UPC·MARATHON

FurnaceDoctor® - DPT
Dewpoint Analyzer
User Manual

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MANUAL #: 104

Revision #	Revision Date	Revision Description
009		

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WARRANTY:

UPC-Marathon warrants its goods as being free of defective materials and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to UPC-Marathon during the period of coverage, UPC-Marathon will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. Specifications may change without notice. The information we supply is

believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

TECHNICAL ASSISTANCE

For all questions or concerns regarding the operation of the **FurnaceDoctor®-DPT**, please consult the last page of this manual for contact information.

Table of Contents

1 SAFETY

Please read the instructions before operating the instrument.

This instrument complies with accepted industrial safety standards. Do ***NOT*** operate this instrument with the internal top cover removed.

2 EQUIPMENT RATINGS

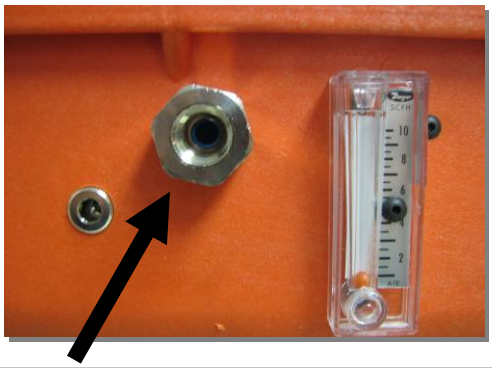
Charger Voltage	110 Vac
Charger Frequency	50/60 Hz
Power Consumption	1.5 Amps
Range	-50 ºF to 80ºF / -45ºC to 27ºC
Battery	12V Lead Acid

3 ENVIRONMENTAL RATINGS

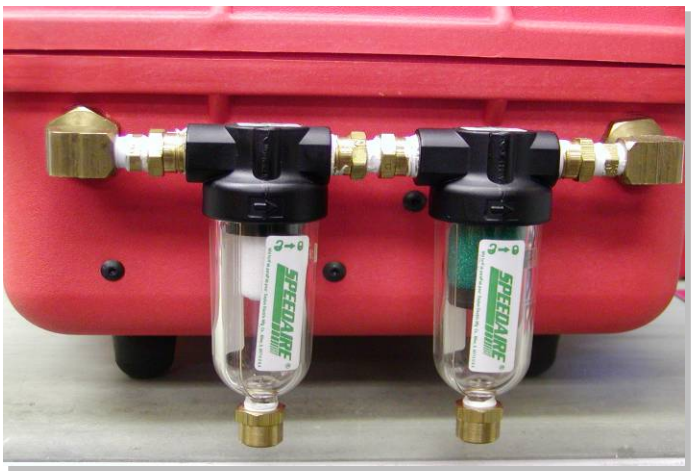
Operating Temperature	40ºF - 120ºF Ensure the enclosure has adequate ventilation
Relative Humidity	5% to 90%, non-condensing
Dew Pont Range	-50ºF to +80ºF (-45ºC to 27ºC)
Accuracy	± 0.9°F Accounting for maximum deviation in RH measurement and the internal temperature sensor.
Atmosphere	The instrument is not suitable for operations in explosive or corrosive environments. Ammonia is strictly prohibited in the sample. Concentrations of >500 ppm of NH3 will have an increasingly negative effect on the sensor. Avoid acidic atmospheres, expose to highly acidic processes can damage the sensor

4 OPERATION

- Connect one end of the sample tube to the barb fitting on the analyzer inlet. Six feet of silicon sample tubing is included with the analyzer. Connect the other end to the furnace sample port. Do not use oxygen probe burn off ports, or connect to a port with a lamb's wool, or angel hair filter already installed.



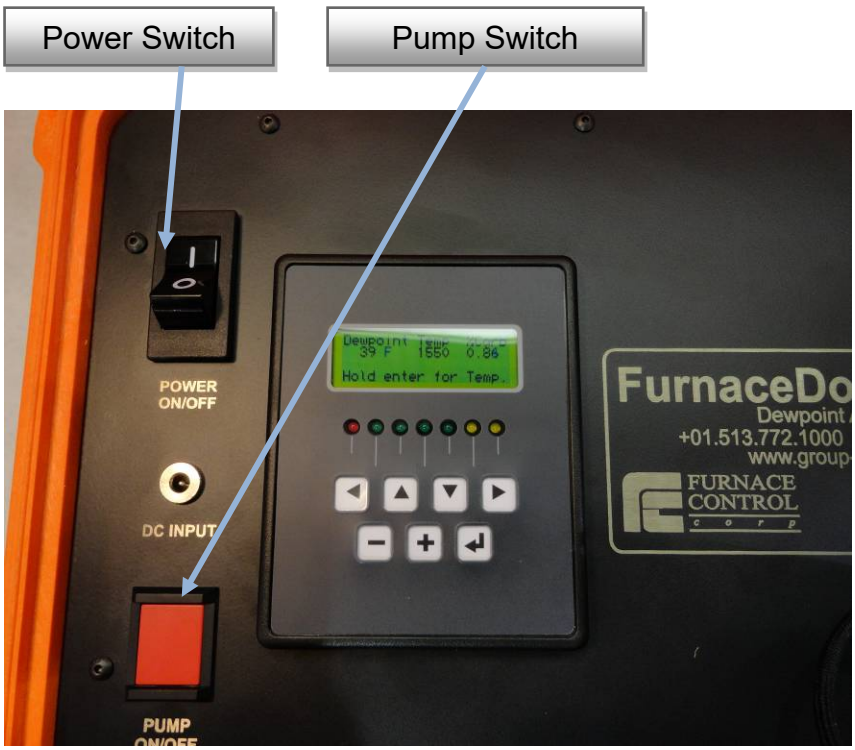
Sample inlet hookup point



Any discoloration in the white sample element requires the element to be replaced. - P/N T-FIL-01

The .3 micron (green) filter should be changed annually

P/N T-FIL-02



Power the unit on by depressing the power switch. Depress the Pump button to start sampling.

- The LCD display will illuminate, and the internal pump will begin after pump switch is depressed drawing a sample.

Allow adequate time for the sample line to purge. Moisture could be retained in the sample line. At least two minutes for each 10 feet of sample line is recommended.

- Ensure that sample flow is adequate. If you are sampling a generator with significant pressure at the sample port, it is recommended that you partially close the port valve so that the internal pump is not damaged. The pump is rated at 4 LPM @ 1 PSI.

- The following display is shown on the LCD when power is applied to the unit.

- Measurement begins immediately and is continuous. The display includes measured dew point, °C or °F, calculated theoretical carbon for the displayed dew point, and milli-volts for the computed %Carbon and manually entered temperature

- **If you desire to compute the %C associated with that dew point – press and hold the enter button. The message "Enter Process Temp" appears on the top line.**

- The arrow will point under the digit in the temperature number. Change the indicated digit by using the +, - keys until the desired digit appears. Use the right or left pointing arrow keys to move from digit to digit until the desired temperature is displayed. Press the enter key to store and go to the next page.

- Depressing the enter button will take you to the Deg C or F page. Enter a 1 for Deg F, or a 2 for Deg C. Change the indicated digit by using the +, - keys until the desired digit appears

- Depress the enter button to return to the main page to display the Dewpoint. The instrument displays the carbon for the measured dewpoint and entered probe temperature. Additionally, it displays calculated %C.

NOTE: Carbon values are computed based on equilibrium atmosphere conditions with no compensation for the type of steel processed. The calculation also assumes 20% CO. Any variation in equilibrium conditions will affect %C. Some carbon control instruments allow the adjustment of the displayed carbon in the form of a process factor or CO factor. Be sure to set these values back to theoretical before comparing values with the FurnaceDoctor®-DPT.

THESE NUMBERS ARE FOR REFERENCE ONLY

4.1 Calibration

The FurnaceDoctor®-DPT must be returned to UPC for factory calibration.

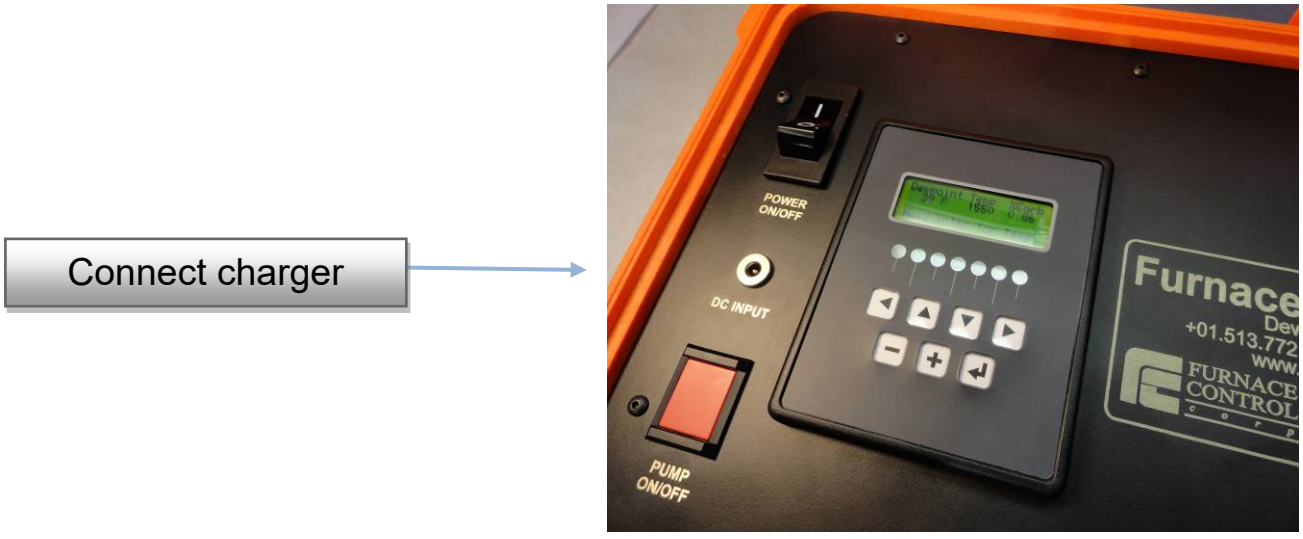
4.2 Charger

Your FurnaceDoctor®-DPT includes an external battery charger. Charge the unit for at least 8 hours.

- A unit will operate continuously for approximately 8 hours without recharging. A full charge will take approximately 4 hours to complete. It is not necessary to completely discharge the battery before charging.
- To charge the unit, turn the FurnaceDoctor®-DPT power switch to the off position.
- Use a properly grounded extension cord to connect the charger to a 110 VAC source.

Charging

The unit must be off for charging. The charger is not designed to be an AC adapter. The battery will provide hours of service before recharging is required.



- Red Status Indicator Light –battery is charging
- Green Status Indicator Light- battery is charged

Dual-voltage, Regulated, Sealed Lead-Acid Battery Chargers

Our top-of-the-line chargers are designed to maintain maximum performance from your batteries. These chargers feature dual-voltage output, and regulated current control to insure that no damage occurs during charging or while the battery remains on the charger. The charger is provided with screw-terminal outputs, allowing the user to attach any output cable they desire.

The charger begins its charge cycle on “fast-charge”, providing the battery with constant voltage of 15VDC, and regulated current of 1000mA. This charge cycle is indicated by the red LED. As the charging cycle progresses, the terminal voltage of the battery will rise to an eventual 15VDC. At this point, the charger senses this voltage, and the fast-charge circuit cuts-off, also turning off the red LED. The “floatcharge” circuit then turns on with the green LED, providing the battery with a constant voltage of 13.8VDC. This voltage can be left on the battery indefinitely without damage and keeps the battery fully charged.

Note: Unit is designed to operate with a charged battery. Using the charger as an AC adapter will not allow the battery to charge properly. Eventually the battery will not be able to sustain operation of the analyzer. Please connect the charger with the unit’s power off and charge only when battery is low.

5 ANALYZER FAQs

Can I check calibration of the analyzer?

The best way to confirm that the analyzer is working is to find out what the local humidity is and take the analyzer outside. Run it for 15 minutes sampling ambient air and compare the reading with the reported local dew point. If the analyzer reading is ±5° of the reported dew point, then the analyzer is probably working.

Special equipment is required to do a full calibration, so if you are in doubt about the operation of the analyzer, it must be returned to UPC. Recommended factory calibration is once a year.

What is the temperature range I can enter?

Any process temperature can be entered, but if this value is less than 700 or greater than 2000, the temperature will default to 1550, if power is cycled or if the temperature edit screen is opened.

What is the temperature value for?

The temperature value that is entered by the operator is used to calculate the % carbon. Enter the actual process temperature to get an estimate of the corresponding carbon. The dew point cell has its own internal temperature sensor used to calculate the dew point.

How long does the charge on the battery last?

A fully charge battery can run continuously for about 10 hours with the pump running the entire time. The total current draw during this condition is 400mA. The analyzer can run for more than 20 hours without the pump running. The current draw during this condition is about 40mA.

You should always fully charge the analyzer before using it because it can appear to be working when in fact the output voltage is too low to support the dew point cell circuitry but will continue to power the display and processor unit. The result is erratic dew point readings when the battery voltage under load drops below 10V.

Is the dew point sensor still OK if it gets wet?

Obviously you want to sample non-condensing gases so liquid water does not form in the analyzer's filters and cell. Dual filters are set up in the gas stream to try to protect the cell. However this situation occurs from time to time.

The best thing to do is to remove the filter elements and connect a pure dry gas such as nitrogen to the analyzer. You should run the pump and balance the pressure on the nitrogen regulator to maintain a flow that does not load the sample pump.

Run this gas through the analyzer until there is no evidence of any moisture in either the inlet or outlet of the analyzer.

Replace the filter elements with new before putting the analyzer back into service.

Sensors that have been exposed to high dew point or liquid water for extended periods of time have a tendency to drift. If there is any question regarding the stability of the sensor after exposure to water you should return it to UPC for evaluation.

Are there any replacement parts inside the analyzer case?

No, breaking the seal on the cover and/or altering any components or tubing, or changing the analyzer configuration in any way will void the instrument's warranty.

What is the warranty period of the analyzer?

A new instrument has a 12 month warranty starting from the time the instrument is shipped. Any replacement part or repair will carry the remainder of the original warranty or 90 days, whichever is greater.

6 CUSTOMER SUPPORT

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		Poland: +48 32 296 66 00

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