

*Version 5.11  
User's Guide*

# **PARTICLE ANALYSIS REPORTING SYSTEM**

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## Overview

The **Particle Analysis Reporting System** (PARS) is custom software designed to make particle counting more productive. These are some of the benefits:

- Control operation of the particle counter from a PC keyboard. This provides a significant increase in productivity since you can do other things while the counter is in operation.
- The **Operate Particle Counter** screen allows you to capture particle count data from the counter and will display each run (from 1 to 99) and the average values. From this screen you can capture and see the run and average values.
- You can set threshold levels in the PARS program to have the computer warn you when the average results vary more than the standard you specify allows.
- PARS provides five text fields, two numeric fields, one Note field and five check boxes that can be used for entering user-defined data.
- You can set a pre-flush option to flush the sampler automatically before beginning the count.
- In addition to saving directly into the PARS database, during sampling you can set options to simultaneously save each run average to these destinations:
  - Text file (ASCII format for export to another software product such as a spreadsheet or word processor).
  - Printer
  - Serial communication port (for **simultaneous** export to another computer for example). You can select any combination of destinations and choose which format to use to send the data; custom (ASCII) or standard counter format (LPA).
- Sample history data can also be sent to the same destinations from the Export screen in original counter format or custom ASCII format.
- Maintain a library of your database files for easy management of your information. You can use different counter settings for each sample database and copy settings from an existing database to a new one. Here is an example of how this feature is used: Setup two database files, each with different channel sizes. Then when you open the Operate Particle Counter screen, PARS can automatically send the appropriate channel size settings to the counter before sampling begins.
- From the Browse screen you can:
  - Export Sample data (Averages and run detail) in different output formats (8000A, Excel, Access, Custom format)
  - View sample history data in a grid format with query features.
  - View only the data that interests you.
  - Rearrange the columns, sort the data and delete samples.
  - Change editable data by simply clicking on the field you want to modify, and then enter your changes.
- PARS has an easy to use graphical interface.

## System Requirements

Please verify that the computer on which you will be installing PARS is running one of the following operating systems:

**Win 7, 8, 10 (32/64 bit) Note: while PARS may work with other Windows operating systems, we will only provide technical and programming support for the operating systems listed and newer.**

The following is the minimum suggested PC configuration. All equipment should be MS Windows compatible:

- PC with Pentium 4 CPU
- 1024 MB of memory
- 100 MB of free disk space (you can store more data if you have more free disk space available)
- CD-ROM drive for software installation
- VGA or higher resolution monitor
- Printer to print reports
- Keyboard and mouse

If installing PARS on a network, it is recommended that you install the PARS software on the PC and the database files on the network drive. **In a network environment, each computer with PARS installed must have separate licensed copies of the program.**

## PARS Navigation

To move around in PARS you can use the keyboard and the mouse. For some features only the mouse will work. When you see a word with an underlined letter (**Acccept**), you can press a combination of **Alt key + underlined letter** to select that option. In this example you would press and hold the **Alt** key and then press the letter **A**. To move from field to field on any screen where data input is requested, you can click directly on the field you want to update or you can use the **Tab** key to move the cursor **forward** or **Shift+Tab** to move **backward**.

## Software and Cable Installation

If you are a current PARS customer, backup the existing PARS directory before installing this version. Additionally, to avoid program conflicts, do not install new versions of PARS into the same directory as any previous version of PARS.

Before you begin, please verify there are no other programs running on your computer during installation.

### Install the PARS program

- Insert the Installation CD into the CD-ROM or compatible drive.
- On the installation screen, click the link labeled “Click here to install PARS”.
- If the installation screen does not display, run the program **SETUP.EXE** located on the CD.
- Follow the instructions presented on the installation screens.
- Before you begin using PARS for the first time, please review this User’s Guide to become familiar with the program and its features.

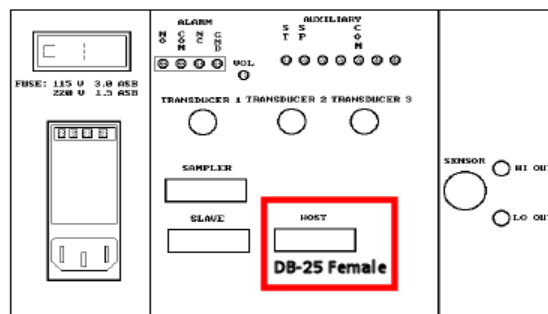
### Connect the counter to your computer

Before you configure the software, be sure the counter is physically and properly connected to a serial communication port on the PC where PARS is installed. **The cable used is an RS-232 straight-through (modem) cable.** The cable end that connects to the counter “Host” connector is a DB25 pin male connector. The cable end that connects to the computer serial port is a DB9 pin female connection. A USB-to-Serial Cable can also be used if the computer does not have a DB9 connector. Be sure to install any cable software drivers (if required) according to the cable manufacturer instructions.

Example of DB9-to-DB25 RS-232 straight-through (modem) Cable



Example of USB-to-Serial Cable



Rear panel of Counter

## Quick Start Instructions

These instructions are provided to enable you to configure PARS and the Particle Counter so that you may quickly begin to use the program. Once you have verified that the software and the Particle Counter are operating properly, you can change the counter settings to match your production environment.

### Configure the counter

- Insure the serial cable is connected from your computer to the “Host” connection on the back of the counter.
- Turn on the counter.
- Manually configure the counter with the following settings:

**Note: In order for the PARS software to work properly, the following “MORE/HOST STUP” parameters should not be modified once set.**

#### MORE/HOST SETUP

Host Interface:	ENABLED
Report Runs:	YES
Report Averages:	YES
Report Format:	LONG
Data Format:	CUMULATIVE
Baud Rate:	9600
Parity:	NONE
# of Data Bits:	8
# of Stop Bits:	1

### Start the PARS program

- Select the PARS icon that was created in your programs group during PARS installation. Click, Double-Click or hit enter to start PARS.
- Enter an Operator name in the Operator ID field. This is typically the person’s name that will be running the samples that day. The default is “Operator” if you do not enter an ID. PARS does not keep a list of Operators; the last person to login is the name that will first appear when PARS starts.
- If the software has never been registered, the main screen will display DEMO in the “licensed to” area.
- If you are using PARS in DEMO mode, go to the next section. Otherwise continue with the next bullet point. Note: In DEMO mode, there is a restriction on the number of samples you can save to the database and the number of databases you can use. Also, you cannot save/export records in DEMO mode.
- On the menu bar at the top of the screen, click on Help then Register PARS Software.
- Read the license agreement.
- Fill in the fields on the screen and enter the serial number and registration number you received when you purchased the software.
- Click OK and you are finished with registration.

### Create a sample database file

- Click on the “Maintain” button at the top of the main screen in PARS.
- Click on the Create button.
- Enter a Database Description. E.g., “Test Sample File” (without quotes).
- Click on the Browse button.
- Enter a valid file name. E.g., “TestDatabase” (without quotes). You do not need to enter the .mdb extension.
- Click Save, then click OK.
- Select the file you created and click on the Open button.
- You are finished creating a sample database file. Now you will need to configure the sample database file with the counter settings. (See next page).

### Configure PARS System Settings

- **NOTE: Please be sure to close and restart the PARS program after saving system settings for your changes to take effect.**
- On the menu bar at the top of the main screen, click on Configuration, PARS System Settings.
- On the PARS Settings tab, place a check mark in the “File” check box at the right middle part of the screen. Also mark the check box next to File (Column “Output in 8000A format”).
- Below the “File” checkbox, click the Browse button and supply a file name that will contain a copy of the sample records. E.g., “TestSamples”. Click the Save button on the screen where you entered the database file name. The program will append .prn to the filename during sampling. This is the file that will contain a copy of the data saved in the PARS database you created (e.g., “TestDatabase”). The file can then be opened in another application like a spreadsheet program or used as input to a custom application such as a LIMS program.
- Click on the PARS System Settings screen, “Com Ports” Tab.
- Click the Test button at the bottom, middle of the screen and watch the status window to be sure the counter is properly connected to the software. If the connection is successful, the status will show “**Pass, Counter responded with !REMOTE+**” in the window. If you get an error message, try changing the **Counter** radio button at the upper left to com2, com3 and com4, while running the test after each change. If the connection is not successful, you will need to contact your Computer Support team for assistance in determining if there is a problem with the cable, serial port on your computer or some other issue. You may also try turning off the counter, exit PARS and shut down your computer. Then turn on the counter and then turn on your computer. Then start PARS and try the connection test again.
- If you successfully connected the software to the counter (the message “**Com Port PASS – Counter PASS**” will show under the com port settings buttons), you are finished configuring the PARS System Settings. Click “Save” to return to the main screen.

### Initialize the sample database file with the counter settings:

- Click on the large “Counter” button at the top of the main screen in PARS.
- Click on the OK button on the warning message box that is displayed.
- Click on the “Quick Setup” button at the bottom left of the Counter Settings screen.
- PARS will cycle through the tabs reading the settings from the counter. When it has finished reading the counter settings, the program will save the settings to the PARS database you created. Click on the OK button. The Counter Settings screen will close and you will return to the Main screen.
- You have completed initializing the PARS database with the counter settings and may now run a sample.

### Run a test sample

- Click on the large “Operate” button at the top of the main screen in PARS.
- On the screen that displays, click on the Operate button to begin operation. Do not check the box labeled “Configure counter with database settings”. If the box is checked, the program will resend the settings to the counter which could change the counter settings and then the counter and PARS will be out of sync.
- The Operate Particle Counter screen will display.
- Prepare your fluid, air, etc. sample and the equipment attached to the counter.
- When ready to begin, click on the green F9=Start button or press F9 on the keyboard.
- PARS will show the status of the operation. You should also see the sampler begin to operate and the front panel of the particle counter will show the operation too.
- When the entire cycle is complete, you will see the message “**Data has been received; review and save**”.
- Click on the F2 Save button or press the F2 key on the keyboard.
- Run and save more samples if desired. **NOTE: If you are in DEMO mode**, you are restricted to saving one sample and one database file. Use the Delete button on the main screen to delete samples.
- When finished, click on the F5=Exit button or press the F5 key on the keyboard to exit the Operate screen and return to the main screen.



- You have successfully completed running samples. You may now use the Browse screen or run a report to view the data. If you are satisfied that everything is working properly, you can return to the settings screens to finish customizing PARS to fit your production operation.

Note: You can convert an older PARS database by using the **File, Convert Old Database (Alt+F,C)** Menu bar option. PARS v5.x will only convert PARS 4.x, 5.x files. Please contact Gajjt Software support if you need to convert 3.x and older files. Note: A PARS database that contains sample records cannot have its counter settings changed. However, if you delete all the samples in that file, then you are able to change the counter settings.

***END OF QUICK START INSTRUCTIONS***

## Logon to PARS

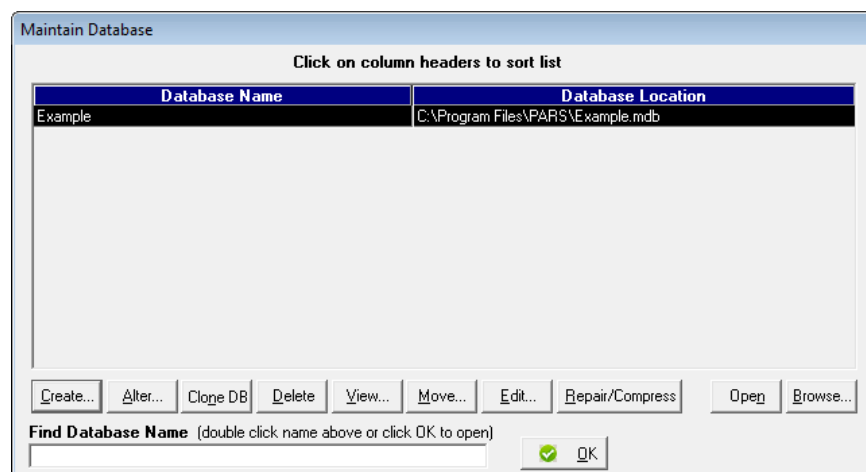
When you start the PARS program, you will need to Logon. The default Operator ID is "Operator". The last name used will always be the name shown. PARS does not keep a list of operator names. If the check box is selected, the next time you start PARS, the logon screen will be bypassed. In that case, you can click on the Logon title in the Menu bar to display the Logon screen.



The dialog box is titled "Operator ID". It contains a text input field labeled "Enter Operator ID" with the text "Operator" entered. To the right of the input field are two buttons: "Logon" (with a green checkmark icon) and "Cancel" (with a red X icon). Below the input field is a checkbox with the text: "Check box to automatically login using the last Operator ID entered. Select Logon from main menu to display this screen again."

## Creating and Maintaining Database Files

Before you can use PARS, you will need to create a database. This database will contain information about the samples you are going to collect and the settings you used when collecting those samples. Select **Alt+M** (Maintain button) or **Alt+F, M** (File, Maintain) from the main screen or click on the Maintain icon button. The following screen appears. Use the **Maintain Database** screen to Create, Alter, Clone or Delete a database, View database specifications, Move the database to another disk drive or directory, Edit the Name or Location, Repair and Compress the database, Open and Browse a database.



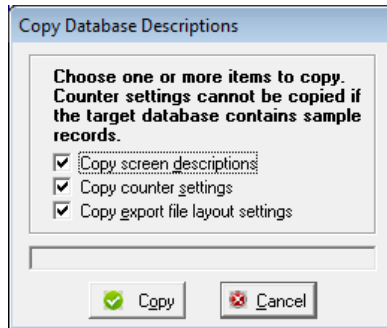
The dialog box is titled "Maintain Database". It features a table with two columns: "Database Name" and "Database Location". The table contains one row with the values "Example" and "C:\Program Files\PARS\Example.mdb". Above the table is the instruction "Click on column headers to sort list". Below the table is a row of buttons: "Create...", "Alter...", "Clone DB", "Delete", "View...", "Move...", "Edit...", "Repair/Compress", "Open", and "Browse...". At the bottom, there is a text input field labeled "Find Database Name (double click name above or click OK to open)" and an "OK" button with a green checkmark icon.

Database Name	Database Location
Example	C:\Program Files\PARS\Example.mdb

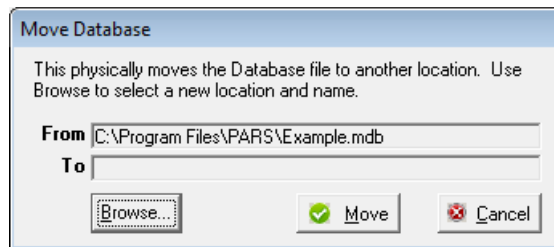
- Click on the "Database Name" column header to sort the list of Databases by name. Or, click on the "Database Location" column header to sort the list by location. Click once to sort ascending and click a second time to sort descending.
- Enter a database name in the "Find Database Name" field. As you begin to enter a name, the row closest matching the first and subsequent letters you enter will be highlighted until ultimately the database you desire is highlighted (if it is present in the list) or in close proximity.
- Double clicking on a row in the grid is the same as clicking on the Alter button.

The following list describes the button functions on this screen.

- Use the Create button to create new database files. See section "Creating or Altering a database" for details.
- The Alter feature is used to modify existing database settings previously created with the Create button.
- Select the Clone DB button to make a copy of an existing database. The following screen is displayed to select copying three options. 1) Screen Descriptions, 2) Counter Settings, 3) Export File Layout Settings.



- To delete a database, highlight the file you wish to delete. Then select the **Delete** button. You have the option of deleting the entry from the list only or delete the entry from the list and delete the file from the disk drive.
- Select the **View** button to display information about the database you have highlighted. The View screen shows the Database Description, Location Path and database name, PARS Version, File Size, Number of Records, Last Accessed date and time, Latest Sample date and number, Oldest Sample date and number, Cuml/Diff setting, Standard and eight channel sizes.
- To move a database, select the **Move** button. The following dialog box appears with your highlighted entry displayed in the **From** field. Select the **Browse** button to choose a path and file name to move the database. This name will appear in the **To** field. When ready click on the Move button and the file will be moved to the location specified. (You can move a file to the same directory but with a different name.)



- Click the Edit button to edit the Database Name and the Database Location. An edit is not performed to determine if the Database Location you modify is valid.
- Select the **Repair/Compress** button to fix a corrupted database. Be aware; it is possible that the corrupted data (in the worst case, all data) will be lost. Your file can become corrupted if your computer is powered off or re-booted while PARS is running, for example. How do you know if your file is corrupt? PARS may inform you of a problem with that database when others work fine. Also, if you experience problems operating PARS with a database that previously worked fine, then it may be corrupt. Selecting **Repair/Compress** will also reorganize the database and possibly reduce the file size. If you have deleted many entries from a database, it is quite likely the file size will be reduced by some amount. However, deleting just a few records may not have any effect on the file size. If the Repair option does not fix the database file, you will need to create a new database file. **Caution: As a safeguard, always backup your files before you perform the Repair/Compress function.**
- If you highlight an entry in the grid and select the **Open** button, the highlighted file will become the current database and the Maintain screen will close. The currently opened database file path and name will be displayed in the lower right hand corner of the PARS main screen.
- If you select the **Browse** button, the Browse\Print Samples screen will display and you can perform any of the functions on that screen.

When finished with the Maintain Database screen, select OK to close and return to the Main screen.

## Creating or Altering a database

To create a database, from the Maintain Database screen, select Create, **Alt+C**. If you want to change the values in an existing database, choose Alter, **Alt+A** instead. The following screen appears in which you can enter the Database Description and choose a path location for the database if it is new. (If the database exists, you are only allowed to change the description and Defined Fields. To change the location, use the Move option described later in this section.)

The changes on this screen are unique to each database created.

Database and Screen Field Titles

**Database Information**

Description: Example  
 Filename: C:\Program Files\PARS\Example.mdb

Use Browse button to enter a Filename.

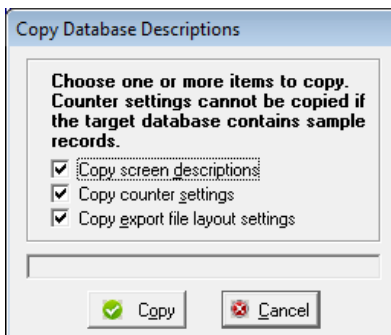
Use the options below to customize field titles on the Operate Particle Counter screen. If the "Clear Field" boxes are checked, the field will be cleared when the record is saved (F2=Save button). F1=New will always clear all fields. Use the yellow fields to customize PARS with titles you are accustomed to. Use the green fields to specify a default value that PARS will use to pre-fill the fields and save with every sample record.

PARS Defined Fields		User Defined Fields			
Default Field Title	Custom Field Title	Default Field Title	Custom Field Title	Default Field Value	Clear Field Value
Arr Date	Arrl Date	UserField1	UserField1		<input checked="" type="checkbox"/>
Smpl Nbr	Smpl Nbr	UserField2	Customer	Gajjt Software, Inc.	<input type="checkbox"/>
Alt Smpl Nbr	Alt Smpl Nbr	UserField3	UserField3	0	<input checked="" type="checkbox"/>
Standard	Standard	UserField4	UserField4		<input checked="" type="checkbox"/>
PVi	Pyi	UserField5	UserField5		<input checked="" type="checkbox"/>
Cntr Nbr	Cntr Nbr	UserField6	UserField6		<input checked="" type="checkbox"/>
Run Dt	Run Dt	UserField7	UserField7	0.00	<input checked="" type="checkbox"/>
Diff Cumu	Diff Cuml	UsrChk1	UsrChk1		<input checked="" type="checkbox"/>
Dltn Fctr	Dltn Fctr	UsrChk2	UsrChk2		<input checked="" type="checkbox"/>
Background	Background	UsrChk3	UsrChk3		<input checked="" type="checkbox"/>
Counts/mL	Cnts/mL	UsrChk4	UsrChk4		<input checked="" type="checkbox"/>
		UsrChk5	UsrChk5		<input checked="" type="checkbox"/>

Use the YELLOW fields to customize PARS with titles you are accustomed to. Use the GREEN fields to specify a default value that PARS will use to pre-fill the fields and save with every sample record.

- Enter a database description (up to 60 characters). Then use the Browse button to select a directory and enter a filename (if new). You should change the data field titles on this screen to something that is meaningful to you.
- PARS provides you with user defined fields allowing you to save additional information about the sample. There are five text fields (UserField1, 2, 4, 5, 6), two numeric fields (UserField3, 7) and five check boxes (UsrChk1-5) that are user defined. Use the "Custom Field Title" boxes to give the user defined fields custom names. For example, you could change "UserField2" to "Customer" as shown in the example. The name "Customer" will then be display throughout PARS instead of UserField2. The maximum number of characters allowed for each field title is 20 characters. **However, it is possible that some screens and reports will not display all 20 characters due to display size limitations.**
- On this screen, you also have the ability to set default values for each of the custom fields; "Default Field Value". The values you enter will automatically appear in the field on the Operate Particle Counter screen when first opening the screen and when selecting F1; New. If the "Clear Field Value" box is checked, the field will clear after pressing F2; Save. Therefore uncheck the box if you want the field to always default to the value set. You can overwrite the default field on the Operate screen, and after saving, the screen will show the override value (if the Clear Field Value box is not checked). Press F1 to show the default values again. In the above example, "Gajjt Software" will be the default "Customer" field value on the Operate Screen each time a new sample is started.

- At the far right of the screen there are check boxes; “Clear Field Value”. These check boxes are used by PARS on the **Operate Particle Counter** screen to determine when to clear the UserFieldx and UsrChkx fields for the data you enter when running a sample. For example, on the **Operate Particle Counter** screen, you enter customer “Gajjt Software, Inc.” into the Customer (UserField2) field and then save the record (F2). After saving the sample, PARS will clear the Customer field if the check box on this screen is marked. If the check box is not marked, then the value “Gajjt Software, Inc.” will appear in the field. In this example, the feature keeps you from having to reenter the customer name for subsequent samples (you can always manually change the value or clear the field.)
- If you use the “**Click here to copy...**” option, you can select screen descriptions, counter settings and export layout settings from an existing database and copy those values into the new or changed database. This is a time saving feature. Please note that counter settings cannot be copied if the target database contains records.



When finished with the Database and Screen Field Titles, select “Save” to save your changes. Your new database will appear in the grid of the Maintain Database dialog box.

**Note: You can create several database files this way. A separate database file could be used for different customers, for example. You could also create a new database for each month is another example. Each setting on this screen is unique to its own database.**

## PARS Database Files

PARS database files can be identified in the Windows Explorer program by their filename. The filename will be of the format \*.MDB where \* is the file name you have chosen. With each database file there is an associated file with an .LDB extension. When you access your database, PARS automatically creates the .LDB extension file and then removes the .LDB file when you close PARS or select another database. This file is used to monitor shared access and file security. Please insure that the PARS program is closed when you run backups to avoid conflicts with the backup program and PARS. If you desire, you can copy the \*.MDB files to another computer that is running PARS and then use the **Create** option to add the file to the PARS list of databases. (Review the paragraph above on **Creating and Altering a Database.**)

You should periodically backup the entire PARS directory where you originally installed the software and your database files.

## Converting Older PARS Database Files

If you previously owned PARS 4.x, 5.x and want to convert that data to the current version, follow the instructions below. Beginning with PARS v5.0, only PARS 4.x and higher databases can be converted. If you have older sample database files you wanted converted, please contact [Support@GajitSoftware.com](mailto:Support@GajitSoftware.com) with the details of your request and we will provide you a cost estimate for providing that service.

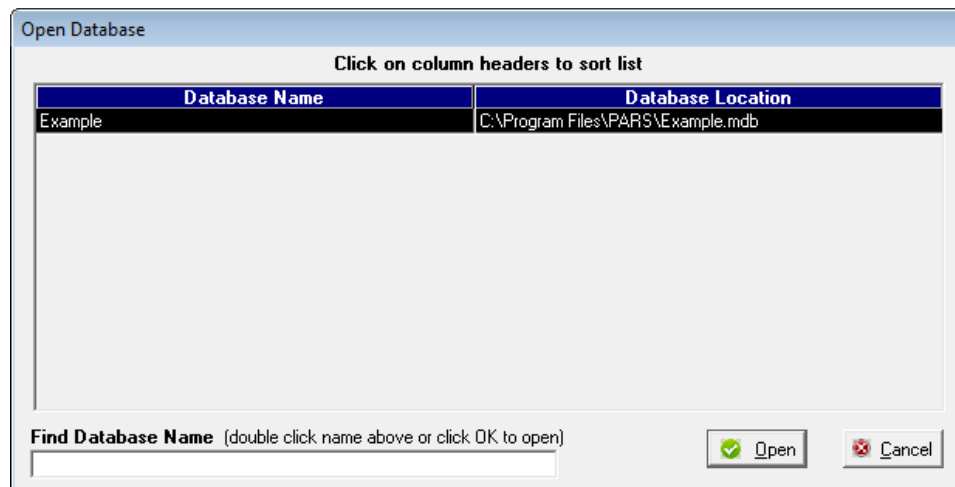
To convert PARS 4.x and higher Database Files:

1. Create a backup of the database you wish to convert, (PARS will not create a backup of the file to be converted. Also, once converted, the converted database file is not backwards compatible with previous versions of PARS).
2. Start PARS by double clicking on the PARS icon in Windows.
3. From the PARS main screen select **File, Convert 4.x,5.x Database (Alt+F,C)**. Use the file open dialog box to choose the database you wish to convert. Click on Ok.

PARS will convert the database to the current version. Verify the conversion of your data by reviewing the settings screens and the Browse screen.

## Open Database Screen

Use this screen to view and open database files you have saved. To open a database file: Double click on the row with the database you want to open. Or, click once on the row and then click the Open button. The name and location of the open database will appear at the bottom right of the PARS main screen.



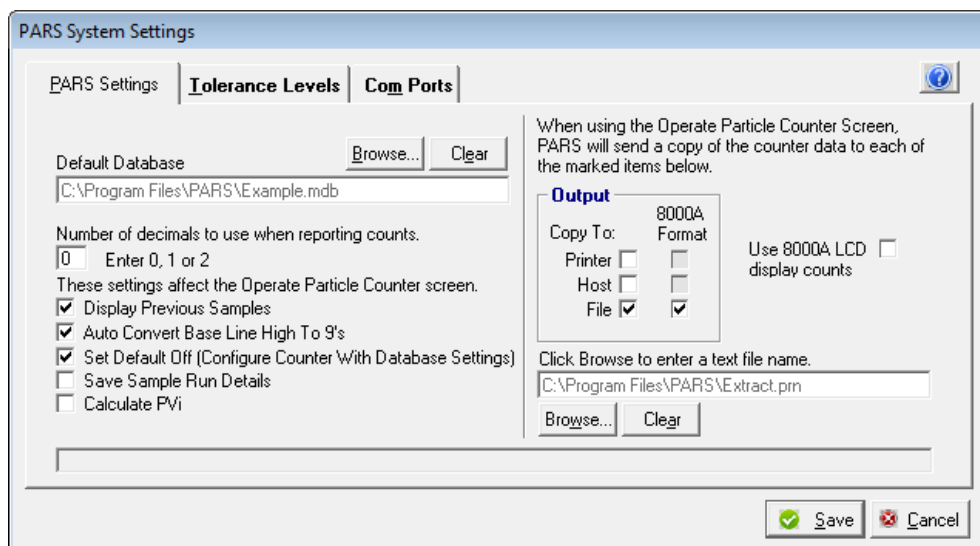
- Click on the “Database Name” column header to sort the list by name. Or, click on the “Database Location” column header to sort the list by location. Each subsequent click will change the sort order.
- Enter a name in the “Find Database Name” field. As you begin to enter a name, the row closest matching the first and subsequent letters you enter will be highlighted until ultimately the database you desire is highlighted (if it is present in the list) or in close proximity.

## PARS System Settings

To activate this option, select **Alt+C,S** from the menu bar. This option is used to set system level parameters in PARS. **These settings apply to all databases.** There are three tabs. One is used for PARS settings, one for Tolerance Level settings and one for Com Port settings.

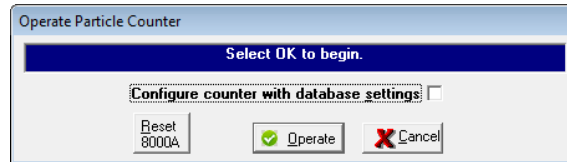
**NOTE: Please be sure to close and restart the PARS program after saving system settings for your changes to take effect.**

### PARS Settings



- On the PARS Settings tab, you can enter a value for the **Default Database** by using the top left **Browse** button. PARS will use this information to automatically open that database each time the program starts. You can override the currently open database by using the **Open Database** screen and selecting a different name. To erase the file name select the **Clear** button. Specifying a Default Database will keep you from needing to select a PARS database each time you start the PARS program.
- The “**number of decimals**” field is used to tell PARS how many decimals to use when displaying and saving the average channel counts. This option works with PARS screens only. The reports and report screen will display whatever the database holds. The valid values are 0, 1 and 2.
- The **Display Previous Samples** checkbox works with the **Operate Particle Counter** screen. If this box is marked then a grid will appear at the bottom of the Operate screen and will show data in the currently open database. If you do not want to see previously stored data then unmark this box.
- The “**Auto Convert...**” check box tells PARS that when a Baseline high sample is received from the counter, automatically display all 9’s for the channel counts. If the box is unmarked, PARS will display the counts unchanged. You can manually convert the counts to all 9’s by using the right mouse key to select the BH check box. Use the left mouse key to mark the sample Baseline High without converting the counts.
- The “**Set Default Off**” check box works with the **Operate Particle Counter** startup dialog box. If you want to always send the counter settings from the PARS database to the counter before you begin operating, then unmark this box. Doing so will set the check box on the startup dialog box on (“Configure counter with database settings” is on). When the Operate screen is displayed, PARS will send the configuration settings to

the counter. Typically, you would check “Set Default Off” box and then you can always check the “Configure Counter” Box any time you open the Operate Screen. If you know that the counter settings match the PARS database file, you do not need to configure the counter with database settings each time you start sampling. Additionally, resending the settings to the counter could possibly change more counter settings than you are expecting. Always verify the counter settings when using this option.



- The “**Save Sample Run Details**” check box will save the sample detail runs into the database.
- The “**Calculate PVi**” check box is used to tell PARS to calculate the Particle Volume index. The PVi is a calculated value used by some labs to provide an easier way to see a change in particle distribution.
- The “**Copy To**” and “**8000A Format**” check boxes are used to tell PARS where to send an additional copy of the sample data and whether or not to send the data in 8000A long format. If you do not check any of the “8000A Format” boxes, then PARS will use the format you specify in the **Export File Layout** screen. The 8000A format is the data format sent directly from the counter to PARS. **PARS will only modify this string of data to substitute the Sample Number for Sample ID1, UserField1 for Sample ID2, UserField2 for Sample ID3 and UserField3 for Sample ID4.** Prior to using PARS, you may have entered the data for these fields on the 8000A touch panel. Now you enter the values in PARS.
- For each of the following, when the **F2; Save** option is selected on the Operate Screen, PARS will save a copy of the sample in the PARS database and send a copy of the sample data to Printer, Host and File if any or all are checked. If 8000A is checked the sample will default to the 8000A format which is comma delimited. Otherwise the Export Layout Screen format will be used.
  - Copy to printer will send a copy of the sample data to an attached printer. Some Labs use dot matrix printers for this purpose. LaserJet printers will work too, but they buffer the output and for both dot matrix and laser printers, **printing and saving to files may not be finished until you exit PARS.**
  - Copy to Host will send a copy of the sample data to an attached serial device like another computer or lab equipment.
  - Copy to File will send a copy of the sample data to a file that you specify in the File name box located at the bottom right of the screen. Browse to the location where you want to save the file and enter a file name. PARS will then save samples to that file. PARS will always append to the file and you have the ability to clear the file or archive the file from the Operate screen.

Example of 8000A format data:  
 !LPA1,2,7,D,4.00,6.00,10.00,14.00,25.00,50.00,100.00,100.00,2650,274,59,35,4,1,0,0,3.33,  
 09/10/11,14:22:30,Operator,1,Customer ABC,Component 3,0,ISO Code: 17/14/11

Example of Export Layout format data (see section describing the Export File Layout screen):  
 "2011/09/10",0000002,"17/14/11",0,0,0,0,0,"Customer ABC", "Component  
 3",0,"", "", "",0,"",795.65,82.28,17.57,10.36,1.05,0.15,0,0,"Operator"
- The Browse and Clear buttons are used to browse for files and to clear the paths from the screen.
- The “**Use 8000A LCD display counts**” check box is used in conjunction with the 8000A Format checkbox. Checking this box will provide that the values sent to the output location will match what is seen on the 8000A LCD screen.



## Tolerance Levels

With the PARS System Settings screen displayed, select **Alt+T** or click on the **Tolerance Levels** tab; the following screen displays. Use this screen to enter information that will assist you in determining the acceptability of the counts. Four methods of analysis are available. **All methods work only if the number of runs is greater than 1.**

PARS System Settings

PARS Settings | **Tolerance Levels** | Com Ports

**Method**

- Percent Difference Between Minimum And Maximum
- Percent Difference Between Average And Maximum
- Percent Difference Between Average And Minimum
- Standard Deviation

Use Tolerance Level Feature

Alarm On

If Tolerance Settings are used, the "High" values are mandatory (zero is valid). The "Avg Count" and "Low" values are optional. Refer to the User's Guide for a complete explanation on how to use this feature.

**Tolerance Settings**

	2.00 um	5.00 um	10.00 um	15.00 um	20.00 um	25.00 um	50.00 um	100.00 um
Avg Count	0	0	0	0	0	0	0	0
Low	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Save Cancel

Select a Method used when PARS shows differences in the Operate Particle Counter screen. Formulas are:

- **Percent difference between minimum and maximum.** This option uses the formula  $\%diff \text{ Min\&Max} = ((\text{max run count} - \text{min run count}) / \text{max run count}) * 100$ . The Result will never be more than 100.
- **Percent difference between average and maximum.** This option uses the formula  $\%diff \text{ Avg\&Max} = ((\text{max run count} - \text{avg}) / \text{max run count}) * 100$ . The Result will never be more than 100.
- **Percent difference between average and minimum.** This option uses the formula  $\%diff \text{ Avg\&Min} = ((\text{avg} - \text{min run count}) / \text{avg}) * 100$ . The Result will never be more than 100.
- **Standard Deviation.** The SD is used to describe sets of values to determine how far the value varies from the arithmetic mean. The formula is standard deviation for a population:
  - $SQRT((n * \text{SUM}(x^2) - (\text{SUM}(x))^2) / n^2)$  where x is each data point and n is the total number of data points. For example, for the figures, 12,9,9,9,8,6,6,5,4,2: n = 10,  $\text{SUM}(x^2) = 568$ ,  $\text{SUM}(x) = 70$ .
  - $SQRT((10 * 568 - (70^2)) / 10^2) = 2.7928$ . The result can be greater than 100.

To set the Tolerance Levels, first check the **Use Tolerance Level Feature** box. If the **Alarm On** box is checked, the PC bell sounds once for each channel when its tolerance level value is exceeded.

The **Tolerance Settings** are used in conjunction with the **Method**. The Avg Count values must be in the range 0 to 999999. The Low and High ranges represent percentages or SD. The value must be between 0 and 100 for the Percent Difference options. Up to six digits are allowed for the SD. There are three ways to use this feature.

### 1. Evaluation based on Avg Count, Low and High percentages or SD

The Avg Count values represent a number that directly corresponds to the average result for a sample and applies to each channel. If you enter a value in the Avg count fields, PARS will use this number to determine if it should use the Low or High values when performing its calculations. If the average count returned from the counter is less than or equal to the Avg count entered, PARS will use the Low value. If the average count returned from the counter is higher than the Avg count, PARS will use the High value. For example:

Assume the following settings for channel 1:  
 Avg count: 1000 (average particles per mL)  
 Low: 20 (percentage)  
 High: 25 (percentage)

If the counter returned two runs where run 1 = 950 and run 2 = 800 and the average is 875, then the **Percent difference between minimum and maximum** is 15.79, calculated as follows:  $(950 - 800) / 950 * 100$ . Therefore PARS would compare 15.79 to the number 20 (since 875 is less than 1000). If the average count was greater than 1000, then PARS would compare the Percent difference to 25. In either case the sample would pass the tolerance test because 15.79 is less than 20 and 25. If the average result was greater than 20, then the channel would be flagged in this example. If you do not want to monitor a channel, then enter zeros in all three fields for that channel.

## 2. Evaluation based on percentage or SD only

To use this method, enter zeros in the **Avg Count** and **Low** fields and enter the percentage or SD you desire in the **High** field. With this method PARS will calculate the percentage or SD and compare the result to the value you entered for each channel. If the result is greater than the value specified, that channel will be flagged. As with option 1 above, enter a zero in all three fields to skip the evaluation for a channel. If you enter a value in the Low field it is ignored with this method.

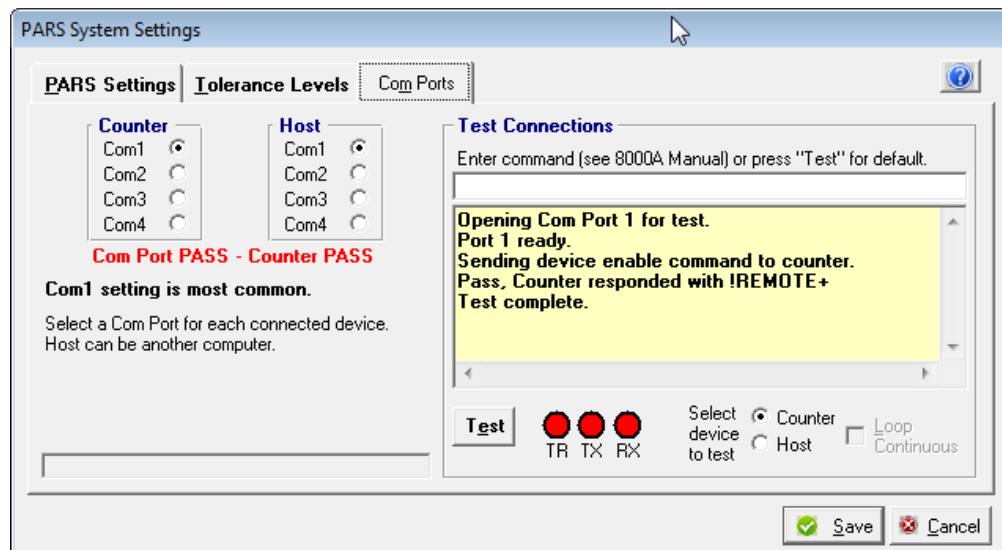
## 3. Combination of 1 and 2

If desired, you can use a combination of 1 and 2 by applying those instructions to each channel desired. Again, enter a zero in all three fields to skip the evaluation for a channel.

If you do not want to use the Tolerance Settings at all, then unmark the **Use Tolerance Level Feature** box.

## Com Ports

To activate this option, with the PARS System Settings screen displayed, select **Alt+M** or click on the **Com Ports** tab; the following screen displays. Use this screen to specify the com ports for the Counter and Host connections. You must select a communication port for the Counter (default is Com1). The Host selection is optional. Be sure the counter is powered on and the counter display screen is at the main panel.



- The **Counter Com Port** is for a connection between the PC and the particle counter.
- The **Host Com Port** is for a connection between the PC and another computer. This is an advanced option and requires two com ports on the PC and two cables. One cable is connected from the counter to the PC (Counter Com Port). The second cable is connected from the PC to second computer. The second computer will typically have software running that waits for the counter sample results to be sent over the Host Com Port and will save that information into its own database.

**Note:** If you selected the **Copy To: Host** option on the PARS Settings Tab, you cannot set the Counter Com Port to the same com port as the Host. These are simultaneous operations.

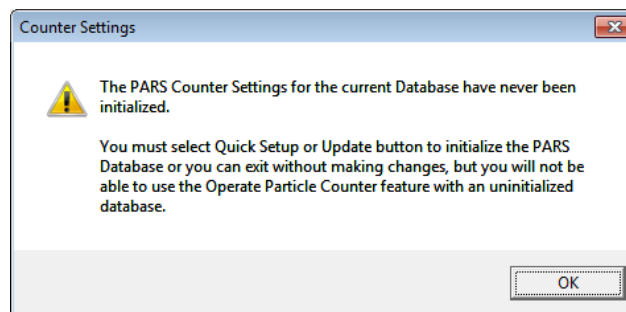
Each com port must represent a valid physical com port on the PC or an error message will be displayed along with “Com Port FAIL” when OK is selected.

When you have completed the physical connection, click on the Test button to see if PARS recognizes the counter. The status window will indicate pass or fail and “xx FAIL” or “xx PASS” (where xx is Com Port or Counter) will also be displayed below the com port settings.

### Particle Counter Settings

To activate this option, select **Alt+C, P** from the menu bar or select the Counter icon button on the main screen. The following screen displays with the Global Parameters tab shown first. This screen is used to interact with the 8000A and the PARS Database. You can change some values on the screen and send them to the counter. You can also read settings from the 8000A into the PARS Counter Settings database. Not all counter settings are available in PARS. Additionally, not all settings on these screens are modifiable. As a result, those fields are read-only. **The settings apply to each database individually.**

When you first create or convert a database and then access this screen, a message will display to inform you that you need to configure the PARS database. Without performing this operation you will not be able to use the database with the counter.



After clicking OK, you will be able to access the Settings screen. The PARS database settings are displayed when the screen is first opened as indicated in the status bar at the top.

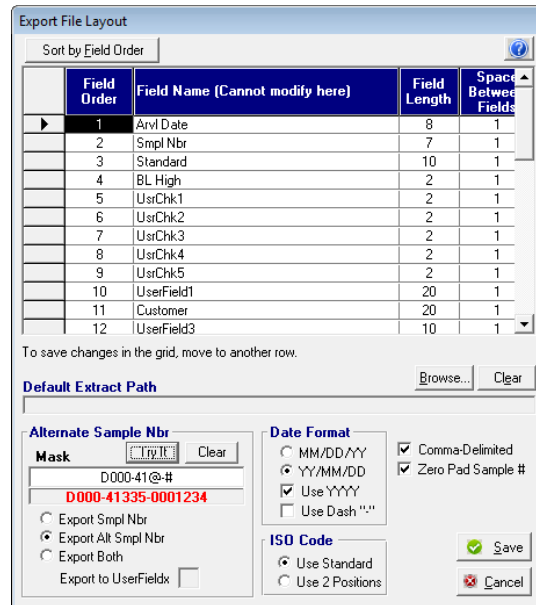
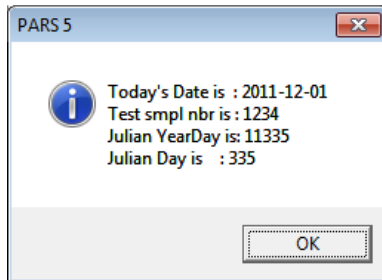
- **Clicking on the “Quick Setup” button is the fastest and easiest way to initialize the PARS database. This option will simply read the current settings from the counter and save them to the PARS database. A message will be displayed at the end of the process indicating the setup was complete and then you will exit back to the main PARS screen. With this option, be sure the counter settings are where you want them before clicking on the Quick Setup button.**
- Clicking on the Reset button will send a reset command to the counter. If the Counter is not properly connected, is turned off or not at the main screen, an error message will be displayed and the Reset will not be successful. The status bar will indicate the result of the reset.
- Clicking on the “Display Counter Settings” button will read the settings from the counter and display them on the screen.
- Clicking on the “Display PARS Settings” button will display the PARS database settings.
- To change the Counter settings, click on the “Change Counter Settings” button. The counter settings will be read from the counter and displayed and then you will be able to make changes on the screen.
- To change the settings in the PARS database, click on the “Change PARS Settings” button. The PARS settings will be displayed and then you will be able to make changes on the screen.
- After clicking on one of the Change buttons, select the “Update” radio buttons to update PARS, the Counter or Both and click on Update to save your changes. Click on Cancel to exit the screen without updates. Please be aware that sending the updates to the counter can change some of the counter settings and therefore you should double check the settings in PARS and on the counter to be sure they match. If a mismatch occurs, you may need to manually update the counter, click on Change Counter Settings and then Update PARS only.

Review the 8000A Operations Manual for instructions on operation of the 8000A counter and the meaning of each of the parameters that are available on this screen.

Note: If you have initialized the database with the counter settings and then want to change them later, the database must be empty of samples. To change the settings when there are records, you can delete all the records in the database using the Delete button on the main screen and then return to the Counter Settings screen to make your changes.

## Export File Layout

To activate this option, select **Alt+C,E** from the menu bar; the following screen on the right displays. This screen is used to define the layout of the export file. The layout is used by the Browse screen, Operator Particle Counter screen and Export screen. The Browse screen and Export screen use the layout when extracting to a disk file and sending details to the Host Com Port. The Operate Particle Counter screen uses the layout to send the data to the printer, host com port and a disk file. Note: If the 8000A Format option on the PARS System Settings screen is in effect, that format will be used instead of the Export Layout settings.



- Use the information in the grid to tell PARS how you want your extracted data to look. There you specify the field order, field length and space between fields. To change values, click once on the desired cell and enter the new value. Please note that while a cell is modified the Sort button and OK buttons are disabled until the change is saved by moving to another row. During the change, a pencil icon will appear to the far left of the row. While the icon is present, you can press escape in each changed cell on the current row to abandon one or more changes for that row.
- Note: The “Field Name” cannot be modified on this screen. Use the Database Field Descriptions Screen to modify the Field Names.
- The Sort button when selected will simply sort the grid by the Field Order. This is only temporary and will reset to default when exiting the screen.
- The purpose of the “Field Order” column is to specify the order that each field will appear in the output file. These should be numbered sequentially from 1 to x (total number of fields) without skipping numbers. The field order number should be zero for each field you do not want extracted. When you skip fields, they have to be renumbered from 1 through x - n, where n = number of fields with zero. There cannot be duplicate Field Order numbers. If there are and Save is selected, a warning message is displayed and the first duplicate is highlighted.
- The “Field Length” column can be a number from 1 to 99. It does not have to match the actual length of the data in that field. The “Space Between Fields” column can be a number from 0 to 99. This allocates the specified number of spaces between the fields.
- The “Date Format” section is used to format the extracted dates. The “Use Dash” option will format the date as MM-DD-YY versus MM/DD/YY. The “Use YYYY” option will include the century as part of the date. If the dates are not working properly, verify the date format in your Windows Operating System. Select the Windows Control Panel, International icon, Date settings. The Date format should be set to MDY.
- The “ISO Code” section is used to extract the entire ISO Code or only the last two positions. Note: PARS saves the entire ISO code in the PARS database regardless of this setting. This option just applies to the extract file

and reports.

- The **“Alternate Sample Nbr”** section is used to give you more flexibility with the sample number. Special characters are placed in the Mask field along with your default values. The Mask “D000-41@-#” produces the result “D000-41335-0001234” (with Zero Pad Sample # check box checked). “335” is the Julian Day as shown in the dialog box. The test sample number is always “1234” when testing. In this case, leading zeros were applied because the check box “Zero Pad...” was marked. Clicking on the “Try it” button will let you see what the result is. The “Clear” button will clear the result field. The valid special characters and their meanings are:

\$ = Julian YearDay. In the example above: 11335 (2011-12-01)

@ = Julian Day. In the example above: 335

# = Sample Number. In the example a default of “1234” is always used for test purposes.

The radio buttons can be used to tell PARS which format of the Sample ID you want to use. **“Export Smpl Nbr”** is the default and will export only the sample number (with leading zeros if that box is checked.) **“Export Alt Smpl Nbr”** will export the Alternate Sample Nbr in place of the normal Sample Number. **“Export Both”** will export both the Sample Number and the Alternate Sample Nbr. When you export both, you will need to select a text UserField (1,2,4,5,6) to export the Alternate Sample Nbr to.

- The **“Default Extract Path”** is used to identify the path to store the extract file. Use the Browse button to select a drive and path. Use the Clear button to clear the path. If no path is specified, the extracted file will be saved in the PARS program directory with the default file name of PCMMDDYY where MMDDYY is the current month, day, year; for example PC120111.
- Mark the **“Comma-Delimited”** box if you want to export your data using a standard comma-delimited format. The Field Length option is not used with the Comma-Delimited option. Also, the size of the date field will always default to the length of the date.
- Mark the **“Zero Pad Sample #”** box to pad the sample number with leading zeros. PARS uses the Field Length value of the Smpl Nbr field to determine how many zeros to pad with.

### Mark Fields to Display

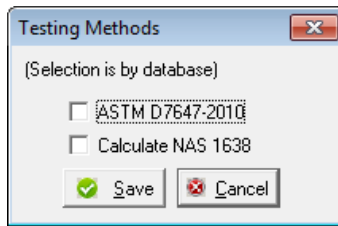
To activate this option, select **Alt+C,M** from the menu bar; the following screen displays. Use this screen to exclude or include fields of information on specific screens throughout PARS. If a field is marked, it will display on the screens. Otherwise it will not be shown. The screens affected are the Operate Particle Counter screen and the Browse screen. The Operate Particle Counter screen will however, display the Date, Sample Nbr, Standard, UserField1, Basehigh and channel sizes regardless of the settings. Additionally, the Date and Sample number check boxes default to on and cannot be changed since those fields are critical to all operations.

Field Name	Checked	Field Name	Checked	Field Name	Checked
Arvl Date	<input checked="" type="checkbox"/>	UserField1	<input checked="" type="checkbox"/>	Notes	<input checked="" type="checkbox"/>
Smpl Nbr	<input checked="" type="checkbox"/>	Customer	<input checked="" type="checkbox"/>	2.00 um	<input checked="" type="checkbox"/>
Standard	<input checked="" type="checkbox"/>	UserField3	<input checked="" type="checkbox"/>	5.00 um	<input checked="" type="checkbox"/>
BL High	<input checked="" type="checkbox"/>	UserField4	<input checked="" type="checkbox"/>	10.00 um	<input checked="" type="checkbox"/>
UsrChk1	<input checked="" type="checkbox"/>	UserField5	<input checked="" type="checkbox"/>	15.00 um	<input checked="" type="checkbox"/>
UsrChk2	<input checked="" type="checkbox"/>	UserField6	<input checked="" type="checkbox"/>	20.00 um	<input checked="" type="checkbox"/>
UsrChk3	<input checked="" type="checkbox"/>	UserField7	<input checked="" type="checkbox"/>	25.00 um	<input checked="" type="checkbox"/>
UsrChk4	<input checked="" type="checkbox"/>	PVi	<input type="checkbox"/>	50.00 um	<input checked="" type="checkbox"/>
UsrChk5	<input checked="" type="checkbox"/>	Operator	<input checked="" type="checkbox"/>	100.00 um	<input checked="" type="checkbox"/>
Cntr Nbr	<input type="checkbox"/>	Dltn Fctr	<input type="checkbox"/>	Cnts/mL	<input type="checkbox"/>
Run Dt	<input type="checkbox"/>	Background	<input type="checkbox"/>	Alt Smpl Nbr	<input type="checkbox"/>
Diff Cuml	<input type="checkbox"/>				

Date and Sample number default to on and cannot be changed. Alt Sample ID display is determined on the Maintain Screen.

## Testing Methods

To activate this option, select **Alt+C,T** from the menu bar; the following screen displays.



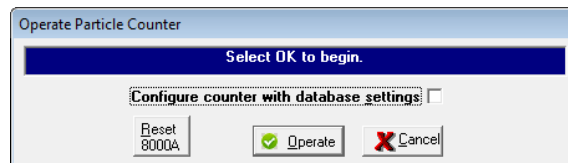
Use this screen to select the options for:

- Running ASTM D7647-2010 reports. These reports are used in conjunction with a testing method for automatic particle counting of lubricating and hydraulic fluids using dilution techniques to eliminate the contribution of water and interfering soft particles by light extinction. For report examples, see the section of this guide called “Viewing and Printing PARS Reports”.
- Calculating the NAS 1638 Class. If this option is selected, PARS uses the following values for determining the NAS 1638 Class. Please note: the temporary file, PARLOG.TMP found in the PARS installation directory will always display the exact values received from the particle counter in the event you need to verify the NAS 1638 class value returned from the counter.

Class	5-15um	15-25um	25-50um	50-100um	>100um
00	125	22	4	1	0
0	250	44	8	2	0
1	500	89	16	3	1
2	1000	178	32	6	1
3	2000	356	63	11	2
4	4000	712	126	22	4
5	8000	1425	253	45	8
6	16000	2850	506	90	16
7	32000	5700	1012	180	32
8	64000	11400	2025	360	64
9	128000	22800	4050	720	128
10	256000	45600	8100	1440	256
11	512000	91200	16200	2880	512
12	1024000	182400	32400	5760	1024

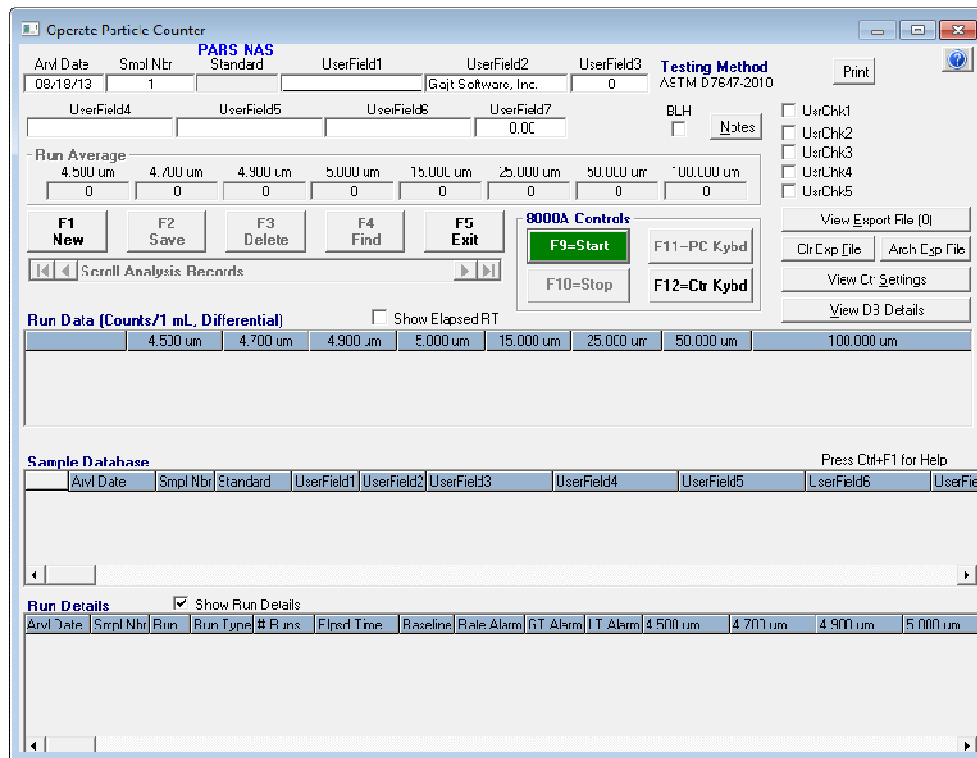
## Operate Particle Counter screen

To activate this option, select **Alt+E** from the menu bar; the following screen displays. This dialog box is used to establish connection between PARS and the counter. If the counter settings have not been activated in the current database you will have to use the Counter Settings screen first.



After clicking on the Operate button, the status bar will begin a count down from 15 while it attempts to connect. If it reaches zero after the first try, select the Reset button and try again. If the second attempt fails, check the System Settings and be sure the 8000A device has the main screen displayed. The OK button will not be enabled at this point if a connection cannot be made. The check box on this screen, if marked, will send the database counter settings to the counter upon connection. **You do not need to send the settings if the counter is already configured to match the database.**

Upon successful connection the following screen will display. This screen is used to capture and display sample results from the particle counter. It provides a facility for simple operation of the counter. The screen displays the average results when performing more than one run and can save those results to the sample database. When performing **one** run, the values of the single run are displayed and saved since there is not an average involved. Each individual sample run is displayed and can be optionally saved. The screen can also display (bottom of screen) samples that are currently in the sample database **both Averages and run details**. You can edit the user data and re-run (update) a previously saved sample. Fields grayed out cannot be modified. The screen also provides the ability to delete samples one at a time and to find a particular sample without browsing the entire database (Find).



The following fields on the Operate Particle Counter screen are modifiable. The data characteristics are shown.

Field Description	Field Characteristics
Arvl Date	MM/DD/YY
Smpl Nbr	Numeric, values 0 to 9,999,999 (automatically increments to next number)
Alt Smpl Nbr	Text field, up to 20 characters (see section on Export File Layout for details)
UserField1	Text field, up to 20 characters
UserField2	Text field, up to 20 characters (labeled as "Customer" in the example)
UserField3	Numeric, values -999,999,999 to 999,999,999
UserField4	Text field, up to 20 characters
UserField5	Text field, up to 20 characters
UserField6	Text field, up to 20 characters
UserField7	Numeric, values -999,999,999.99 to 999,999,999.99
BLH	Boolean, values true or false (BLH = Base Line High)
UsrChk1	Boolean, values true or false
UsrChk2	Boolean, values true or false
UsrChk3	Boolean, values true or false
UsrChk4	Boolean, values true or false
UsrChk5	Boolean, values true or false
Notes	Text field, up to 240 characters



Some text fields may not display all data entered on the screen due to limitations on field size. Additionally, the fonts used are proportional fonts. Therefore it is possible that one combination of letters and numbers will display all of the characters, while a different combination will not display entirely.

When the screen is first displayed, the default date and sample number are the current date and the next highest sample number for that day. To change the value of these fields, use the tab key or mouse to select the field and then make your changes. If you enter a different date and sample number, PARS will continue to automatically increment the sample number for the date entered just as it does when using the defaults. The sample number will increment after a save (F2) is issued.

**Follow these steps to run a sample:**

1. Press F1 to establish a new date and sample number. If desired, change the date and sample number.
2. Enter any user-defined data. Please note that you can perform step 3 first and while the sampler is in operation, enter user data.
3. If the sampler is ready, press the **F9** keyboard key or click on the **F9** button with the mouse to start the counter. During the first run of each new session (where you left the Operate screen and returned again) PARS takes a few seconds to verify that the counter settings match the PARS database for key settings. If there is a mismatch, a dialog box will display showing the differences. You should exit PARS and make the appropriate correction (update the database or the counter). You are given the option of disabling this message during this session. If the counter edits pass, the counter will start and will display the runs, average and differences, if the Tolerance Method was selected. If the difference exceeds your tolerance settings, the difference field will turn red and the alarm may sound.
4. If the results meet your satisfaction, press **F2** (Save) or click on the **F2** button. This updates the PC database with that record, clears the screen (some user fields may not be cleared depending on the settings you chose when creating the database) and increments the sample number to the next number regardless if that number is in use. Any default values you setup in the Database and Screen Field Titles screen will automatically be populated in the associated field. If you try to exit or go on without saving first, PARS will prompt you to save. If the date and number selected already exist, PARS will prompt you that a record exists and gives you an opportunity to skip the update.
5. You can now setup the next sample.

If the counter returns a baseline high, the Baseline High check box will automatically be checked. To manually select Baseline High:

1. Left click on the Baseline High box. This sets the value without changing the counter results.
2. Or, using the right mouse button, click on the Baseline High box. This will display a dialog box that warns that marking the box will convert all of the channel values to 9's. Select OK if that is desired. If all 9's are present and you wish to unmark the box, using the right mouse button will display a dialog box that warns that unmarking the box will convert all of the channel values to 0's. Select OK if that is desired.

You can also use **Alt+B** or the space bar to mark the Baseline High box. The button and keyboard options on this screen are:

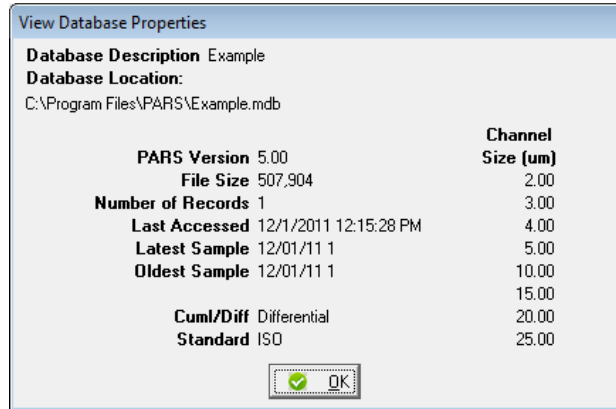
- Notes - Select **Alt+N**(Notes) to enter up to 240 characters of information about the sample. The word "YES" will appear above the **Notes** button if notes are present for the sample displayed.
- F1=New - Select this option to clear the screen and start with the current date and the next highest sample number for that date.
- F2=Save - Select this option to save the information displayed on the screen. If the data already exists, you are prompted for the update.
- F3=Delete - Select this option to delete the displayed record. (Use the option **Alt+D, D** (Database, Delete) from the main screen to perform a mass delete by date.)
- F4=Find - Select this option to find and display an existing record in the database. You must enter an exact

match.

- F5=Exit - Select this option to close the Operate screen and return to the PARS main screen.
- F9=Start - Select this button to issue a command to the counter to begin the sample process. If this key is available, the background color will be green. Otherwise it is gray.
- F10=Stop - Select this button to issue a command to the counter to immediately stop the sample process. If this key is available, the background color will be red. Otherwise it is gray.
- F11=PC Kybd - Select this button to enable the PC keyboard and disable the counter keyboard. The counter keyboard has to be disabled for PARS to communicate with it.
- F12=Ctr Kybd - Select this button to enable the counter keyboard and disable the PC keyboard. You can use this option to access the counter while this screen is operational, however be aware that if you change any values, PARS will not know.
- View Export File(x) – This button will let you view the data that is extracted to the flat file.
- Clr Exp File – This button will clear out the export flat file.
- Arch Exp File – This button will create an archived copy of the export flat file and then clear out the file.
- View Ctr Settings - This button will display the Counter Settings screen. You will not be able to make changes on that screen from here.
- View DB Details - This button will display the View Database Properties screen to let you see the specifications for the active database.
- Scroll Analysis Records - This is the scroll bar under the **F1** through **F5** buttons. The leftmost arrow with the vertical bar will display the first record on file. The leftmost arrow without the vertical bar will move to the previous record. The rightmost arrow with the vertical bar will display the last record on file. The rightmost arrow without the vertical bar will move to the next record.
  - F7=View the previous record in the database.
  - F8=View the next record in the database.
  - Ctrl+F7=View the first record in the database.
  - Ctrl+F8=View the last record in the database.
- Alt+B - Works the same as clicking on the Baseline High check box with the right mouse button.
- Alt+W - Will mark and unmark the UsrChk1 field.
- When the ASTM D7647-2010 Testing Method is used, a Print button will appear giving you the ability to print an analysis report for the sample currently displayed. Otherwise, the button will not be present and the analysis report will not be available.
- When using the PARS NAS 1638 calculation, the letters “PARS NAS” will appear above the Standard Field at the top left of the screen.
- Re-arranging the display - If you click on the column headers and move the mouse left or right, the columns will be highlighted. Release the mouse then click on the highlighted columns to drag them left or right and reposition them temporarily. Additionally, if you slowly move the mouse from left to right or right to left on the column headers, the mouse cursor will change from a single arrow to a double arrow. When the double arrows are displayed, press the left mouse button and drag left or right. The column will expand or shrink in size. These settings are also temporary.
- The form can be resized by moving the mouse to the screen border, click and drag to the size desired.
- You cannot change the values in either of the grids displayed on this screen. In the **Run Data** grid, you can only scroll the rows. In the **Sample Database** grid you can scroll and select a row for display by clicking on the row with the mouse. In the **Run Details** grid you can scroll and select a row for display by clicking on the row with the mouse.

## Viewing Database Properties

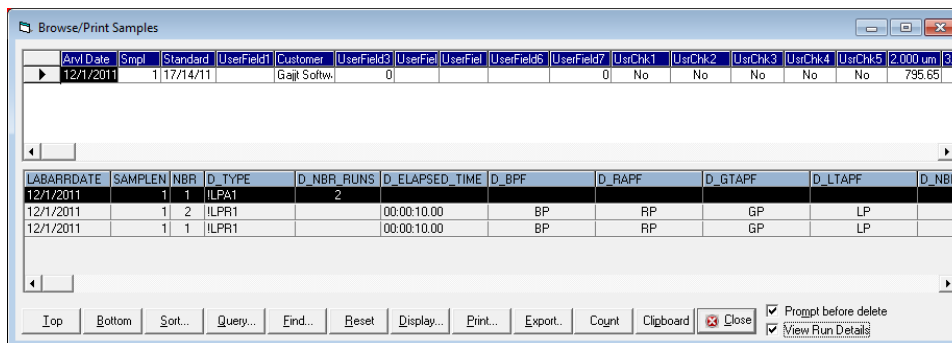
This option is activated from the Operate Particle Counter screen and the Maintain Database screen. When activated the following screen displays. This feature is used to view the properties of the selected database. It is a convenient way of viewing the settings without having to print a report.



- The Database Description is the name you gave the current database file. Drive:Path\Filename is the physical path and name you assigned. The Version number is the version of the PARS database when created or converted and will not always match the program version number. The file size is the OS file size for this database and is not proportionate to the number of records in the database. In fact, adding a few records may not change the size at all since space is pre-allocated. The Last Accessed date and time may reflect the last time PARS was used and not the last time a sample run occurred. For example, anytime a value in one of the database tables is updated the date/time stamp of the database file is updated.
- The remaining fields are self-explanatory. If you display this screen for a new database that has not been configured with counter settings, you will receive a message telling you that the information is incomplete. Once you initialize the file with the settings, you will no longer receive this message.

## Viewing and Printing Samples

To activate this option, select **Alt+P,B** from the menu bar or **Alt+B** (Browse icon) from the main screen. The following screen displays. The purpose of this screen is to allow you to view, modify, print and graph the sample data in the PARS database. The screen will not display if the database is empty. If all data is deleted while the screen is displayed, the screen will appear blank with only column headers showing. All of the fields in the PARS database are shown unless overridden on the **Mark Fields to Display** screen.



Select the buttons to perform the following operations:

- **Top** – Moves the cursor to the first row in the database.
- **Bottom** – Moves the cursor to the last row in the database.
- **Sort** – Displays a dialog box that provides you with the ability to sort data by Arrival Date, Sample Nbr, UserField1 and UserField2.
- **Query** – Displays a dialog box that provides you with the option to specify ranges of selection criteria and sort orders. These settings will remain this way for the current session only. Once you leave PARS and return at another time, the default will show again. When you select OK from the Query screen the data will be processed accordingly and the results displayed in the grid.
- **Find** – Displays a dialog box where you can enter information for a sample you want to quickly locate. This is particularly useful with large databases. The sample you wish to locate has to be an exact match.
- **Reset** – Select this button to clear all highlights and query result sets. The data is redisplayed as when the screen was first shown.
- **Display** – Displays the Mark Fields to Display screen. Use the mouse to click on the check boxes and unmark those fields you do not wish to see. These settings are permanent until you change them again.
- **Print** – Displays a dialog box to provide you with the option to print samples to a printer or the PC window. Before you print, be sure your printer settings are correct.
- **Export** – Displays a dialog box to provide you with the option to extract data to a file in various formats (PARS, CSV, MS Excel, MS Access). You can also export PARS and CSV files to the PC Com Port. The format of the data extracted to the file and Com Port depends on the settings you chose in the **Export File Layout** screen. See the section in this manual on Exporting Data.
- **Count** – Select this button to display the number of records in the current displayed set as defined by the Query. If all records are displayed, the number reflects the total number of records in the database.
- **Clipboard** – Select samples on the Browse screen and then click on the Clipboard button. You can then paste the data into a document or file for use by another application.
- **Close** – Exits the Browse screen and returns to the main menu.
- **Scrolling** – Click on the scroll bar arrows to move the data one line at a time. Click on the gray portion of the scroll bar to move several lines at a time. Finally, you can click and drag the square button on the scroll bar to move several lines of data on the screen.
- **View Run Details** – Will display the run details at the bottom of the screen. If you slowly move the mouse cursor between the two grids the cursor will change to a double ended arrow. Click and drag to increase or decrease the size of the run details grid.
- **Prompt before delete** – Will prompt you to give you a chance to cancel a delete request.

- Re-arranging the display – If you click on the Column headers and move the mouse left or right, the columns will be highlighted. Release the mouse then click on the highlighted columns to drag them left or right and reposition them temporarily. Additionally, if you slowly move the mouse from left to right or right to left on the Column headers, the mouse cursor will change from a single arrow to a double arrow. When the double arrows are displayed, press the left mouse button and drag left or right. The column will expand or shrink in size. These settings are also temporary.

You can modify the data on this screen by selecting a cell and then entering your changes. You are allowed to modify the following columns:

- All User text fields
- All User check box fields
- Baseline high
- Operator
- Notes

To change data in one of these columns, click once on the desired cell or use the tab key to select a cell. Then enter your changes. The grid automatically changes to edit mode (red on white). You can also double click on a field to change to edit mode. When editing a field, a pencil icon will appear on that row to the far left. This means that a value has been changed. If escape is pressed while in that cell or any changed cell in the same row and the pencil is still present, that cell will revert back to the value before the change. To affect the update, click on another row and the pencil will go away. Clicking on certain buttons will also make the change effective.

You can delete rows on this screen by clicking on the current record indicator to highlight the row (leftmost box on the desired row). Then press the Del key on the PC keyboard. If the “**Prompt for delete**” check box is marked, a message will display asking if it is OK to delete the record. If you unmark the prompt box then the records are deleted without prompting. The check box is marked by default each time the Browse screen is first displayed. Only one row at a time can be deleted from this screen. A message appears to let you know which record was deleted.

### Using the Browse Screen Query Feature

This feature is only available from the Browse/Print Samples screen. To activate the screen, choose the **Query** button or press **Alt+Q**. This screen is used to build a subset of the data in the database. The subset is displayed in the Browse grid. The information is range based. The screen will retain previously entered values only during the current PARS session.

The 'Define Query' dialog box is used to specify search criteria. It features a table for 'From' and 'To' values for various fields. The 'Sort By' section allows users to select a sequence number and an ascending or descending order for each field.

	From	To
Arvl Date	12/01/2011	12/01/2011
Smpl Nbr	1	999999999
UserField1	<FIRST>	<LAST>
Customer	<FIRST>	<LAST>

Sort By options:

- Arvl Date: 3, Asc (selected), Desc
- Smpl Nbr: 4, Asc (selected), Desc
- UserField1: 1, Asc (selected), Desc
- Customer: 2, Asc (selected), Desc

Upon first time entry (during the current session), the default for the **From** date is the earliest sample date in the database. The default **To** date is the current date. The other ranges default to <FIRST> and <LAST>. <FIRST> is equivalent to a null string ("" ) and <LAST> is equivalent to ASCII(255).

The dates on this screen are mandatory. The SampleNbr field only accepts numbers. For all fields the **To** value must be greater than or equal to the **From** value. The characteristics of the fields are:

Description	Characteristics
Date	MM/DD/YY, century can be used
SampleNbr	numeric, 0 to 9,999,999
UserField1	alphanumeric, up to 20 characters
UserField2	alphanumeric, up to 20 characters

The values for alphanumeric follow the rules for ASCII text. A space is less than any letter or number; capitalized letters are less than lower case letters. Refer to the ASCII Character Code Set in the appendices of this guide.

The sort order can be specified by entering the sequence number order. If a field is to be excluded from the sort, use zero for its value. Select the ascending/descending order by clicking on the respective radio button. Except for the value zero, no two sort field numbers can have the same value.

The output from this screen is a subset of the entire sample database. The resulting subset is displayed in the Browse grid. It is possible that the result of the Query will be zero records found. In this case, PARS will default to all records displayed.

### Using the Print Report Feature

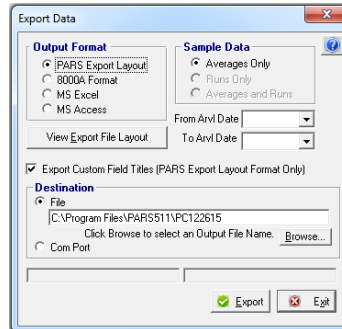
This feature is only available from the Browse/Print Samples screen. To select the screen choose the **Print** button or press **Alt+P**; the following screen displays. This screen is used to select the report and destination of the output from the Browse grid. You can choose to print a report to the PC Window or send to the printer.

The 'Print' dialog box allows users to select a report type and a destination. The 'Report' section has four radio button options, and the 'Destination' section has two radio button options.

When rows are selected with the mouse, the data is sent to its destination in the order that it was selected. Otherwise the data is sent in the order displayed in the grid.

## Using the Export Data Feature

This feature is available from the Main Screen and the Browse/Print Samples screen. To select the screen choose the **Export** button on either screen or press **Alt+P** on the Main Screen or **Alt+E** on the Browse/Print screen. **PARS** now provides the option to extract data to Excel and Access.



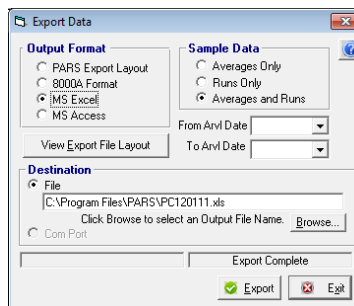
The Output Format for **PARS Export Layout** is dependent on the **Export File Layout** screen settings. The file is fixed format or comma-delimited depending on the layout screen. The **8000A format** is the standard string of data that is sent by the 8000A counter. Only the PARS Export Layout and 8000A formats can be exported to the Com Port. The **Com Port** option works the same as the file export, except the data is sent over the Com Port. If a Default Extract Path was specified in the Export Layout File screen, then that is the path that will show when selecting the Export File option. If a path is not specified, PARS displays the path where PARS was installed and provides a file name consisting of PCMMDDYY, for example, C:\Program Files\PARS\PC120111.

For PARS Export Layout format, only Averages data can be exported. For all other Formats, Averages, Runs or both can be exported. Click on the View Export File Layout button to change the Export options. The **From** and **To** dates are based on the dates of the data that is in the PARS database. If no dates are selected, all data is exported. However, if samples were selected on the Browse screen, then only those samples will be exported.

The Com Port device to which you are exporting must be connected by cable to the PC serial port as identified by the Host Com Port setting. If you do not know to which port **Host Com Port** is assigned, review the settings in the PARS Settings screen. After identifying the data to export, select the **Com Port** radio button, then select Export. PARS uses the settings 9600, N, 8, 1 with 35/100ths sec line pacing (pauses for 35/100ths sec before sending the next record). All data exported is terminated with a carriage return, line feed (ASCII(13)ASCII(10)).

## Graphing Samples

Starting with PARS V5, Graphing is available by exporting the sample data to a file using the Export Data screen and then using a graphing tool like MS Excel.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1	LABARRDATE	SAMPLENBR	STANDARD	USRFLD1	USRFLD2	USRFLD3	USRFLD4	USRFLD5	USRFLD6	USRFLD7	CHKUSRFLD1	CHKUSRFLD2	CHKUSRFLD3	CHKUSRFLD4	CHKUSF
2	12/11/2011		1 17/14/11		Gait Software, Inc.	0				0	FALSE	FALSE	FALSE	FALSE	FA
3															
4															
5															

### Deleting and Changing Samples

To activate the delete option, select **Alt+P,D** from the menu bar or **Alt+D** (Delete icon) from the main screen; the following screen displays. The purpose of this screen is to perform mass deletes of sample data from the PARS database using a date range. When deleting a single date, **the From Date and To Date** are the same. Press **Alt+O** or click on the OK button to delete the records or select Cancel to exit without deletes.

The dates must be entered in MM/DD/YYYY format. If the range entered spans more than 365 days a message is displayed to give you a chance to cancel if a wrong year was entered, for example. The number of records deleted is displayed. If no records were found in the range, a message is displayed.

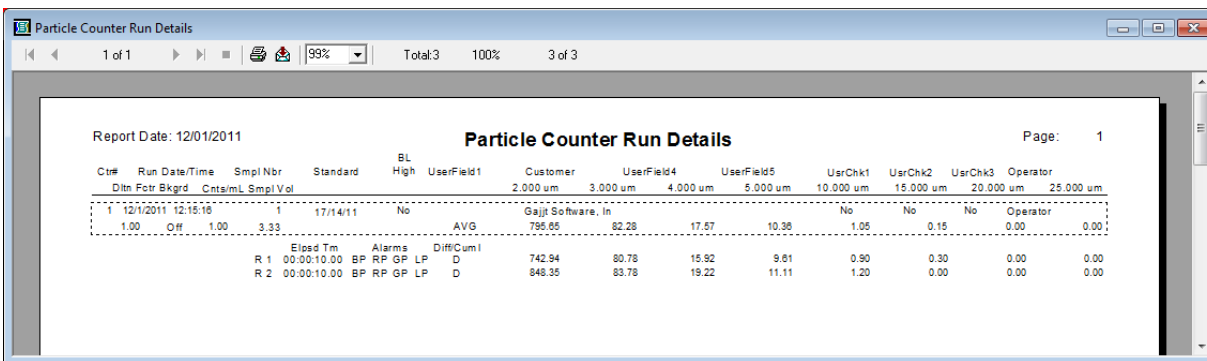


To activate the change option, select **Alt+P,C** from the menu bar or **Alt+A** (Change icon) from the main screen; the following screen displays. This screen is used to change the sample date on many records at one time. The dates must be entered in MM/DD/YYYY format. If the time entered spans more than 365 days, a message is displayed to give you a chance to cancel (if you put in the wrong year for example). After selecting OK when the changes are finished, the number of records changed is displayed. If no records were found in the range then a message is displayed. Otherwise the sample date is changed to the new date.



### Viewing and Printing PARS Reports

The reports are activated from two locations, the PARS main menu bar and the Browse/Print Sample screen. To activate the reports from the main menu bar, select **Alt+R** and then select one of the report options. To activate from the Browse/Print Samples screen, select the Print button while in that screen. The following screen or a similar screen is displayed. PARS provides basic and custom reports. One basic report will display all fields of information in the particle count database (Sample Run Details.) A similar report (Sample Average Details) is of the same format, but only displays the Averages. There is also a report that displays information about the databases you have created and saved (Database Settings) and a report that will print the NAS 1638 Chart.



After you select a report to print, you will see an online report screen. Located on the screen are controls to allow you to move to the first page or last page and one page at a time in either direction. You may also print, export and magnify the report. When you select Print from the Browse screen, if there are highlighted rows, only those details print. Otherwise data displayed is printed.



Two Custom reports are available for Automatic Particle Counting of lubricating and hydraulic fluids using dilution techniques to eliminate the contribution of water and interfering soft particles by light extinction; ASTM D7647:

ASTM D7647 Verification report only:

**ASTM D7647 Verification**

Date 06/02/2013

Labnumber TEST

Time 4:45 pm

Bin Size	Run 1	Run 2	Run 3
≥4	189.0	172.0	183.0
≥6	44.0	40.0	41.0
≥14	3.00	4.00	3.00

Cumulative Count	BIN SIZES			Acceptability (% Diff)
	≥4	≥6	≥14	
10000 ≤ X Count				≤ 11
5000 ≤ X <10000				≤ 11.3
2000 ≤ X <5000				≤ 11.9
1000 ≤ X <2000				≤ 13.4
500 ≤ X <1000				≤ 15.6
200 ≤ X <500				≤ 19.3
100 ≤ X <200	9.375			PASS ≤ 27.5
50 ≤ X <100				≤ 37.4
20 ≤ X <50		9.600		PASS ≤ 51.8

ASTM D7647 Verification Report with Particle Counter Run Details:

Report Date: 06/02/2013

**Particle Counter Run Details**

Page: 1

Ctn#	Run Date/Time	Smpl Nbr	Standard	BL High	Labnumber	Type	UserField4				UserField5				Operator
							4.000 um	6.000 um	10.000 um	14.000 um	21.000 um	38.000 um	70.000 um	70.000 um	
1	10/2/2012 13:29:05	1	15/13/9	No	TEST	0	181.00	42.00	9.00	3.00	No	No	No	oeg	
	1.00	Off	1.00	10.00		AVG					1.00	0.00	0.00	0.00	
		Elpsd Tm	Alarms	Diff/Cuml	Standard										
	R 1	00:00:06.38	BP RP GP LP	C	15/13/	189.00	44.00	9.00	3.00	2.00	0.00	0.00	0.00	0.00	
	R 2	00:00:06.47	BP RP GP LP	C	15/13/	172.00	40.00	9.00	4.00	2.00	0.00	0.00	0.00	0.00	
	R 3	00:00:06.51	BP RP GP LP	C	15/13/	183.00	41.00	8.00	3.00	1.00	0.00	0.00	0.00	0.00	


**ASTM D7647 Verification**

Labnumber TEST

Bin Size	Run 1	Run 2	Run 3
≥4	189.0	172.0	183.0
≥6	44.0	40.0	41.0
≥14	3.00	4.00	3.00

Cumulative Count	BIN SIZES			Acceptability (% Diff)
	≥4	≥6	≥14	
10000 ≤ X Count				≤ 11
5000 ≤ X <10000				≤ 11.3
2000 ≤ X <5000				≤ 11.9
1000 ≤ X <2000				≤ 13.4
500 ≤ X <1000				≤ 15.6
200 ≤ X <500				≤ 19.3
100 ≤ X <200	9.375			PASS ≤ 27.5
50 ≤ X <100				≤ 37.4
20 ≤ X <50		9.600		PASS ≤ 51.8

### ***Using the Help Screens***

Most of the time you can access online help in PARS by pressing the F1 key. From within the **Operate Particle Counter** screen, press the **Ctrl+F1** keys to get online help. In the Graph screen there is also a help icon on the tool bar  and each property page on the Graph Control screen has a help button.

The PARS online help screens are basically this manual. However, the graph help screen uses hotspots, pop-up windows and topic jumps. If you click on an object in the graph help window, a pop-up window will display or the topic you clicked on will be displayed.

When the help screen displays, you can select **Alt+H,T** to have the help screen always stay on top while shown. If you do not do this, and you click on the graph while help is displayed, then the help screen will move to the background. Use the Task List manager of Windows (**Ctrl+Esc**) to re-display the help screen.

## ***Trouble Shooting***

Use the information below if you are experiencing problems. If you still cannot resolve the problem, contact Technical Support. Please keep us informed of problems you are having even if you find a work-around. In this way we can schedule the correction for a future update.

### **Com Port connections**

If you cannot connect to the 8000A from PARS check these items:

- Review the PARS System Settings one more time to be sure you have selected the proper com port for the counter.
- Make sure the cable you are using is a straight-thru modem cable. Also be sure that the cable connections are secure. A loose connection can result in sporadic transmissions.
- View the front panel display on the 8000A to be sure the Main Function menu is displayed. Always operate from this menu.
- Make sure the cable is connected to the correct com port on the computer and that the com port is operational. You may have to review the Windows Control Panel, Ports settings to be sure the options are set to 9600, N, 8, 1. If Flow Control is an option, set it to none.
- Insure the cable is connected to the Host port on the 8000A and a Com port on the PC. The com port on the PC should be a 9 pin male connector. See the section in the guide on Software and Cable Installation for more details.

### **Interacting with the counter**

If you are receiving errors when attempting to update the counter, review the previous tips under Com Port Connections. A quick way to initialize a database is to use the counter settings screen to display the counter settings and then save the settings to the PARS database using the Quick Setup option on the Counter Settings screen.

### **Program run-time errors**

If you encounter a run-time error note the message number and message text. Send an email message to [support@gajitsoftware.com](mailto:support@gajitsoftware.com) and provide as much information about what immediately preceded the error (screen, button, etc.) as possible. Please report these errors, even if you find a work-around.

## ***Technical Support, Orders, Comments***

To help you get up and running or address any questions you may have later, send your email to [support@gajitsoftware.com](mailto:support@gajitsoftware.com) or visit our website at [www.gajitsoftware.com](http://www.gajitsoftware.com).

To order **Particle Analysis Reporting System**, visit our web site at [www.gajitsoftware.com](http://www.gajitsoftware.com).

Please email your comments and suggestions for improvements to us at [support@gajitsoftware.com](mailto:support@gajitsoftware.com). Provide as much information as possible. We are dedicated to supporting you and your use of PARS. Thank you for purchasing the Particle Analysis and Reporting System!



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