
Particle Analysis and Display System (PADS): Serial Output Module Manual

DOC-0296 Rev A

PADS 3.5.0

Serial Output Module 3.5.0



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Risks of Installing Additional Software

Instrument computers from DMT are configured to acquire data in a reliable, robust manner. Typically, such instruments are either not connected to a network or are connected to a small, local network that is isolated from the internet, reducing the risk of viruses. Since anti-virus programs can cause erratic behavior when run in the background on data acquisition computers, DMT does not install anti-virus, anti-spam, or anti-malware programs. If you choose to install these programs, you accept the risk associated with them in terms of potential performance degradation of the software installed by DMT.

For similar reasons, DMT recommends that you do not install or run other software on the dedicated instrument computer. Although the installation of some software may be unavoidable, it is particularly important not to run other software while the computer is acquiring data.

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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 Serial Output display version 3.5.0, which allows you to select data channels from multiple instruments within PADS to be sent out over a serial port and/or written to a data file.

For an explanation of the basic PADS setup and instructions on how to acquire data using PADS, consult the *PADS Overview Manual*, DOC-0300. This manual also gives definitions for all the channels that Serial Output module can send over the serial stream.

The Serial Output tab is accessible from the **Summary** tab. (Note that this tab may be called something other than Summary if you have renamed it.) For more information about other Summary sub-tabs (XY Plots and Numeric, Histogram Summary, XYZ Color Plots, and Summary Array), consult DOC-0299, the *PADS Summary Module Manual*.

2.0 Configuring the Display

To configure the Serial Output display, click on the “Summary” tab if you’re not already on it. From the **Configure** menu, select **Configure Display**. Then click on the **Serial Output** tab. You will see the window in Figure 1.

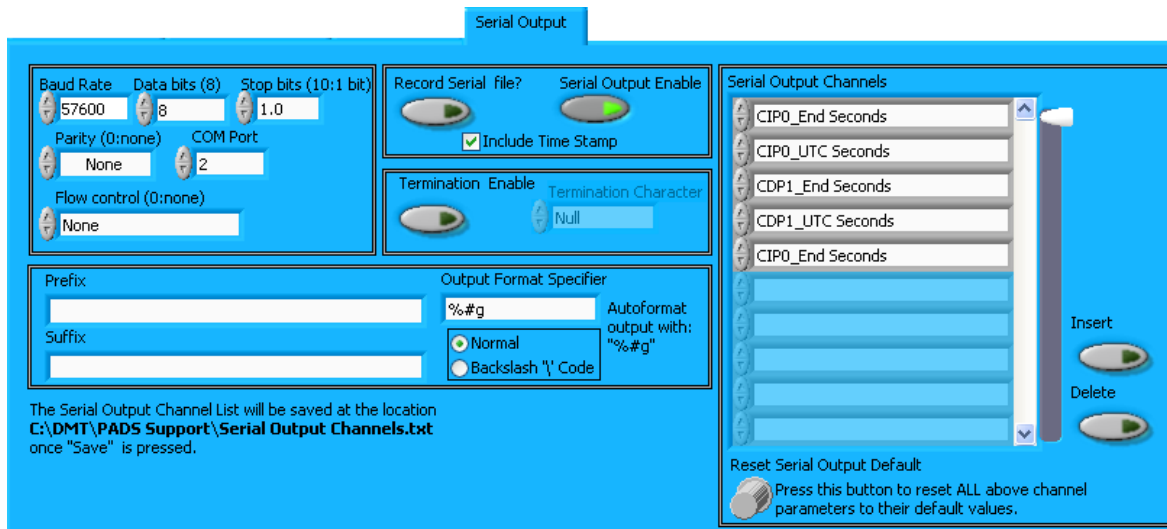


Figure 1: Summary Display Editor Window with Serial Output Sub-tab Active

The **Baud Rate**, **Data Bits**, **Stop Bits**, and **Parity** parameters set the communications protocol for the serial output.

The **COM Port** lists the communications port that PADS sends the serial output to.

Flow Control sets the rate of data transmission so that the receiver is not overwhelmed with data from the serial output transmitter. The options are as follows:

- None (no regulation)
- XON/XOFF (software flow control)
- RTS/CTS (Request To Send/Clear To Send)
- XON/XOFF and RTS/CTS
- DTR/DSR (Data Terminal Ready/Data Set Ready)
- XON/XOFF and DTR/DSR

If **Record Serial File?** is enabled, PADS will create a new output file containing the same data that is sent over the serial stream. The name of this file will be `Telemetry[YYMMDDhhmmss].csv`, where [YYMMDDhhmmss] is the time stamp.

If **Serial Output Enable?** is enabled, data are sent out via the serial stream.

If **Include Time Stamp** is checked, a time stamp is included with each sampling instance of the serial output data. The time stamp is the same as the **End Seconds** channel (see the *PADS Overview Manual*). It appears as the first data point after the prefix, if there is any.

If **Termination Enable** is selected, the **Termination Character** control will activate, allowing you to specify a termination character that appears at the end of each sampling instance. The termination character comes after any suffix. Available termination characters are <Null>, <Carriage Return>, <Line Feed>, and <Carriage Return Line Feed>. These are characters that operating systems typically use to identify a break in the serial data.

The **Normal / Backslash ‘\’ Code** radio determines how data appear in the **Prefix** and **Suffix** fields—whether as normal text or using “Backslash” codes to make unprintable characters visible. For instance, the line

End data

in normal mode would appear as

End\sdata

in Backslash ‘\’ Code.

Prefix and **Suffix** allow you to specify a prefix or suffix to be inserted before or after the data, respectively.

Output Format Specifier allows you to specify the output format for the data. This format determines things like whether the data will appear in hex or decimal format, how many digits of precision are given, and so on. `%#g` is the default. This option uses automatic formatting to ensure adequate resolution for all channels regardless of their individual values. As a result, the data stream is not of fixed length but can vary from one record to the next. For information on other output formats, contact DMT.

The **Serial Output Channels** is an array of channels that are included with the serial output data. You can navigate within the array using the scrollbar, and you can insert and delete channels using the buttons to the right of the array. Note that the white pointer to the right of the array of channels indicates where a channel will be inserted or deleted. Channels can be taken from any active instruments and will appear in the order specified here. Once you press save, this list of channels is written to the directory `C:\DMT\PADS Support\Serial Output Channels.txt`.

Normal / Backslash ‘\’ Code controls the format of the serial stream as it appears on the tab. This format can be either normal text or text with “Backslash” codes to make unprintable characters visible. For instance, the line

End data

in normal mode would appear as

End\data

in Backslash ‘\’ Code.

The **Serial Output** channels array shows the values for the Serial Output channels that were selected on the Display Editor (see Figure 1). You use the scrollbar to view rows further down in this array.

The **Serial Output String** displays the current string that is being sent out. This includes the data plus the prefix, time stamp, suffix, and terminal character, if these have been selected. The string’s format depends on the setting of the **Normal / Backslash ‘\’ Code** control. However, the data is sent to the serial port and written to the file in normal format, not Backslash format. Backslash formatting is only an aid for viewing the string on the screen.

Settings lists the communications protocol for the serial data.

Prefix and **Suffix** list the prefix and suffix that precede and follow each instance of serial-stream data.

Most of the information on the **Serial Output** sub-tab is for display only. To change the values of these parameters, you will need to do so via the Display Editor (see section 2.0).

Appendix A: Revisions to Manual

Parts of this document appeared in DOC-0200, the *PADS 2.X PADS Telemetry Module Manual*. This document has been completely updated to reflect PADS 3 features.