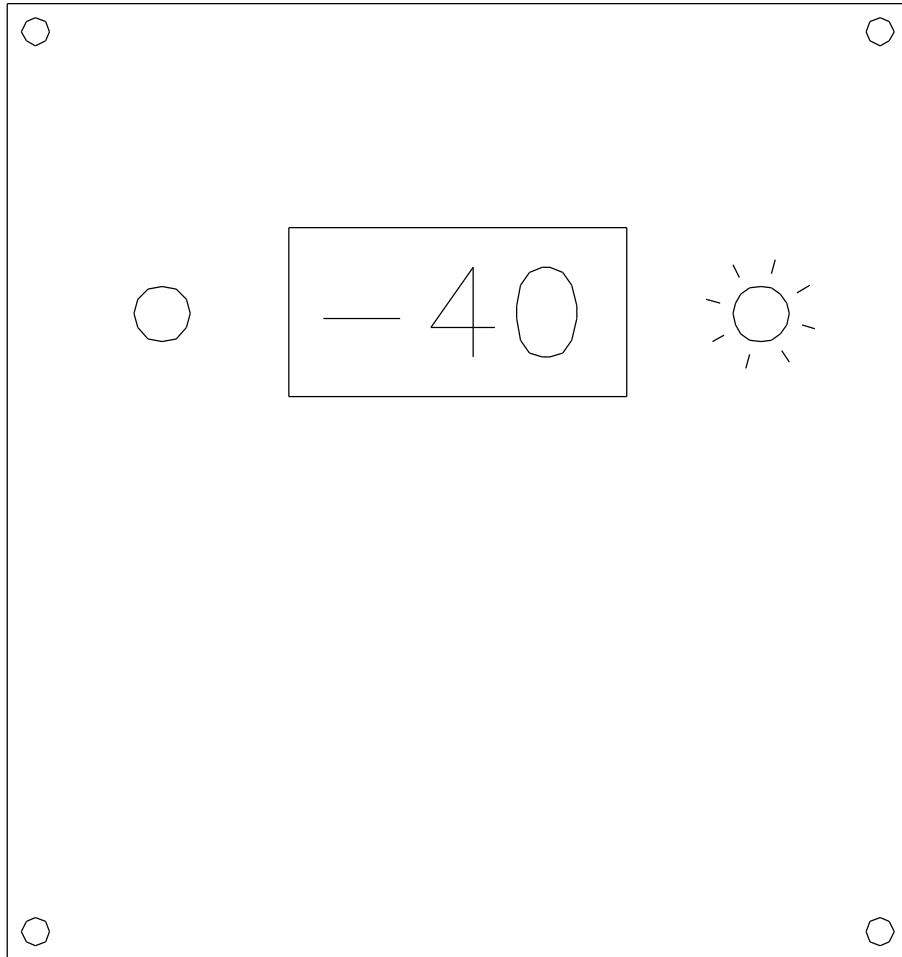


# Digital Dew Point Retrofit Kit



Instruction Manual  
414486A

**Thoreson-McCosh Inc.**

**FORWARD**

The information contained in this Instruction Manual is provided to you for the maintenance of your Thoreson McCosh equipment.

Also included in this manual are operating instructions, a service parts list, and wiring diagrams. Please file this manual for future use.

For additional information, please contact:

THORESON-McCOSH Inc.  
1885 Thunderbird Street  
Troy, MI 48084  
Phone: (248) 362-0960  
Facsimile: (248) 362-5270  
[sales@thoresonmccosh.com](mailto:sales@thoresonmccosh.com)

**CUSTOMER RECORDS**

Upon receipt of your Thoreson McCosh equipment, it is very important that you complete the table below. The information will be needed to best serve you when you call the Thoreson McCosh Service Department with questions or to order replacement parts. The information is located on the Serial Tag on the unit and inside the door of the control box.

Model Name	_____
Serial No.	_____
Wiring Diagram No.	_____
Insert No.	_____
Program No.	_____
Layout No.	_____

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**SECTION 1: THORESON-MCCOSH INC. PRODUCT WARRANTY**

Thoreson McCosh warrants each product of its manufacture to be free from defects in material and workmanship for a period of 12 months from the date of delivery to the original purchaser. Thoreson McCosh's obligation under this warranty is limited to repairing or replacing any part returned to the Thoreson McCosh factory with transportation charges prepaid, and which, on examination by Thoreson McCosh, shall disclose to Thoreson McCosh's satisfaction to have been defective.

The purchaser must notify Thoreson McCosh of such defects and promptly deliver the defective part(s) in accordance with Thoreson McCosh's shipping instructions, delivery prepaid. Parts will be replaced F.O.B. Thoreson McCosh factory, by Thoreson McCosh, and will be invoiced to the purchaser with "credit on return of defective part", if the part is returned within fifteen (15) days after shipment of replacement part. Thoreson McCosh is not liable for installation or cost to install the replacement part or removal of the defective part.

Thoreson McCosh is not responsible for any failure of its product due to improper use, installation, or operation. Thoreson McCosh shall not assume any expense or liability for repairs made to any Thoreson McCosh unit or equipment outside Thoreson McCosh's own factory unless specifically agreed to in writing by Thoreson McCosh.

Equipment and accessories furnished by us, but manufactured by others, are guaranteed to the extent of the original manufacturer's guarantee to Thoreson McCosh, if that guarantee exceeds one (1) year.

It is expressly understood that Thoreson McCosh is not responsible for damage and/or injury caused to buildings, contents, products, or persons by reason of installation or use of any of our products. Thoreson McCosh shall not be liable for loss, damage or expenses arising directly or indirectly from, or being consequential or incidental to, the use of its products or from any other cause.

The above warranty supersedes, and is in lieu of all other warranties expressed or implied; and no person, agent, representative or dealer is authorized to give any warranties on behalf of Thoreson McCosh, not to assume for Thoreson McCosh any other liability in connection with Thoreson McCosh products.

## **SECTION 2: INSTRUCTIONS**

### **2.1: INTRODUCTION**

Your Thoreson-McCosh Digital Dew Point Kit is designed to fit most any dryer.

### **2.2: INSTALLATION AND SETUP**

Step 1. Remove all power from the Dryer.

Step 2. Cut a 6.5 long by 6.25 wide hole in the door. Transfer the mounting hole pattern from the plate to the door and drill the four holes with a 3/16" drill bit.

**NOTE:** *Take care to pick a spot in the door where the DP board will not hit on any panel components.*

Step 3. Mount the panel with four #8 screws

Step 4. Connect the power wires #1 and #2 to the control circuit.

#### **IF THIS UNIT HAS AN EXISTING DEW POINT;**

Step 5. Install the sensor into the sensor block and plug in the sensor cable.

Step 6. Recheck all new wire connections before applying power.

#### **PARTS LIST**

- 1) Digital dew point assembly:
- 2) #8-32 screws with nuts, lock washers, washers.
- 3) 413495 1205DM sensor

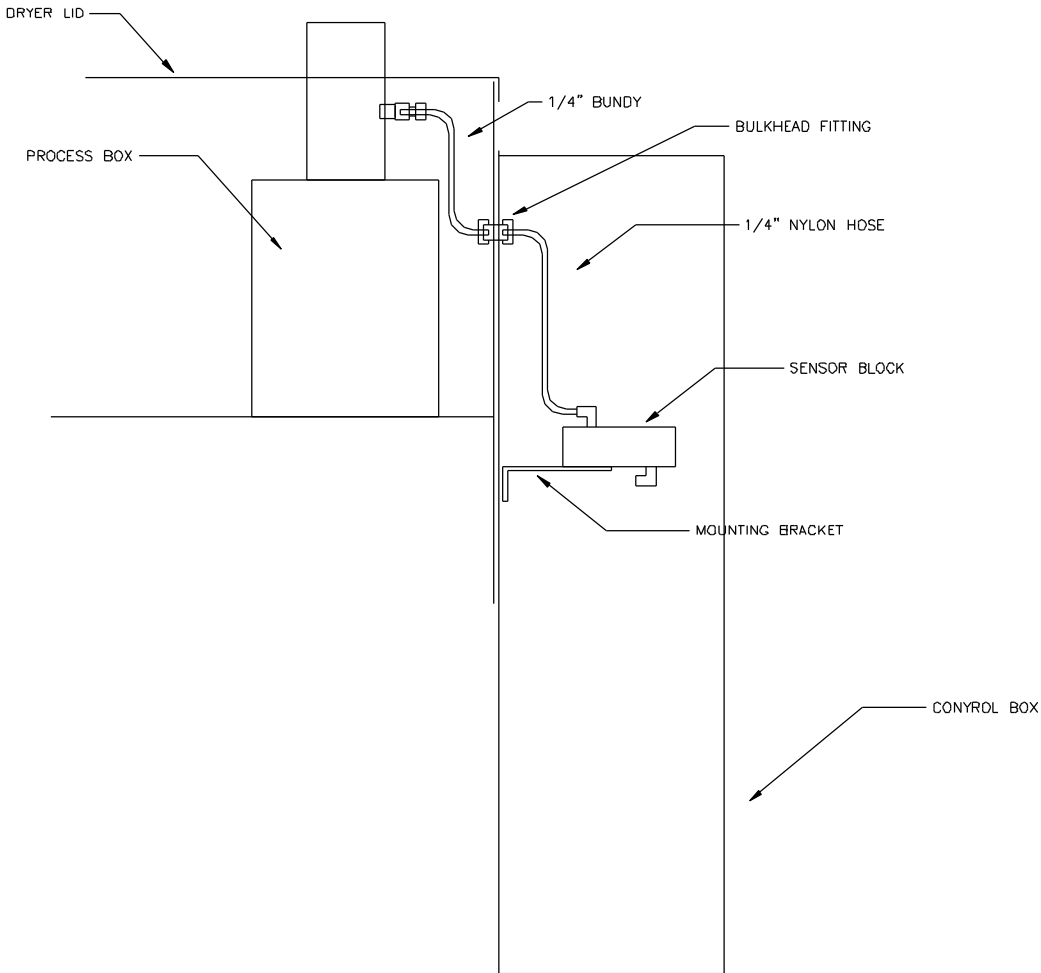
### **2.3: TD-DRYER WITH NO PRE-EXISTING DEW POINT**

- Step 5. Mount the sensor block bracket to any open space on the panel. If there is no open space, mount to the bottom of the control box.
- Step 6. Mount the sensor block to the sensor block bracket.
- Step 7. Remove the 1/8"-NPT plug from the coupling in the process tube. If there is no coupling, drill a hole with a "R" letter drill and tap the hole with a 1/8"-NPT tap. Install a straight or 90° compression fitting, depending on the location of the hole.
- Step 8. Drill a 7/16" hole through the cabinet into the control box near the top between the panel and the top of the control box. Install the bulkhead fitting using 2) 3/8 washers.
- Step 9. Bend the Bundy tubing so it goes from the bulkhead fitting to the fitting in the process tube.
- Step 10. Insert the brass insert into the end of the 1/4" nylon hose. Insert the nylon hose into the bulkhead fitting inside of the enclosure and connect the other end of the hose to the inlet of the sensor manifold.
- Step 11. Install the sensor into the sensor block and plug in the sensor cable.
- Step 12. Recheck all new wire connections before applying power.

### **PARTS LIST**

- 1) Digital dew point assembly:
- 2) #8-32 screws with nuts, lock washers, washers.
- 3) 413495 1205DM sensor.
- 4) sensor block assembly.
- 5) 404809 1/4" nylon hose, 36" long
- 6) 406068 1/4" Bundy tubing, 24" long
- 7) 409797 Brass bulkhead fitting.
- 8) 404758 Brass insert
- 9) 404597 1/4 X 1/8 NPT straight fitting.

**TD-DRYER LAYOUT**



The sensor manifold may be mounted in any opening on the panel. Try to keep it towards the hinge side of the box and if possible keep away from high power wires.

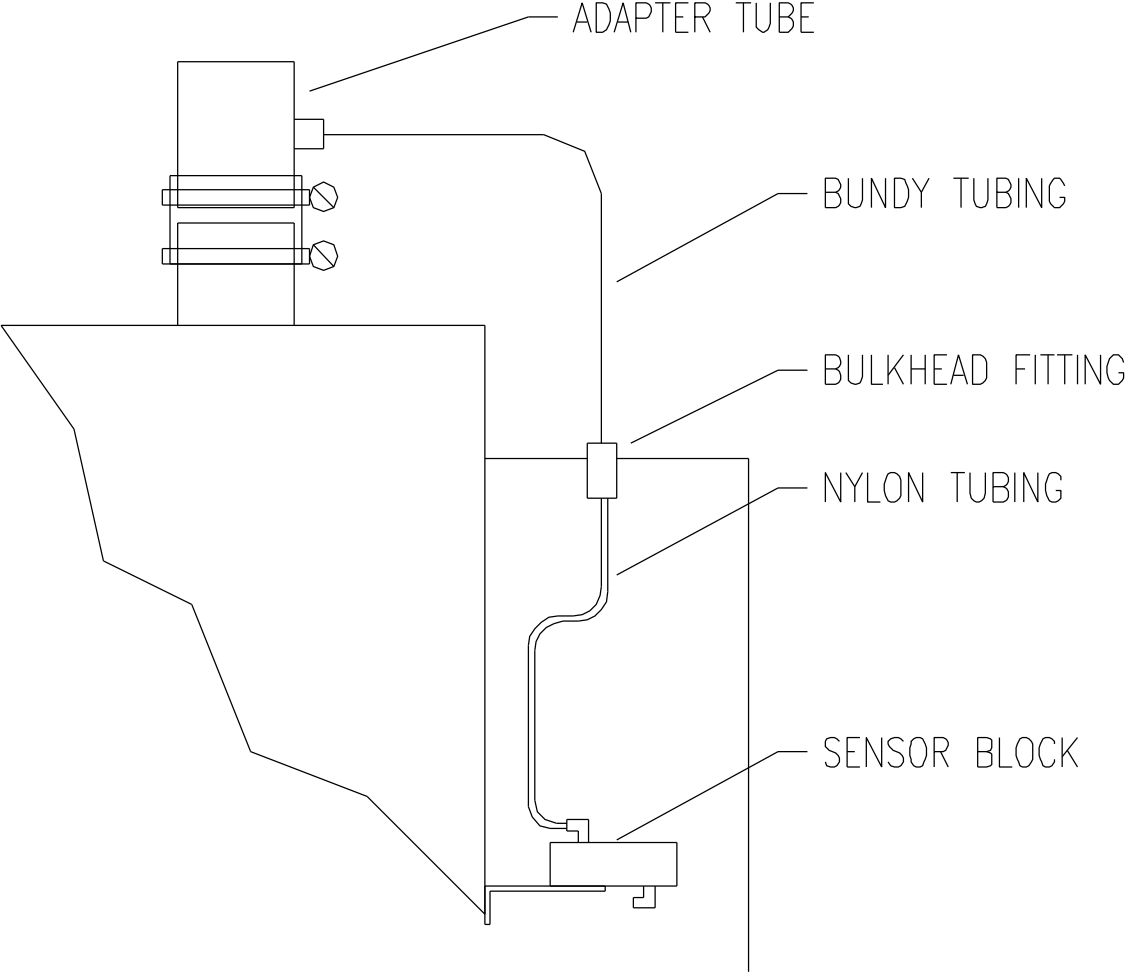
## **2.4: D-DRYER WITH NO PRE-EXISTING DEW POINT**

- Step 5. Mount the sensor block bracket to any open space on the panel. If there is no open space, mount to the bottom of the control box.
- Step 6. Mount the sensor block to the sensor block bracket.
- Step 7. Mount the dew point sample tube to the process outlet.
- Step 8. Drill a 7/16" hole in the top of the control box. Install the bulkhead fitting using 2) 3/8 washers.
- Step 9. Bend the Bundy tubing so it goes from the bulkhead fitting to the fitting in the process tube.
- Step 10. Insert the brass insert into the end of the 1/4" nylon hose. Insert the nylon hose into the bulkhead fitting inside of the enclosure and connect the other end of the hose to the inlet of the sensor manifold.
- Step 11. Install the sensor into the sensor block and plug in the sensor cable.
- Step 12. Recheck all new wire connections before applying power.

## **PARTS LIST**

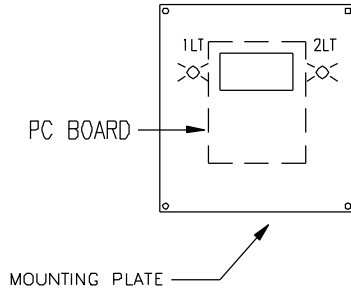
- 1) Digital dew point assembly:
- 2) #8-32 screws with nuts, lock washers, washers.
- 3) 413495 1205DM sensor.
- 4) sensor block assembly.
- 5) 404809 1/4" nylon hose, 36" long.
- 6) 406068 1/4" Bundy tubing, 24" long.
- 7) 409797 Brass bulkhead fitting.
- 8) 404758 Brass insert.
- 9) 404597 1/4 X 1/8 NPT straight fitting.
- 10) Sample tube, O.D. of process outlet, 4" long with 1/8 half nipple in middle.
- 11) High Temp hose, I.D. of process outlet.
- 12) Hose clamp, (2) sized for O.D of process outlet.

**D-DRYER LAYOUT**

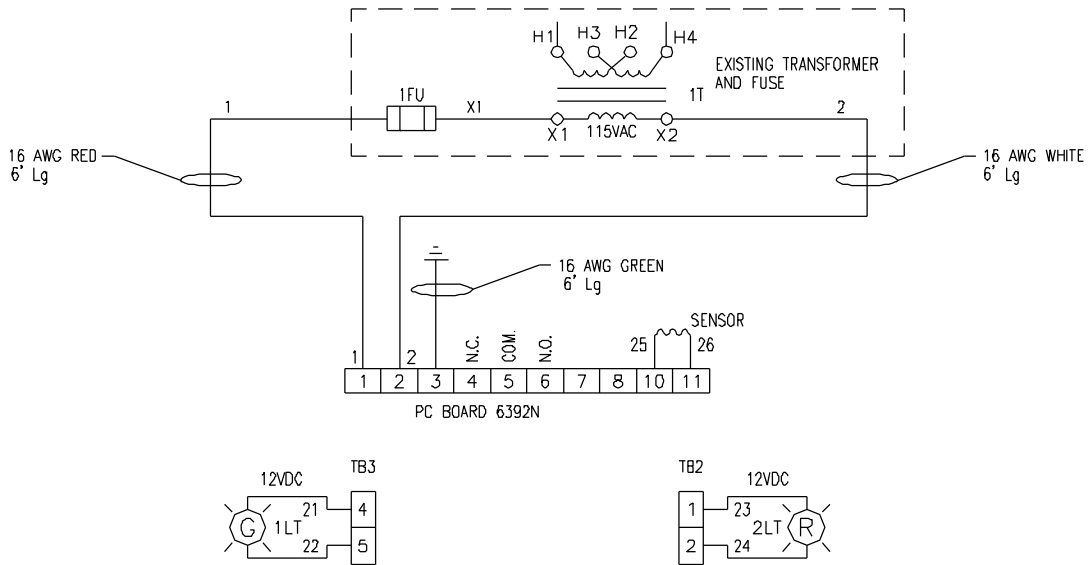


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## DIGITAL DEW POINT ASSEMBLY



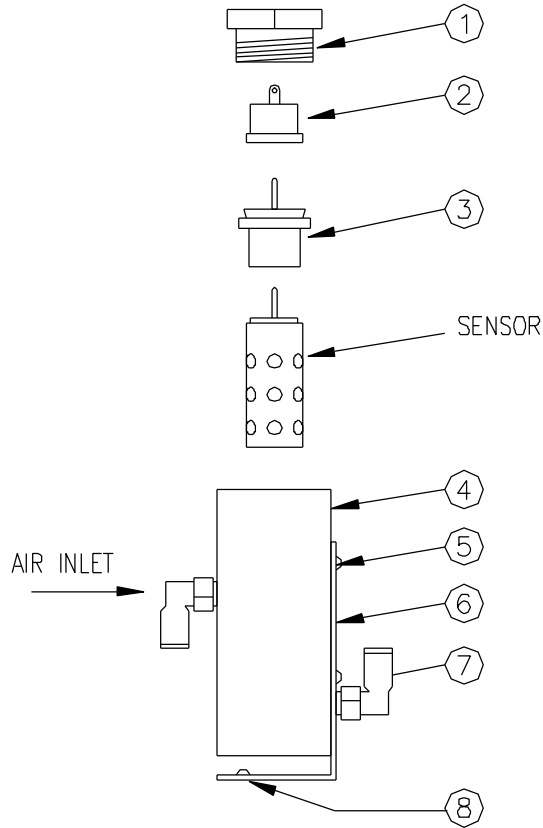
NOTE:  
MAKE THE POWER WIRES 6' LONG



	1	413446-A	S.S MOUNTING PLATE
	4		#8 x 1" MACHINE SCREWS W/LOCK WASHER AND NUT
1LT	1	413499	TERM SUPPLY LI GREEN 12VDC LIGHT
2LT	1	413498	TERM SUPPLY LI RED 12VDC LIGHT
INS	1	413497	NEWPORT SCIENTIFIC 6025 2 PIN CABLE, 6' Lg
BEZ	1	413494	NEWPORT SCIENTIFIC 1835002 BEZEL
PCB	1	413493	NEWPORT SCIENTIFIC 6392-N-115 PRINTED CIRCUIT BRD
SYM.	AM'T	PART NO.	DESCRIPTION

# Thoreson-McCosh Inc.

## SENSOR BLOCK ASSEMBLY



8	2		#8 X .75" SELF TAPPING MACHINE SCREWS
7	2	408002	LEGRIS -- ELBOW
6	1	---	TM 303980B/6 BRACKET
5	2		#10 X .5" MACHINE SCREWS W/LOCK WASHER
4	1	410273	NEWPORT SCIENTIFIC H33-00-101 MANIFOLD
3	1	409668	NEWPORT SCIENTIFIC 0900106 INSERT
2	1	405155	NEWPORT SCIENTIFIC 4-5020-2 SOCKET
1	1	409667	NEWPORT SCIENTIFIC 4600202 RETAINER RING
SYM.	AM'T	PART NO.	DESCRIPTION

# HYGRODYNAMICS

DIGITAL DEW POINT MONITOR

**PC BOARD**

**MODEL 6392N & 6392N2**

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## DIAGRAMS

MOUNTING & WIRING DIAGRAM DWG. # 6392NWD

NEWPORT SCIENTIFIC, INC.  
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## INTRODUCTION

The 6392N is a Digital Dew Point Monitor PC Board with relay setpoint, digital display and linear transmitter. This product is ideal for OEM applications on desiccant dryers. A complete monitoring system includes the 6392N (or 6392N2), a 1205DM Hygrosensor, and a variety of supporting accessories.

## SPECIFICATIONS

<b>Dew Point Range</b>	-40°F to +15°F (-40°C to -9°C)
<b>Sensor Part #</b>	1205DM
<b>Accuracy</b>	±2°F
<b>Alarm Set Point</b>	-10°F (-23°C) (Adjustable, see Calibration Section.)
<b>Remote Alarm Output</b>	Normally open and normally closed contacts, 5A @ 115V rated
<b>Recorder Output</b>	4-20 mA and 0-5V

**NOTE:** Use one (1) of the following equations when determining the corresponding dewpoint for milliamp (mA) or voltage (V) outputs.

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

$$(-40 = 4 \text{ mA or } 0 \text{ V}; 70 = 20 \text{ mA or } 5 \text{ V})$$

<b>Power Requirements</b>	115 VAC ±10% (230 VAC Available) 50/60Hz Or 18VDC to 28VDC (-24V versions)
<b>Power Consumption</b>	4 Watts max
<b>Dimensions</b>	3.5"W x 5.75"H

## INSTALLATION

1. The 6392N is designed to be mounted behind a panel with the built-in display showing through.
2. Drill and punch holes in your panel as shown on 6392N Mounting Drawing.

**NOTE:** If Newport Scientific bezel # 1835002 is used, the two (2) top mounting holes aren't required.

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3. Connect power to terminals HOT+ and NEUT- and ground to terminal GND of TB1 as shown on drawing.
4. Connect Sensor Cable to terminals A and B of TB1.
5. Recorder output signal is on TB3. Terminal 1 of TB3 is 0-5V output , Terminal 3 is 4-20mA output and Terminal 2 is signal ground.

## Wiring Summary

<b>Terminal No. TB1</b>	<b>Labeled</b>	<b>Function</b>
1	HOT+	Line Hot (or positive if 24V version board)
2	NEUT-	Line Neutral (or negative if 24V version board)
3	GND	Power and signal ground
4	NC1	Normally closed for relay #1
5	COM1	Common for relay #1
6	NO1	Normally open for relay #1
7	NC2	Normally closed for relay #2 (applies only to 6392N2)
8	COM2	Common for relay #2 (applies only to 6392N2)
9	NO2	Normally open for relay #2 (applies only to 6392N2)
10	A	Sensor lead
11	B	Sensor lead
12	GND	Power and signal ground
13	C	(not used)
14	D	(not used)

<b>Terminal No. TB2</b>	<b>Function</b>
1	Aux alarm +12VDC source
2	Aux alarm open collector output relay #1
3	Aux alarm +12VDC source (applies only to 6392N2)
4	Aux alarm open collector output relay #2 (applies only to 6392N2)

<b>Terminal No. TB3</b>	<b>Function</b>
1	Recorder output 0-5VDC
2	Power and signal ground
3	Recorder output 4-20mA
4	Aux no alarm +12VDC source
5	Aux no alarm open collector output relay #1
6	Aux no alarm +12VDC source (applies only to 6392N2)
7	Aux no alarm open collector output relay #2 (applies only to 6392N2)

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Terminal No. TB5	Function (Terminal TB5 is not available on 24V versions)
1	Pump power Hot (115VAC)
2	Pump power Neutral (115VAC)

## OPERATION & MAINTENANCE

Field calibration of the Hygrosensor is impractical. To ensure continued accuracy, it is recommended that the sensor be replaced annually.

### Circuit Calibration

**NOTE:** 6392N is supplied fully factory calibrated. This procedure is only necessary if circuit is thought to be malfunctioning.

1. Apply power and measure **TAB** of U201 (Voltage Regulator near side of PC Board). Adjust P4 for 5.00V.
2. With no sensor connected to terminals A and B, measure PIN 6 of U7. Check for  $0.0V \pm 0.05V$ . Check terminal 3 of TB3 for  $4.0mA \pm 0.1mA$ .
3. Place a jumper across sensor terminals A and B and adjust P1 for 5.00V at PIN 6 of U7. Check terminal 3 of TB3 for  $12.0mA \pm 0.1mA$ .
4. If these parameters cannot be met, contact Newport Scientific about factory service on PC board.

## Alarm Set Point Adjustment

Locate the display function switch (S1). **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. **If board is a dual relay version**, relay #2 can be adjusted similarly by turning SET1 position OFF and SET2 position ON. Now adjust the SET2 of potentiometer P3.
3. When finished adjusting the setpoints, return S1 to the default operating mode by turning OPER position ON and all others OFF.

A small red LED near the potentiometer P2 or P3 indicates when an alarm is occurring.

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## **Remote Alarm Connection (TB1)**

The terminals labeled NC, COM, and NO are for alarm indication. The NC and COM are closed when there is no alarm. The NO and COM terminals close when alarm occurs. Connect wires to terminal block on PC Board. For Relay #1, 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). For Relay #2, 7 & 8 are normally closed and 8 & 9 are normally open.

## **Auxiliary Alarm Indication (TB2)**

An open collector output on TB2 can be used to access alarm status. TB2 terminal 2 normally floats, and is pulled low when SET1 is exceeded. Terminal 4 is the output for SET2 if the board is a dual. Terminals 1 and 3 are 12VDC sources for these outputs. The maximum load through each output is 20mA.

## **Auxiliary Non-Alarm Indication (TB3)**

An open collector output on TB3 can be used to access alarm status. TB3 terminal 5 normally is pulled low, and floats when SET1 is exceeded. Therefore, these outputs are active when no alarm is present. These can be used to light a green pilot lamp, for example. Terminal 7 is the output for SET2 if the board is a dual. Terminals 4 and 6 are 12VDC sources for these outputs. The maximum load through each output is 20mA.

## **Recorder Output (TB3)**

The 6392N provides both outputs, 0-5VDC at terminal 1 and 4-20mA at terminal 3, which represent -40°F to +70°F. Terminal 2 is signal ground.

**-40°F=0V or 4mA; +15°F=2.5v or 12mA**

## **Auxiliary Pump Power (TB5)**

115VAC is available on TB5. If the board is set for 230VAC, the voltage at TB5 is stepped down to 115VAC so only one pump type is needed for both applications.

## **°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.

## **115 TO 230V Change**

Remove Jumper J1 and J3 and add Jumper to J2.

# **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.

