



Setting Up Chromeleon PA

(Includes Chromeleon PA OPC Interface Setup)

Now sold under the
Thermo Scientific brand

Thermo
S C I E N T I F I C

Document No. 065262
Revision 02
September 2010

©2010 by Dionex Corporation
All rights reserved worldwide.
Printed in the United States of America.

This publication is protected by federal copyright law. No part of this publication may be copied or distributed, transmitted, transcribed, stored in a retrieval system, or transmitted into any human or computer language, in any form or by any means, electronic, mechanical, magnetic, manual, or otherwise, or disclosed to third parties without the express written permission of Dionex Corporation, 1228 Titan Way, Sunnyvale, California 94088-3603 U.S.A.

DISCLAIMER OF WARRANTY AND LIMITED WARRANTY

THIS PUBLICATION IS PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND. DIONEX CORPORATION DOES NOT WARRANT, GUARANTEE, OR MAKE ANY EXPRESS OR IMPLIED REPRESENTATIONS REGARDING THE USE, OR THE RESULTS OF THE USE, OF THIS PUBLICATION IN TERMS OF CORRECTNESS, ACCURACY, RELIABILITY, CURRENTNESS, OR OTHERWISE. FURTHER, DIONEX CORPORATION RESERVES THE RIGHT TO REVISE THIS PUBLICATION AND TO MAKE CHANGES FROM TIME TO TIME IN THE CONTENT HEREINOF WITHOUT OBLIGATION OF DIONEX CORPORATION TO NOTIFY ANY PERSON OR ORGANIZATION OF SUCH REVISION OR CHANGES.

TRADEMARKS

Chromeleon is a registered trademark of Dionex Corporation.
OPC is a trademark of OPC Foundation.

PRINTING HISTORY

Revision 01, November 2008
Revision 02, September 2010

Chromeleon PA Setup Instructions	1
1. About Chromeleon PA	1
2. The Chromeleon PA Folder Structure	3
3. System Requirements	3
4. Setup Procedure Overview	4
5. Running the Setup Programs and Entering License Information	5
6. Creating Systems and Configuring Devices	5
7. Opening a Control Panel	8
8. Creating Program (PGM) Files	9
8.1 Creating Programs for Different System Functions	9
8.2 Viewing Example Programs	10
9. Creating Method (QNT) Files	10
10. Creating Report Definition Files (RDF)	12
10.1 Report Types	12
10.2 Example Reports	12
11. Starting the Analyzer Program	13
12. Connecting to the Datasource	13
13. Connecting to the Instrument Server	13
14. Configuring Analyzers, Systems, and Streams	14

- A • The Chromeleon PA OPC Interface19**
 - A.1 Data Access (DA) User Interface19
 - A.2 States and Commands26
 - A.2.1 Analyzer.Command and Sequence.....27
 - A.2.2 Analyzer.State28
 - A.2.3 System.State29
 - A.2.4 System.Command.....29
 - A.3 End of Sample and Data Ready Notification30
 - A.4 Remote Access31

Chromeleon PA Setup Instructions

1. About Chromeleon PA

Dionex Chromeleon® PA is a client/server-based chromatography management system that provides software control of Integral *analyzers* or bench-top migration systems used for process analytical applications. An analyzer is a group of chromatography systems that operate synchronously to analyze a series of process sample streams. Chromeleon PA can control a total of four chromatography systems configured in up to four analyzers.

Chromeleon PA is an extended version of the Dionex Chromeleon Chromatography Management System (Chromeleon). Chromeleon PA adds process monitoring functions (including stream selection, sample preparation, alarm configuration, and component data trending) to Chromeleon.

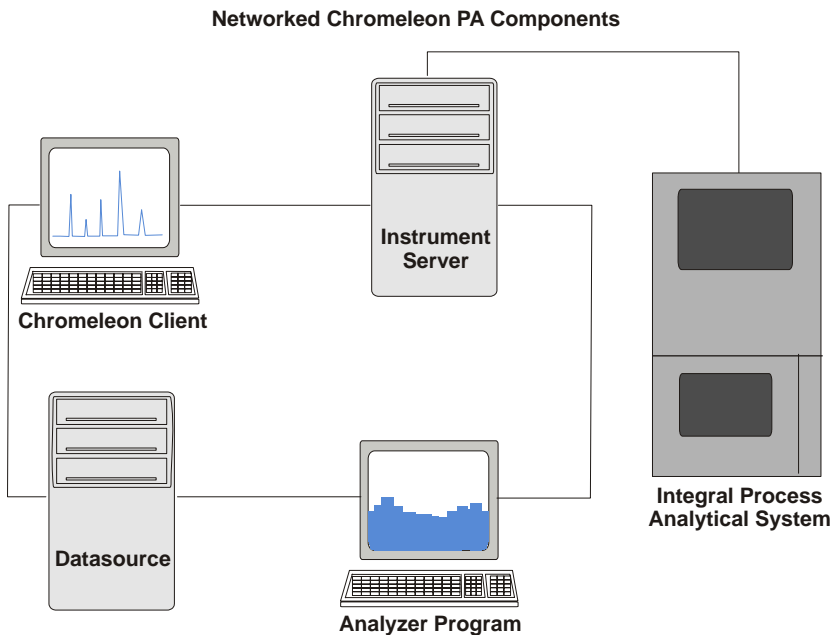
These are the Chromeleon PA main components:

- **Chromeleon Server Configuration program**—maintains configuration information about the chromatography instrument systems. This is a standard component of Chromeleon.
- **Chromeleon Instrument Server**—controls the data exchange between Integral analyzers and the Chromeleon PA computer.
- **Chromeleon Server Monitor program**—required for starting and monitoring the chromatography server. This is a standard component of Chromeleon.
- **Chromeleon client**—the user interface for accessing chromatography data and for controlling individual chromatography instruments. This is a standard component of Chromeleon.
- **Analyzer program**—the user interface for accessing process analytical functions. This includes all analyzer-level configuration, analyzer control, results display, and results reporting. This is a unique component of Chromeleon PA.

Setting Up Chromeleon PA

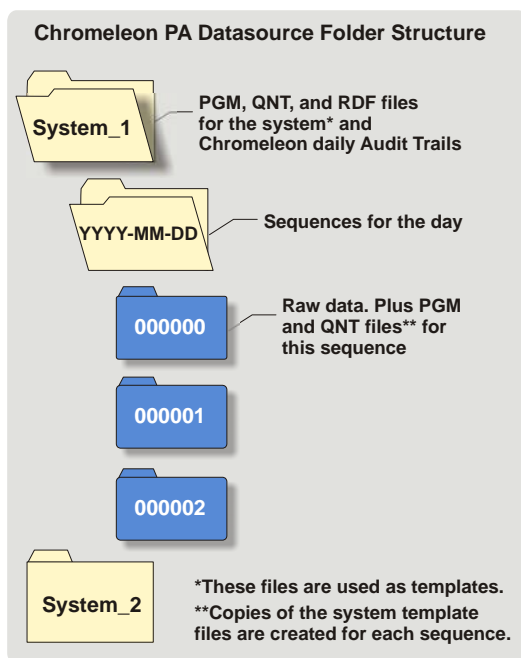
- **Analyzer device driver**—transfers analyzer status and events from Chromeleon PA to Chromeleon. This is a unique component of Chromeleon PA.
- **Datasource**—the database in which Chromeleon PA data is stored. The structure of this database is a unique component of Chromeleon PA (see [Section 2](#)).
- **Chromeleon PA OPC™ Interface (Optional)**—the Chromeleon PA OPC (OLE for Process Control) Server allows access to, and limited control of, one or more Integral analyzers by an external OPC-compatible program (the client). The OPC client uses Integral analyzer data for custom applications. The Chromeleon PA OPC interface specifications are based on the Axeda FactorySoft OPC Toolkit.

The above programs, as well as the datasource and instrument server can be installed on a single computer or on separate computers, as in the following example:



2. The Chromeleon PA Folder Structure

Unlike Chromeleon, which can be connected to multiple datasources, Chromeleon PA can be attached to only one datasource at a time. All data (including sample data, the Chromeleon Audit Trail, report templates, alarm configurations, and so on) is stored and retrieved from this datasource. Chromeleon PA creates the folder structure of the datasource.



When you configure timebases (systems) in the Server Configuration program, Chromeleon creates a top-level folder in the datasource for each configured system. All programs (PGM files), methods (QNT files), and report templates (RDF files) for a system must be stored in this top-level folder. These are the templates used in daily operation as described below.

During daily operation, when the analyzer begins the first sequence of the day, Chromeleon PA creates a new folder under the system top-level folder and names it with the current year, month, and day. All sequences started on that day are then placed in this subfolder. Each sequence is named with a 6-digit number to ensure uniqueness. Output PGM and QNT files, which are copied from the template versions located in the top-level folder, are also stored in the sequence folder.

3. System Requirements

System requirements for Chromeleon PA are the same as for Chromeleon versions without process monitoring functions. Refer to *Installing the Chromeleon IC System* (Document No. 031883) for details.

4. Setup Procedure Overview

This section provides an overview of the tasks that must be completed before you can begin using Chromeleon PA to control an Integral analyzer.

1. Run the Chromeleon and Chromeleon PA setup programs, enter the license information, and connect the chromatography system devices (see [Section 5](#)).
2. In the Server Configuration program, create timebases (systems) and configure the system devices (see [Section 6](#)).
3. In the Chromeleon client, open control panels for each system. Verify that Chromeleon is communicating with all systems and the systems are functioning correctly (see [Section 7](#)).
4. In the Chromeleon client, create programs (see [Section 8](#)), quantification methods (see [Section 9](#)), and report definitions (see [Section 10](#)). Save all files in the top-level system folder in the datasource.
5. Start the Analyzer program and connect to the datasource in which the program, method, and report files for the analyzer systems are stored (see [Section 12](#)).
6. In the Analyzer program, connect to the Chromeleon instrument server that controls the analyzer systems (see [Section 13](#)).
7. In the Analyzer program, configure analyzers, systems, and streams (see [Section 14](#)).
8. (Optional) Run the Chromeleon PA OPC interface setup program and then follow the instructions in [Appendix A](#) to set up the interface.

5. Running the Setup Programs and Entering License Information

Follow the instructions in *Installing the Chromeleon Chromatography Management System* (Document No. 031883) to complete the following steps:

1. Insert the Chromeleon disk in the computer and run the Chromeleon Setup program.
2. Install any appropriate Chromeleon Service Packs. Refer to the release notes for the latest information.
3. When Chromeleon setup is complete, insert the Chromeleon PA disk in the computer and run the Chromeleon PA setup.
4. Start the Chromeleon server.
5. Enter the license information.
6. Connect the chromatography system devices to the Chromeleon network.

6. Creating Systems and Configuring Devices

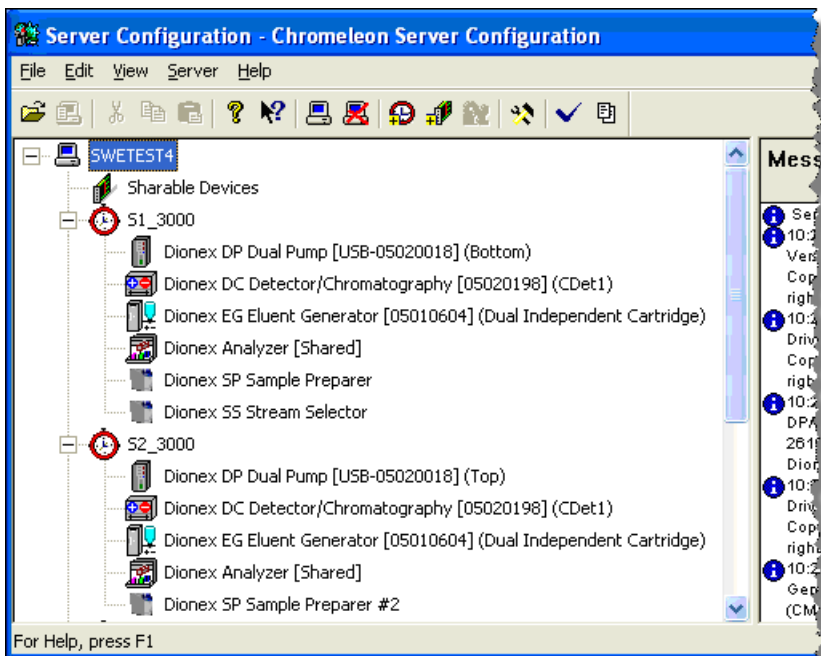
Before you can operate an Integral analyzer, Chromeleon PA needs to know the system configuration (which hardware devices are to be controlled and how they are connected). The number of systems needed and the devices included in each depend on your hardware devices and the applications to be run. In addition to the hardware devices, each system configuration *must* include (or share) an Analyzer device.

1. Make sure all chromatography system devices are connected to the Chromeleon network and their power is turned on.
2. Open the Chromeleon Server Configuration program and create the systems required for your hardware configuration.
3. Add the hardware devices to each system.
4. Add an Analyzer device to each system or share the Analyzer device between up to four systems. Systems that share an Analyzer device will be configured into one analyzer in the Analyzer program. Systems that do not share an Analyzer device will be configured into separate analyzers.

In the example configuration shown below, two chromatography systems are sharing an Analyzer device. When you configure analyzers in the Analyzer

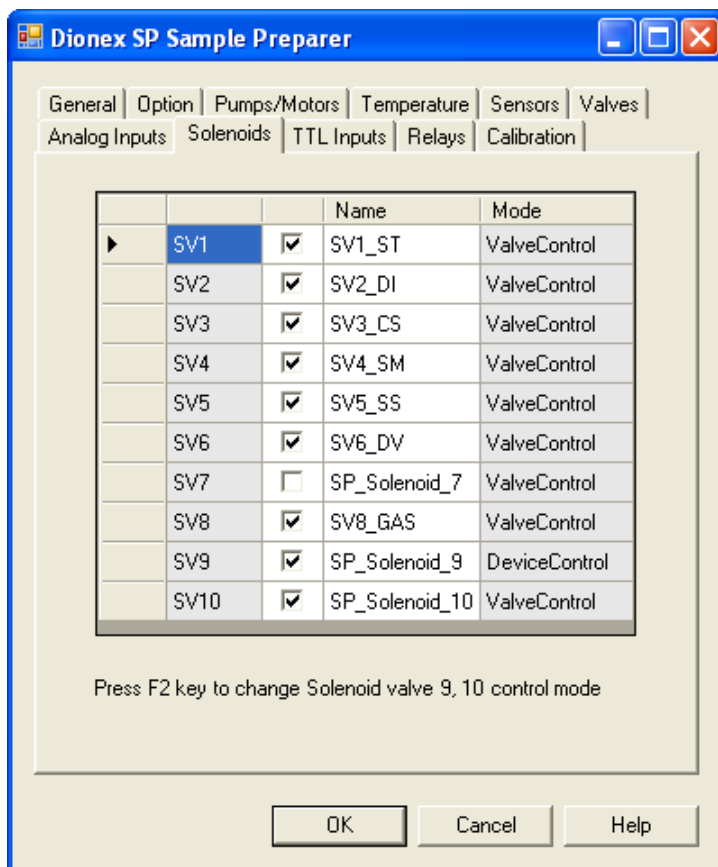
Setting Up Chromeleon PA

program (see [Section 14](#)), these two systems will be configured into one analyzer.



5. When you add a device to a timebase, enter the configuration properties as required for the device. Click the **Help** button on each tab page for details about the properties on the page.

- If you are configuring an SP1 or SP2, rename the generic solenoid valve names on the **Solenoids** page to match the names and functions assigned to the valves in the SP1 and SP2. Type the names exactly as shown in the following example. This ensures that solenoid valve controls on the Chromeleon Control panel will be enabled.

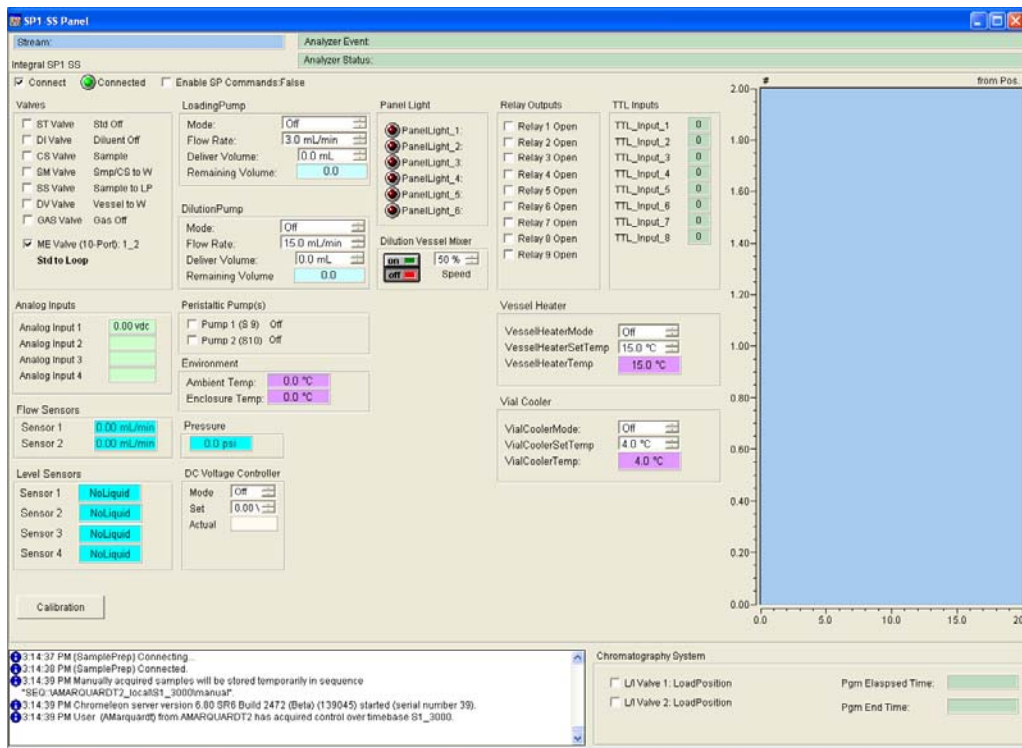


7. Opening a Control Panel

Dionex provides default control panels for monitoring the status of system devices and for controlling instrument functions when the system is offline. To open a control panel, go to the Chromeleon Browser and open the **Dionex Templates\Panels\Dionex_IC\Integral Panels** folder. Double-click the panel that matches the instrument configuration for your system.

To connect the system to the panel, select **Control >Connect to Timebase**. Select the timebase from the list and click **OK**.

The example below shows the Control panel for an SP1.

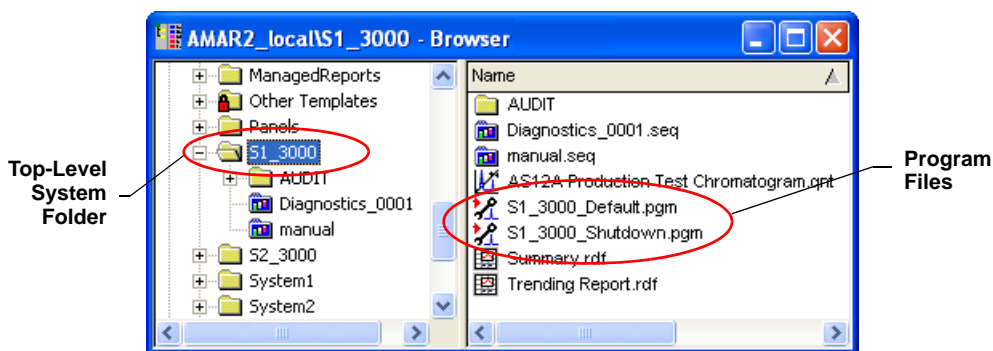


8. Creating Program (PGM) Files

In the Chromeleon client, use the Program Wizard to create new program files for the analyzer systems or to edit existing programs. See the Chromeleon Help for detailed instructions.

When you save the programs, save them in the top-level folder of the system for which the program was created. The Analyzer program only accesses programs from this top-level folder. If the files are in a different folder, they will not be available in the Analyzer program. See [Section 2](#) for details about the Chromeleon PA folder structure.

In the example below, two programs were created for the S1_3000 system and saved in the system's top-level folder.



8.1 Creating Programs for Different System Functions

In addition to creating programs for sample analyses, you can also create programs to control other system functions (for example, shutting down a system). The Analyzer program lets you assign the following four types of programs to a system:

Program Type	Used For
Default	Running sample analyses
Standby	Placing a system in standby
Shutdown	Shutting down a system
Overlap Flush	Flushing when a sequence is interrupted (for example, if an alarm occurs)

The Chromeleon Program Wizard is designed primarily for creating programs for data acquisition. Data acquisition commands cannot be used with the Standby, Shutdown, and Overlap Flush programs.

When you use the Program Wizard to create a Standby, Shutdown, or Overlap Flush program, delete any detector signal-related commands from the program after completing the Wizard. Examples of lines to delete are:

- Autozero
- ECD_1.AcqOn
- ECD_1.AcqOff
- UV.AcqOn
- UV.AcqOff

8.2 Viewing Example Programs

Chromeleon PA provides example program files, which you can refer to when creating programs for your analyzer. Because every program is created for a specific system and application, the examples will not work “as is” with your analyzer, but the principles behind the types of commands included and the order in which they are listed can be applied to many systems.

To access the example programs, go to the Chromeleon Browser and open the **Dionex Templates\IC Applications\IC Integral Applications** folder.

9. Creating Method (QNT) Files

In Chromeleon, create new method files or edit existing files. This section provides a brief description of the steps and settings recommended for creating QNT files for Chromeleon PA. Refer to the Chromeleon Help for detailed instructions.

After creating the QNT files, save them in the top-level system folder. These files will be used as templates by the Analyzer program. See [Section 2](#) for details about the Chromeleon PA folder structure.

Updating the Calibration

During daily operation, when the Analyzer program runs a sequence, it copies the template method (QNT) file from the system's top-level program and saves it with the sequence. If a sequence includes calibration standards, both the sequence copy of the method and the template method are updated. This ensures that the updated calibration information is used for all subsequent sequence runs on that system.

When setting up method files for system calibration, you will need to create sequences in the Chromeleon client. However, for routine analyzer runs, the Analyzer program is used to create and control sequences.

Creating Method Files for Chromeleon PA

Complete the following steps in the Chromeleon client.

1. Create a new method file (select **File>New>Method File**) or copy one of the example files included in the **Dionex Templates>IC Applications** folders and modify it as required for your system.
2. In the QNT Editor, select the **General** tab page, and select the **Fixed Mode** under **Global calibration settings**.
3. Create a sequence that runs the desired number of levels and replicates of the calibration standards.
4. Run the standards.
5. In the QNT editor, select the **Calibration** tab and add the standards to the table (right-click and select **Insert Standard**).
6. On the **Amount Table** tab page, enter the amounts of the components in the standard.
7. On the **General** tab page, click the **Calibrate** button to generate the calibration curve and parameters.
8. Save the calibrated method file in the top-level folder for the system.

10. Creating Report Definition Files (RDF)

In Chromeleon, create report definition files to define the contents of reports printed from the Analyzer program. See the Chromeleon Help topic, “Report Templates” for detailed instructions.

As with program and method files, save all report files in the top-level folder of the system for which the report will be used.

10.1 Report Types

The following two basic types of reports are used with Chromeleon PA:

- **Sample (end-of-run)** reports print the results of sample analysis at the end of each injection run. These reports typically include a chromatogram, a table containing information (height, area, amount, etc.) about each peak in the chromatogram, calibration curves and tables, and peak analysis information (height, width, type, resolution, etc.).
- **Scheduled (trend)** reports print at scheduled intervals. These reports typically include trend data plots (for example, a plot of the peak height obtained for a particular component over the last 24 hours).

10.2 Example Reports

Chromeleon PA provides example reports, which you can copy to your system folders and modify for your needs. The report files are available in the Chromeleon Browser in the **Dionex Templates>Reports** folder.

11. Starting the Analyzer Program

Verify that the Chromeleon Server is running and then select **Start>All Programs>Chromeleon>CM-PA**.

12. Connecting to the Datasource

When the Analyzer program starts the first time, the **Datasource** dialog box appears. Under **Available Datasources**, select the datasource in which the analyzer system folders are located. Click **Make Current**.

13. Connecting to the Instrument Server

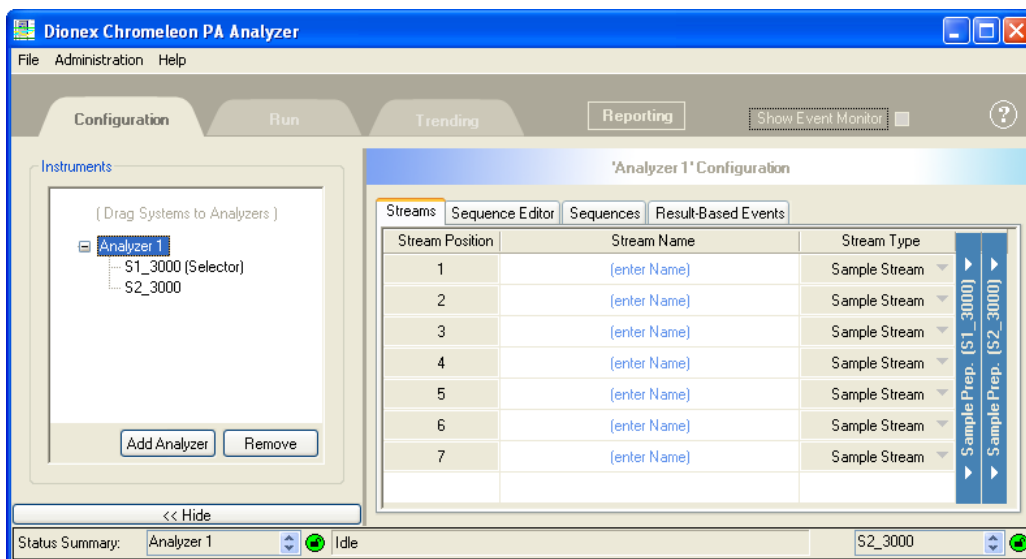
To connect to the Chromeleon instrument server, on the **Administration** menu, select **Instrument Server**. The **Connect to Chromeleon Server** dialog box appears. Select the server from the list and click **OK**.

14. Configuring Analyzers, Systems, and Streams

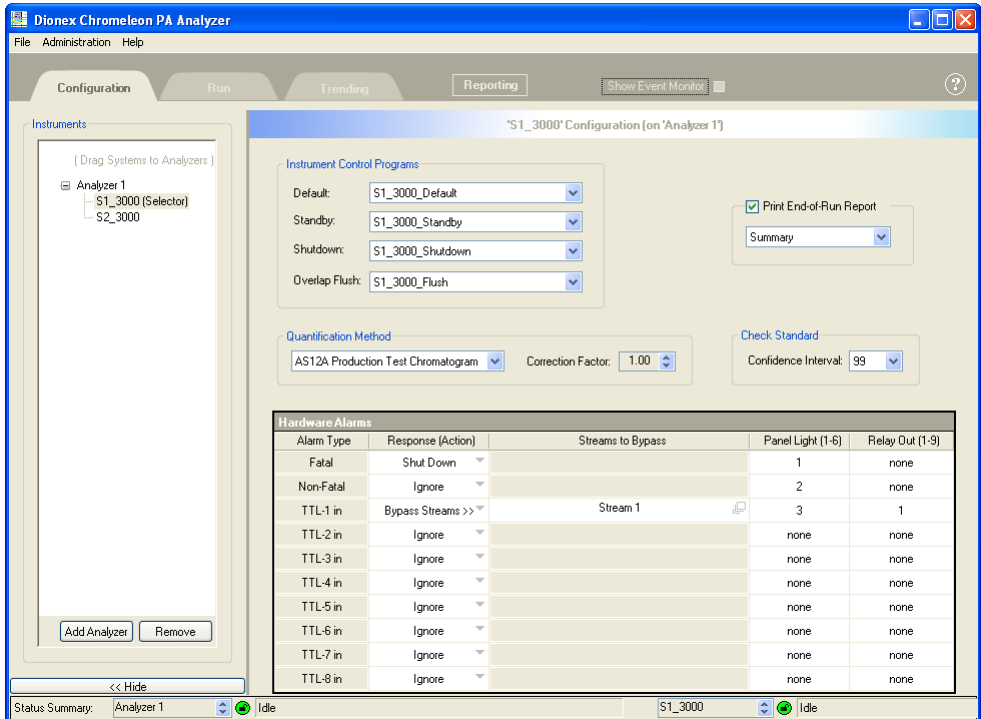
To configure analyzers, systems, and streams, follow the basic steps outlined below. For detailed instructions, refer to the Analyzer program Help.

1. Create one or more analyzers and assign the chromatography instrument systems to them. When creating new analyzers and assigning systems, make sure the configuration you create in the Analyzer program matches the configuration established in the Chromeleon Server Configuration program (see [Section 6](#)).

The example configuration shown below consists of one analyzer (Analyzer 1) that has two systems (S1_3000 and S2_3000) assigned to it. This configuration matches the example server configuration described in [Section 6](#). In the server configuration, S1_3000 and S2_3000 share an Analyzer device, therefore they must be configured into the same analyzer in the Analyzer program.



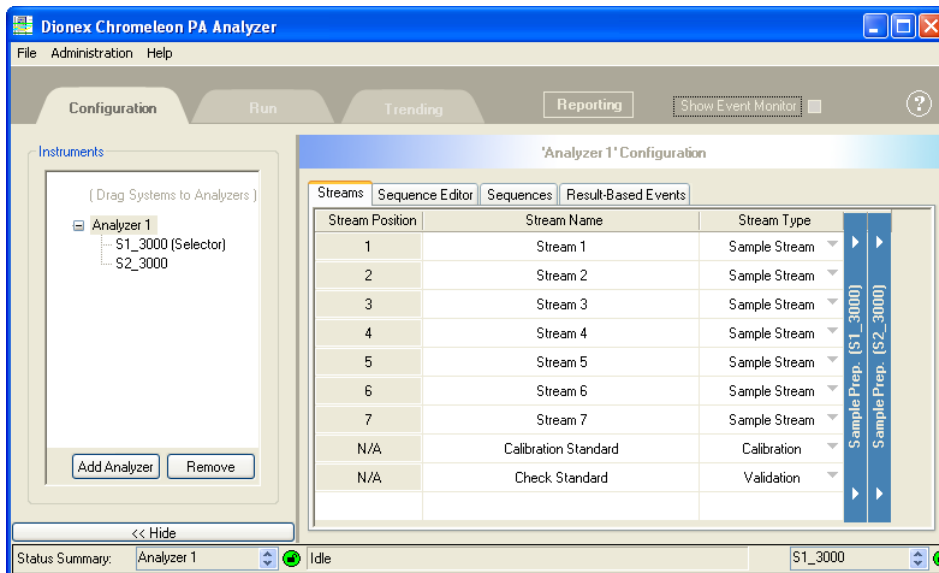
- Configure each system by assigning default control programs, a quantification method, a confidence interval, a report format, and alarm parameters. The example below shows the configuration for the S1_3000 system.



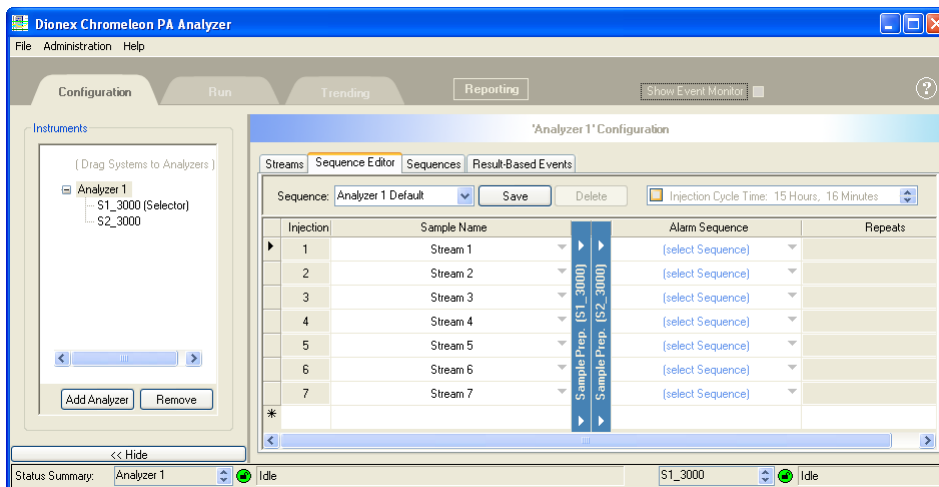
- Configure the streams to be analyzed. An analyzer can include definitions for up to 100 streams, including the SS valve positions and one or more non-valve streams (typically, used for calibration and check standards). Assign each stream a name and a type. The example below shows streams configured

Setting Up Chromeleon PA

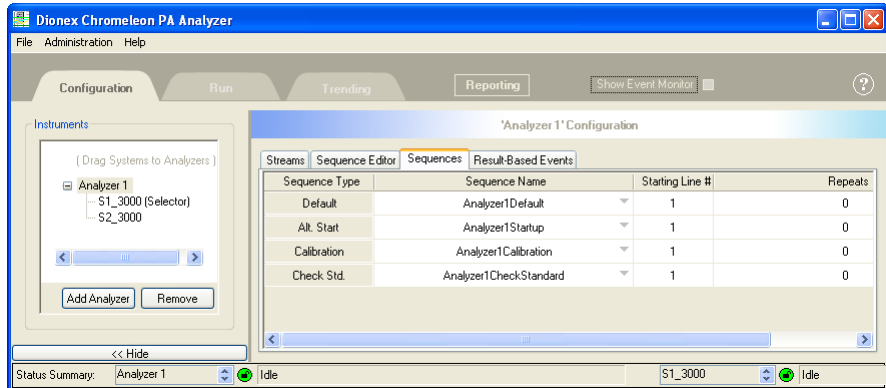
for Analyzer_1. Streams 1 through 7 are the streams from each SS valve position.



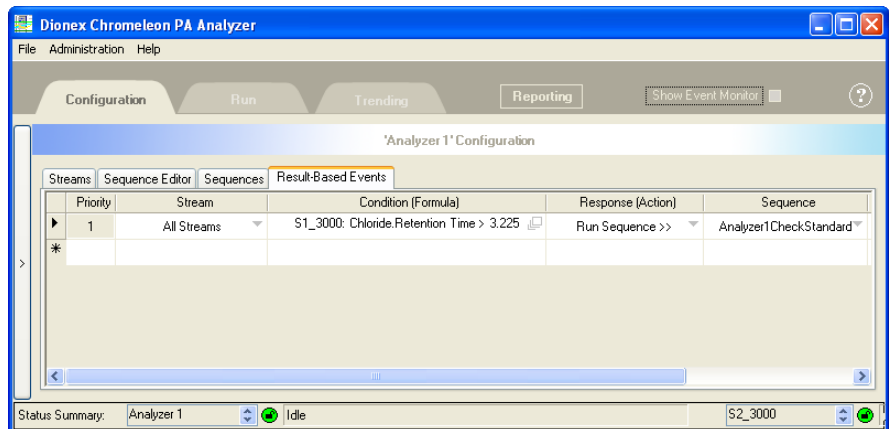
4. Create sequences for various analyzer functions. The example below shows a sequence for running sample streams.



5. Assign default sequences to four analyzer functions: (1) running samples (2) starting up (3) calibrating and (4) running check standards.



6. Define *result-based events* (events that are triggered if a result meets a pre-defined condition). In the example shown below, the check standard sequence is run if the retention time of the chloride peak exceeds 3.225.



NOTE In the above example, the left pane of the window (the configuration tree) is hidden.

A • The Chromeleon PA OPC Interface

OPC is a series of standards specifications that enables open connectivity in industrial automation¹. The optional Chromeleon PA OPC Server includes the OPC Data Access (DA) interface specification². This interface moves real-time data.

Installation of the Chromeleon PA OPC Server allows access to, and limited control of, one or more Dionex Integral Process Analytical Systems by an external OPC-compatible program (the *client*). The OPC client will use Integral data for custom applications.

This appendix contains the following sections:

Section A.1	Instructions for setting up the OPC Data Access interface
Section A.2	Details about states and command
Section A.3	Instructions for gathering results at the end of a sample
Section A.4	Instructions for setting up remote access of the OPC server

Before beginning these tasks, run the Chromeleon PA OPC interface setup program.

A.1 Data Access (DA) User Interface

This section explains how to establish communication between the Integral analyzer and the OPC client and how to select DA tags and assign numeric values to them. A *tag* is any aspect of the analyzer or system that the OPC Server can monitor or control; this includes sequences, sample streams, device states, report variables, and status messages.

1. For more information about OPC, go to <http://www.opcfoundation.org/>.

2. The Chromeleon PA OPC specification is based on the Axeda FactorySoft OPC Toolkit.

Setting Up Chromeleon PA

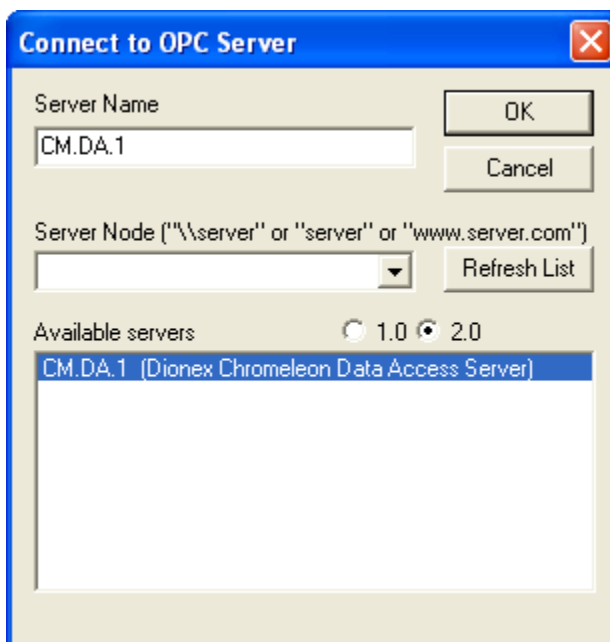
1. Start the Chromeleon Server and then start the Analyzer program (select **Start>All Programs>Chromeleon>CM-PA**).
2. Start the Chromeleon PA OPC Server (select **Start>All Programs>Chromeleon>OPC Server**). Each time the OPC Server is started, the list of tags is rebuilt. The time required to complete this process varies, depending on the number of tags. When the list is complete, the OPC icon appears on the taskbar.
3. When the OPC icon appears on the taskbar, start the OPC Data Access (DA) client (select **Start>All Programs>Chromeleon>DA Client**).

The main window of the DA client appears.

Notes:

- The Dionex DA client is simply an OPC test client; it provides access to the Chromeleon PA OPC Server and enables you to view certain features, but is not linked to any other programs.
 - Typical OPC installations require the use of a “double-headed” client application that can be used to connect the Chromeleon PA OPC Server application to another server application.
4. On the **OPC** menu, select **Connect**.

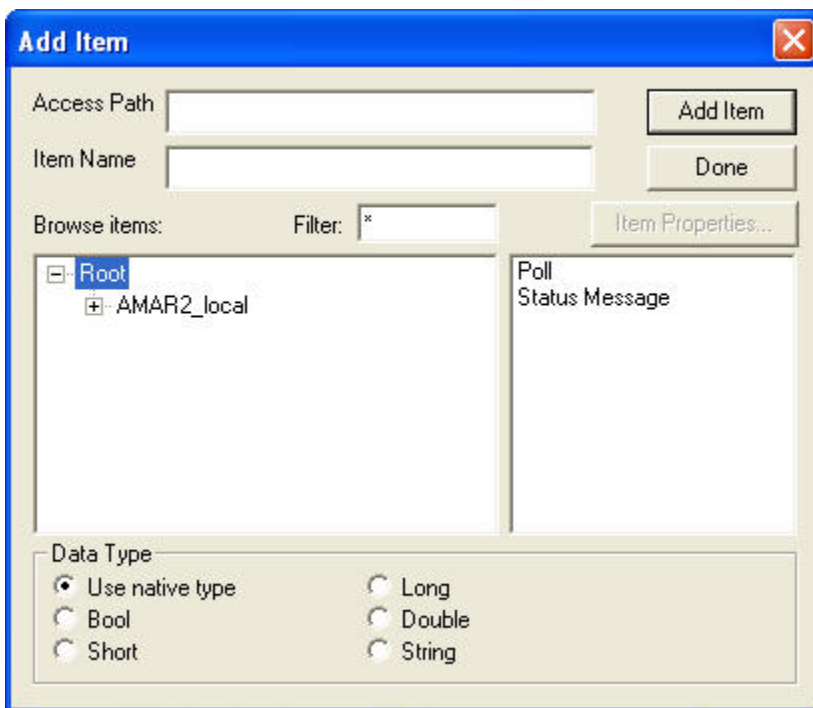
The **Connect to OPC Data Access Server** dialog box appears.



5. Under **Available servers**, select **CM.DA.1 (Dionex Chromeleon Data Access Server)** and click **OK**.
6. On the **OPC** menu, select **Add Item**.

Setting Up Chromeleon PA

The **Add Item** dialog box appears. The following example shows the top level of the tag tree under **Browse items**. The default state is that no tags are selected.

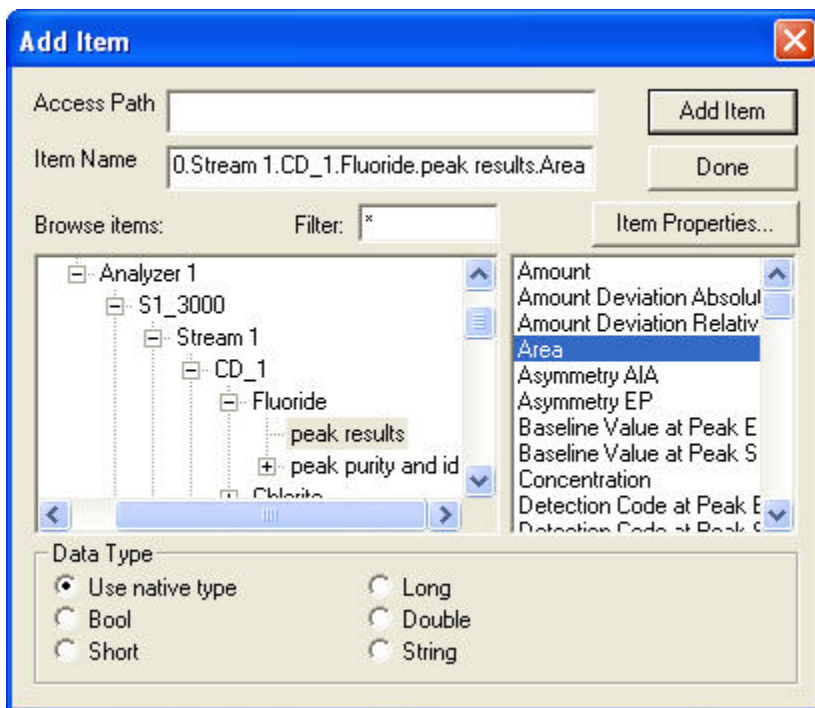


The general structure for the tag tree is as follows:

```
Root (tag: Poll)
- CM Datasource
-- General
-- Analyzer (tags: Command, sequence, other)
-- System (tags: data ready, end of sample, alarm LED states, TTL states, Relay states)
--- Sample stream
---- Detector
----- Analyte
----- peak results (tags: area, amount, height, etc.)
```

To expand the tree, click the + sign preceding an item.

- To add a tag, select an item in the **Browse items** tree. A list of related tags is displayed to the right. See the following example.



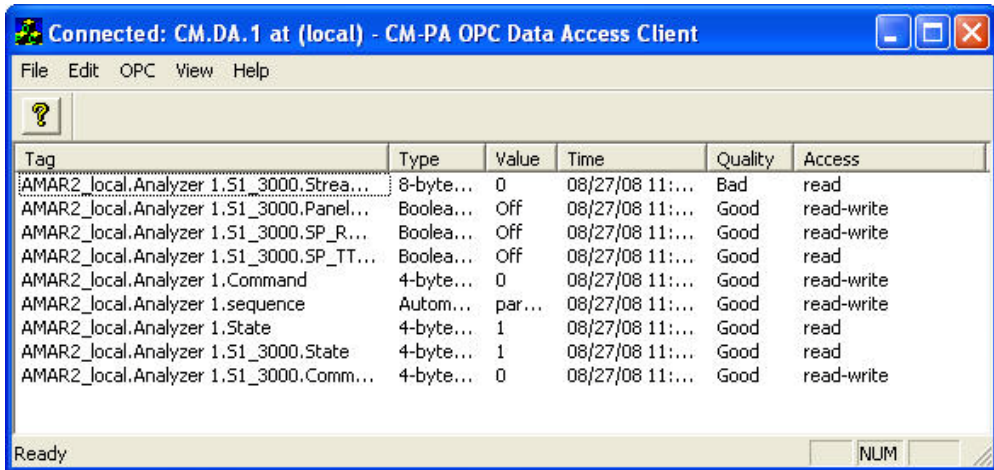
- Select a tag and click **Add Item**. To view additional information about a selected tag, click the **Item Properties** button.

NOTE For an explanation of which tags to select to gather results at the end of a sample, see [Section A.3](#).

- When you finish adding tags, click **Done**.

Setting Up Chromeleon PA

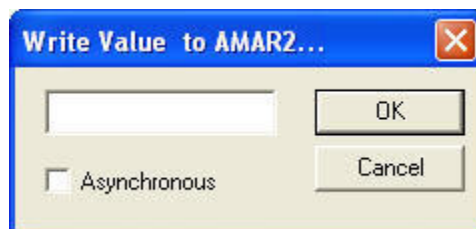
- The main window of the DA client now displays the tags you selected. The window will resemble the following example.



NOTE If the quality of a selected tag is “Uncertain,” refer to the “Category Tables” section on the following page for more information.

- To retain this list of tags for use in the future (and avoid repeating the selection process), select **Save** on the **File** menu. Select a path and name for the configuration file and click **OK**.
- Select any tag with write permission (as indicated in the **Access** column). On the **OPC** menu, select **Write Value to Item**.

The **Write Value to** dialog box appears.



- After referring to the tables in [Section A.2](#), type an appropriate value for the tag and click **OK**.

NOTE Do not select the **Asynchronous** check box.

14. Continue assigning values to tags in the DA client window.

General Notes

Poll: A Poll tag is provided as a “heartbeat” from CM-OPC server. It is an integer value incremented on each poll of about 1 second. It begins at 0 at CM OPC Server startup.

“n.a.” Results: Under certain circumstances, numerical results will return the text “n.a.” (For example, if a peak is not found, the Amount is returned as n.a.) If this occurs, the numerical results are converted to the minimum negative value of the type (floating point = -2.2250738585072014e-308, integer = -2147483648) and the quality of the tag is set to OPC_QUALITY_UNCERTAIN.

NOTE The variable value is not converted to the minimum negative value of the type.

To determine the actual value returned by Chromeleon, look at the table tag:

1. Select the tag name in the DA client window.
2. On the **Edit** menu, select **Copy** (or press Ctrl-C).
3. Paste the contents of the table into Notepad (or other text editor). Scroll through the file to the tag of interest.

CM-PA Close and Restart

Closing CM-PA will cause the Chromeleon-PA status text to indicate “CM-PA not available.” The stream tag quality will be set to bad. OPC results acquisition and symbol table states will continue to function but analyzer and system states and commands will indicate out of range error codes.

If CM-PA is restarted with no errors or configuration changes, the Chromeleon-PA status text will indicate “OK.” The stream tag quality will be set to good.

NOTE CM-PA closing is detected using a remoting exception, an inter-process communication error between CMOPC.EXE and CM-PA.EXE.

CM Server Stop

If connection to the CM Server fails, the System status tag text is as follows: “Symbol Table: XML element invalid.” The CM Server and then the OPC server must be restarted to restore the connection.

A.2 States and Commands

Essentially all control for the chromatography system is at the “Analyzer Command” level. Likewise, general status is found at the “Analyzer Status” level. Keep in mind that an “analyzer” is one or more chromatography systems running in parallel, performing a determination (or determinations) on a sample. When all chromatography systems that are configured into one Analyzer are finished, the Analyzer moves on to the next sample. Many installations only consist of one system. In these cases it might seem confusing to run at the analyzer level, but in order to accommodate sample stream selection, automatic sequence generation, conditional logic, and other CM-PA features, operation is maintained at the analyzer level.

To start the analyzer:

1. Set the Sequence name (string) (see [Section A.2.1](#)). Note that a sequence equals the list of, or order of samples. This analyzer sequence must be pre-defined in CM-PA and the string that is entered in OPC must match the name defined in CM-PA.
2. Set the Analyzer Command tag to **0** (start)

NOTE If the analyzer sequence consists of one line (one sample stream), the Start command will only run one sample. To run another sample, the start command will need to be sent again.

A.2.1 Analyzer.Command and Sequence

Command	Code	Definition
Start	0	Use in conjunction with analyzer-level sequence tag. The sequence tag is assigned a sequence, and then the analyzer command is set to 0.
Sequence End	1	End current sequence at end of sequence (stop looping).
Sample End	2	End current sequence at end of currently running sample.
Abort	3	Abort current sequence immediately.
Resume	4	Restart systems in standby.
Standby End of Sequence	5	Put analyzer into standby at end of sequence.
Standby End of Sample	6	Put analyzer into standby at end of sample.
Standby	7	Put analyzer into standby immediately.
Sequence	string	Sequence name as an alpha-numeric string. Can be a word, integer, or combination. Enter the sequence that is to be started. If no sequence is entered, the default sequence is run.

A.2.2 Analyzer.State

These codes are the values provided to the OPC Server from CM-PA.

Analyzer State	Code	Definition
Ready	1	Analyzer ready to run.
Running	2	Analyzer running sequences.
Standby	3	All channels are in standby state. If standby methods were assigned, they are run or are being run.
Standard	4	Running calibration sequences.
Validate	5	Running check standard sequences.
Alarm Schedule	6	Running alarm schedule.
Re-run	8	Re-running sample.
Running RBE Sequence	9	Running result-based event sequence.

A.2.3 System.State

System State	Code	Description
Ready	1	Sequence is not running.
Running	2	Sequence is running.
Standby	3	System is in standby state.
Shutdown	7	System shutdown, or not available.
Standard	4	Running calibration.
Validate	5	Running check standard.
Re-run	8	Re-running sample.
Running RBE Sequence	9	Running result-based event sequence.

A.2.4 System.Command

Command	Code	Definition
Sequence End	1	End system sampling at end of sequence (stop looping).
Sample End	2	End system sampling at end of currently running sample.
Abort	3	Abort system sampling immediately.
Resume	4	Restart system if in standby.
Standby End of Sequence	5	Put system into standby at end of sequence.
Standby End of Sample	6	Put system into standby at end of sample.
Standby	7	Put system into standby immediately.

A.3 End of Sample and Data Ready Notification

End of Sample and Data Ready provide notification that Chromeleon has finished processing raw chromatographic data and has updated reported results. This includes reporting SST results, validation, standard pass/fail, and component alarms.

NOTE These tags are provided at the chromatography system level.

End of Sample Tag (read only)

The End of Sample tag provides text in the following CSV format:

First row: Fixed header column

Second row: Actual data for each column

Example:

```
"Analyzer Name", "System Name", "Sample Name", "Inj. Time",  
"Event", <CR>  
"analyzer 1", "system 1", "sample 1", "11-30-08 11:21:34", <Code>
```

Where <CR> is a new line; <Code> is the end of sample code; 1 is a sample ended normally. Any other value for <Code> indicates a premature termination of the sample and sequence. Results for the terminated sample will not be updated. The end of a standby method is indicated by empty entries for the sample name and injection time.

Data Ready Tag (read/write)

A "data ready" tag is provided at the system level as a read/write string. The value is equal to the <code> from the end of the End of Sample tag. However, this is a simplified tag with read/write attributes. A value "1" means sample ended normally; other values mean a premature termination. It is meant to provide a resettable tag that can be monitored by a remote control client. The tag type is a string. The typical value to reset is "0."

Test Results Tags

The Test Results tags in the System Suitability Row (num) categories within the System Suitability group provide result text in the following CSV format:

First row: Fixed header column

Second row: Actual data for each column

Example:

```
"Sample Name", "Component Name", "Category Name", "Result Name",  
Result", <CR>
```

```
"Standard 1", "", " system suitability test Row 4", " Test Results", "  
Failed"
```

Where <CR> is a new line

A.4 Remote Access

The OPC client can access the server remotely from another computer, provided that the computer name is specified at connection time. Follow the steps below to correctly configure DCOM.

1. Launch DCOMCNFG.EXE (in WINDOWS\SYSTEM32).
2. Select the following settings on the respective property pages.

Default Properties

X Enable Distributed COM on this computer

Default Authentication Level: None

Default Impersonation Level: Impersonate

Default Security

Default Access Permissions

- Add the client computer
- Type of Access: Allow Access

Default Launch Permissions

- Add the client computer
- Type of Access: Allow Launch

Default Configuration Permissions

- Add the client computer
- Type of Access: Full Control

Properties

OPCENUM & DA and AE

- General: Authentication Level; Default
- Location: Run application from this location. CLEAR OTHER OPTIONS!
- Security: Accept defaults (OPCENUM and DA only)
- Identity: The launching user (OPCENUM and DA only)