

HYGRODYNAMICS

DIGITAL DEW POINT MONITOR

MODEL 8097
8097-230VAC

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DIAGRAMS

GENERAL ARRANGMENT (DWG. NO. 8097)
WIRING DIAGRAM (DWG. NO. 6392NWD)

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**DEW POINT MONITOR
MODEL 8097**

SPECIFICATIONS

Dew Point Range:	-40°F to +15°F (-40°C to -9°C)
Recorder Output:	4-20mA Scaled as -40°F to +70°F
	$\text{mA} = \frac{\text{DP} + 67.5}{6.875} \quad \text{or} \quad \text{V} = \frac{\text{DP} + 40}{22}$
	-40 = 4mA or 0V 70 = 20mA or 5V
Alarm Indication:	Red Light and Audible Alarm With Silencer Switch.
Alarm Output:	5AMP @ 115VAC Rated Contact. Normally Open and Normally Closed Dry Contacts.
Alarm Set Point:	-10F (-23C) (Adjustable, see Maintenance)
Accuracy:	±2°F Dew Point
Sensor Part No.:	1205DM
Dimensions:	10½" x 8½" x 6
Net Weight:	6 lbs.
Enclosure:	Lexan NEMA-12 Electrical Box, CSA Approved. Wall Mountable or Portable With Removable Front Cover.
Power Requirements:	115VAC ±10%, 50-60 Hz, 0.1 Amps (230V available)
Pressure Range:	0 - 300 psig

PRINCIPLE OF OPERATION

The 8097 Dew Point Monitor is designed to monitor the dew point of compressed air in the range of -40 °F to +15°F. The unit is equipped with a remote sensor in a pipe fitted housing. The Dew Point Monitor is connected to the sensor by a 10 ft electrical cable.

The HYGROSENSOR consists of a bifilar winding of palladium wire wound on an insulating core. The surface is coated with a thin film mixture of LiBr and PVA (polyvinyl alcohol). The sensor varies its electrical resistance inversely proportional to the moisture in the surrounding atmosphere.

The 8097's internal circuit excites the sensor with a regulated AC voltage and measures the dewpoint in

terms of electrical current. The signal is used to drive the digital meter and a comparator circuit which provides relay contact closure.

INSTALLATION

Choosing A Sampling Location

Start by finding a suitable location for the sensing element. An ideal location would be free of oil, particulates, and possible condensation. Also, the sensor should see an airflow of 5SCFH or more for best response. The ideal air temperature at the sensor is 80F, however the sensor can operate up to 140F.

Install a tee fitting with a 1" NPT female thread to accept the sensor mount assembly. Orient the tee such that the sensor will be on the top or sides of the pipe. Avoid having the sensor near the bottom of the pipe since condensation and particulates may settle there.

1. Press the sensor into the pipe mount with moderate hand pressure.
2. Screw pipe mount into 1" NPT female fitting.
3. Do not tighten the packing nut more than hand tight.

Mounting the Enclosure

Remove the screws that hold the brackets on the backside of the unit. Re-install brackets so the flanges extend beyond the top and bottom of the enclosure. Mount the enclosure to a chosen location with bolts.

Remote Alarm Connection (TB1)

NOTE: The built in audible alarm can be silenced with the ALARM switch on the front panel. This switch does not affect the status of the remote alarm output.

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 terminal 2 & 3 of TB3. For 0-5V terminals 1 & 2.
3. Gently tighten the liquid tight fitting. **-40°F=0V or 4mA; +15°F=2.5V or 12mA.**

MAINTENANCE

The Dew Point Monitor normally does not require calibration, and in most applications the sensor will provide years of service. However, the easiest and most reliable way to insure consistent accuracy is to replace the sensor annually.

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 pipe mount from air line.
2. Pull sensor out of pipe mount.
3. Press new sensor into pipe mount.
4. Screw pipe mount into air line. Do not tighten the packing nut more than hand tight.

Electronic Test Procedure

1. Disconnect sensor cable at pipe fitting.
2. With power on, check the Dew Point Monitors' display for $-40^{\circ}\text{F} \pm 2^{\circ}\text{F}$.
3. Place a jumper across the sensor cable's terminals.
4. Check the Dew Point Monitors' display for $+15^{\circ}\text{F} \pm 2^{\circ}\text{F}$.
5. Remove jumper and connect sensor cable to pipe fitting.

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

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 SI 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.

APPLICATION HINTS

1. Replace the sensor on a yearly basis.
2. Do not expose the sensor to temperatures greater than 140 F.
3. Avoid installations with oil or separated water in the line. These contaminants cause premature sensor failure.
4. Maintain an air-flow of approximate 5 SCFH.
5. Never connect the sensor to a DC voltage. Keep in mind an Ohmmeter cannot be used to measure the sensor resistance as it provides a DC excitation signal.
6. To test the sensor install it in a 1" NPT pipe tee with a small orifice to maintain a back pressure of 100 psig, then purge the 1" NPT pipe tee with a Zero Grade Nitrogen (available in tanks) or air of a known certified dew point.

REPLACEMENT PARTS

1205DM.....Hygrosensor

6146A.....Pressure Mount

HYGRODYNAMICS

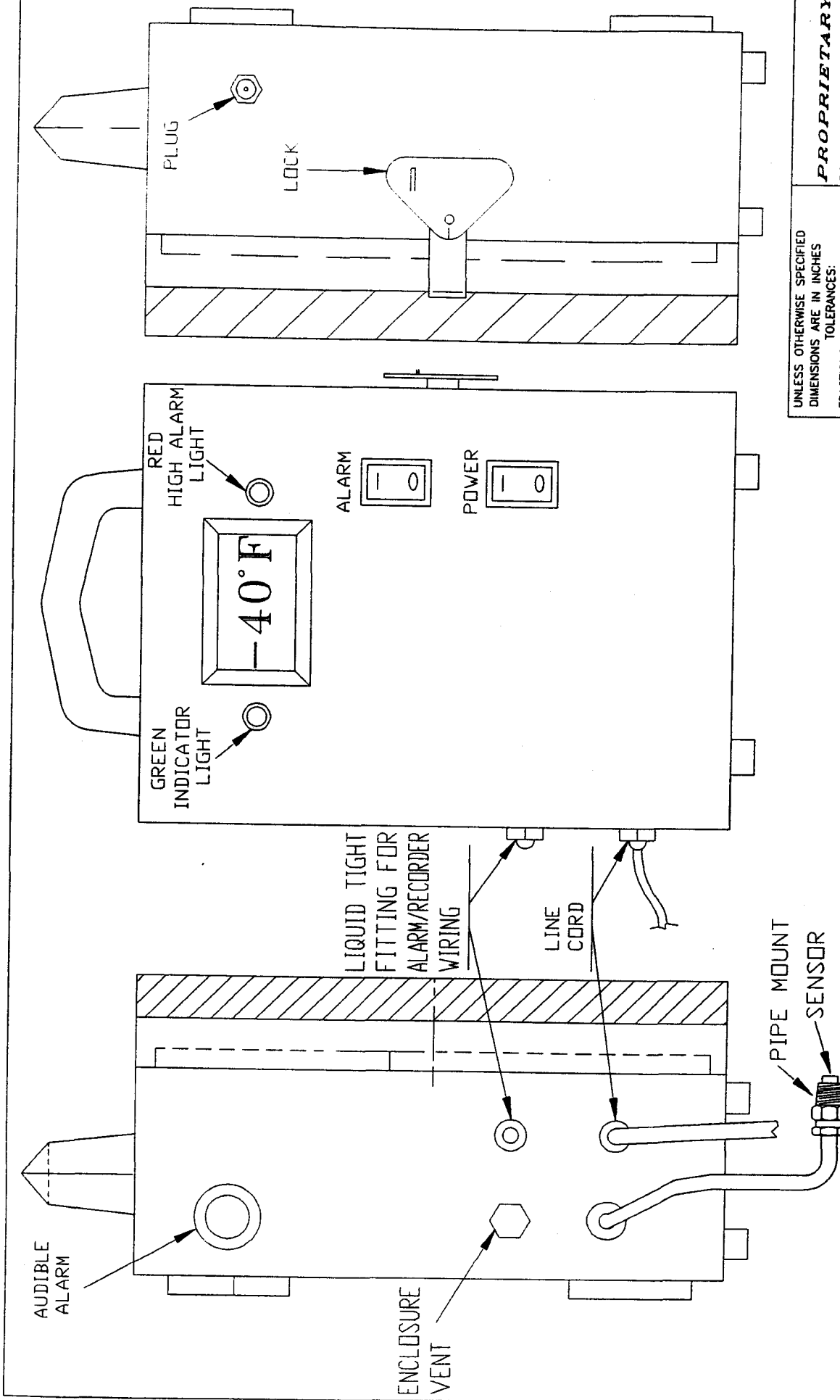
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In the case of special equipment or modifications to standard equipment manufactured at the request of the buyer, under buyer-approved specifications, buyer will indemnify Seller against the risk damages due to patent infringement.



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONS \pm
 DECIMALS \pm
 ANGLES \pm

REMOVE ALL BURRS AND SHARP EDGES
 DO NOT SCALE THIS DRAWING

BY	NAME	DATE	FINISH:
CHECKED			
ENGR/DRSK	EP	RAY	
APPROVED			

MATERIAL

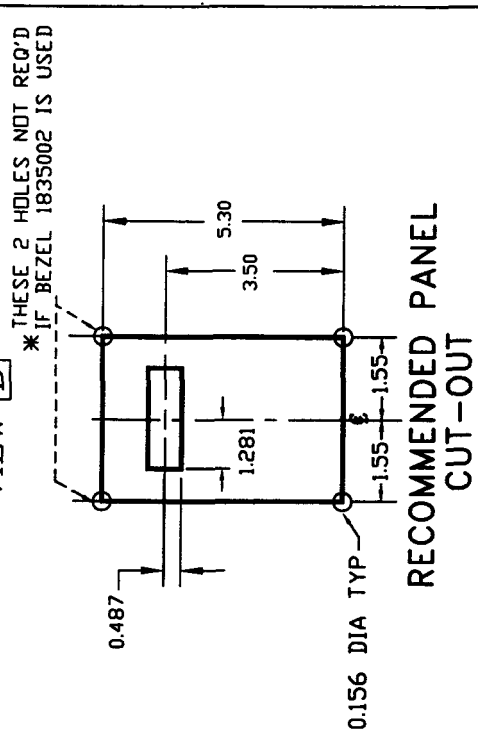
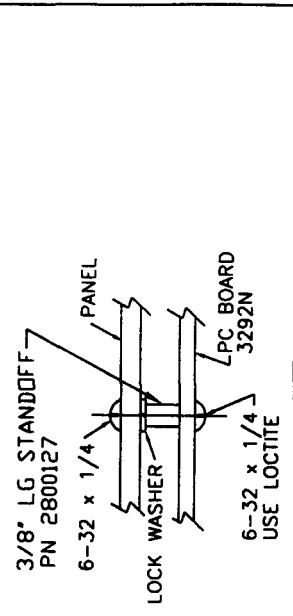
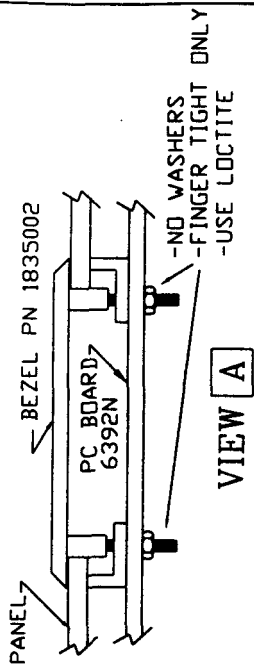
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TITLE: GENERAL ARRANGEMENT DEW POINT MONITOR

CODE IDENT. NO. 59505
 PART NO. 8097
 SIZE A
 DRAWING NO. 8097

SCALE: N/FIN/F
 WEIGHT
 SHEET OF



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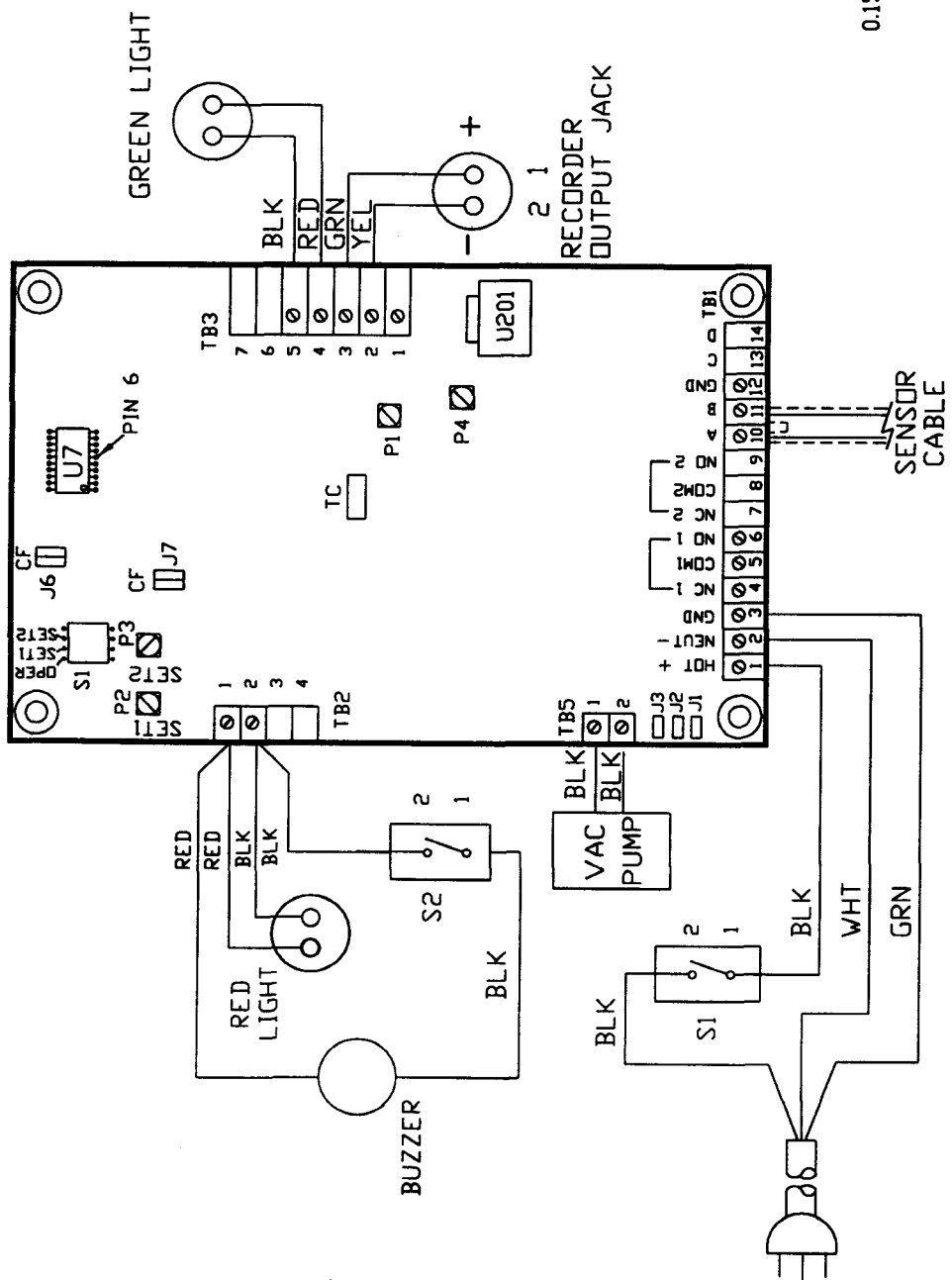
REMOVE ALL BURRS AND SHARP EDGES
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BY	NAME	DATE	FINISH:
PREPARED			
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MATERIAL			

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

CODE IDENT. NO. 59505
PART NO. 6392NWD
DRAWING NO. 6392NWD

SCALE _____ WEIGHT _____ SHEET _____ OF _____



NOTE: RED & GREEN LIGHTS ARE OPTIONAL.