
Particle Analysis and Display System (PADS): Dew Point Hygrometer (Dewpoint) Module

Operator Manual

DOC-0193 A-1, PADS 2.5.6

Dewpoint Module 2.5.1



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1.0 Introduction

The Particle Analysis and Display System (PADS) is a software package that interfaces with instruments produced by Droplet Measurement Technologies (DMT) and other leading instruments used in the atmospheric sciences. This manual describes the PADS module for the Dew Point Hygrometer (Dewpoint).

For an explanation of the basic PADS setup and instructions on how to acquire data using PADS, consult the *PADS Operator Manual*. Definitions and calculations used in the Dewpoint module are also described in the *PADS Operator Manual*.

For information on the Dew Point Hygrometer, consult [EdgeTech](#), which manufactures the instrument.

2.0 Configuration

Using PADS, you can configure both the software for the instrument and the instrument's data display in PADS. The following two sections explain how to do this.

Configuring the Dewpoint

Your Dewpoint sensor and data system should arrive preconfigured from DMT. In some cases, however, you may want to change the software configuration for the instrument. To do this, follow the steps below. *Note: Droplet Measurement Technologies STRONGLY recommends that customers contact our office prior to changing any of the parameters in the instrument configuration. Improper changes can result in communication failure and/or changes in PADS computation algorithms, which can compromise data validity.*

1. Click on the “Dewpoint” tab.
2. From the **Configure** menu, select **Configure Instrument**. You will see the following window.

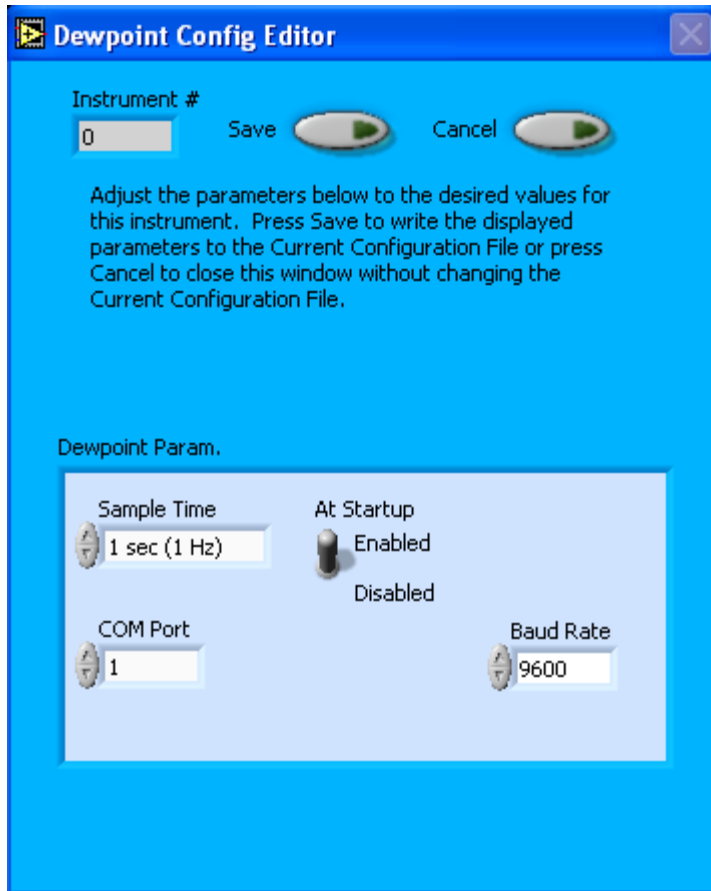


Figure 1: Dewpoint Configuration Editor Window

3. Now you can configure the instrument parameters to your desired specifications. You will find a list of the parameters you may want to reconfigure in the two sections below, “Occasionally Reconfigured Dewpoint Parameters” and “Rarely Reconfigured Dewpoint Parameters.” If at any time you would like to revert to the previously saved values for the Dewpoint parameters, press **Cancel** to exit the window without saving changes.
4. When you are done configuring the Dewpoint parameters, press **Save** at the top of the Config editor window. (If you would instead like to revert to the previously saved values, click **Cancel**.) Then press the green **Reset Program** button for the new configuration to take effect. Note that pressing the **Reset Program** button will clear any data currently being displayed.

Occasionally Reconfigured Dewpoint Parameters

Sample Time: This parameter shows the time interval between samples. It should normally be set to 1 sec / 1 Hz. If you want to change the sample time, you must reprogram the Dewpoint with a new output interval and set the PADS **Sample Time** to match this interval.

Note that you may not be able set the Dewpoint output interval to all of the options listed on the PADS **Sample Time** field. For details, consult [EdgeTech](#) or the Dew Point Hygrometer manual.

At Startup Enabled / Disabled: If you want the Dewpoint to acquire data when PADS begins sampling, make sure this parameter is in the “Enabled” mode. In some cases, such as if the Dewpoint is inoperative, you may want to use this control to disable the probe. Disabling the Dewpoint allows data to transmit from other instruments without interference.

COM Port: This is the serial communications port that the Dewpoint uses to connect with the computer. This number should match the computer hardware configuration for the particular computer you are using. If you are not using multiple computers, this number should not be changed.

You will notice that there are other parameters listed on the **Dewpoint Config Editor** window. You should not need to change these, and changing them may compromise your data. If you are curious about these parameters or think you do need to modify them, see the section titled “Rarely Reconfigured Dewpoint Parameters” below or consult with a DMT technical representative.

Rarely Reconfigured Dewpoint Parameters

The Dewpoint configuration editor displays several parameters that you will rarely need to modify. The following is a list of these parameters and an explanation of what they do.

Instrument #: This lists the number corresponding to the instrument you are viewing, in this case the Dewpoint. If your Dewpoint has been assigned instrument number one, you will see “1” in this field. You should not need to modify the instrument number, and in fact you are unable to do so from within PADS.

Baud Rate: The Baud rate for the probe is defined at manufacture, and you should not need to change it. PADS lists this parameter because some probes can run at different baud rates. So if you reconfigure your hardware, the baud rate may change. In general, a higher baud rate

means that the probe can transmit data more quickly to the computer. However, higher baud rates may not work with some computers and can result in unreliable data transmission.

After making changes in the instrument configuration window, you will need to press the **Save** button and then click the green **Reset Program** to activate these changes. Clicking **Reset Program** will clear any data PADS is currently displaying.

Configuring the Dewpoint Display

To configure the Dewpoint display, click on the Dewpoint tab if you have not already done so. Then select **Configure** from the menu bar and click on **Configure Display**. This will bring up the following window.

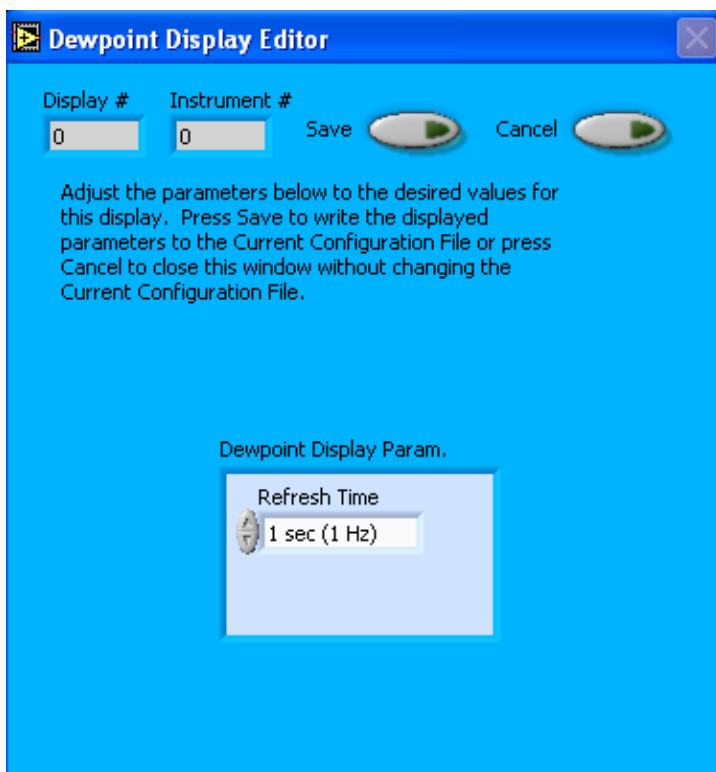


Figure 2: Dewpoint Display Editor Window

You do not need to modify the **Display #** or **Instrument #**. Changing the **Refresh Time** allows you to set the time intervals for data display during acquisition mode; you can choose any time that is equal to or greater than the sample time. (Choosing a time less than the sample time is not useful, since the same data will be displayed multiple times.)

When you are done, click on **Save** to update the configurations or **Cancel** to revert to the previous configuration. After you reset PADS, you will be able to see any changes you

have made to Refresh Time. Note that clicking **Reset Program** will clear out any data currently being displayed.

3.0 The Dewpoint Window

At the top of the main Dewpoint window are the **Enable** button, **COM Port** indicator, and **Fault/No Fault** button. For explanations of these features, see the “Instrument Tabs” section of the *PADS Operator Manual*.

Dewpoint Tabular Data and ABC Cycle Button

To the left of the main chart are the dewpoint indicator and the ABC Cycle button, as shown in Figure 3. The dewpoint indicator shows the dewpoint or frostpoint reading for the currently selected moment in time. The ABC cycle indicator signifies whether the dewpoint’s Automatic Balance Control (ABC) cycle is on or off. The ABC cycle is useful in calibrating sensor optics, but data are not recorded when the cycle is on. Thus the indicator must read “ABC Cycle Off” for currently displayed data to be valid.

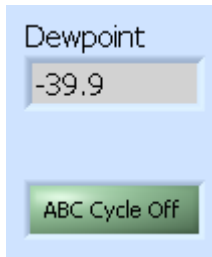


Figure 3: Dewpoint Indicator and ABC Cycle Indicator

When PADS detects that ABC cycle is on, it sets the ABC channel value to 1 and turns the ABC cycle indicator on. It also sets current dewpoint values to NaN, since the instrument is not gathering data. For more information about the ABC cycle, consult EdgeTech’s *Dew Point Hygrometer Operator’s Manual*.

Chart Display

The dewpoint chart displays dewpoint or frostpoint values for the sampling session, as shown in Figure 4.

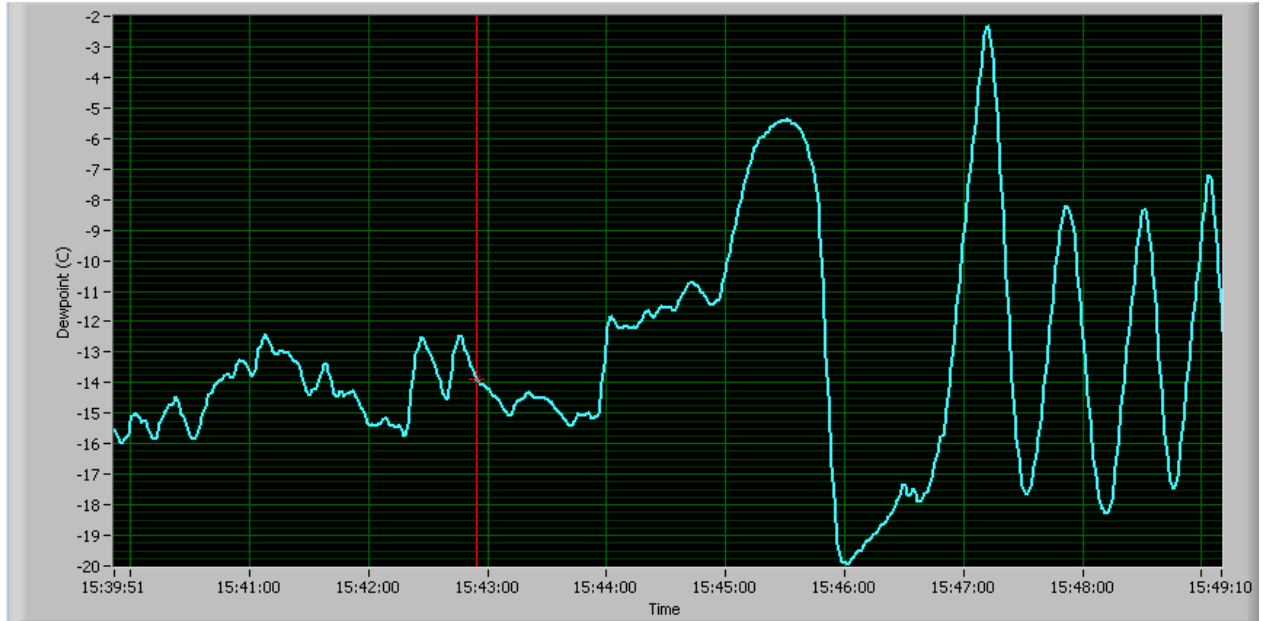
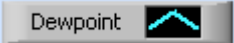


Figure 4: Dewpoint Chart Display

The  button at the top right of the chart allows you to modify the chart display options. To see a drop-down list of these options, click on the button.

When you access time-series charts in playback mode, the currently selected moment in time is indicated by a red cursor, as shown above. The y-axis value for this time is indicated by cross (+) on this cursor. Note that when you display a large range of time-series data, the chart display does not have sufficient resolution to display each individual time point. To increase resolution, zoom in on the data by changing the time interval to a smaller range.

You can change the scale by typing a different number into the starting and ending values on each axis. For instance, if you want to change the time period in the graph above to end at 15:45:00, you simply select the field that currently says 15:49:10, type in 15:45:00, and hit the <Enter> key. In acquisition mode, you must disable autoscaling (see below) before you modify fields in this way.

Many charts also show you options for scaling and copying the data when you right-click on them, which brings up a drop-down menu. These options are as follows:

Autoscale This autoscales the relevant axis. In autoscaling mode, the minimum and maximum values of the axis are set automatically so that all data points can be seen in the display. Note that on charts that have autoscale buttons, like the large histogram chart on some instrument tabs, the buttons override the Autoscale options in the drop-down menu. To see autoscaling options in the drop-down

menu, position the cursor over the relevant axis before right-clicking. Note that you may not always be able to autoscale the x-axis.

Copy Data This copies the chart to the clipboard using a screen capture. This chart can then be pasted into other documents like Word or PowerPoint presentations.

Export Simplified Image This copies a simplified image of the data to the clipboard or an output file. You can choose the format you desire—bitmap (.bmp), encapsulated postscript (.eps), or enhanced metafile (.emf). Note that when you select the .eps option, you must copy the data to a file. Unless you specify otherwise, output files will be saved in the time-and-date-specific output file directory for the current session.

Clear Graph This erases the currently displayed data points from the graph.

Appendix A: Dewpoint Channels

A list of Dewpoint channels appears below. The Dewpoint output file will contain data values for each channel for each sampling instance.

For definitions of the channels, consult *Appendix A: Definitions* in the *PADS Operator Manual*.

Time
Month
Day
Year
Hours
Minutes
Seconds
Dewpoint (C)
ABC
Status
GPS Time

Dewpoint channels fall into several broad categories:

Time Channels: The time channels store time data. Time is generated by the PADS computer clock and is the time when the program receives the Dewpoint data. It is given in seconds after midnight on the day the program was started. Month, Day, Year, Hours and Minutes are generated by the Dew Point Hygrometer and reflect the time data was sampled as measured by the hygrometer's internal clock. GPS Time is included in every instrument's list of channels whenever a GPS is included as one of the PADS instruments. GPS Time will be collected from an instrument other than the Dewpoint, even though it appears as a channel in the Dewpoint output file.

Data Channel: Dewpoint holds the results of the instrument's dew point calculations.

Status Channels: ABC provides information about the Dew Point Hygrometer's status. Status is currently always set to one, but it will be used in the future to store data on the communication between the instrument and PADS.