Digital Dew Point Meters
Model 8072 (120 and 230 Volt)
IMS #113145
(Units made after 2002)
INSTRUCTION MANUAL

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SAFETY SUMMARY

This manual uses the following signal words to call attention to the safety sign and to designate a degree or level of hazard seriousness.

1. **DANGER:** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations.

2. **WARNING:** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

3. **CAUTION:** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. Also used to alert against unsafe practices or property damage only accidents.

4. **NOTE:** indicates general safe practices, machine use instructions and information, property damage only hazards, temporary hazards, precautions to avoid a hazard, results of not avoiding a hazard, or any combination of these messages.

5. **SYMBOL/PICTORIAL:** conveys a message without words.

6. **SAFETY ALERT SYMBOL:** indicates a potential personal injury hazard; an exclamation point inside a triangle.
INTRODUCTION

The IMS #113145, Model 8072 Dew Point Monitor is used in the Plastics Industry to check for moisture in the output air from a desiccant dryer. The moisture reading is given as Dew Point Temperature. The dryer the air, the lower the dew point.

The meter’s sampling pump draws an air sample and pumps it into a chamber that contains a moisture sensor called a hygrosensor. The amount of moisture in the sample affects the sensor’s electrical resistance. Interpreting that resistance, the meter shows dew point temperature on the LED display.

Features include:
1. Two indicator lights: The GREEN light shows that the dew point is at or below the set point. The RED light shows that the dew point is above the set point. The factory default set point is -10° F. It can be changed using the procedure on Page 10.
2. An alarm that sounds if the dew point rises above the set point.
3. A chart recorder output: A 4 to 20 mA DC linear signal that can be used by a chart recorder to track levels of dryness. The output can easily be changed to 0 to 5 VDC. See instructions on Page 10.

NOTE

Though the Model 8072 reads dew points from -40° to +15° F., the chart recorder output is on a -15° to +70° F. scale. If you use a chart recorder, you will probably need to set it to 50% of scale.

DEW POINT TEMPERATURE --- A LAYMAN’S EXPLANATION

Warm air can hold a lot of moisture. As air temperature drops, so does its ability to hold moisture. At some point the air becomes saturated and dew forms. That point is called the dew point temperature of that air sample.

Rather than actually chilling a sample to the point of saturation, the IMS Company Model 8072 Dew Point Meter measures the moisture content and calculates the dew point temperature.

For example, if this meter reads -40°, it means that the actual air temperature would have to drop to -40° F. before the little amount of moisture in the sample would form dew.
SPECIFICATIONS:

Dew Point Range -40°F to +15°F (-40°C to -9°C)

Ability To Sample Air Temperatures of 40°F to 500°F

Sensor Part # 1205DM/IMS # 112254

Accuracy ±3°F

Alarm Set Point -10°F (23°C) Adjustable

Recorder Output 4-20mA scaled as -40°F to +70°F (0-5V optional)

NOTE: Use one (1) of the following equations when determining the corresponding dew point for milliamp (mA) or voltage (v) outputs.

\[
\begin{align*}
\text{mA} &= \frac{\text{DP} + 67.5}{6.875} \\
\text{V} &= \frac{\text{DP} + 40}{22}
\end{align*}
\]

-40°F = 4mA or 0V
70°F = 20mA or 5V

Indicators GREEN light indicating dew point below set point
Alarm and RED light indicating dew point above set point

Power Requirements 115VAC +10% (230VAC optional)
50/60Hz

Power Consumption 5 Watts

Pump Specifications Flow: 2.5 L/min (0.08 SCFM)
Vacuum: 6.8” of Hg
Pressure: 3.2 psi
(All pump specifications are nominal)

Dimensions 8072 Carrying Case 9" x 12 1/2" x 5" Deep

Weight 8 lbs. shipping
INSTALLATION/OPERATION

Refer to Figure 1 on Page 17 for parts identification.

**NOTE**
A key for the meter’s case and the unit’s serial number tag are behind the foam padding in the case lid when the unit is shipped.

**CONNECT CHART RECORDER (OPTIONAL)**
The Model 8072 includes a two-pin connector and three (3) sizes of strain relief for connecting a chart recorder. They are in a small bag behind the foam in the lid of the carrying case.

The DC output for a chart recorder is preset for 4 to 20 mA. It can be changed to 0 to 5 V. See Page 10 for instructions on this procedure.

**SELECT FAHRENHEIT OR CELSIUS SCALE**
The Model 8072 is factory set to read in the Fahrenheit scale. To change to Celsius, follow the instructions for this procedure on Page 10.

The 8072 is designed to sample process air at a pressure between -1 psig and +7 psig. This range of air pressure is typical of that found in a plastics drying system. If you are sampling compressed air, use model 8075. Air up to 500°F (drybulb) can be sampled if appropriate tubing is used. The clear plastic tubing supplied can withstand temperatures up to 180°F.

**NOTE:** For best sensor life and response time, avoid sampling ambient air of high humidity. Leave unit off when not monitoring a dryer or hopper.

Some units have a brass selector valve on the side panel. This valve should remain closed during any operation to prevent ambient air from leaking into the sensor manifold.

The 8072 is packaged for convenient spot checking of dryers or hopper systems, but it can be used continuously to monitor process conditions, with the alarm indicating when dryness is inadequate.
INSTALLATION/OPERATION (continued)

PRE-DRY HYGROSENSOR (Also Meter Self Test)  
(Should be performed BEFORE sampling dryers or hopper outputs)

NOTE

To pre-dry hygrosensor, desiccant in tube should be bright blue. If color has faded, pour desiccant in a pan and dry in a 350° F. oven for one hour. You may also use a suitable container in a microwave oven and heat for two minutes at HIGH setting. As soon as desiccant cools, place back in tube and reseal both ends. Do not leave desiccant out of tube; it will adsorb moisture.

Connect one end of desiccant tube to sampling tubing and the other end to sample exhaust tube to form a closed loop.

Plug meter into 120 V grounded outlet.

Turn ON/OFF switch to ON. Sampling pump will start drawing sample through desiccant tube.

Meter should read -40° F. within 10 to 15 minutes. If the meter does not, go through VERIFICATION AND TROUBLE SHOOTING beginning on Page 12.

Turn ON/OFF switch OFF. Remove desiccant tube, capping both ends.

CAUTION

HIGH HEAT could DAMAGE METER.
Do not bypass or cover cooling coil.
Do not close case while using meter.
Do not sample air above 500° F.
Tubing included with meter limits sampling air temperatures up to 180° F.

CONNECT METER TO SAMPLING POINT.
INSTALLATION/OPERATION (continued)

CAUTION
HIGH PRESSURE could DAMAGE PUMP.
Pressure not to exceed +7 PSI.

Dryer Output Sampling
The performance of a dryer can be evaluated by measuring the dew point of its output air.

1. Connect the 8072 sample tubing to a point in the drier’s output. Make sure not to exceed the supplied tubing temperature rating of 180°F.
2. Turn on the 8072 and allow the reading to stabilize. It can take 10 minutes or more for the unit to stabilize when first used. You can silence the alarm with the switch on the side of the panel.

A constant high reading on the 8072 may indicate a malfunctioning dryer or one that is overloaded by damp material in the hopper.

Hopper Output Sampling
Dryness of material in a hopper can be checked by measuring the dew point of air exiting the hopper. When a hopper is initially loaded with material, high dew points at the hopper air return are normal while moisture is removed. It can take significant time to dry material in some systems.

1. Connect the 8072 sample tubing to a point in the hopper’s air output. Make sure not to exceed the supplied tubing temperature rating of 180°F.
2. Turn on the 8072 and allow the reading to stabilize. Plastics processing can proceed when the dew point reading is low enough for your material.

Recorder Output Connection
The 4-20mA output jack on the front panel allows continuous monitoring of dew point over a period of time. The supplied mating connector can be wired as needed.

Pin 1: 4-20mA signal
Pin 2: ground
CALIBRATION & MAINTENANCE

NOTE
Most ISO certified companies are required to have their Dew Point Meter recalibrated with a Certificate of Calibration, which requires BEFORE & AFTER readings YEARLY. If your company is not ISO certified or you do not require yearly calibrations, you can change the sensor once a year & the air filter every 3 months and the unit may stay calibrated or within specifications indefinitely.

Contact Industrial Molding Supplies to schedule recalibration and/or repair — 1-800-537-5375.

Alarm Set Point Adjustment
The dew point at which an alarm occurs can be changed. The unit must be opened for this procedure so remove power before proceeding.

Remove the four nuts and screws that hold the panel in the case. Remove the panel and look at the PC board.

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

Apply power to the unit and turn it on with care, making sure not to touch any electrical components inside. Locate the display function switch (S1) near the upper left corner of the PC board. Note that only one position of this switch should be ON at a time.
CALIBRATION & MAINTENANCE (continued)

Switch the OPER position of S1 to OFF and the SET1 position to ON. Adjust SET1 potentiometer to the desired alarm setpoint as shown on the LED display.

![S1 setting for alarm setpoint view and adjustment](image)

When finished adjusting the alarm setpoint, return S1 to the default operating mode by switching OPER position ON and all others OFF as shown below:

![S1 setting for normal operation](image)

Remove power to the unit before assembling the panel back in its case.

°F to °C Display Change
The unit must be opened for this procedure so remove power before proceeding.

Remove the four nuts and screws that hold the panel in the case. Remove the panel and look at the PC board.

To change the digital display to °C, move jumpers J6, J7, and J8 (if present) to the C position.

TO CHANGE CHART RECORDER OUTPUT FROM 4 - 20 mA to 0 - 5 VDC
Recorder output signal is on TB3. Terminal 1 of TB 3 is 0 – 5 V output, Terminal 3 is 4 – 20 mA output, and Terminal 2 is signal ground.
Sensor Replacement Procedure

Replacement of the sensor is recommended on a yearly basis.

*NOTE: If you send your meter in for recalibration every year, this is done as part of the service.*

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.
4. Remove old sensor from socket and press the new sensor into the socket. Then slide the sensor and socket into the manifold.
5. Replace and hand-tighten the hex nut.
6. Install panel in instrument case.

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 panel from its case and disconnect the 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 ±2°F.
3. Place a jumper across the sensor cable. The dew point monitor should read +15°F ±2°F.

If display fails to read these values, contact Industrial Molding Supplies for factory service.
VERIFICATION AND TROUBLE SHOOTING

Refer to drawing on Page 17 for parts identification.

Test meter using the meter’s desiccant tube to provide dry air sample:
1. Connect desiccant tube to sampling tube. Connect other end of desiccant tube to sample exhaust tube to close the loop.
2. Turn unit ON.
3. Meter should read -40° F. within 10 to 15 minutes. If it does not, let it run for another 15 to 20 minutes to finish drying any parts of the meter that might have been damp.

**NOTE**
To test the hygrosensor, desiccant in tube should be dark blue. If color has faded, pour desiccant in a pan and dry in a 350° F. oven for one hour. You may also use a suitable container in a microwave oven and heat for two minutes at HIGH setting. As soon as desiccant cools, place back in tube and reseal both ends. Do not leave desiccant out of tube; it will adsorb moisture.

If meter does not pass test, check for a good vacuum at the end of the sampling tube (you should be able to feel vacuum with your finger). Check for leaks in the sampling tube or connections. Check for a loose nut in the sensor chamber; it should be hand tight.

If vacuum is good, the easiest check is to change sensors, following the instructions for this procedure on Page 11. If the reading is better with the new sensor, leave it in. If the reading is the same with both sensors, it is unlikely that both sensors are bad.

**NOTE**
IMS Company strongly recommends that you keep an extra sensor on hand. The spare sensor is useful as a diagnostic tool. Also, the sensor should be changed yearly to maintain the accuracy of the meter.
VERIFICATION AND TROUBLE SHOOTING (continued)

Test meter electronic logic using the following procedure. This procedure involves using the meter while it is out of the case. When the meter is plugged in, lay it down where no one or nothing will contact the exposed terminals.

1. Unplug meter. Remove chassis from case by removing four (4) screws from bottom and sides.
2. Unplug BROWN sensor cable from sensor manifold. You may need to pry gently on the cable to loosen it. Since the meter reads high resistance as low dew point, it will read the infinite resistance of the open connection as an extremely low dew point.
3. Plug meter in and turn it ON. Within 15 seconds, it should read -40° F. (or -40° C.) and the GREEN indicator should light to show the meter is finding a dew point at or below the low end of the range.
4. Turn meter OFF and unplug it.
5. Install a shorting wire in end of sensor cable. The meter should read the resulting low resistance as a very high dew point.
6. Plug the meter in and turn it ON. Within 15 seconds, it should read +15° F. (or -9° C.) and the RED indicator light should come on to show the meter is finding a dew point at or above the high end of the range.
7. Turn meter OFF and unplug it. Removing shorting wire and reconnect sensor cable.

If the electronics are good, replace the sensor following the instructions on Page 11. After you replace the sensor, use desiccant tube to test meter (see test procedure on Page 7). If the meter can read down to -40° F. dew point, it should not need recalibration after the sensor is replaced. For certified accuracy, return the unit to IMS Company for recalibration. Request a Certificate of Conformance to certify the calibration.

Field calibration of the circuit board can be accomplished by following these steps:

1. Recorder output signal is on TB3
2. Terminal 1 of TB3 is 0 – 5 V output.
3. Terminal 3 is 4 – 20 mA output.
4. Terminal 2 is signal ground.

DANGER

LIVE ELECTRICAL PARTS could cause DEATH or SHOCK.
Protect yourself from electrical parts.
Only qualified Electricians are to work on this meter.
VERIFICATION AND TROUBLE SHOOTING (continued)

Reassemble meter before use. If none of the above steps solve the problem, contact an Industrial Molding Supplies Representative for trouble shooting assistance. A Return Authorization Number (RA#) is required to return the meter to Industrial Molding Supplies.

SENSOR EXPOSURE LIMITATIONS

In normal plant use, the hygrosensor should last indefinitely. The following conditions can have a negative effect on the sensor.

PHYSICAL
Dust is generally hygroscopic and slows down response time. Oil forms a film that keeps sensor from sensing water vapor.

If using the meter where there is a lot of dust or oil in the air, check filter often. Change if dirty. (As a rule, you should change the filter every three months if meter is used on a regular basis)

PRESSURE, VACUUM, VAPOR PRESSURE
The crystals in the sensor can realign after a long time in a strong vacuum, in high vapor pressure or in high temperatures.

POLAR VAPORS
Polar vapors such as ammonia, amines, alcohols, glycols and glycerols can temporarily poison the sensor.

The sensor would act the way it does when exposed to water vapor. Normally the sensor returns to normal after being removed from the polar vapors.

CHEMICAL
Mercury vapor, unstable hydrocarbons such as ketones, halogen gases, and sulphur compounds such a hydrogen sulphide and sulphur dioxide can affect the sensor.

Note that sulphur compounds are often used to give an odor to gas lines. In humid air, they can mix with moisture and form an acid.

CONDENSATION AND OTHER SOURCES OF WATER
The crystals in the sensor can be changed or even washed away by water. If sampling very moist or very cool air (unlikely in a plastics shop), heat sampled air above the dew point temperature before letting it into the meter.
## PARTS FOR CURRENT & OBSOLETE DEW POINT METERS

<table>
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<tr>
<th>OLD IMS NUMBER</th>
<th>NEW IMS NUMBER</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>TEZ9-0300157</td>
<td>121703</td>
<td>CONNECTOR KIT FROM DEW POINTER METER TO CHART RECORDER</td>
</tr>
<tr>
<td>TEZ9-1541012</td>
<td>121709</td>
<td>HARD CASE FOR 8072 DEW PT METER</td>
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<tr>
<td>TEZ9-4100132</td>
<td>116195</td>
<td>SAMPLING TUBE FOR DEW POINT METER, TEMP RANGE: 60 DEG F TO 500 DEG F</td>
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<tr>
<td>NONE</td>
<td>140508</td>
<td>ROCKER SWITCH - ON/OFF FOR MODEL 8072 DEWPOINT METER/MONITOR</td>
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<tr>
<td>TEZZ-1205-1</td>
<td>103790</td>
<td>WHITE HYGROSENSOR FOR 9342F DEW POINT METER</td>
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<tr>
<td>TEZZ-1205-2DM</td>
<td>108706</td>
<td>WHITE HYGROSENSOR FOR 8005F DEW POINT METER</td>
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<tr>
<td>TEZZ-1205-DM</td>
<td>112254</td>
<td>HYGROSENSOR FOR 8070 &amp; 8072 DEW POINT METER</td>
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<tr>
<td>TEZZ-13002-28</td>
<td>105674</td>
<td>RED NEON LIGHTS FOR 8072F DEW POINT METERS</td>
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<tr>
<td>TEZZ-13002-29</td>
<td>105673</td>
<td>GREEN NEON LIGHT FOR 8072F DEW POINT METERS</td>
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<td>TEZZ-13002-31</td>
<td>119179</td>
<td>RED NEON LIGHTS FOR 9342F DEW POINT METERS</td>
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<td>GREEN NEON LIGHTS FOR 9342F DEW POINT METERS</td>
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<tr>
<td>TEZZ-1826-2</td>
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<td>HYGROSENSOR FOR MODEL 8074 DEW POINT METER</td>
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<td>TEZZ-1875ST</td>
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<td>3/16&quot; I.D. PLASTIC SAMPLING TUBE F/9342F - 8005F - 8072 - 8074</td>
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<tr>
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<td>113615</td>
<td>VACUUM PUMP FOR DEW POINT METER/MONITOR #3305003</td>
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<tr>
<td>TEZZ-3305005</td>
<td>103808</td>
<td>INLINE AIR FILTER FOR DEW POINT METER #3305005</td>
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<tr>
<td>TEZZ-6245</td>
<td>103796</td>
<td>DESICCANT TUBE FOR DEW POINT METER</td>
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<tr>
<td>TEZZ-SP3513</td>
<td>115611</td>
<td>PEN PACK FOR CR4207 CHART RECORDER - 6 PENS PER PACK</td>
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<tr>
<td>TEZZ-SP353</td>
<td>115608</td>
<td>PAPER FOR CR4207 CHART RECORDER, - BOX OF 100 SHEETS</td>
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</table>
LIMITED WARRANTY

All IMS auxiliary and testing equipment are warranted to be free of defective material or workmanship for a period of two years from the date of shipment from IMS (unless a different warranty term is specified in writing by IMS). All basic consumables, including but not limited to consumable machinery components and commodity items such as fuses, heater bands, immersion heaters, elements, brushes, belts, O-rings and otherwise renewable parts shall be warranted against defects for a period of 90 days from the date of purchase. If any product is found by IMS to be defective, IMS's sole obligation under this limited warranty shall be, at its option, the repair or replacement of such product or any part(s) thereof, at no charge to the customer. IMS's limited warranty does not cover, and IMS expressly disclaims any warranty with respect to, any defect, failure, deficiency or error which is: (a) not reported to IMS within the applicable warranty period and returned to IMS within 30 days of notification of the customer's warranty claim; (b) due to product modification, abuse, misuse, improper storage, unauthorized repair or maintenance or abnormal conditions of temperature, humidity, dirt or corrosive matter; (c) due to the application of the product, either intentional or otherwise, in an improper manner; or (d) due to normal wear and tear of the product or any part(s) thereof.

IMS' LIMITED WARRANTY IS IN LIEU OF AND EXCLUDES ANY AND ALL OTHER WARRANTIES REGARDING PRODUCTS, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTY OF MERCHANTABILITY, THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, IMPLIED WARRANTIES AGAINST DEFECTS IN DESIGN, MATERIALS AND WORKMANSHIP, AND THE WARRANTY AGAINST REDHIBITORY DEFECTS. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

CUSTOMER WAIVES ALL OTHER CLAIMS AGAINST IMS.

IMS' TOTAL LIABILITY RELATED TO ANY PRODUCT IS LIMITED TO THE REPAIR OR REPLACEMENT OF SUCH PRODUCT AND IN NO EVENT SHALL EXCEED THE PURCHASE PRICE OF SUCH PRODUCT PAID TO IMS BY CUSTOMER. IMS SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, INDIRECT OR EXEMPLARY DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE PURCHASE, STORAGE OR USE OF THE PRODUCT, INCLUDING, BUT NOT LIMITED TO: (A) DAMAGES FOR LOSS OF USE, INCOME OR PROFIT; (B) LOSSES SUSTAINED AS A RESULT OF INJURY (INCLUDING DEATH) TO ANY PERSONS; AND/OR (C) DAMAGES TO PROPERTY, OTHER THAN THE PRODUCT.
AIRFLOW SCHEMATIC

* WITH VALVE IN OPEN POSITION

---- AIRFLOW WHEN SAMPLING FROM POSITIVE PRESSURE
MAINTENANCE RECORDS AND NOTES