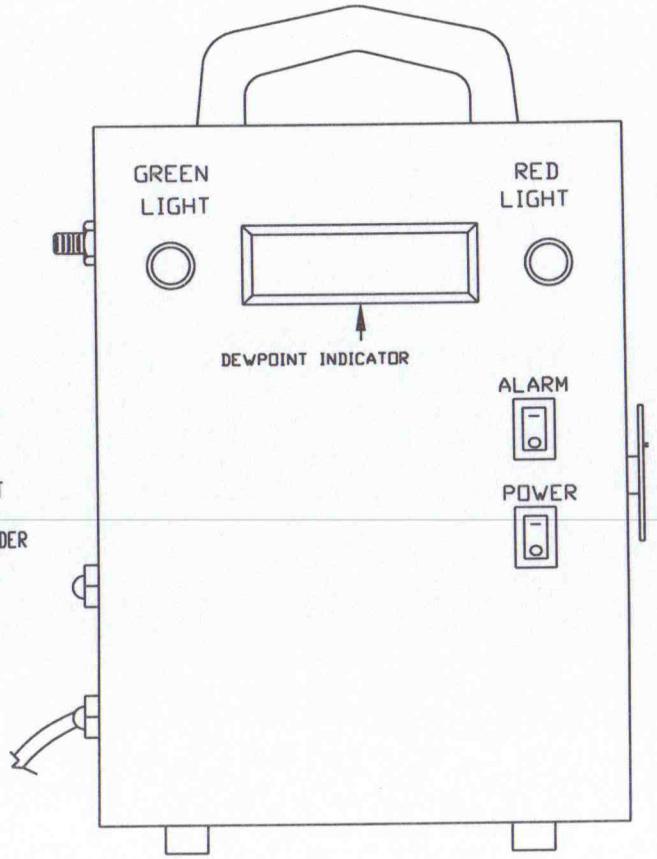
If display fails to read these values, contact Plastic Process Equipment for factory service.

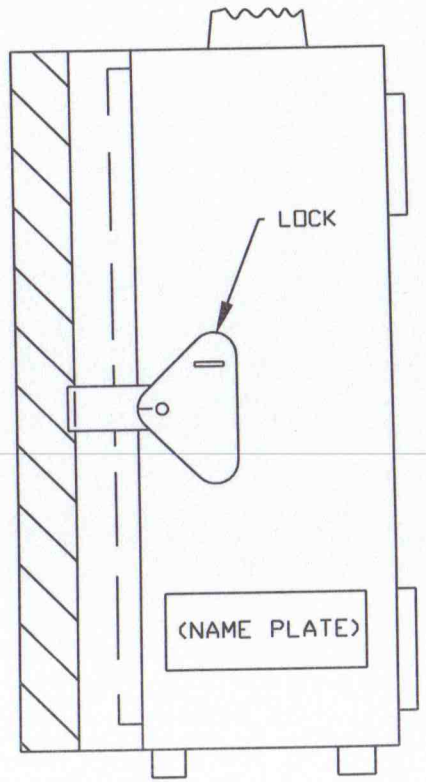
SPARE PARTS

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

REVISIONS		
A	(SAMPLE AIR OUT) WAS LOCATED ON RIGHT SIDE	6/5/01
B	ADDED NOTE REF. TO 8099	10/14/07







NOTE: EXACT LOCATION OF ITEMS MAY VARY
DRAWING APPLIES TO 8098, 8099

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONS ±
DECIMALS ±
ANGLES ±
REMOVE ALL BURRS AND SHARP EDGES
DO NOT SCALE THIS DRAWING

	BY	NAME	DATE
PREPARED			
CHECKED			
ENGR/DSGN			
APPROVED			

MATERIAL

FINISH:

HYGRODYNAMICS® NEWPORT SCIENTIFIC INC.

TITLE: GENERAL ARRANGEMENT
DEW POINT MONITOR
8098, 8099

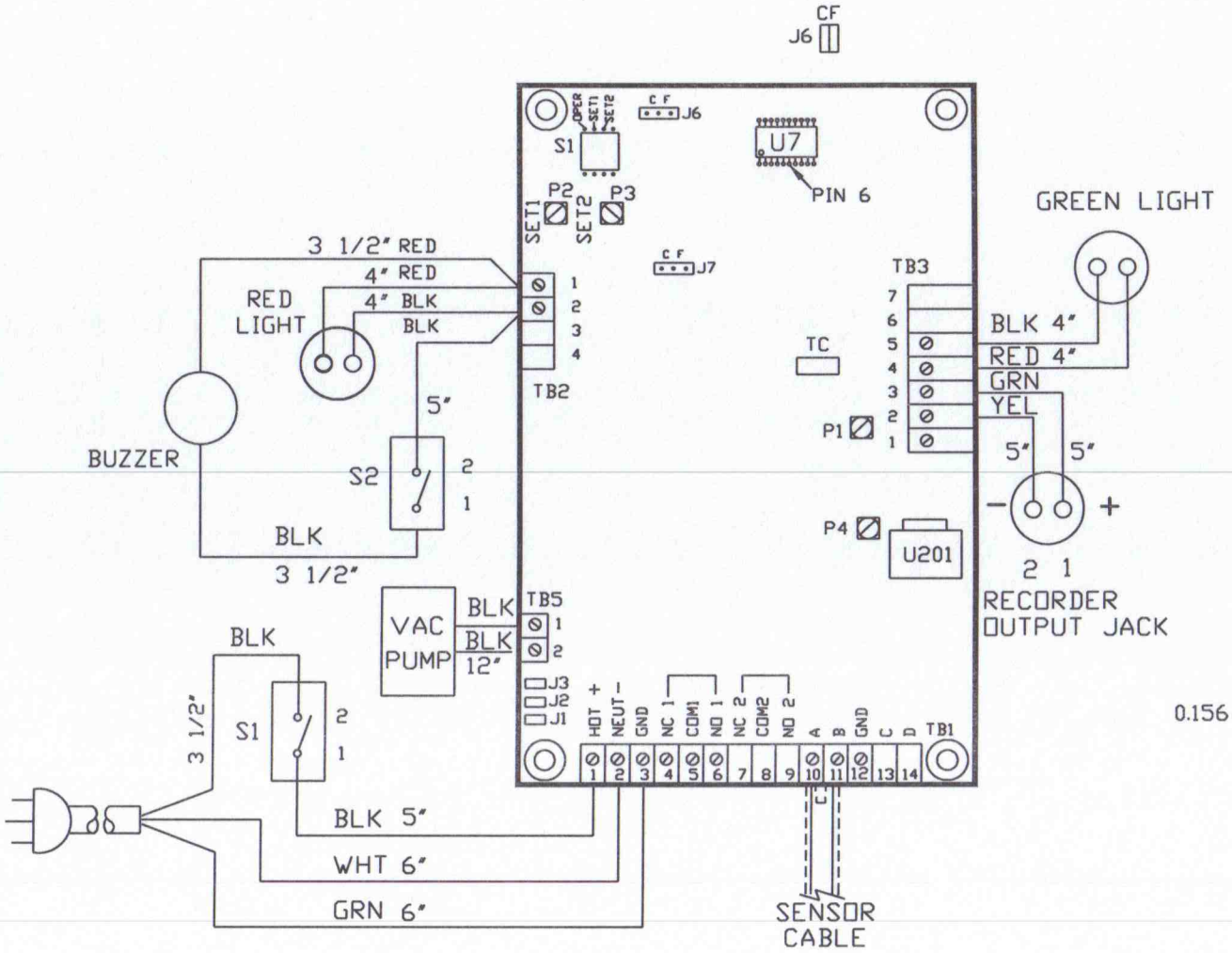
CODE IDENT. NO.	SIZE	PART NO.
59505	A	8098

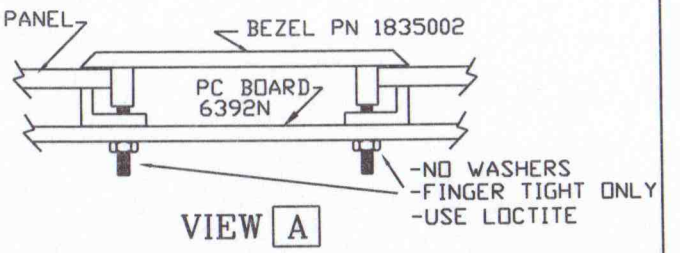
DRAWING NO. 8098

SCALE | WEIGHT | SHEET 1 OF 1

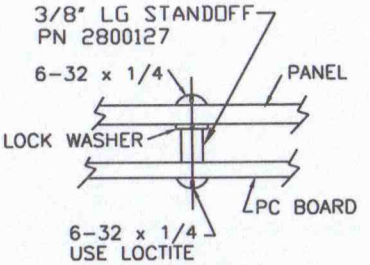
REV	DATE	CHANGES
A	2001	INITIAL RELEASE
B	2/16/2007	J6 AND J7 RECONFIGURE

UNITS PRE-2007 J6 AND J7 ORIENTED AS SHOWN:

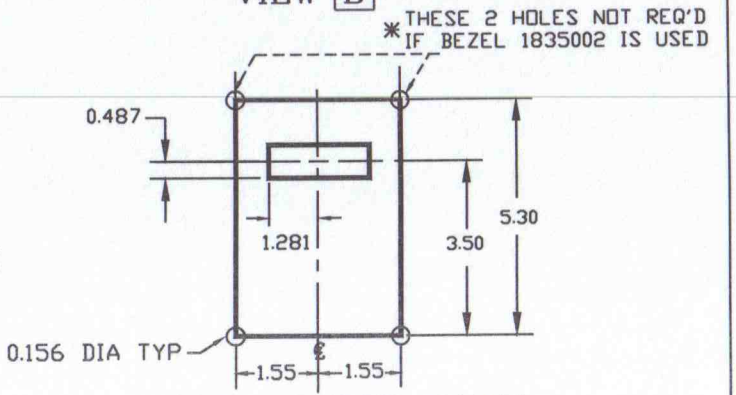




VIEW A



VIEW B



RECOMMENDED PANEL CUT-OUT

NOTES:

1. WIRE LENGTHS TYP FOR 8072

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONS ±
DECIMALS ±
ANGLES ±
REMOVE ALL BURRS AND SHARP EDGES
DO NOT SCALE THIS DRAWING

BY	NAME	DATE
PREPARED		
CHECKED		
ENGR/DSGN		
APPROVED		

FINISH:
MATERIAL

HYGRODYNAMICS® NEWPORT SCIENTIFIC INC.

MOUNTING & WIRING
FOR 6392N & 6392N2 D/P BOARD

CODE IDENT. NO.	SIZE	PART NO.	6392NWD
59505		DRAWING NO.	6392NWD
SCALE	WEIGHT	SHEET	OF